







Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميائى پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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Piping Material Class

Z01	30.04.2020	As Built	Liu Jianxin	Liu Man	Wang Meng
3	17.05.2017	Final Issue	Liu Jianxin	Liu Man	Wang Meng
2	07.05.2017	Final Issue	Liu Jianxin	Liu Man	Wang Meng
1	24.04.2017	Final Issue	Liu Jianxin	Liu Man	Wang Meng
0	07.06.2016	Final Issue	Liu Jianxin	Liu Man	Wang Meng
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B1	04.05.2016	Issued For Review	Liu Jianxin	Liu Man	Wang Meng
B	03.03.2016	Issued For Review	Liu Jianxin	Liu Man	Wang Meng
A	20.11.2015	Issued For Review	Liu Jianxin	Liu Man	Wang Meng
REV.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED

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INDEX OF PIPING MATERIAL CLASS




No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
	B24	BD	Boiler Blow Down	3.5~10.5	100~200	SW/WN- RF CL150 A105	A106 Gr. B A672 Gr. B60 CL.12	Flat Gasket SS316 reinforced graph.	1.6	4"	
		BFW	Boiler Feed Water	4.5	160					18"	
		CD	Closed Drain	3.5	340					1 1/2"	
		CD	Closed Drain	10	100					2"	
		CWS	Cooling Water Supply (AG)	7.5	100					40"	
		CWR	Cooling Water Return(AG)	7.5	100					32"	
		HPC	High Pressure Condensate	7	180					8"	
		MPC	Medium Pressure Condensate	7	180					34"	
		LPS	Low Pressure	9.5	190					1.5"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
			Steam								
	B24	LPS	Low Pressure Steam	5	340					32"	
		LPC	Low Pressure Condensate	10.5	190					20"	
		N	Nitrogen	10.5/16	110					10"	
		PA	Plant Air	10.9	85					4"	
		FG	Fuel Gas	7	100					28"	
		FLG	Flare/Vent Gas	5	390					28"	
		FLG	Flare/Vent Gas	5	410					64"	
		LOS	Liquid off Stream Methanol	7.5	175					3"	
		NG	Natural Gas	7	85					24"	
		OW	Oily Water	7.5	150					4"	
		PG	Off Gas	7	100					24"	
		PMC	Crude Methanol	15	160					24"	

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	B24	PMP	Rich Methanol Liquid	14	150					12"	
		PMP	Rich Methanol Liquid	8	165					24"	
		PMV	Rich Methanol Gas Liquid	3.5	150					72"	
		PMV	Rich Methanol Gas Liquid	7.5	175					42"	
		PMW	Methanol Water	7.5	175					18"	
		PMW	Methanol Water	15	120					6"	
		PRC	Process Condensate	3.5	180					2"	
		VA	Vent to Atmosphere	7	410					28"	
		SW	Service Water	11.5	85					4"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
	B24A	LOS	Liquid off Stream Methanol	13	175	SW/WN-RF CL150 A105	A106 Gr. B A672 Gr. B60 CL.12	Flat Gasket SS316 reinforced graph.	3.0	2"	
		PG	Off Gas	3.5	85					6"	
		PMC	Crude Methanol	13	160					20"	
		PMV	Rich Methanol Gas Liquid	5	160					42"	
	B24U	PMW	Methanol Water (UG)	10.5	85	SW/WN-RF CL150 A105	A106 Gr. B A672 Gr. B60 CL.12 PE Coated	Flat Gasket SS316 reinforced graph.	3.0	6"	UG
	B40	AM	Ammonia Water (5~15%)	7	85	SW/WN-RF CL150 F304L	A312 TP304L	Flat Gasket SS316 reinforced graph.	0	1.5"	amine
		BD	Boiler Blow Down	9.9	125					6"	
		BD	Boiler Blow Down	7	170					16"	
		FLG	Flare/Vent Gas	5	100					3/4"	
		HZ	Oxygen Scavenger	7	85					1.5"	
		NS	NAOH Solution	7	85					3"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
			(10~30%)								
		PG	Off Gas	7	100					14"	
	B40	PMC	Crude Methanol	13	100					18"	
		PMV	Rich Methanol Gas Liquid	3.5	100					20"	
		PMW	Methanol Water	3.5	100					3"	
		PRC	Process Condensate	7	100					4"	
		VA	Vent to Atmosphere	3.5	100					24"	
		VG	Vent Gas	3.5	85					24"	
	B40U	PRC	Process Condensate	7	100	SW/WN-RF CL150 F304L	A312 TP304L PE Coated	Flat Gasket SS316 reinforced graph.		4"	UG
	B50	DMW	Demineralized Water	14	110	SW/WN-RF CL150	A312 TP304	Flat Gasket SS316 reinforced	0	12"	

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		TC	Turbine Condensate	10.5	160	F304		graph.		6"	
		IA	Instrument Air (AG)	10.5	85					3"	
	B50B	LO	Lube Oil	10	85	SW/WN-RF CL150 F304	A312 TP304	Mod. PTFE	0	4"	For Package unit
	B70	VA	Vent to Atmosphere	4.5	255	WN-RF CL150 N04400	B165 N04400	MONEL N04400 WND FLEXIBLE THERMICU LITE	0	4"	
	D24	BFW	Boiler Feed Water	15	200	SW/WN-RF CL300 A105	A106 Gr. B A672 Gr. B60 CL.12	SP WD SS316/Gra ph.	1.6	24"	
		LPS	Low Pressure Steam	9.5	340					4"	
		LPC	Low Pressure Condensate	18	190					4"	
		LPC	Low Pressure	9.5	340					1"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
			Condensate								
		N	Nitrogen	29	100					2"	
		HG	Hydrogen Gas	28~29	85~100					3"	
		PMC	Crude Methanol	16	160					8"	
		PMP	Rich Methanol Liquid	19	85~165					24"	
	D24	PMW	Methanol Water	15	175					6"	
		SG	Synthesis Gas	29	100					6"	
		VA	Vent to Atmosphere	9.5~10	330~340					16"	
		VA	Vent to Atmosphere	7.0	410					20"	
		VA	Vent to Atmosphere	29	100					2"	
	D34	RFG	Reformed Gas	29	390	SW/WN-RF	A335 P11	SP WD	1.6	42"	
		RFG	Reformed Gas	31	440	CL300		SS316/Graph.		42"	

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		VA	Vent to Atmosphere	4.5	470	A182 F11 CL.2				24"	
		VA	Vent to Atmosphere	15	490						20"
	D40	N	Nitrogen	29	100~120	SW/WN-RF CL300 F304L	A312 TP304L	SP WD SS316/Graph.	0	10"	
		PRC	Process Condensate	30	100					8"	
		RFG	Reformed Gas	29	100~200					34"	
		RW	RO Water	15	85					4"	From B40
		SG	Synthesis Gas	29	100					28"	
	F24	BD	Boiler Blow Down	48	265	SW/WN-RF CL600 A105	A106 Gr. B	SP WD SS316/Graph.	1.6	6"	
		BFW	Boiler Feed Water	80	160					8"	
		CBD	Continous Blow Down	47	260~265					4"	
		HPC	High Pressure Condensate	52~53	290					6"	

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		HPS	High Pressure Steam	52	310~410					28"	
		MPS	Medium Pressure Steam	45~46.5	260~300					24"	
		MPC	Medium Pressure Condensate	45	300					18"	
		MPC	Medium Pressure Condensate	46.5~73	260					18"	
	F24	LPS	Low Pressure Steam	45~52	300~340					24"	
		N	Nitrogen	60	85					1.5"	
		N	Nitrogen	46	290					10"	
		N	Nitrogen	55	410					1.5"	
		HG	Hydrogen Gas	60	100~200					3"	
		LOS	Liquid off Stream Methanol	60	85					2"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
		NG	Natural Gas	55~69	85					14"	
		NG	Natural Gas	55	375					8"	
		OW	Oily Water	60	85					2"	
		PMP	Rich Methanol Liquid	52	85					3"	
		PMW	Methanol Water	82	175					3"	
		PRG	Process Gas HDS	46~55	290,375, 410					24"	
		VA	Vent to Atmosphere	52	410					3"	
	F34	HPS	High Pressure Steam	52	470	SW/WN-RF CL600	A335 P11	SP WD SS316/Graph.	1.6	24"	
		HPC	High Pressure Steam Condensate	52	470	A182 F11 CL.2				1 1/2"	
		RFG	Reformed Gas	46	500					30"	
	F40	PH	Phosphate Solution	47	75	SW/WN-	A312	SP WD	0	2"	

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			(1~2% Na ₃ PO ₄)								
		SG	Synthesis Gas	38	100	RF CL600 F304L	TP304L	SS32/Graph.		36"	
		PRC	Process Condensate	30	200					8"	
	F44	HPS	High Pressure Steam	52	410	SW/WN-RF CL600 A182 F321	A312 TP321	SP WD SS321/Graph. Oil free	0	4"	
	F50	PO	Process Oxygen	55	410	WN-RF CL600	A312 TP304	SP WD SS316/Graph.	0	18"	
		PO	Process Oxygen	55	85	A182 F304				10"	
	F50A	HG	Hydrogen Gas	60	290	WN-RF CL600 A182 F304	A312 TP304	SP WD SS316/Graph.	0	4"	For compressor Package
	F70	HPS	High Pressure Steam	52	410	WN-RF CL600 B564	B165 N04400	SP WD Monel/ Thermiculit	0	4"	

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		PO	Process Oxygen	55	85,255, 290,410	N04400		e.		18"	
	G24	BD	Boiler Blow Down	113	330	WN-RJ CL900 A105	A106 Gr. B	Soft Iron	1.6	6"	
		BFW	Boiler Feed Water	113	160~310					12"	
		CBD	Continous Blow Down	112	330					10"	
		HHPS	High High Pressure Steam	112	330					18"	
		SG	Synthesis Gas	99	100					6"	
	G36	PRG	Process Gas HDS	46	550	WN-RJ CL900 A182 F22 CL.3	A335 P22	A182 F5	1.6	30"	
	G40	BD	Boiler Blow Down	56	255~290	WN-RJ CL900 F304L	A312 TP304L	F182 304L	0	4"	
		BFW	Boiler Feed Water	80	160					3"	
		CD	Closed Drain	100	100					2"	
		N	Nitrogen	99	120					2"	

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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
		PRC	Process Condensate	55~80	100~200					8"	
		PRC	Process Condensate	72	290					16"	
		PRG	Process Gas HDS	55	290					28"	
		SG	Synthesis Gas	99	100~120					38"	
		VA	Vent to Atmosphere	99	100					2"	
		PMC	Crude Methanol	100	100					12"	
	H24	BFW	Boiler Feed Water	170	160	WN-RJ CL1500	A106 Gr. B	Soft Iron	1.6	12"	
		HHPS	High High Pressure Steam	112	370	A105				20"	
	H34	HPS	High Pressure Steam	112	410, 470	WN-RJ CL1500 A182	A335 P11	A182 F5	1.6	24"	
		HHPS	High High Pressure Steam	112	490	F11 CL.2				24"	




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Max. Size	NOTES
	H40	N	Nitrogen	99	260	WN-RJ CL1500 F304L	A312 TP304L	A182 304L	0	2"	
		PH	Phosphate Solution (1~2% Na ₃ PO ₄)	114	75					1.5"	
		SG	Synthesis Gas	99	150~290					34"	
	H64	RFG	Reformed Gas	39	675	WN-RJ CL1500 A182 F321H	A312 TP321H	A182 F321	0	24"	
		RFG	Reformed Gas	46	675					34"	




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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INDEX OF WATER PIPING MATERIAL CLASS




No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Size Range	NOTES
	C1A	FW	Fire Water (AG)	9.8	85	SW/WN-RF CL150 A105	A106 Gr. B A672 Gr. B60 CL.12	Flat Gasket	1.6	24"	
		POC	Potentially Oily Contaminate Water (AG)	5.1	85					24"	
		FF	Fire Foam	8	85					16"	
	G1A	PW	Potable Water (AG)	12	85	TH/WN-RF CL150 A105/ GALV.	A53 Gr. B/GALV.	Flat Gasket	0	4"	
	G1B	FW	Fire Water (after filter)	9.8	85	TH/WN-RF CL150 A105/ GALV.	A53 Gr. B/GALV.	Flat Gasket	0	16"	
	S1A	CH1	Crossion Inhibitor (AG)	4.8	85	SW/WN-RF CL150 F316L	A312 TP316L	Mod. PTFE	0	2"	
		CH2	Scale Inhibitor (AG)	4.8	85					2"	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Size Range	NOTES
		CSW	Clean Salty Water (TDS ≤ 12000mg/l, CL- ≤ 8000mg/l (AG))	6.8	85					6"	
	S1B	SU	H2SO4 (98%) (AG)	5	85	SW/WN-RF CL150 F316L	A312 TP316L	Mod. PTFE	0	4"	
		SU	H2SO4 (0.5~3%) (AG)	5	85					4"	
	N0A	SN	Sanitary Sewage (Indoor)	Gravity Flow	45		UPVC		0	8"	
	N0C	SN	Sanitary Sewage (UG)	Gravity Flow	45		Structural- wall HDPE PIPE		0	16"	
	N2A	SN	Sanitary Sewage (UG)	5.1	40	WN-FF PN16 (CL150) PE80	PE80	MOD. PTFE	0	3"	
	N2C	CLO	NaClO Solution (10%) (AG)	4.8	85	FF, CL150, CPVC	CPVC	Soft PVC	0	3"	

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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No.	Pipe Class	Fluid code	Fluid	Des. Press. (Barg)	Des. Temp. (°C)	Flange	Piping	Gasket	Corr. Allow. (mm)	Size Range	NOTES
		HC	HCL Solution (2~40%) (AG)	3~6	85					2"	
	N2D	PW	Potable Water (Indoor)	5	60		PPR		0	6"	
	U1A	FW	Fire Water (UG)	9.8	85	SW/WN-RF CL150 A105	A106 Gr. B A672 Gr. B60 CL.12	Flat Gasket Synthetic Fiber with Nitrile Binder	1.6	24"	
		CWS	Cooling Water Supply (UG)	7.5	100					56"	
		CWR	Cooling Water Return (UG)	7.5	100					56"	
		POC	Potentially Oily Contaminate Water (UG)	5.1	85					16"	
	U1B	PW	Potable Water (UG)	12	85	TH/SO-RF CL150 A105/ GALV.	A53 Gr. B/GALV. PE Coated Externally	Flat Gasket	0	4"	

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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PIPE CLASS: B24

BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	BD, BFW, CD, CWS, CWR, HPC, MPC, LPS, LPC, N, PA, FG, FLG, LOS, NG, OW, PG, PMC, PMP, PMV, PMW, PRC, PRG, VA, SW

SERVICE LIMITE:




DN1500 AND SMALLER

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		

LARGER THAN DN1500 (PN16)

DESIGN TEMP.(°C):	≤100	100	150	200	250	300	350	400	450				
DESIGN PRESS. (Barg):	13.7	13.7	13.3	12.4	11.3	10.2	9.6	9.1	5.2				

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH80	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH40	
	200~350		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH20	
	400~450		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
	500~600		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
	700~1100		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	STD	
	1200		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	11.13mm	

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	Doc. Title	Piping Material Class			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	1400		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	11.91mm	
	1500		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	12.7mm	
	1600		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	14.27mm	
	1800		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	15.88mm	

PIPE NIPPLE




15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH80
15~40		ASTM A106 Gr. B,SMLS,POEXTOE, ASME B36.10M L=100mm	SCH80

FORGED FITTING




ELBOW 90°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
ELBOW 45°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
TEE EQUAL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
TEE REDU.	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE
SOCKOLET	50~1800	15~40	ASTM A105, SW, CL3000, MSS SP-97	
WELDOLET	100~600	50~400	ASTM A105, BW,MSS SP-97	AS PIPE
	700~1800	50~300	ASTM A105, BW,MSS SP-97	AS PIPE
COUPLING FULL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
CAP	15 ~40		ASTM A105, SW, CL3000, ASME B16.11	
	15 ~ 40		ASTM A105, NPT, CL3000, ASME B16.11	

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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BW FITTING					
ELBOW 90°	50 ~ 350		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
	400~1800		ASTM A234 WPB, SR, WELDED,BW,ASME B16.9	AS PIPE	
ELBOW 90° REDU	1200	1000	ASTM A234 WPB, SR, WELDED,BW,ASME B16.9 DIMENSIONS AS PER MANUFACTURER'S STANDARD	AS PIPE	
ELBOW 45°	50 ~ 350		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	400~ 1800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
CAP	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	350~ 1800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL150,ASME B16.5	AS PIPE	
	15 ~ 40		ASTM A105, SW-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105, WN-RF,CL150,ASME B16.5	AS PIPE	
	50 ~ 600		ASTM A105, WN-RF,CL300,ASME B16.5	AS PIPE	
	700 ~ 1500		ASTM A105, WN-RF,CL150,ASME B16.47 B	AS PIPE	
	1600 ~ 1800		A105, WN-RF,PN16,EN1092-1	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF,CL150,ASME B16.5		
	700 ~ 1500		ASTM A105, BL-RF,CL150,ASME B16.47 B		
	1600 ~ 1800		ASTM A105, BL-RF,PN16,EN1092-1	AS PIPE	

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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
FIGURE 8	15~300		ASTM A515 Gr.70, RF, CL150, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	700~1500		ASTM A515 Gr.70, RF,CL150,MFR'S STD		
BLANK	700~1500		ASTM A515 Gr.70, RF,CL150,MFR'S STD		
SPACER	1600~1800		ASTM A515 Gr.70, RF,PN16,MFR'S STD		
BLANK	1600~1800		ASTM A515 Gr.70, RF,PN16,MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm KLINGER PSM-AS OR EQUAL.		
	700 ~ 1500		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.47 B,T=3.2mm KLINGER PSM-AS OR EQUAL.		
	1600 ~ 1800		FLAT RING GASKET,SS REINFORCED GRAPHITE, RF,PN16, EN1514-1, EN1092-1,T=3.2mm KLINGER PSM-AS OR EQUAL.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z51H1-800C1K	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z41H1-150C1K	1
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40H1-150C2	
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40H1-150C2K	
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF,	Z40H1-150C2	7

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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			CL150, FLEXIBLE WEDGE, BB, API 600, HW.		
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40H1-150C2K	7
	350~750		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540H1-150C2	7
	350~750		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z540H1-150C2K	7
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SPLIT WEDGE, BB, API 600, HW.	Z42H1-150C2	6
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42H1-150C2K	6
	350~750		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542H1-150C2	6
	350~750		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SPLIT WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z542H1-150C2K	6
	100 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW. EXTENTION STEM.	Z40H1-150C2-L	
BALL VALVE	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, WITH NIPPLE, API 608, LO.	Q51F2-800C1	1,2
	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, WITH NIPPLE, WITH LOCK, API 608, LO.	Q51F2-800C1K	1,2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, WITH LOCK, API 608, LO.	Q41F2-150C1K	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, WITH	Q41F2-150C2K	2

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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			LOCK, API 608, LO		
	150~300		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341F2-150C2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2	
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, WITH LOCK, BS1873, HW OP.	J41H1-150C2K	
	200~300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-150C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H1-150C1	1
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS 1868, ASME B16.34.	H44H1-150C2	
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	4
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2	2,3, 4
	150~ 900		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, GO.	D372F1-150C2	2,3, 4
	80~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2	2
	150~ 900		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, GO.	D342F1-150C2	2
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150C1	
	50~100		BODY: CS, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	SY41E1-150C2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
T TYPE	150 ~600	BODY: CS STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD		ST41E1-150C2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.
- Normally only used as block valve to underground cooling water system.
- Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
- Wall thickness calculation is based on 1.5MPa, 160°C UP TO DN1000; Pipes >DN1000 is based on 0.75MPa 175°C.
- Split wedge gate valve should be used for services with design temperature higher than 350°C.
- Flexible wedge gate valve should be used for services with design temperature not higher than 350°C
- For vent and drain.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B24A

BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	3.0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	LOS PG PMC PMV
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH80	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH40	
	200~350		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH20	
	400~450		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
	500~600		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
	700~1100		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	STD	
	1200		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	11.13mm	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH80	
	15~40		ASTM A106 Gr. B,SMLS, POEXTOE,, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE EQUAL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~1200	15~40	ASTM A105, SW, CL3000, MSS SP-97		
WELDOLET	100~600	50~400	ASTM A105, BW,MSS SP-97	AS PIPE	
	700~1200	50~300	ASTM A105, BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
	15 ~ 40		ASTM A105, NPT, CL3000, ASME B16.11		3

BW FITTING




ELBOW 90°	50 ~ 350		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	400 1200		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 350		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	400 1200		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	400 1200		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	400 1200		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	400 1200		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	400	1200	ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
CAP	50 ~ 350		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	400	1200	ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105,WN-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	700 ~ 1200		ASTM A105, WN-RF,CL150,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF,CL150,ASME B16.5		
	700 ~ 1200		ASTM A105, BL-RF,CL150,ASME B16.47 B		
FIGURE 8	15~300		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	700~1200		ASTM A515 Gr.70, RF,CL150,MFR'S STD		
BLANK	700~1200		ASTM A515 Gr.70, RF,CL150,MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm KLINGER PSM-AS OR EQUAL.		
	700 ~ 1200		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.47 B, T=3.2mm KLINGER PSM-AS OR EQUAL.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE,BB, API 600, HW.	Z40H1-150C2	
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE,BB, WITH LOCK, API 600,	Z40H1-150C2K	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			HW.		
	350~600		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540H1-150C2	
	100 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW. EXTENTION STEM.	Z40H1-150C2-L	
BALL VALVE	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, WITH NIPPLE, API 608, LO.	Q51F2-800C1	2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341F2-150C2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2	
	200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-150C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H1-150C1	1
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44H1-150C2	
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150C1	
	50~100		BODY: CS, STRAINER: SS304, RF, CL150,	SY41E1-150C2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			MANUFACTURE'S STANDARD		
T TYPE	150 ~600		BODY: CS STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	ST41E1-150C2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.
- For vent and drain.

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B24U

BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	PMP, PMC
SERVICE LIMITE:	




DN1500 AND SMALLER

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M PE Externally Coated	SCH80	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M PE Externally Coated	SCH40	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm PE Externally Coated	SCH80	
	15~40		ASTM A106 Gr. B,SMLS,POEXTOE, ASME B36.10M L=100mm PE Externally Coated	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
ELBOW 45°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
TEE EQUAL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
TEE REDU.	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	

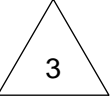
Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			PE Externally Coated		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SOCKOLET	50~150	15~40	ASTM A105, SW, CL3000, MSS SP-97 PE Externally Coated		
WELDOLET	100~150	50	ASTM A105, BW,MSS SP-97 PE Externally Coated	AS PIPE	
COUPLING FULL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
CAP	15 ~40		ASTM A105, SW, CL3000, ASME B16.11 PE Externally Coated		
	15 ~ 40		ASTM A105, NPT, CL3000, ASME B16.11 Externally Coated		6
BW FITTING					
ELBOW 90°	50 ~ 150		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
TEE EQUAL	50 ~ 150		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER ECC.	50 ~ 150		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
CAP	50 ~ 150		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 150		ASTM A105, WN-RF,CL150,ASME B16.5	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BL FLANGE	15 ~ 150		ASTM A105, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~150		ASTM A515 Gr.70, RF, CL150, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 150		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm KLINGER PSM-AS OR EQUAL.		
INSULATION GASKET KIT					
INSULATION GASKET	15 ~ 150		GLASS REINFORCED EPOXY G10, RF, CL150, ASME B16.21, ASME B16.5		
INSULATION SLEEVE AND WASHER	15 ~ 150		GLASS REINFORCED EPOXY G10		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40H1-150C2	
BALL VALVE	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, WITH NIPPLE, API 608, LO.	Q51F2-800C1	1,2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
K	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY,	Q341F2-150C2	2

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه Middle East Kimiya Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO		
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, WITH LOCK, API 608, GO	Q341F2-150C2K	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL80, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H1-150C1	1
	50~ 150		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS 1868, ASME B16.34.	H44H1-150C2	
	50~ 150		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	4
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2	2,3, 4
	150~ 150		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, GO.	D372F1-150C2	2,3, 4
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150C1	
	50~100		BODY: CS, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	SY41E1-150C2	
T TYPE	150		BODY: CS STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	ST41E1-150C2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.
- Normally only used as block valve to underground cooling water system.
- Don't connect wafer check valve directly with wafer butterfly valve without spool piece.

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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5. Wall thickness calculation is based on 1.5MPa, 160°C UP TO DN1000; Pipes >DN1000 is based on 0.75MPa 175°C.
6. For vent and drain.

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B40

BASIC MATERIAL:	STAINLESS STEEL 304L
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	AM BD FLG HZ NS PG PMC PMV PMW PRC VA VG RW




SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	15.9	15.3	13.3	12.0	11.2	10.5	10.0	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M	SCH40S	
	50~150		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH10S	
	200~600		ASTM A312 TP304L, EFW, BE, ASME B36.19M Ej=1.00	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP304L, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE EQUAL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~600	15~40	ASTM A182 F304L, SW, CL3000, MSS SP-97		
WELDOLET	100~600	50~400	ASTM A182 F304L, BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
	15 ~ 40		ASTM A182 F304L, NPT, CL3000, ASME B16.11		5
BW FITTING					
ELBOW 90°	50 ~ 150		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A403 WP304L, LR, WELDED, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 150		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	200 ~ 600		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 150		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 150		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304L, SW-RF, CL150, ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F304L, WN-RF, CL150, ASME B16.5	AS PIPE	
	50 ~ 600		ASTM A182 F304L, WN-RJ, CL900, ASME B16.5	AS PIPE	6
BL FLANGE	15 ~ 600		ASTM A182 F304L, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304L, RF, CL150, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304L, RF, CL150, ASME B16.48		
BLANK	350~600		ASTM A240 Gr.304L, RF, CL150, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm KLINGER PSM-AS OR EQUAL.		
VALVE					

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
GATE VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51E1-800P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z51E1-800P3K	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41E1-150P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL150, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z41E1-150P3K	1
	50 ~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40E1-150P2	
	50 ~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40E1-150P2K	
	200 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40E1-150P2	4
	200 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40E1-150P2K	4
	350~600		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540E1-150P2	4
	350~600		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z540E1-150P2K	4
	200 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, SPLIT WEDGE, BB, API 600, HW.	Z42E1-150P2	3
	200 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42E1-150P2K	3
	350~600		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542E1-150P2	3
	350~600		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, SPLIT WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z542E1-150P2K	3
BALL VALVE	15 ~ 40		ASTM A182 F304L, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-150P3	2
	50 ~ 100		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-150P2	2
	150		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY,	Q341F1-150P2	2

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO		
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51E1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41E1-150P3	1
	50~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41E1-150P2	
	200~300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541E1-150P2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, LIFT PISTON, BC, API 602.	H51E1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL150, LIFT PISTON, BC, API 602.	H41E1-150P3	1
	50~ 600		ASTM A351 CF8, TRIM: SS304, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44E1-150P2	
STRAINERS					
Y TYPE	15 ~40		BODY: SS304L, STRAINER: SS304L, SW, CL150, MANUFACTURE'S STANDARD	SY51E3-150P3	
	50 ~100		BODY: SS304L, STRAINER: SS304L, RF, CL150, MANUFACTURE'S STANDARD	SY41E3-150P2	
T TYPE	150 ~600		BODY: SS304L, STRAINER: SS304L, RF, CL150, MANUFACTURE'S STANDARD	ST41E3-150P2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.
- Split wedge gate valve should be used for services with design temperature higher than 350°C.
- Flexible wedge gate valve should be used for services with design temperature not higher than 350°C
- For vent and drain.
- To connect with 900LB flange.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PIPE CLASS: B40U




BASIC MATERIAL:	STAINLESS STEEL 304L PE COATED
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	PRC
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	15.9	15.3	13.3	12.0	11.2	10.5	10.0	8.4	7.4	6.5	5.5		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M PE Externally Coated	SCH40S	
	50~150		ASTM A312 TP304L, SMLS, BE, ASME B36.19M PE Externally Coated	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm PE Externally Coated	SCH40S	
	15~40		ASTM A312 TP304L, SMLS, POEXTOE, ASME B36.19M L=100mm PE Externally Coated	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
ELBOW 45°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
TEE EQUAL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
TEE REDU.	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE, MSS SP-	AS PIPE	

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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			95 PE Externally Coated		
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP- 95 PE Externally Coated	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SOCKOLET	50~100	15~40	ASTM A182 F304L, SW, CL3000, MSS SP-97 PE Externally Coated		
WELDOLET					
COUPLING FULL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
CAP	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11 PE Externally Coated		
	15 ~ 40		ASTM A182 F304L, NPT, CL3000, ASME B16.11 PE Externally Coated		1
BW FITTING					
ELBOW 90°	50 ~ 100		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
ELBOW 45°	50 ~ 100		ASTM A403 WP304L, LR, WELDED, BW, ASME B16.9 PE Externally Coated	AS PIPE	
TEE EQUAL	50 ~ 100		ASTM A403 WP304L, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
TEE REDU.	50 ~ 100		ASTM A403 WP304L, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER CON.	50 ~ 100		ASTM A403 WP304L, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER ECC.	50 ~ 100		ASTM A403 WP304L, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
CAP	50 ~ 100		ASTM A403 WP304L, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304L, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 100		ASTM A182 F304L, WN-RF, CL150, ASME	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
B16.5					
BL FLANGE					
FIGURE 8					
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 100		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm KLINGER PSM-AS OR EQUAL.		
INSULATION GASKET KIT					
INSULATION GASKET	15 ~ 100		GLASS REINFORCED EPOXY G10, RF, CL150, ASME B16.21, ASME B16.5		
INSULATION SLEEVE AND WASHER	15 ~ 100		GLASS REINFORCED EPOXY G10		

NOTES:

1. For vent and drain.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B50




BASIC MATERIAL: STAINLESS STEEL 304
FLANGE RATING & FACING: CL150 RF
CORROSION ALLOWANCE: 0mm
TEMPERATURE LIMIT: 538
STRESS RELIEF: ASME B31.3
SERVICE: DMW TC IA
SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538	
DESIGN PRESS. (Barg):	19	18.3	15.7	14.2	13.2	12.1	10.2	8.4	6.5	4.6	2.8	1.4	




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304, SMLS, PE, ASME B36.19M	SCH40S	
	50~150		ASTM A312 TP304, SMLS, BE, ASME B36.19M	SCH10S	
	200~600		ASTM A312 TP304, EFW, BE, ASME B36.19M	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP304, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP304, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE REDU.	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP304, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP304, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~600	15~40	ASTM A182 F304, SW, CL3000, MSS SP-97		
WELDOLET	100~600	50~400	ASTM A182 F304, BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
	15 ~ 40		ASTM A182 F304, NPT, CL3000, ASME B16.11		4
BW FITTING					
ELBOW 90°	50 ~ 150		ASTM A403 WP304, LR, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, LR, WELDED, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A403 WP304, LR, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, LR, WELDED, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, WELDED, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, WELDED, BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
REDUCER ECC.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, WELDED, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
	200 ~ 600		ASTM A403 WP304, WELDED, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F304, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F304, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304, RF,CL150, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304, RF,CL150, ASME B16.48		
BLANK	350~600		ASTM A240 Gr.304, RF,CL150, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, MOD. PTFE, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm GYLON 3504 OR EQUAL.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51E1-800P1	1
	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41E1-150P1	1
	50 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE,BB, API 600, HW.	Z40E1-150P2	
	50 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE,BB, WITH LOCK, API 600, HW.	Z40E1-150P2K	
	350~600		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540E1-150P2	
BALL VALVE	15 ~ 40		ASTM A182 F304, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY,	Q41F1-150P1	2

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.		
	50 ~ 100		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-150P2	2
	150		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341F1-150P2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51E1-800P1	1
	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41E1-150P1	1
	50~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41E1-150P2	
	200		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541E1-150P2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304, SW, CL800, LIFT PISTON, BC, API 602.	H51E1-800P1	1
	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, LIFT PISTON, BC, API 602.	H41E1-150P1	1
	50~ 600		ASTM A351 CF8, TRIM: SS304, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44E1-150P2	
BUTTERFLY VALVE	80~ 100		BODY: ASTM A351 CF8, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150P2	2,3
	150~ 600		BODY: ASTM A351 CF8, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER TYPE, API 609 CATEGORY B, GO.	D372F1-150P2	2,3
STRAINERS					
Y TYPE	15 ~40		BODY: SS304, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150P1	
	50 ~100		BODY: SS304, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	SY41E1-150P2	
T TYPE	150 ~600		BODY: SS304, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	ST41E1-150P2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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2. Can only be used bellow 150°C.
3. Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
4. For vent and drain.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B50B




BASIC MATERIAL:	STAINLESS STEEL 304
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	LO
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538	
DESIGN PRESS. (Barg):	19	18.3	15.7	14.2	13.2	12.1	10.2	8.4	6.5	4.6	2.8	1.4	

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304, SMLS, PE, ASME B36.19M	SCH40S	
	50~150		ASTM A312 TP304, SMLS, BE, ASME B36.19M	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP304, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP304, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
SOCKOLET	50~150	15~40	ASTM A182 F304, SW, CL3000, MSS SP-97		
CAP	15~40		ASTM A182 F304, NPT, CL3000, ASME B16.11		2
BW FITTING					
ELBOW 90°	15 ~ 150		ASTM A403 WP304, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A403 WP304, LR, SMLS, BW, ASME	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
B16.9					
TEE EQUAL	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 150		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 150		ASTM A182 F304, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 150		ASTM A182 F304, BL-RF, CL150, ASME B16.5		
FIGURE 8	15 ~ 150		ASTM A240 Gr.304, RF,CL150, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, MOD. PTFE, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm GYLON 3504 OR EQUIVALENT.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41E2-150P1	
	50 ~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, FLEXIBLE WEDGE,BB, API 600, HW.	Z40E2-150P2	
BALL VALVE	15 ~ 40		ASTM A182 F304, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-150P1	1
	50 ~ 100		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-150P2	1
	150		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL150, FLOATING BALL,FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608,	Q341F1-150P2	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
GO					
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41E2-150P1	
	50~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41E2-150P2	
CHECK VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304, RF, CL150, LIFT PISTON, BC, API 602.	H41E1-150P1	
	50~ 150		ASTM A351 CF8, TRIM: SS304, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44E1-150P2	
STRAINERS					
Y TYPE	15 ~40		BODY: SS304, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150P1	
	50 ~100		BODY: SS304, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	SY41E1-150P2	
T TYPE	150		BODY: SS304, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	ST41E1-150P2	

NOTES:

1. Can only be used bellow 150°C.
2. For vent and drain.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: B70




BASIC MATERIAL:	NICKLE ALLOY MONEL N04400
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	475
STRESS RELIEF:	ASME B31.3
SERVICE:	VA
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	450	475
DESIGN PRESS. (Barg):	15.9	15.4	13.8	12.9	12.5	12.1	10.2	8.4	7.4	6.5	5.5	4.6	3.7

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM B165 N04400 ANNEALED, SMLS, PE, ASME B36.10M	SCH30	
	50~100		ASTM B165 N04400 ANNEALED, SMLS, BE, ASME B36.19M	SCH10S	
FORGED FITTING					
WELDOLET	50~100	15~40	ASTM B564 N04400, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 100		ASTM B366 N04400, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	15 ~ 100		ASTM B366 N04400, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 100		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 100		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 100		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 100		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
CAP	15 ~ 100		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
WN FLANGE	15 ~ 100		ASTM B564 N04400,WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 100		ASTM B564 N04400, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~100		ASTM B127 N04400, RF, CL150, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8M CL.2/A194 8M, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2. OIL FREE FOR OXYGEN SERVICE		
GASKET					
	15 ~ 600		MONEL N04400 WND FLEXIBLE THERMICULITE, MONEL N04400 IR & SS CR, SPIRAL WND, RF, CL150, ASME B16.20, ASME B16.5,T=4.5mm. OIL FREE FOR OXYGEN SERVICE		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41M1-150M1Y	
	50 ~ 300		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL150, SPLIT WEDGE, BB, API 600, HW.	Z42M1-150M3Y	
	350~600		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL150, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542M1-150M3Y	
GLOBE VALVE	15 ~ 40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP. FOR OXYGEN SERVICE	J41M1-150M1Y	
	50~ 100		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP. FOR OXYGEN SERVICE	J41M1-150M3Y	
BALL VALVE	15 ~ 40		BODY: ASTM B564 N04400, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-150M1Y	
	50 ~ 100		ASTM A494 M-35-1, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-150M3Y	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	150		ASTM A494 M-35-1, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL150, TRUNNION MOUNTED BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q347M1-150M3Y	
CHECK VALVE	15 ~ 40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL150, LIFT PISTON, BC, API 602. FOR OXYGEN SERVICE	H41M1-150M1Y	
	50~ 100		ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL150, SWING, BC, BS1868, ASME B16.34. FOR OXYGEN SERVICE	H44M1-150M3Y	

NOTES:

1. ALL PARTS INCLUDING (PIPES, FITTINGS, FLANGES, VALVES, GASKETS, FASTENERS, etc.) CONTACT WITH OXYGEN SERVICE SHALL BE WITHOUT SHARP EDGES, DEBRIS, MILL SCALES AND RUST. OIL AND GREASE SHALL BE REMOVED. THE INTERNAL SURFACE FINISH SHALL BE AT LEAST ISO8501-1 Sa2.5.

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: D24

BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL300 RF
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	BFW LPS LPC N HG PMC PMP PMW SG VA

SERVICE LIMITE:




DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	425			
DESIGN PRESS. (Barg):	51.7	51.7	51.5	50.3	48.6	46.3	42.9	40.3	36.5	28.8			

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH80	
	50~200		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH40	
	250~600		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH30	
	700~800		ASTM A672 B60 CL12, B,EFW,BE, ASME B36.10M	SCH30	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH80	
	15~40		ASTM A106 Gr. B,SMLS,POEXTOE, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~800	15~40	ASTM A105, SW, CL3000, MSS SP-97		
WELDOLET	100~800	50~350	ASTM A105, BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A105, SW, CL3000, ASME B16.11		
	15 ~ 40		ASTM A105, NPT, CL3000, ASME B16.11		5
BW FITTING					
ELBOW 90°	50 ~ 600		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 600		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	
CAP	50 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
	700~ 800		ASTM A234 WPB, WELDED,BW,ASME B16.9	AS PIPE	

FLANGE

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105, WN-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	700 ~ 800		ASTM A105, WN-RF,CL300,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF,CL300,ASME B16.5		
	700 ~ 800		ASTM A105, BL-RF,CL300,ASME B16.47 B		
FIGURE 8	15~300		ASTM A515 Gr.70, RF,CL300, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF,CL300, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF,CL300, ASME B16.48		
SPACER	700~800		ASTM A515 Gr.70, RF,CL300,MFR'S STD		
BLANK	700~800		ASTM A515 Gr.70, RF,CL300,MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.5, T=4.5mm.		
	700 ~ 800		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.47 B, T=4.5mm.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z51H1-800C1K	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL300, SOLID WEDGE, BB, API 602, HW.	Z41H1-300C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL300, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z41H1-300C1K	1
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, FLEXIBLE WEDGE, BB, API 600, HW.	Z40H1-300C2	
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40H1-300C2K	
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF,	Z40H1-300C2	4

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			CL300, FLEXIBLE WEDGE, BB, API 600, HW.		
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40H1-300C2K	4
	350~800		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540H1-300C2	4
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, SPLIT WEDGE, BB, API 600, HW.	Z42H1-300C2	3
	200 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42H1-300C2K	3
	350~800		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542H1-300C2	3
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL300, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-300C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-300C2	
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, PARABOLIC DISC, BB, WITH LOCK, BS1873, HW OP.	J41H1-300C2K	
	200~450		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-300C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL300, LIFT PISTON, BC, API 602.	H41H1-300C1	1
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, SWING, BC, BS1868, ASME B16.34.	H44H1-300C2	
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL300, DUAL PLATE WAFER TYPE, API594.	H76H-300C2	2
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL300, MANUFACTURE'S STANDARD	SY51E1-300C1	
	50~100		BODY: CS, STRAINER: SS304, RF, CL300, MANUFACTURE'S STANDARD	SY41E1-300C2	
T TYPE	150 ~600		BODY: CS STRAINER: SS304, RF, CL300, MANUFACTURE'S STANDARD	ST41E1-300C2	




NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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for pumps, equipment connections, tank nozzles and instruments.

2. Don't connect wafer check valve directly with wafer butterfly valve without a spool piece.
3. Split wedge gate valve should be used for services with design temperature higher than 350°C.
4. Flexible wedge gate valve should be used for services with design temperature not higher than 350°C
5. For vent and drain.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: D34




BASIC MATERIAL:	LOW ALLOY STEEL 11/4Cr 0.5Mo
FLANGE RATING & FACING:	CL300 RF
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	RFG VA
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538	
DESIGN PRESS. (Barg):	51.7	51.7	51.5	49.7	48	46.3	42.9	40.3	36.5	33.7	25.7	14.9	




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A335 P11,SMLS,PE, ASME B36.10M	SCH80	
	50~600		ASTM A335 P11,SMLS,BE, ASME B36.10M	SCH40	
	700		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	17.48mm	
	750		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	19.05mm	
	800		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	20.05mm	
	850		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	20.62mm	
	900		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	22.23mm	
	1000~1050		ASTM A691 Gr. 11/4 Cr CL22,EFW, BE, ASME B36.10M	23.83mm	
PIPE NIPPLE					
	15~40		ASTM A335 P11,SMLS,PBE, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME		

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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			B16.11		
ELBOW 45°	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A234 WP11, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WP11, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WP11, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WP11, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~1050	15 ~ 40	ASTM A182 F11 CL.2, SW, CL3000, MSS SP 97		
WELDOLET	150~1050	50~350	ASTM A182 F11 CL.2, BW, MSS SP 97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F11 CL.2, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 600		ASTM A234 WP11, LR, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, LR, WELDED,BW,ASME B16.9	AS PIPE	
	50 ~ 600		ASTM A234 WP11, SR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	

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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			B16.9		
REDUCER ECC.	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	
CAP	50 ~ 600		ASTM A234 WP11, SMLS,BW,ASME B16.9	AS PIPE	
	700 ~ 1050		ASTM A234 WP11, WELDED,BW,ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F11 CL.2, SW-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F11 CL.2, WN-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	700 ~ 1050		ASTM A182 F11 CL.2, WN-RF,CL300,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F11 CL.2, BL-RF,CL300,ASME B16.5		
	700 ~ 1050		ASTM A182 F11 CL.2, BL-RF,CL300,ASME B16.47 B		
FIGURE 8	15~300		ASTM A387 Gr.11 CL.2, RF,CL300, ASME B16.48		
SPACER	350~600		ASTM A387 Gr.11 CL.2, RF,CL300, ASME B16.48		
BLANK	350~600		ASTM A387 Gr.11 CL.2,RF, CL300, ASME B16.48		
SPACER	700~1050		ASTM A387 Gr.11 CL.2, RF,CL300,MFR'S STD		
BLANK	700~1050		ASTM A387 Gr.11 CL.2, RF,CL300,MFR'S STD		
FASTENER					
BOLT/NUT			A193 B16/A194 4, BLUING TREATED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR,SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.5,T=4.5mm.		
	700 ~ 1050		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR,SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.47 B,T=4.5mm.		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800I1	1
	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RF, CL300, SOLID WEDGE, BB, API 602, HW.	Z41Y1-300I1	1
	50 ~ 150		BODY: ASTM A217 WC6, TRIM: STL/STL, RF, CL300, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-300I2	
	200 ~ 300		BODY: ASTM A217 WC6, TRIM: STL/STL, RF, CL300, SPLIT WEDGE, BB, API 600, HW.	Z42Y1-300I2	
	200 ~ 300		BODY: ASTM A217 WC6, TRIM: STL/STL, RF, CL300, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42Y1-300I2K	
	350~600		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL300, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542Y1-300I2	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602,HW OP.	J51Y1-800I1	1
	15 ~ 40		BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, RF,CL300, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-300I1	1
	50~ 150		BODY: ASTM A217 WC6,TRIM: STL/STL, RF,CL300, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-300I2	
	200		BODY: ASTM A217 WC6,TRIM: STL/STL, RF,CL300, PARABOLIC DISC, BB BS1873, GEAR OP.	J541Y1-300I2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800I1	1
	15 ~ 40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RF, CL300, LIFT PISTON, BC,API 602.	H41Y1-300I1	1
	50~ 600		ASTM A217 WC6, TRIM: STL/STL, RF, CL300, SWING, BC, BS1868, ASME B16.34.	H44Y1-300I2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiaye Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: D40




BASIC MATERIAL:	STAINLESS STEEL 304L
FLANGE RATING & FACING:	CL300 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	N PRC RFG SG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	41.4	40	34.8	31.4	29.2	27.5	26.1	25.1	24.8	24.3	23.9		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M	SCH40S	
	50~100		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH10S	
	150		ASTM A312 TP304L, SMLS, BE, ASME B36.10M	SCH40S	
	200~500		ASTM A312 TP304L, SMLS, BE, ASME B36.10M	SCH30	
	600~850		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.10M	SCH30	
PIPE NIPPLE					
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP304L, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE EQUAL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~850	15 ~40	ASTM A182 F304L, SW, CL3000, MSS SP 97		
WELDOLET	150~850	50~350	ASTM A182 F304L, BW, MSS SP 97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 500		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX, SR, WELDED, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 500		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX,, LR, WELDED, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 500		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX,, WELDED, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 500		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	600~ 850		ASTM A403 WP304L-WX,, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 500		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX,, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 500		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX,, WELDED, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 500		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	600~ 850		ASTM A403 WP304L-WX,, WELDED, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304L, SW-RF,CL300,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F304L,WN-RF, CL300, ASME B16.5	AS PIPE	
	700 ~ 850		ASTM A182 F304L,WN-RF, CL300, ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F304L, BL-RF, CL300, ASME B16.5		
	700 ~ 850		ASTM A182 F304L,BL-RF, CL300, ASME B16.47 B		
FIGURE 8	15~300		ASTM A240 Gr.304L, RF, CL300, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304L, RF, CL300, ASME B16.48		
BLANK	350~600		ASTM A240 Gr.304L, RF,CL300, ASME B16.48		
SPACER	700~850		ASTM A240 Gr.304L, RF,CL300,MFR'S STD		
BLANK	700~850		ASTM A240 Gr.304L, RF,CL300,MFR'S STD		
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.5, T=4.5mm.		
	700 ~ 850		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.47 B, T=4.5mm.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51E1-800P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL300, SOLID WEDGE, BB, API 602, HW.	Z41E1-300P3	1
	50 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, FLEXIBLE WEDGE, BB, API 600, HW.	Z40E1-300P2	
	50 ~ 300		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40E1-300P2K	
	350~700		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540E1-300P2	
	350~700		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z540E1-300P2K	
BALL VALVE	15 ~ 40		ASTM A182 F304L, BALL: SS304L, PTFE SEAT, RF, CL300, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-300P3	2
	50 ~ 100		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL300, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F1-300P2	2
	150		ASTM A351 CF8, BALL: SS304, PTFE SEAT, RF, CL300, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341F1-300P2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51E1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL300, SWIVEL PLUG, BB, API 602, HW OP.	J41E1-300P3	1
	50~ 150		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, PARABOLIC DISC, BB, BS1873, HW OP.	J41E1-300P2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	200~400		BODY: ASTM A351 CF8, TRIM: SS304, RF, CL300, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541E1-300P2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L, SW, CL800, LIFT PISTON, BC, API 602.	H51E1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L, RF, CL300, LIFT PISTON, BC, API 602.	H41E1-300P3	1
	50~ 600		ASTM A351 CF8, TRIM: SS304, RF, CL300, SWING, BC, BS1868, ASME B16.34.	H44E1-300P2	
BUTTERFLY VALVE	50~ 100		ASTM A351 CF8, TRIM: SS304/METAL+GRAPHITE, RF, CL300, BI-ECCENTRIC WAFER TYPE, API 609 CATEGORY B, LEVER OP.	D72E1-300P2	
	150~ 600		ASTM A351 CF8, TRIM: SS304/METAL+GRAPHITE, RF, CL300, BI-ECCENTRIC WAFER TYPE, API 609 CATEGORY B, GO.	D372E1-300P2	
	50~ 100		ASTM A351 CF8, TRIM: SS304/METAL+GRAPHITE, RF, CL300, BI-ECCENTRIC FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42E1-300P2	
	150~ 850		ASTM A351 CF8, TRIM: SS304/METAL+GRAPHITE, RF, CL300, BI-ECCENTRIC FLANGED TYPE, API 609 CATEGORY B, GO.	D342E1-300P2	
	850		ASTM A351 CF8, TRIM: SS304/METAL+GRAPHITE, RF, CL300, TRI-ECCENTRIC FLANGED TYPE, API 609 CATEGORY B, GO. ADJUSTABLE LIMIT STOP	D343E1-300P2M	3,4
33STRAINERS					
Y TYPE	15 ~40		BODY: SS304L, STRAINER: SS304L, SW, CL300, MANUFACTURE'S STANDARD	SY51E3-300P3	
	50 ~100		BODY: SS304L STRAINER: SS304L, RF, CL300, MANUFACTURE'S STANDARD	SY41E3-300P2	
T TYPE	150 ~600		BODY: SS304L STRAINER: SS304L, RF, CL300, MANUFACTURE'S STANDARD	ST41E3-300P2	




NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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3. Adjustable limit stop device should be provided. The minimum stop shall be 10% open.
4. Tag No. and P&ID of the valve refer to the following:




Tag No.	P&ID
MSV-2002	MKP-11-DE-2000-PR-PID-015
MSV-5001	MKP-11-DE-5000-PR-PID-002
MSV-5002	MKP-11-DE-5000-PR-PID-010

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~850	15 ~ 40	ASTM A105, SW, CL6000, MSS SP 97		
WELDOLET	150~700	50~250	ASTM A105, BW, MSS SP 97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A105, SW, CL6000, ASME B16.11		
COUPLING HALF (BOSS TYPE)					
CAP	15 ~40		ASTM A105, SW, CL6000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 850		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 850		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 850		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 850		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 850		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 850		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
CAP	50 ~ 850		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL600,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105, WN-RF, CL600,ASME B16.5	AS PIPE	
WN FLANGE	700~850		ASTM A105, WN-RF, CL600,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF, CL600,ASME B16.5		
	700~850		ASTM A105, BL-RF, CL600,ASME B16.47 B		
FIGURE 8	15~300		ASTM A515 Gr.70, RF, CL600, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF, CL600, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF, CL600, ASME B16.48		
SPACER	700		ASTM A515 Gr.70, RF, CL600, MFR'S STD		
BLANK	700		ASTM A515 Gr.70, RF, CL600, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1,		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
ASME B18.2.1/ B18.2.2.					
GASKET					
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm.		
	700~850		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL300, ASME B16.20, ASME B16.47 B, T=4.5mm.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: STL/STL, SW, CL800, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z51Y1-800C1K	1
	15 ~40		BODY: ASTM A105, TRIM: STL/STL, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41Y1-600C1	1
	15 ~40		BODY: ASTM A105, TRIM: STL/STL, RF, CL600, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z41Y1-600C1K	1
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600C2	
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40Y1-600C2K	
	200~250		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600C2	3
	200~250		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, HW.	Z40Y1-600C2K	3
	200~250		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, API 600, HW.	Z42Y1-600C2	4
	200~250		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42Y1-600C2K	4
	300~850		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540Y1-600C2	3
	300~850		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z540Y1-600C2K	3
	300~850		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542Y1-600C2	4
	300~850		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, WITH LOCK, API 600, BEVEL GEAR OP.	Z542Y1-600C2K	4
	400		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600,	Z542Y1-600C2N	4

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SPLIT WEDGE, BB, API 600, CHAIN WHEEL OP.					
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51Y1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: STL/STL, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-600C1	1
	50~ 100		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-600C2	
	50~ 100		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, PARABOLIC DISC, BB, WITH LOCK, BS1873, HW OP.	J41Y1-600C2K	
	150~300		BODY: ASTM A216 WCB, TRIM: STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541Y1-600C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: STL/STL, RF, CL600, LIFT PISTON, BC, API 602.	H41Y1-600C1	1
	50~ 700		ASTM A216 WCB, TRIM: STL/STL, RF, CL600, SWING, BC, BS1868, ASME B16.34.	H44Y1-600C2	
	50~ 700		ASTM A216 WCB, TRIM: STL/STL, RF, CL600, DUAL PLATE WAFER TYPE, API594.	H76Y1-600C2	2
BUTTERFLY VALVE	350		ASTM A216 WCB, DISC: A216 WCB+STL, SEAT: STL HARDFACED, RF, CL600, TRI-ECCENTRIC FLANGED TYPE, API 609 CATEGORY B, GO. ADJUSTABLE STOP LIMIT.	D343E1-600C2M	5, 6
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL600, MANUFACTURE'S STANDARD	SY51E1-600C1	
	50 ~100		BODY: CS, STRAINER: SS304, RF, CL600, MANUFACTURE'S STANDARD	SY41E1-600C2	
T TYPE	150 ~600		BODY: CS, STRAINER: SS304, RF, CL600, MANUFACTURE'S STANDARD	ST41E1-600C2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- For both horizontal and vertical installation.
- Flexible wedge gate should be used for design temperature not greater than 350°C.
- Split wedge gate valve should be used for design temperature higher than 350°C.
- Adjustable limit stop device should be provided. The minimum stop shall be 10% open.
- Tag No. and P&ID of the valve refer to the following:

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>	
	Unit	General Technical	PHASE	As Built Drawing		
	Doc. Title	Piping Material Class				
	Owner No.	MKP-11-AS-9000-PI-SPC-006				
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001				
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Tag No.	P&ID
MSV-2001	MKP-11-DE-2000-PR-PID-006




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F34




BASIC MATERIAL:	LOW ALLOY STEEL 11/4Cr 0.5Mo
FLANGE RATING & FACING:	CL600 RF
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	HPS MPS RFG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538	
DESIGN PRESS. (Barg):	103.4	103.4	103	99.5	95.9	92.7	85.7	80.4	73.3	67.7	51.5	29.8	




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A335 P11,SMLS,PE, ASME B36.10M	SCH160	
	50~300		ASTM A335 P11,SMLS,BE, ASME B36.10M	SCH80	
	350~600		ASTM A335 P11,SMLS,BE, ASME B36.10M	SCH80	
	700~750		ASTM A335 P11,SMLS,BE, EN10220	32mm	
PIPE NIPPLE					
	15~40		ASTM A335 P11,SMLS,PBE, ASME B36.10M L=100mm	SCH160	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A234 WP11, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WP11, SMLS, BLEXPSE,MSS SP-95	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A234 WP11, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WP11, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~750	15 ~ 40	ASTM A182 F11 CL.2, SW, CL6000, MSS SP 97		
WELDOLET	150~750	50~350	ASTM A182 F11 CL.2, BW, MSS SP 97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
CAP	15 ~40		ASTM A182 F11 CL.2, SW, CL6000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 750		ASTM A234 WP11, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 750		ASTM A234 WP11, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 750		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 750		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 750		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 750		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
CAP	50 ~ 750		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F11 CL.2, SW-RF,CL600,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F11 CL.2, WN-RF, CL600,ASME B16.5	AS PIPE	
WN FLANGE	700 ~ 750		ASTM A182 F11 CL.2, WN-RF, CL600,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F11 CL.2, BL-RF, CL600,ASME B16.5		
	700 ~ 750		ASTM A182 F11 CL.2, BL-RF, CL600,ASME B16.47 B		
FIGURE 8	15~300		ASTM A387 Gr.11 CL.2, RF, CL600, ASME B16.48		
SPACER	350~600		ASTM A387 Gr.11 CL.2, RF, CL600, ASME B16.48		
BLANK	350~600		ASTM A387 Gr.11 CL.2, RF, CL600, ASME B16.48		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SPACER	700~750		ASTM A387 Gr.11 CL.2,RF, CL600, MFR'S STD		
BLANK	700~750		ASTM A387 Gr.11 CL.2,RF, CL600, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B16/A194 4, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5,T=4.5mm.		
	700 ~ 750		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.47 B,T=4.5mm.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800I1	1
	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41Y1-600I1	1
	50 ~ 150		BODY: ASTM A217 WC6, TRIM: STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600I2	
	200~250		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, API 600, HW.	Z42Y1-600I2	
	200~250		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, WITH LOCK, API 600, HW.	Z42Y1-600I2K	
	300~600		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL600, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542Y1-600I2	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602,HW OP.	J51Y1-800I1	1
	15 ~ 40		BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-600I1	1
	50~ 100		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-600I2	
	150~200		BODY: ASTM A217 WC6,TRIM: STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541Y1-600I2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800I1	1

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	15 ~ 40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RF, CL600, LIFT PISTON, BC,API 602.	H41Y1-600I1	1
	50~ 600		ASTM A217 WC6, TRIM: STL/STL, RF, CL600, SWING, BC, BS1868, ASME B16.34.	H44Y1-600I2	
	50~ 600		ASTM A217 WC6, TRIM: STL/STL, RF, CL600, DUAL PLATE WAFER TYPE, API594.	H76Y1-600I2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F40




BASIC MATERIAL: STAINLESS STEEL 304L
FLANGE RATING & FACING: CL600 RF
CORROSION ALLOWANCE: 0mm
TEMPERATURE LIMIT: 425
STRESS RELIEF: ASME B31.3
SERVICE: PH PRC
SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	82.7	80	69.6	62.8	58.3	54.9	52.1	50.1	49.5	48.6	47.7		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M	SCH40S	
	50~350		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH40S	
	400~450		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH80S	
	500~600		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH40	
	700		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.19M	19.05mm	
	750		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.19M	20.62mm	
	800		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.19M	22.23mm	
	850		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.19M	23.83mm	
	900		ASTM A358 Gr.304L CL1, EFW, BE, ASME B36.19M	25.4mm	
PIPE NIPPLE					

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP304L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~900	15 ~40	ASTM A182 F304L, SW, CL3000, MSS SP 97		
WELDOLET	150~900	50~600	ASTM A182 F304L, BW, MSS SP 97	AS PIPE	
COUPLING FULL	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
COUPLING HALF (BOSS TYPE)	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F304L, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 600		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
ELBOW 45°	50 ~ 900		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	700 ~ 900		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
TEE EQUAL	50 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
TEE REDU.	50 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER CON.	50 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER ECC.	50 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
CAP	50 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 900		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304L, SW-RF, CL600, ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F304L, WN-RF, CL600, ASME B16.5	AS PIPE	
	700~900		ASTM A182 F304L, WN-RF, CL600, ASME B16.47 B	AS PIPE	
	50 ~ 600		ASTM A182 F304L, WN-RJ, CL900, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 300		ASTM A182 F304L, BL-RF, CL600, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304L, RF, CL600, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304L, RF, CL600, ASME B16.48		
BLANK	350~600		ASTM A240 Gr.304L, RF, CL600, ASME B16.48		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SPACER	700~900		ASTM A240 Gr.304L, RF, CL600, MFR'S STD		
BLANK	700~900		ASTM A240 Gr.304L, RF, CL600, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm.		
	700 ~ 900		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.47 B, T=4.5mm.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41Y1-600P3	1
	50 ~ 200		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600P2	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51Y1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-600P3	1
	50~ 100		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-600P2	
	50~ 100		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, PARABOLIC DISC, BB, WITH LOCK, BS1873, HW OP.	J41Y1-600P2K	
	150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL 4, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541Y1-600P2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RF, CL600, LIFT PISTON, BC, API 602.	H41Y1-600P3	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	50~ 700	ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, SWING, BC, BS1868, ASME B16.34.		H44Y1-600P2	
	50~ 700	ASTM A351 CF8, TRIM: STL/STL, RF, CL600, DUAL PLATE WAFER TYPE, API594.		H76Y1-600P2	
	50~ 700	ASTM A351 CF8, TRIM: STL/STL, RF, CL600, TILTING DISC, PC, BS1868, ASME B16.34.		H49Y1-600P2	3

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Minimum wall thickness shall be nominal wall thickness minus 0.3mm.
- For syngas compressor.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F44




BASIC MATERIAL: STAINLESS STEEL 321
FLANGE RATING & FACING: CL600 RF
CORROSION ALLOWANCE: 0mm
TEMPERATURE LIMIT: 538
STRESS RELIEF: ASME B31.3
SERVICE: HPS
SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538	
DESIGN PRESS. (Barg):	99.3	97.1	88.5	82	76.6	72	68.3	65.2	63.2	61.7	56.5	50	

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP321 SMLS, PE, ASME B36.19M	SCH40S	
	50~100		ASTM A312 TP321, SMLS, BE, ASME B36.19M	SCH40S	
PIPE NIPPLE					
	15~40		ASTM A312 TP321, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP321, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP321, SMLS, BLEXPSE,MSS SP-95	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A403 WP321, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP321, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET WELDOLET	50~100	15 ~40	ASTM A182 F321, SW, CL3000, MSS SP 97		
COUPLING FULL	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F321, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 100		ASTM A403 WP321, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 100		ASTM A403 WP321, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 100		ASTM A403 WP321, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 100		ASTM A403 WP321, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 100		ASTM A403 WP321, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 100		ASTM A403 WP321, SMLS, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 100		ASTM A403 WP321, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F321, SW-RF,CL600,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 100		ASTM A182 F321,WN-RF, CL600, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 100		ASTM A182 F321, BL-RF, CL600, ASME B16.5		
FIGURE 8	15 ~ 100		ASTM A240 Gr.321, RF, CL600, ASME B16.48		
SPACER BLANK					
FASTENER					
BOLT/NUT			A193 B8T CL2/A194 8T, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.OIL FREE		3
GASKET					

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	15 ~ 600		SS321 WND FLEXIBLE GRAPHITE, SS321 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm. OIL FREE		3
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800R5C	1, 3
	15 ~40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41Y1-600R5C	1, 3
	50 ~ 100		BODY: ASTM A351 CF8C, TRIM: SS321+STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600R6C	3
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51Y1-800R5C	1, 3
	15 ~ 40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-600R5C	1, 3
	50~ 100		BODY: ASTM A351 CF8C, TRIM: SS321+STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-600R6C	3
CHECK VALVE	15 ~40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800R5C	1, 3
	15 ~ 40		BODY: ASTM A182 F321, TRIM: A182 F321+STL/STL, RF, CL600, LIFT PISTON, BC, API 602.	H41Y1-600R5C	1, 3
	50~ 200		ASTM A351 CF8C, TRIM: SS321+STL/STL, RF, CL600, SWING, BC, BS1868, ASME B16.34.	H44Y1-600R6C	3

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- All parts including (pipes, fittings, flanges, valves, gaskets, fasteners, etc.) shall be without debris, mill scales and rust. oil and grease shall be removed at site.
- Oil and grease shall be removed at manufacturer's work shop.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F50




BASIC MATERIAL:	STAINLESS STEEL 304
FLANGE RATING & FACING:	CL600 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	PO
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	500	538
DESIGN PRESS. (Barg):	99.3	95.6	81.7	74.0	69.0	65.0	61.8	59.3	58.1	56.9	56.0	53.0	48.9

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304(S), SMLS, PE, ASME B36.19M	SCH40S	
	50~100		ASTM A312 TP304(S), SMLS, BE, ASME B36.19M	SCH40S	
	150~300		ASTM A312 TP304(S), SMLS, BE, ASME B36.19M	SCH80S	
	350~500		ASTM A312 TP304(S), SMLS, BE, ASME B36.10M	SCH60	
FORGED FITTING					
WELDOLET	50~500	15~150	ASTM A182 F304(S), BW, MSS SP 97	AS PIPE	
BW FITTING					
BEND 90°	15 ~ 500		ASTM A403 WP304(S), R=3D, SMLS, BW, ASME B16.9	AS PIPE	
BEND 45°	15 ~ 500		ASTM A403 WP304(S), R=3D, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 500		ASTM A403 WP304(S), SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 500		ASTM A403 WP304(S), SMLS, BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
REDUCER CON.	15 ~ 500		ASTM A403 WP304(S), SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 500		ASTM A403 WP304(S), SMLS, BW, ASME B16.9	AS PIPE	
CAP	15 ~ 500		ASTM A403 WP304(S), SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 500		ASTM A182 F304(S),WN-RF, CL600, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 500		ASTM A182 F304(S), BL-RF, CL600, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304(S), RF, CL600, ASME B16.48		
SPACER	350~500		ASTM A240 Gr.304(S), RF, CL600, ASME B16.48		
BLANK	350~500		ASTM A240 Gr.304(S), RF, CL600, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2. OIL FREE FOR OXYGEN SERVICE		
GASKET					
	15 ~ 500		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm. OIL FREE FOR OXYGEN SERVICE		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: MONEL N04400, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41M1-600P1Y	1
	15 ~40		BODY: ASTM A182 F304, TRIM: MONEL N04400, RF, CL600, SOLID WEDGE, BB, API 602, EXTENDED STEM, HW.	Z41M1-600P1YL	1
	50 ~ 250		BODY: ASTM A351 CF8, TRIM: MONEL N04400, RF, CL600, SPLIT WEDGE, BB, API 600, HW.	Z42M1-600P2Y	1
	300~500		BODY: ASTM A351 CF8, TRIM: MONEL N04400, RF, CL600, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542M1-600P2Y	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: MONEL N04400, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP. FOR OXYGEN SERVICE	J41M1-600P1Y	1
	15 ~ 40		BODY: ASTM A182 F304, TRIM: MONEL N04400, RF, CL600, SWIVEL PLUG, BB, API 602, EXTENDED STEM, HW OP. FOR OXYGEN SERVICE	J41M1-600P1YL	1
	50~ 100		BODY: ASTM A351 CF8, TRIM: MONEL N04400, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP. FOR OXYGEN SERVICE	J41M1-600P2Y	1
	150~ 200		BODY: ASTM A351 CF8, TRIM: MONEL N04400, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP. FOR OXYGEN SERVICE	J541M1-600P2Y	1
BALL VALVE	15 ~ 40		ASTM A182 F304 BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-600P1Y	1
	50		ASTM A351 CF8, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-600P2Y	1
	80~100		ASTM A351 CF8, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, TRUNNION MOUNTED BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q347M1-600P2Y	1
CHECK VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: MONEL N04400, RF, CL600, LIFT PISTON, BC, API 602. OR OXYGEN SERVICE	H41M1-600P1Y	1
	50~ 500		ASTM A351 CF8, TRIM: MONEL N04400, RF, CL600, SWING, BC, BS1868, ASME B16.34. OR OXYGEN SERVICE	H44M1-600P2Y	1

NOTES:

1. ALL PARTS INCLUDING (PIPES, FITTINGS, FLANGES, VALVES, GASKETS, FASTENERS, etc.) CONTACT WITH OXYGEN SERVICE SHALL BE WITHOUT SHARP EDGES, DEBRIS, MILL SCALES AND RUST. OIL AND GREASE SHALL BE REMOVED. THE INTERNAL SURFACE FINISH SHALL BE AT LEAST ISO8501-1 Sa2.5.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F50A




BASIC MATERIAL:	STAINLESS STEEL 304
FLANGE RATING & FACING:	CL600 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	HG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	500	538
DESIGN PRESS. (Barg):	99.3	95.6	81.7	74.0	69.0	65.0	61.8	59.3	58.1	56.9	56.0	53.0	48.9

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304, SMLS, PE, ASME B36.19M	SCH40S	
	50~100		ASTM A312 TP304, SMLS, BE, ASME B36.19M	SCH40S	
	150~200		ASTM A312 TP304, SMLS, BE, ASME B36.19M	SCH80S	
FORGED FITTING					
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP304, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP304, SMLS, BLEXPSE,MSS SP-95	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A403 WP304, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP304, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET	50~100	15 ~40	ASTM A182 F304, SW, CL3000, MSS SP 97		
WELDOLET					
COUPLING FULL	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F304, SW, CL3000, ASME B16.11		
WELDOLET	50~200	15~150	ASTM A182 F304, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	50 ~ 200		ASTM A403 WP304, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 200		ASTM A403 WP304, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 200		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 200		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 200		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 200		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 200		ASTM A403 WP304, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F304, SW-RF,CL600,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 200		ASTM A182 F304,WN-RF, CL600, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 200		ASTM A182 F304, BL-RF, CL600, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304, RF, CL600, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8 CL.2/A194 8, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2. OIL FREE FOR OXYGEN		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SERVICE					
GASKET					
	15 ~ 200		SS316L WND FLEXIBLE GRAPHITE, SS316 IR & CS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm. OIL FREE FOR OXYGEN SERVICE		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51Y1-800P1	1
	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41Y1-600P1	1
	50 ~ 200		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, FLEXIBLE WEDGE, BB, API 600, HW.	Z40Y1-600P2	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51Y1-800P1	1
	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-600P1	1
	50~ 100		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP.	J41Y1-600P2	
	150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL 4, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541Y1-600P2	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51Y1-800P1	1
	15 ~ 40		BODY: ASTM A182 F304, TRIM: A182 F304 +STL/STL, RF, CL600, LIFT PISTON, BC, API 602.	H41Y1-600P1	1
	50~ 200		ASTM A351 CF8, TRIM: SS304+STL/STL, RF, CL600, SWING, BC, BS1868, ASME B16.34.	H44Y1-600P2	
	50~ 200		ASTM A351 CF8, TRIM: STL/STL, RF, CL600, DUAL PLATE WAFER TYPE, API594.	H76Y1-600P2	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: F70




BASIC MATERIAL:	NICKLE ALLOY MONEL N04400
FLANGE RATING & FACING:	CL600 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	475
STRESS RELIEF:	ASME B31.3
SERVICE:	HPS PO
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	450	475
DESIGN PRESS. (Barg):	82.7	80.5	71.9	67.5	65.4	65.2	65.2	65.1	64.8	64.2	63.3	53.8	41.5

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM B165 N04400 ANNEALED, SMLS, PE, ASME B36.10M	SCH30	
	50~100		ASTM B165 N04400 ANNEALED, SMLS, BE, ASME B36.10M	SCH30	
	150		ASTM B165 N04400 ANNEALED, SMLS, BE, ASME B36.10M	SCH40	
	200~500		ASTM B165 N04400 ANNEALED, SMLS, BE, ASME B36.10M	SCH60	
FORGED FITTING					
WELDOLET	50~500	15~150	ASTM B564 N04400, BW, MSS SP 97		AS PIPE
BW FITTING					
ELBOW 90°	15 ~ 500		ASTM B366 N04400, LR, SMLS, BW, ASME B16.9		AS PIPE
ELBOW 45°	15 ~ 500		ASTM B366 N04400, LR, SMLS, BW, ASME B16.9		AS PIPE
BEND 90°	15 ~ 500		ASTM B366 N04400, R=3D, SMLS, BW, ASME B16.9		AS PIPE
BEND 45°	15 ~ 500		ASTM B366 N04400, R=3D, SMLS, BW, ASME B16.9		AS PIPE

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE EQUAL	15 ~ 500		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 500		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 500		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 500		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
CAP	15 ~ 500		ASTM B366 N04400, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 500		ASTM B564 N04400,WN-RF, CL600, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 500		ASTM B564 N04400, BL-RF, CL600, ASME B16.5		
FIGURE 8	15~300		ASTM B127 N04400, RF, CL600, ASME B16.48		
SPACER	350~500		ASTM B127 N04400, RF, CL600, ASME B16.48		
BLANK	350~500		ASTM B127 N04400, RF, CL600, ASME B16.48		
FASTENER					
BOLT/NUT	1/2~1 1/2		A193 B8M CL.2/A194 8M, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2. OIL FREE FOR OXYGEN SERVICE		
	1 5/8~		A193 B7/A194 2H, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 500		MONEL N04400 WND FLEXIBLE THERMICULITE, MONEL N04400 IR & SS CR, SPIRAL WND, RF, CL600, ASME B16.20, ASME B16.5, T=4.5mm. OIL FREE FOR OXYGEN SERVICE		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL600, SOLID WEDGE, BB, API 602, HW.	Z41M1-600M1Y	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	50 ~ 250		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, SPLIT WEDGE, BB, API 600, HW.	Z42M1-600M3Y	1
	50 ~ 250		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, SPLIT WEDGE, BB, API 600, EXTENDED STEM, HW.	Z42M1-600M3YL	1
	300~500		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, SPLIT WEDGE, BB, API 600, BEVEL GEAR OP.	Z542M1-600M3Y	1
GLOBE VALVE	15 ~ 40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL600, SWIVEL PLUG, BB, API 602, HW OP. FOR OXYGEN SERVICE	J41M1-600M1Y	1
	15 ~ 40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL600, SWIVEL PLUG, BB, API 602, EXTENDED STEM, HW OP. FOR OXYGEN SERVICE	J41M1-600M1YL	1
	50~ 100		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, PARABOLIC DISC, BB, BS1873, HW OP. FOR OXYGEN SERVICE	J41M1-600M3Y	1
	150~ 200		BODY: ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, PARABOLIC DISC, BB, BS1873, GEAR OP. FOR OXYGEN SERVICE	J541M1-600M3Y	1
BALL VALVE	15 ~ 40		ASTM B564 N04400, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-600M1Y	1
	50		ASTM A494 M-35-1, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO.	Q341M1-600M3Y	1
	80~150		ASTM A494 M-35-1, BALL: MONEL N04400, MONEL N04400 SEAT, RF, CL600, TRUNNION MOUNTED BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q347M1-600M3Y	1
CHECK VALVE	15 ~ 40		BODY: ASTM B564 N04400, TRIM: MONEL N04400, RF, CL600, LIFT PISTON, BC, API 602. OR OXYGEN SERVICE	H41M1-600M1Y	1
	50~ 500		ASTM A494 M-35-1, TRIM: MONEL N04400, RF, CL600, SWING, BC, BS1868, ASME B16.34. OR OXYGEN SERVICE	H44M1-600M3Y	1

NOTES:

- ALL PARTS INCLUDING (PIPES, FITTINGS, FLANGES, VALVES, GASKETS, FASTENERS, etc.) CONTACT WITH OXYGEN SERVICE SHALL BE WITHOUT SHARP EDGES, DEBRIS, MILL SCALES

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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AND RUST. OIL AND GREASE SHALL BE REMOVED. THE INTERNAL SURFACE FINISH SHALL BE AT LEAST ISO8501-1 Sa2.5.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: G24




BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL900 RJ
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	BD BFW CBD HHPS SG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	425		
DESIGN PRESS. (Barg):	153.2	150.4	139.8	135.2	131.4	125.8	119.5	112.7	104.2			

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH160	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH80	
	200~600		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH100	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH160	
FORGED FITTING					
WELDOLET	50~600	15~200	ASTM A105, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 600		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	15 ~ 600		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
REDUCER ECC.	15 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
CAP	15 ~ 600		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 40		ASTM A105, WN-RJ,CL1500,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105, WN-RJ, CL900,ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 40		ASTM A105, BL-RJ, CL1500,ASME B16.5		
	50 ~ 600		ASTM A105, BL-RJ, CL900,ASME B16.5		
FIGURE 8	15~40		ASTM A515 Gr.70, RJ, CL1500, ASME B16.48		
	50~300		ASTM A515 Gr.70, RJ, CL900, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RJ, CL900, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RJ, CL900, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 40		RING GASKET, SOFT IRON, OCTAGONAL, RJ, CL1500, ASME B16.20. 90HB MAX.		
	50 ~ 500		RING GASKET, SOFT IRON, OCTAGONAL, RJ, CL900, ASME B16.20. 90HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, BW, CL1500, SOLID WEDGE, BB, API 602, HW.	Z61Y1-1500C1	1
	15 ~40		BODY: ASTM A105, TRIM: STL/STL, RJ, CL1500, SOLID WEDGE, BB, API 602, HW.	Z41Y1-1500C1J	1
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, PB, API 600, HW.	Z42Y1-900C2J	
	50 ~ 150		BODY: ASTM A216 WCB, TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, PB, WITH LOCK, API 600, HW.	Z42Y1-900C2JK	
	200~600		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, PB, API 600, BEVEL GEAR OP.	Z542Y1-900C2J	
	200~600		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, PB, WITH LOCK, API 600, BEVEL GEAR OP.	Z542Y1-900C2JK	
GLOBE VALVE	15 ~ 40		BODY: ASTM A105,TRIM: STL/STL, BW, CL1500,	J61Y1-1500C1	1

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			SWIVEL PLUG, BB, API 602,HW OP.		
	15 ~ 40		BODY: ASTM A105,TRIM: STL/STL, RJ,CL1500, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-1500C1J	1
	50~ 100		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ, CL900, PARABOLIC DISC, PB, BS1873, HW OP.	J41Y1-900C2J	
	150~300		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ, CL900, PARABOLIC DISC, PB, BS1873, GEAR OP.	J541Y1-900C2J	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, BW, CL1500, PISTON CHECK, BC, API 602.	H61Y1-1500C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: STL/STL, RJ, CL1500, PISTON CHECK, BC, API 602.	H41Y1-1500C1J	1
	50~ 600		ASTM A216 WCB, TRIM: STL/STL, RJ, CL900, SWING, PC, BS1868, ASME B16.34.	H44Y1-900C2J	

NOTES:

- For DN40 and below, butt weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: G36




BASIC MATERIAL:	LOW ALLOY STEEL 21/4Cr1Mo
FLANGE RATING & FACING:	CL900 RJ
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	590
STRESS RELIEF:	ASME B31.3
SERVICE:	PRG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	500	550
DESIGN PRESS. (Barg):	155.1	155.1	154.6	150.6	145.8	139	128.6	120.7	109.8	84.7	46.9




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A335 P22,SMLS,PE, ASME B36.10M	SCH160	
	50~150		ASTM A335 P22,SMLS,BE, ASME B36.10M	SCH80	
	200~600		ASTM A335 P22,SMLS,BE, ASME B36.10M	SCH100	
	700		ASTM A335 P22,SMLS,BE, EN10220	40mm	
	750		ASTM A335 P22,SMLS,BE, EN10220	45mm	
PIPE NIPPLE					
	15~40		ASTM A335 P22,SMLS,PBE, ASME B36.10M L=100mm	SCH160	
FORGED FITTING					
WELDOLET	50~750	15~300	ASTM A182 F22 CL.3, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 750		ASTM A234 WP22, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	15 ~ 750		ASTM A234 WP22, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 750		ASTM A234 WP22, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 750		ASTM A234 WP22, SMLS,BW, ASME B16.9	AS PIPE	

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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
REDUCER CON.	15 ~ 750		ASTM A234 WP22, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 750		ASTM A234 WP22, SMLS,BW, ASME B16.9	AS PIPE	
CAP	15 ~ 750		ASTM A234 WP22, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 40		ASTM A182 F22 CL.3, WN-RJ, CL1500, ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F22 CL.3, WN-RJ, CL900, ASME B16.5	AS PIPE	
	700 ~ 750		ASTM A182 F22 CL.3, WN-RJ, CL900, ASME B16.47 A	AS PIPE	
BL FLANGE	15 ~ 40		ASTM A182 F22 CL.3, BL-RJ, CL1500, ASME B16.5		
	50 ~ 600		ASTM A182 F22 CL.3, BL-RJ, CL900, ASME B16.5		
	700 ~ 750		ASTM A182 F22 CL.3, BL-RJ, CL900, ASME B16.47 A		
FIGURE 8	15~300		ASTM A387 Gr.22 CL.2, RJ, CL900, ASME B16.48		
SPACER	350~600		ASTM A387 Gr.22 CL.2, RJ, CL900, ASME B16.48		
BLANK	350~600		ASTM A387 Gr.22 CL.2, RJ, CL900, ASME B16.48		
SPACER	700~750		ASTM A387 Gr.22 CL.2, RJ, CL900, MFR'S STD		
BLANK	700~750		ASTM A387 Gr.22 CL.2, RJ, CL900, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B16/A194 4, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 40		RING GASKET, A182 F5, OCTAGONAL, RJ, CL1500, ASME B16.20. ASME B16.5 130HB MAX.		
	50 ~ 600		RING GASKET, A182 F5, OCTAGONAL, RJ, CL900, ASME B16.20. ASME B16.5 130HB MAX.		
	700 ~ 900		RING GASKET, A182 F5, OCTAGONAL, RJ,		




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
CL900, ASME B16.20. ASME B16.47 A 130HB MAX.					
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F22 CL.3, TRIM: STL/STL, BW, CL1500, SOLID WEDGE, FULL BORE, LONG PATTERN, BB, API 602, HW.	Z61Y1-1500I3	
	15 ~40		BODY: ASTM A182 F22 CL.3, TRIM: STL/STL, RJ, CL1500, SOLID WEDGE, FULL BORE, LONG PATTERN, BB, API 602, HW.	Z41Y1-1500I3J	
	50 ~ 150		BODY: ASTM A217 WC9, TRIM: STL/STL, BW, CL900, SPLIT WEDGE, SHORT PATTERN, PB, API 600, HW.	Z62Y1-900I4	
	50 ~ 150		BODY: ASTM A217 WC9, TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, SHORT PATTERN, PB, API 600, HW.	Z42Y1-900I4J	
	200~600		BODY: ASTM A217 WC9,TRIM: STL/STL, BW, CL900, SPLIT WEDGE, SHORT PATTERN (UP TO DN400), PB, API 600, BEVEL GEAR OP.	Z562Y1-900I4	
	200~600		BODY: ASTM A217 WC9,TRIM: STL/STL, RJ, CL900, SPLIT WEDGE, PB, API 600, BEVEL GEAR OP.	Z542Y1-900I4J	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F22 CL.3,TRIM: STL/STL, BW, CL1500, SWIVEL PLUG, FULL BORE, LONG PATTERN, BB, API 602,HW OP.	J61Y1-1500I3	
	15 ~ 40		BODY: ASTM A182 F22 CL.3,TRIM: STL/STL, RJ, CL1500, SWIVEL PLUG, FULL BORE, LONG PATTERN, BB, API 602,HW OP.	J41Y1-1500I3J	
	50~ 100		BODY: ASTM A217 WC9,TRIM: STL/STL, BW, CL900, PARABOLIC DISC, FULL BORE, SHORT PATTERN (DN65~100), PB, BS1873, HW OP.	J61Y1-900I4	
	50~ 100		BODY: ASTM A217 WC9,TRIM: STL/STL, RJ, CL900, PARABOLIC DISC, FULL BORE, PB, BS1873, HW OP.	J41Y1-900I4J	
	150~200		BODY: ASTM A217 WC9,TRIM: STL/STL, BW, CL900, PARABOLIC DISC, FULL BORE, SHORT PATTERN, PB, BS1873, GEAR OP.	J561Y1-900I4	
	150~200		BODY: ASTM A217 WC9,TRIM: STL/STL, RJ, CL900, PARABOLIC DISC, FULL BORE, PB, BS1873, GEAR OP.	J541Y1-900I4J	
CHECK VALVE	15 ~40		BODY: ASTM A182 F22 CL.3, TRIM: STL/STL, BW, CL1500, PISTON CHECK, BC, API 602.	H61Y1-1500I3	
	15 ~40		BODY: ASTM A182 F22 CL.3, TRIM: STL/STL, RJ, CL1500, PISTON CHECK, BC, API 602.	H41Y1-1500I3J	
	50~ 600		ASTM A217 WC9, TRIM: STL/STL, BW, CL900, SWING, PC, BS1868, ASME B16.34.	H64Y1-900I4	
	50~ 600		ASTM A217 WC9, TRIM: STL/STL, RJ, CL900,	H44Y1-900I4J	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
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	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWING, PC, BS1868, ASME B16.34.					

NOTES:

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: G40

BASIC MATERIAL:	STAINLESS STEEL 304L
FLANGE RATING & FACING:	CL900 RJ
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	BD BFW CD LPS N PRC PRG SG VA PMC




SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	
DESIGN PRESS. (Barg):	124.1	120.1	104.4	94.2	87.5	82.4	78.2	75.2	74.3	72.9	71.6	




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M	SCH40S	
	50~100		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH40S	
	150~200		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH80S	
	250~600		ASTM A312 TP304L, SMLS, BE, ASME B36.10M	SCH80	
	700		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	36mm	
	750~800		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	40mm	
	950		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	45mm	
PIPE NIPPLE					
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
WELDOLET	50~800	15~300	ASTM A182 F304L, BW, MSS SP 97	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BW FITTING					
ELBOW 90°	15 ~ 600		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
ELBOW 45°	15 ~ 600		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
TEE EQUAL	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
TEE REDU.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER CON.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER ECC.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
CAP	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 950		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
FLANGE					
WN FLANGE	15 ~ 40		ASTM A182 F304L, WN-RJ, CL1500, ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F304L, WN-RJ, CL900, ASME B16.5	AS PIPE	
	700~950		ASTM A182 F304L, WN-RJ, CL900, ASME B16.47 A	AS PIPE	
BL FLANGE	15 ~ 40		ASTM A182 F304L, BL-RJ, CL1500, ASME B16.5		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	50 ~ 600		ASTM A182 F304L, BL-RJ, CL900, ASME B16.5		
	700 ~ 950		ASTM A182 F304L, BL-RJ, CL900, ASME B16.47 A		
FIGURE 8	15~40		ASTM A240 Gr.304L, RJ, CL1500, ASME B16.48		
	50~300		ASTM A240 Gr.304L, RJ, CL900, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304L, RJ, CL900, ASME B16.48		
BLANK	350~600		ASTM A240 Gr.304L, RJ, CL900, ASME B16.48		
SPACER	700~800		ASTM A240 Gr.304L, RJ, CL900, MFR'S STD		
BLANK	700~800		ASTM A240 Gr.304L, RJ, CL900, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 40		RING GASKET, A182 F304L, OCTAGONAL, RJ, CL1500, ASME B16.20. ASME B16.5150HB MAX.		
	50 ~ 600		RING GASKET, A182 F304L, OCTAGONAL, RJ, CL900, ASME B16.20. ASME B16.5150HB MAX.		
	700 ~ 950		RING GASKET, A182 F304L, OCTAGONAL, RJ, CL900, ASME B16.20. ASME B16.47 A, 150HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, SOLID WEDGE, BB, API 602, HW.	Z61Y1-1500P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, SOLID WEDGE, BB, WITH LOCK, API 602, HW.	Z61Y1-1500P3K	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RJ, CL1500, SOLID WEDGE, BB, API 602, HW.	Z41Y1-1500P3J	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L	Z41Y1-1500P3JK	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			+STL/STL, RJ, CL1500, SOLID WEDGE, BB, WITH LOCK, API 602, HW.		
	50 ~ 150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL900, SPLIT WEDGE, PB, API 600, HW.	Z42Y1-900P2J	
	50 ~ 150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL900, SPLIT WEDGE, PB, WITH LOCK, API 600, HW.	Z42Y1-900P2JK	
	200~750		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL900, SPLIT WEDGE, PB, API 600, GO.	Z542Y1-900P2J	
	200~750		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL900, SPLIT WEDGE, PB, WITH LOCK, API 600, GO.	Z542Y1-900P2JK	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, SWIVEL PLUG, BB, API 602,HW OP.	J61Y1-1500P3	1
	15 ~ 40		BODY: ASTM A182 F304L,TRIM: A182 F304L +STL/STL, RJ,CL1500, SWIVEL PLUG, BB, API 602, HW OP.	J41Y1-1500P3J	1
	50~ 100		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, RJ,CL900, PARABOLIC DISC, PB, BS1873, HW OP.	J41Y1-900P2J	
	50~ 100		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, RJ,CL900, PARABOLIC DISC, PB, WITH LOCK, BS1873, HW OP.	J41Y1-900P2JK	
	150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ,CL900, PARABOLIC DISC, PB, BS1873, GEAR OP.	J541Y1-900P2J	
CHECK VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, LIFT PISTON, BC, API 602.	H61Y1-1500P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RJ, CL1500, LIFT PISTON, BC, API 602.	H41Y1-1500P3J	1
	50~ 800		ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL900, SWING, PC, BS1868, ASME B16.34.	H44Y1-900P2J	
	600~800		ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL900, TILTING DISC, PC, BS1868, ASME B16.34.	H69Y1-900P2J	3
BUTTERFLY VALVE	50~ 80		ASTM A351 CF8, TRIM: SS304/304+GRAPHITE, RJ, CL900, TRI-ECCENTRIC FLANGED TYPE, ASME B16.34, LEVER OP.	D43E1-900P2J	
	100~ 600		ASTM A351 CF8, TRIM: SS304/304+GRAPHITE, RJ, CL900, TRI-ECCENTRIC FLANGED TYPE, ASME B16.34, GO.	D343E1-900P2J	
STRAINERS					
Y TYPE	15 ~40		BODY: SS304L, STRAINER: SS304L, SW, CL1500, MANUFACTURE'S STANDARD	SY61E1-1500P3	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	50~100		BODY: SS304L, STRAINER: SS304L, RJ, CL900, MANUFACTURE'S STANDARD	SY41E1-900P2J	
T TYPE	150 ~600		BODY: SS304L STRAINER: SS304L, RJ, CL900, MANUFACTURE'S STANDARD	ST41E1-900P2J	

NOTES:

1. For DN40 and below, butt weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
2. Minimum wall thickness shall be nominal wall thickness minus 0.3mm.
3. For syngas compressor.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: H24




BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL1500 RJ
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	BFW HHPS PMC
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	425		
DESIGN PRESS. (Barg):	255.3	250.6	233	225.4	219.0	209.7	199.1	187.8	173.6	143.8		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH160	
	50~80		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH160	
	100~500		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH120	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH160	
FORGED FITTING					
WELDOLET	50~800	15~350	ASTM A105, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 500		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	15 ~ 500		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 500		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 500		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 500		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 500		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
CAP	15 ~ 500		ASTM A234 WPB, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
WN FLANGE	15 ~ 40		ASTM A105, WN-RJ,CL1500,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 500		ASTM A105, WN-RJ, CL1500,ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 500		ASTM A105, BL-RJ, CL1500,ASME B16.5		
FIGURE 8	15~300		ASTM A515 Gr.70, RJ, CL1500, ASME B16.48		
SPACER	350~500		ASTM A515 Gr.70, RJ, CL1500, ASME B16.48		
BLANK	350~500		ASTM A515 Gr.70, RJ, CL1500, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 500		RING GASKET, SOFT IRON, OCTAGONAL, RJ, CL1500, ASME B16.20. 90HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, BW, CL1500, SOLID WEDGE, WB, API 602, HW.	Z61Y1-1500C1	1
	15 ~40		BODY: ASTM A105, TRIM: STL/STL, RJ, CL1500, SOLID WEDGE, BB, API 602, HW.	Z41Y1-1500C1J	1
	50 ~ 100		BODY: ASTM A216 WCB, TRIM: STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, API 600, HW.	Z62Y1-1500C2	1
	50 ~ 100		BODY: ASTM A216 WCB, TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, HW.	Z42Y1-1500C2J	1
	50 ~ 100		BODY: ASTM A216 WCB, TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, WITH LOCK, API 600, HW.	Z42Y1-1500C2JK	1
	150~500		BODY: ASTM A216 WCB,TRIM: STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, API 600, BEVEL GEAR OP.	Z562Y1-1500C2	1
	150~500		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, BEVEL GEAR OP.	Z542Y1-1500C2J	1
GLOBE VALVE	15 ~ 40		BODY: ASTM A105,TRIM: STL/STL, BW, CL1500, SWIVEL PLUG, BB, API 602,HW OP.	J61Y1-1500C1	1
	15 ~ 40		BODY: ASTM A105,TRIM: STL/STL,	J41Y1-1500C1J	1

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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			RJ,CL1500, SWIVEL PLUG, BB, API 602, HW OP.		
	50~ 80		BODY: ASTM A216 WCB,TRIM: STL/STL, BW, CL1500, PARABOLIC DISC, SHORT PATTERN, PB, BS1873, HW OP.	J61Y1-1500C2	1
	50~ 80		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ,CL1500, PARABOLIC DISC, PB, BS1873, HW OP.	J41Y1-1500C2J	1
	100~300		BODY: ASTM A216 WCB,TRIM: STL/STL, BW,CL1500, PARABOLIC DISC, SHORT PATTERN, PB, BS1873, GEAR OP.	J561Y1-1500C2	1
	100~300		BODY: ASTM A216 WCB,TRIM: STL/STL, RJ,CL1500, PARABOLIC DISC, PB, BS1873, GEAR OP.	J541Y1-1500C2J	1
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: STL/STL, BW, CL1500, LIFT PISTON, BC, API 602.	H61Y1-1500C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: STL/STL, RJ, CL1500, LIFT PISTON, BC, API 602.	H41Y1-1500C1J	1
	50~ 500		ASTM A216 WCB, TRIM: STL/STL, BW, CL1500, SWING, PC, BS1868, ASME B16.34.	H64Y1-1500C2	1
	50~ 500		ASTM A216 WCB, TRIM: STL/STL, RJ, CL1500, SWING, PC, BS1868, ASME B16.34.	H44Y1-1500C2J	1

NOTES:

- Butt weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: H34




BASIC MATERIAL:	LOW ALLOY STEEL 11/4Cr0.5Mo
FLANGE RATING & FACING:	CL1500 RJ
CORROSION ALLOWANCE:	1.6mm
TEMPERATURE LIMIT:	538
STRESS RELIEF:	ASME B31.3
SERVICE:	HPS HHPs
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	400	450	500	538
DESIGN PRESS. (Barg):	258.6	258.6	257.4	248.7	239.8	231.8	214.4	201.1	183.1	169	128.6	74.5

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A335 P11,SMLS,PE, ASME B36.10M	SCH160	
	50~150		ASTM A335 P11,SMLS,BE, ASME B36.10M	SCH160	
	200~600		ASTM A335 P11,SMLS,BE, ASME B36.10M	SCH140	
PIPE NIPPLE					
	15~40		ASTM A335 P11,SMLS,PBE, ASME B36.10M L=100mm	SCH160	
FORGED FITTING					
WELDOLET	50~600	15~200	ASTM A182 F11 CL.2, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 600		ASTM A234 WP11, LR, SMLS,BW,ASME B16.9	AS PIPE	
ELBOW 45°	15 ~ 600		ASTM A234 WP11, LR, SMLS,BW,ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 600		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 600		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 600		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 600		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
CAP	15 ~ 600		ASTM A234 WP11, SMLS,BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 40		ASTM A182 F11 CL.2, WN-RJ, CL1500, ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F11 CL.2, WN-RJ, CL1500, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F11 CL.2, BL-RJ, CL1500, ASME B16.5		
FIGURE 8	15~300		ASTM A387 Gr.11 CL.2, RJ, CL1500, ASME B16.48		
SPACER	350~600		ASTM A387 Gr.11 CL.2, RJ, CL1500, ASME B16.48		
BLANK	350~600		ASTM A387 Gr.11 CL.2, RJ, CL1500, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B16/A194 4, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		RING GASKET, A182 F5, OCTAGONAL, RJ, CL1500, ASME B16.20. ASME B16.5 130HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, BW, CL1500, SOLID WEDGE, FULL BORE, LONG PATTERN, BB, API 602, HW.	Z61Y1-1500I1	
	15 ~40		BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RJ, CL1500, SOLID WEDGE, FULL BORE, LONG PATTERN, BB, API 602, HW.	Z41Y1-1500I1J	
	50 ~ 100		BODY: ASTM A217 WC6, TRIM: STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, API 600, HW.	Z62Y1-1500I2	
	50 ~ 100		BODY: ASTM A217 WC6, TRIM: STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, WITH LOCK, API 600, HW.	Z62Y1-1500I2K	
	50 ~ 100		BODY: ASTM A217 WC6, TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, HW.	Z42Y1-1500I2J	
	50 ~ 100		BODY: ASTM A217 WC6, TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, WITH LOCK, API 600,	Z42Y1-1500I2JK	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kemiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
		HW.			
	150~600	BODY: ASTM A217 WC6,TRIM: STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN (EXCEPT DN600), PB, API 600, BEVEL GEAR OP.		Z562Y1-1500I2	
	150~600	BODY: ASTM A217 WC6,TRIM: STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, BEVEL GEAR OP.		Z542Y1-1500I2J	
GLOBE VALVE	15 ~ 40	BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, BW, CL1500, SWIVEL PLUG, FULL BORE, LONG PATTERN, BB, API 602,HW OP.		J61Y1-1500I1	
	15 ~ 40	BODY: ASTM A182 F11 CL.2,TRIM: STL/STL, RJ, CL1500, SWIVEL PLUG, FULL BORE, LONG PATTERN, BB, API 602,HW OP.		J41Y1-1500I1J	
	50~ 100	BODY: ASTM A217 WC6,TRIM: STL/STL, BW, CL1500, PARABOLIC DISC, FULL BORE, SHORT PATTERN, PB, BS1873, HW OP.		J61Y1-1500I2	
	50~ 100	BODY: ASTM A217 WC6,TRIM: STL/STL, RJ, CL1500, PARABOLIC DISC, FULL BORE, PB, BS1873, HW OP.		J41Y1-1500I2J	
	150~200	BODY: ASTM A217 WC6,TRIM: STL/STL, BW, CL1500, PARABOLIC DISC, FULL BORE, SHORT PATTERN, PB, BS1873, GEAR OP.		J561Y1-1500I2	
	150~200	BODY: ASTM A217 WC6,TRIM: STL/STL, RJ, CL1500, PARABOLIC DISC, FULL BORE, PB, BS1873, GEAR OP.		J541Y1-1500I2J	
CHECK VALVE	15 ~40	BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, BW, CL1500, LIFT PISTON CHECK, BC, API 602.		H61Y1-1500I1	
	15 ~40	BODY: ASTM A182 F11 CL.2, TRIM: STL/STL, RJ, CL1500, PISTON CHECK, BC, API 602.		H41Y1-1500I1J	
	50~ 600	ASTM A217 WC6, TRIM: STL/STL, BW, CL1500, SWING, PC, BS1868, ASME B16.34.		H64Y1-1500I2	
	50~ 600	ASTM A217 WC6, TRIM: STL/STL, RJ, CL1500, SWING, PC, BS1868, ASME B16.34.		H44Y1-1500I2J	

NOTES:




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: H40




BASIC MATERIAL: STAINLESS STEEL 304L
FLANGE RATING & FACING: CL1500 RJ
CORROSION ALLOWANCE: 0mm
TEMPERATURE LIMIT: 425
STRESS RELIEF: ASME B31.3
SERVICE: N PH SG
SERVICE LIMITE:

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425	
DESIGN PRESS. (Barg):	206.8	200.1	173.9	157	145.8	137.3	130.3	125.4	123.8	121.5	119.3	




ART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP304L, SMLS, PE, ASME B36.19M	SCH40S	
	50~80		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH40S	
	100~200		ASTM A312 TP304L, SMLS, BE, ASME B36.19M	SCH80S	
	250~600		ASTM A312 TP304L, SMLS, BE, ASME B36.10M	SCH100	
	700		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	40mm	
	750~800		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	45mm	
	850		ASTM A358 Gr.304L CL1, EFW, BE, EN10220	50mm	
PIPE NIPPLE					
	15~40		ASTM A312 TP304L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
WELDOLET	50~800	15~300	ASTM A182 F304L, BW, MSS SP 97	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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ART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BW FITTING					
ELBOW 90°	15 ~ 600		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
ELBOW 45°	15 ~ 600		ASTM A403 WP304L, LR, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, LR, WELDED, BW, ASME B16.9	AS PIPE	2
TEE EQUAL	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
TEE REDU.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER CON.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
REDUCER ECC.	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
CAP	15 ~ 600		ASTM A403 WP304L, SMLS, BW, ASME B16.9	AS PIPE	
	700 ~ 850		ASTM A403 WP304L-WX, WELDED, BW, ASME B16.9	AS PIPE	2
FLANGE					
WN FLANGE	15 ~ 40		ASTM A182 F304L, WN-RJ, CL1500, ASME B16.5	AS PIPE	
	50 ~ 600		ASTM A182 F304L, WN-RJ, CL1500, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F304L, BL-RJ, CL1500, ASME B16.5		
FIGURE 8	15~300		ASTM A240 Gr.304L, RJ, CL1500, ASME B16.48		
SPACER	350~600		ASTM A240 Gr.304L, RJ, CL1500, ASME		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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ART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			B16.48		
BLANK	350~600		ASTM A240 Gr.304L, RJ, CL1500, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B7/A194 2H, BLUING TREATED,STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		RING GASKET, A182 F304L, OCTAGONAL, RJ, CL1500, ASME B16.20. ASME B16.5150HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, SOLID WEDGE, BB, API 602, HW.	Z61Y1-1500P3	1
	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RJ, CL1500, SOLID WEDGE, BB, API 602, HW.	Z41Y1-1500P3J	1
	50 ~ 100		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, API 600, HW.	Z62Y1-1500P2	1
	50 ~ 100		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, HW.	Z42Y1-1500P2J	1
	150~600		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, API 600, GO.	Z562Y1-1500P2	1
	150~600		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL1500, SPLIT WEDGE, SHORT PATTERN, PB, WITH LOCK, API 600, GO.	Z562Y1-1500P2K	1
	150~600		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, SPLIT WEDGE, PB, API 600, GO.	Z542Y1-1500P2J	1
	150~600		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, SPLIT WEDGE, PB, WITH LOCK, API 600, GO.	Z542Y1-1500P2JK	1
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, SWIVEL PLUG, BB, API 602,HW OP.	J61Y1-1500P3	1
	15 ~ 40		BODY: ASTM A182 F304L,TRIM: A182 F304L	J41Y1-1500P3J	1

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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ART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			+STL/STL, RJ,CL1500, SWIVEL PLUG, LONG PATTERN, BB, API 602, HW OP.		
	50~80		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, BW,CL1500, PARABOLIC DISC, SHORT PATTERN, PB, BS1873, HW OP.	J61Y1-1500P2	1
	50~80		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, BW,CL1500, PARABOLIC DISC, SHORT PATTERN, PB, WITH LOCK, BS1873, HW OP.	J61Y1-1500P2K	1
	50~ 80		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, RJ,CL1500, PARABOLIC DISC, PB, BS1873, HW OP.	J41Y1-1500P2J	1
	50~ 80		BODY: ASTM A351 CF8,TRIM: SS304+STL/STL, RJ,CL1500, PARABOLIC DISC, PB, WITH LOCK, BS1873, HW OP.	J41Y1-1500P2JK	1
	100~150		BODY: ASTM A351 CF8, TRIM: SS304+STL/STL, BW,CL1500, PARABOLIC DISC, SHORT PATTERN, PB, BS1873, GEAR OP.	J561Y1-1500P2	1
	100~150		BODY: ASTM A351 CF8, TRIM: SS30+STL/STL, RJ,CL1500, PARABOLIC DISC, PB, BS1873, GEAR OP.	J541Y1-1500P2J	1
CHECK VALVE	15 ~40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, BW, CL1500, LIFT PISTON, BC, API 602.	H61Y1-1500P3	1
	15 ~ 40		BODY: ASTM A182 F304L, TRIM: A182 F304L +STL/STL, RJ, CL1500, LIFT PISTON, BC, API 602.	H41Y1-1500P3J	1
	50~ 500		ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL1500, SWING, PC, BS1868, ASME B16.34.	H64Y1-1500P2	1
	50~ 500		ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, SWING, PC, BS1868, ASME B16.34.	H44Y1-1500P2J	1
	500~800		ASTM A351 CF8, TRIM: SS304+STL/STL, BW, CL1500, TILTING DISC, PC, BS1868, ASME B16.34.	H69Y1-1500P2J	3
	800		ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, AXIAL FLOW CHECK, PC, ASME B16.34.	H48Y1-1500P2J	3
BUTTERFLY VALVE	50~ 80		ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, TRI-ECCENTRIC FLANGED TYPE, ASME B16.34, LEVER OP.	D43Y1-1500P2J	
	100~ 600		ASTM A351 CF8, TRIM: SS304+STL/STL, RJ, CL1500, TRI-ECCENTRIC FLANGED TYPE, ASME B16.34, GO.	D343Y1-1500P2J	

NOTES:

- Butt weld valves shall be used wherever possible. Flanged valves may be used on pumps, equipment connections, tank nozzles and instruments.

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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2. Minimum wall thickness shall be nominal wall thickness minus 0.3mm.
3. For syngas compressor.




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	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: H64




BASIC MATERIAL:	STAINLESS STEEL 321H
FLANGE RATING & FACING:	CL1500 RJ
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	800°C
STRESS RELIEF:	ASME B31.3
SERVICE:	RFG
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	400	500	600	675	800
DESIGN PRESS. (Barg):	248.2	242.8	221.2	204.9	191.5	180.1	170.7	157.9	140.9	101.3	49.4	15.6

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A376 TP321H, SMLS, PE, ASME B36.19M	SCH80S	
	50~80		ASTM A376 TP321H, SMLS, BE, ASME B36.19M	SCH80S	
	100~150		ASTM A376 TP321H, SMLS, BE, ASME B36.10M	SCH120	
	200~600		ASTM A376 TP321H, SMLS, BE, ASME B36.10M	SCH140	
	700		ASTM A376 TP321H, SMLS, BE, EN10220	60mm	
	750		ASTM A376 TP321H, SMLS, BE, EN10220	65mm	
	800		ASTM A376 TP321H, SMLS, BE, EN10220	70mm	
	850		ASTM A376 TP321H, SMLS, BE, EN10220	73mm	
PIPE NIPPLE					
	15~40		ASTM A376 TP321H, SMLS, PBE, ASME B36.19M L=100mm	SCH80S	
FORGED FITTING					
WELDOLET	50~800	15~300	ASTM A182 F321H, BW, MSS SP 97	AS PIPE	
BW FITTING					
ELBOW 90°	15 ~ 850		ASTM A403 WP321H, LR, SMLS, BW, ASME	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kiniaje Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			B16.9		
ELBOW 45°	15 ~ 850		ASTM A403 WP321H, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	15 ~ 850		ASTM A403 WP321H, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	15 ~ 850		ASTM A403 WP321H, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	15 ~ 850		ASTM A403 WP321H, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	15 ~ 850		ASTM A403 WP321H, SMLS, BW, ASME B16.9	AS PIPE	
CAP	15 ~ 850		ASTM A403 WP321H, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
WN FLANGE	15 ~ 40		ASTM A182 F321H, WN-RJ,CL1500,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A182 F321H,WN-RJ, CL1500, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A182 F321H, BL-RJ, CL1500, ASME B16.5		
FIGURE 8					
SPACER					
BLANK					
FASTENER					
BOLT/NUT			STM B408 N08810 STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		RING GASKET, A182 F347, OCTAGONAL, RJ, CL1500, ASME B16.20. ASME B16.5160HB MAX.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F3021H, TRIM: A182 F321H+STL/STL, BW, CL1500, SOLID WEDGE, BB, API 602, HW.	Z61Y1-1500RA	
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F321H, TRIM: A182 F321H+STL/STL, BW, CL1500, SWIVEL PLUG, BB, API 602,HW OP.	J61Y1-1500RA	




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kinimaye Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: C1A




BASIC MATERIAL:	CARBON STEEL
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0 mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	FW SW CSW POC FF
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M	SCH80	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH40	
	200~350		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M	SCH20	
	400~450		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
	500~600		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M	SCH20	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11		
TEE REDU.	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE, MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE, MSS SP-95	AS PIPE	
SOCKOLET	50~600	15~40	ASTM A105, SW, CL3000, MSS SP-97		
WELDOLET	100~600	50~400	ASTM A105, BW, MSS SP-97	AS PIPE	
COUPLING FULL	15 ~ 40		ASTM A105, SW, CL3000, ASME B16.11		
CAP	15 ~ 40		ASTM A105, SW, CL3000, ASME B16.11		
CAP	15 ~ 40		ASTM A105, Th(NPT), CL3000, ASME B16.11		
GROOVED FITTING					
ELBOW 90°	50 ~ 350		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, LR, WELDED, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 350		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, LR, WELDED, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 350		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, WELDED, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 350		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 350		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, WELDED, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 350		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, WELDED, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 350		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
	400~ 600		ASTM A234 WPB, WELDED, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF, CL150, ASME B16.5	AS PIPE	3
WN FLANGE	50 ~ 600		ASTM A105, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~300		ASTM A515 Gr.70, RF, CL150, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF, CL150, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF, CL150, ASME B16.48		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 200		FLAT GASKET, SYNTHETIC FIBER WITH NITRILE BINDER, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm BG3000 OR EQUAL.		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40H1-150C2	
	350~600		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540H1-150C2	
BALL VALVE	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN WITH NIPPLE, API 608, LO.	Q51F2-800C1	2,4
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GEAR OP.	Q341F2-150C2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2	
	200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-150C2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105,TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC,API 602.	H41H1-150C1	1
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44H1-150C2	
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	4
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2	2,4
	150~ 600		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150, WAFER LUG TYPE, API 609 CATEGORY B, GEAR OP.	D372F1-150C2	2,4
	80~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2	2
	150~ 600		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGE TYPE, API 609 CATEGORY B, GEAR OP.	D342F1-150C2	2
STRAINERS					
Y TYPE	15 ~40		BODY: CS, STRAINER: SS304, SW, CL150, MANUFACTURE'S STANDARD	SY51E1-150C1	
	50~100		BODY: CS, STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	SY41E1-150C2	
T TYPE	150 ~600		BODY: CS STRAINER: SS304, RF, CL150, MANUFACTURE'S STANDARD	ST41E1-150C2	

NOTES:

- For DN40 and below, socket welded valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments..
- Can only be used bellow 150°C.
- For protection of the body seat rings, the valve shall be taken apart before welding.
- Don't connect wafer check valve directly with wafer butterfly valve without spool piece.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركة كيميائى پارس خاورميانه <i>Middle East Kinimaye Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: G1A




BASIC MATERIAL:	CARBON STEEL/GALV.
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0 mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	PW
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~50		ASTM A53 Gr. B/GALV., SMLS, TE, ASME B36.10M	SCH80	
	80		ASTM A53 Gr. B/GALV., SMLS, TE, ASME B36.10M	SCH40	
	100~150		ASTM A53 Gr. B, SMLS, BE, ASME B36.10M	SCH40	
	200		ASTM A53 Gr. B, ERW, BE, ASME B36.10M	SCH20	
PIPE NIPPLE					
	15~50		ASTM A53 Gr. B/GALV., SMLS, TBE, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
ELBOW 45°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
TEE EQUAL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
TEE REDU.	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
SWG CON.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE, MSS SP-95	AS PIPE	
SWG CON.	100	15~80	ASTM A234 WPB/GALV., SMLS, BLEXPSE, MSS SP-95	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE,MSS SP-95	AS PIPE	
SWG ECC.	100	15~80	ASTM A234 WPB/GALV., SMLS, BLEXPSE,MSS SP-95	AS PIPE	
THREADOLET	100~200	15~80	ASTM A105/GALV., NPT, CL3000, MSS SP-97		
WELDOLET	200	100	ASTM A105-, BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
CAP	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
GROOVED FITTING					
ELBOW 90°	100 ~ 200		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	100 ~ 200		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	100 ~ 200		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	100 ~ 200		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	100 ~ 200		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	100 ~ 200		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
CAP	100 ~ 200		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
Th FLANGE	15 ~ 80		ASTM A105/GALV., Th(NPT)-RF, CL150, ASME B16.5	AS PIPE	
WN FLANGE	100 ~ 200		ASTM A105., WN-RF, CL150, ASME B16.5	AS PIPE	3
BL FLANGE	15 ~ 80		ASTM A105/GALV, BL-RF, CL150, ASME B16.5		
	100 ~ 200		ASTM A105, BL-RF, CL150, ASME B16.5		
FIGURE 8	15 ~ 80		ASTM A515 Gr.70/GALV, RF,CL150, ASME B16.48		
	100 ~ 200		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER BLANK					
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 200		FLAT GASKET, SYNTHETIC FIBER WITH NITRILE BINDER, RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm BG3000 OR EQUAL.		
VALVE					
GATE VALVE	15 ~80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, SOLID WEDGE, BB, API 602, HW.	Z11H2-800C1P	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H2-150C1P	1
	50 ~ 200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40H2-150C2P	
BALL VALVE	15~80		ASTM A105, BALL: SS316, PTFE SEAT, Th(NPT)-F, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q11F2-800C1P	2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1P	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2P	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GEAR OP.	Q341F2-150C2P	2
GLOBE VALVE	15 ~ 80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J11H2-800C1P	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H2-150C1P	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H2-150C2P	
	200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H2-150C2P	
CHECK VALVE	15 ~80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, LIFT PISTON, BC, API 602.	H11H2-800C1P	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H2-150C1P	1
	50~ 200		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150,	H44H2-150C2P	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			SWING, BC, BS1868, ASME B16.34.		
	50~ 200		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2P	3
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2P	2,3
	150~ 200		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150, WAFER LUG TYPE, API 609 CATEGORY B, GEAR OP.	D372F1-150C2P	2,3
	50~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2P	2
	150~ 200		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGED TYPE, API 609 CATEGORY B, GEAR OP.	D342F1-150C2P	2

NOTES:

1. For DN80 and below, threaded valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
2. Can only be used bellow 150°C.
3. Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
4. In this pipe class, galvanized pipes and fittings shall be hot dip galvanized.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kinimaye Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: G1B




BASIC MATERIAL:	CARBON STEEL/GALV.
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0 mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	FW
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~50		ASTM A53 Gr. B/GALV., SMLS, TE, ASME B36.10M	SCH80	
	80		ASTM A53 Gr. B/GALV., SMLS, TE, ASME B36.10M	SCH40	
	100~150		ASTM A53 Gr. B, SMLS, PE, ASME B36.10M	SCH40	
	200~ 400		ASTM A53 Gr. B, ERW, PE, ASME B36.10M	SCH20	
PIPE NIPPLE					
	15~50		ASTM A53 Gr. B/GALV., SMLS, TBE, ASME B36.10M L=100mm	SCH80	
FORGED FITTING					
ELBOW 90°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
ELBOW 45°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
TEE EQUAL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
TEE REDU.	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
SWG CON.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE, MSS SP-95	AS PIPE	
SWG CON.	100	15~80	ASTM A234 WPB/GALV., SMLS,	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			BLEXPSE,MSS SP-95		
SWG ECC.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE,MSS SP-95	AS PIPE	
SWG ECC.	100	15~80	ASTM A234 WPB/GALV., SMLS, BLEXPSE,MSS SP-95	AS PIPE	
THREADOLET	100~400	15~80	ASTM A105/GALV., NPT, CL3000, MSS SP-97		
WELDOLET	200~400	200	ASTM A105/GALV., BW,MSS SP-97	AS PIPE	
COUPLING FULL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
CAP	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11		
GROOVED FITTING					
ELBOW 90°	100 ~ 400		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9		
ELBOW 45°	100 ~ 400		ASTM A234 WPB., LR, SMLS, BW, ASME B16.9		
TEE EQUAL	100 ~ 400		ASTM A234 WPB., LR, SMLS, BW, ASME B16.9		
TEE REDU.	100 ~ 400		ASTM A234 WPB., LR, SMLS, BW, ASME B16.9		
REDUCER CON.	100 ~ 400		ASTM A234 WPB., LR, SMLS, BW, ASME B16.9		
REDUCER ECC.	100 ~ 400		ASTM A234 WPB., LR, SMLS, BW, ASME B16.9		
CAP	100 ~ 400		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
Th FLANGE	15 ~ 80		ASTM A105/GALV., Th(NPT)-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	100 ~ 400		ASTM A105, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 80		ASTM A105/GALV, BL-RF,CL150,ASME B16.5		
	100 ~ 400		ASTM A105, BL-RF,CL150,ASME B16.5		
FIGURE 8	15 ~ 80		ASTM A515 Gr.70/GALV, RF,CL150, ASME B16.48		
	100 ~ 400		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	350~400		ASTM A515 Gr.70/GALV, RF,CL150, ASME		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BLANK	350~400		B16.48 ASTM A515 Gr.70/GALV, RF,CL150, ASME B16.48		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 200		FLAT GASKET,SYNTHETIC FIBER WITH NITRILE BINDER, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm BG3000 OR EQUAL.		
VALVE					
GATE VALVE	15 ~80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, SOLID WEDGE, BB, API 602, HW.	Z11H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE,BB, API 600, HW.	Z40H1-150C2	
	350~400		BODY: ASTM A216 WCB,TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, API 600, BEVEL GEAR OP.	Z540H1-150C2	
BALL VALVE	15~80		ASTM A105, BALL: SS316, PTFE SEAT, Th(NPT)-F, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q11F2-800C1	2
	15 ~ 40		ASTM A105, BALL: SS316 , PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL,FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL,FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GEAR OP.	Q341F2-150C2	2
GLOBE VALVE	15 ~ 80		BODY: ASTM A105,TRIM: 13Cr/STL, Th(NPT)-F, CL800, SWIVEL PLUG, BB, API 602,HW OP.	J11H1-800C1	1
	15 ~ 40		BODY: ASTM A105,TRIM: 13Cr/STL, RF,CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB,TRIM: 13Cr/STL, RF,CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kiniaje Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-150C2	
CHECK VALVE	15 ~80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, LIFT PISTON, BC, API 602.	H11H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H1-150C1	1
	50~ 400		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS1868, SME B16.34.	H44H1-150C2	
	50~ 400		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	3
BUTTERFLY VALVE	50~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2	2,3
	150~ 400		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER LUG TYPE, API 609 CATEGORY B, GEAR OP.	D372F1-150C2	2,3
	50~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2	2
	150~ 400		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, GEAR OP.	D342F1-150C2	2

NOTES:

1. For DN80 and below, threaded valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
2. Can only be used bellow 150°C.
3. Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
4. In this pipe class, galvanized pipes and fittings shall be hot dip galvanized.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه Middle East Kimiyay Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: S1A




BASIC MATERIAL:	STAINLESS STEEL 316L
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	CH1 CH2 NS CSW
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	15.9	15.3	13.3	12.0	11.2	10.5	10.0	8.4	7.4	6.5	5.5		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP316L, SMLS, PE, ASME B36.19M	SCH40S	
	50~150		ASTM A312 TP316L, SMLS, BE, ASME B36.19M	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP316L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP316L, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP316L, SMLS, PBE, MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP316L, SMLS, PLEXTSE, MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP316L, SMLS, BLEXPSE, MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP316L, SMLS, PBE, MSS SP-95	AS PIPE	




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
SWG ECC.	20~40	15~25	ASTM A403 WP316L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP316L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET WELDOLET	50~150	15~40	ASTM A182 F316L, SW, CL3000, MSS SP-97		
COUPLING FULL	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 150		ASTM A403 WP316L, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A403 WP316L, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
CAP	15 ~40		ASTM A182 F316L, Th(NPT), CL3000, ASME B16.11		
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F316L, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 150		ASTM A182 F316L, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 150		ASTM A182 F316L, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~150		ASTM A240 Gr.316L, RF,CL150, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8M CL.2/A194 8M, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه Middle East Kimiyay Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
GASKET					
	15 ~ 600		FLAT GASKET, MOD. PTFE RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm GYLON 3545 OR EQUAL		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A182 F316L, TRIM: A182 F316L, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51R6-800R3	1
	15 ~40		BODY: ASTM A182 F316L, TRIM: A182 F316L, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41R6-150R3	1
	50 ~ 150		BODY: ASTM A351 CF3M, TRIM: SS316L, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40R6-150R4	
BALL VALVE	15 ~ 40		ASTM A182 F316L, BALL: SS316L, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F5-150R3	2
	50 ~ 100		ASTM A351 CF3M, BALL: SS316L, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F5-150R4	2
	150		ASTM A351 CF3M, BALL: SS316L, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341F5-150R4	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F316L, TRIM: A182 F316L, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51R6-800R3	1
	15 ~ 40		BODY: ASTM A182 F316L, TRIM: A182 F316L, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41R6-150R3	1
	50~ 150		BODY: ASTM A351 CF3M, TRIM: SS316L, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41R6-150R4	
CHECK VALVE	15 ~40		BODY: ASTM A182 F316L, TRIM: A182 F316L, SW, CL800, LIFT PISTON, BC, API 602.	H51R6-800R3	1
	15 ~ 40		BODY: ASTM A182 F316L, TRIM: A182 F316L, RF, CL150, LIFT PISTON, BC, API 602.	H41R6-150R3	1
	50~ 150		ASTM A351 CF3M, TRIM: SS316L, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44R6-150R4	
STRAINERS					
Y TYPE	15 ~40		BODY: ASTM SS316L, STRAINER: SS316L, SW, CL150, MANUFACTURE'S STANDARD	SY51R6-150R3	
	50 ~100		BODY: A SS316L, STRAINER: SS316L, RF, CL150, MANUFACTURE'S STANDARD	SY41R6-150R3	
T TYPE	150 ~150		BODY: A SS316L, STRAINER: SS316L, RF, CL150, MANUFACTURE'S STANDARD	ST41R6-150R3	

NOTES:

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياى پارس خاورميانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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1. For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
2. Can only be used bellow 150°C.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه Middle East Kimiya Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: S1B




BASIC MATERIAL:	STAINLESS STEEL 316L
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
SERVICE:	SU
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	15.9	15.3	13.3	12.0	11.2	10.5	10.0	8.4	7.4	6.5	5.5		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A312 TP316L, SMLS, PE, ASME B36.19M	SCH40S	
	50~150		ASTM A312 TP316L, SMLS, BE, ASME B36.19M	SCH10S	
PIPE NIPPLE					
	15~40		ASTM A312 TP316L, SMLS, PBE, ASME B36.19M L=100mm	SCH40S	
	15~40		ASTM A312 TP316L, SMLS, POEXTOE, ASME B36.19M L=100mm	SCH40S	
FORGED FITTING					
ELBOW 90°	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
ELBOW 45°	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
TEE EQUAL	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
TEE REDU.	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
SWG CON.	20~40	15~25	ASTM A403 WP316L, SMLS, PBE, MSS SP-95	AS PIPE	
SWG CON.	20~40	15~25	ASTM A403 WP316L, SMLS, PLEXTSE, MSS SP-95	AS PIPE	
SWG CON.	50~100	15~40	ASTM A403 WP316L, SMLS, BLEXPSE, MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A403 WP316L, SMLS, PBE, MSS SP-	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه Middle East Kimiya Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			95		
SWG ECC.	20~40	15~25	ASTM A403 WP316L, SMLS, PLEXTSE,MSS SP-95	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A403 WP316L, SMLS, BLEXPSE,MSS SP-95	AS PIPE	
SOCKOLET WELDOLET	50~150	15~40	ASTM A182 F316L, SW, CL3000, MSS P-97		
COUPLING FULL	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
CAP	15 ~40		ASTM A182 F316L, SW, CL3000, ASME B16.11		
BW FITTING					
ELBOW 90°	50 ~ 150		ASTM A403 WP316L, LR, SMLS, BW, ASME B16.9	AS PIPE	
ELBOW 45°	50 ~ 150		ASTM A403 WP316L, LR, SMLS, BW, ASME B16.9	AS PIPE	
TEE EQUAL	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
TEE REDU.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER CON.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
REDUCER ECC.	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
CAP	50 ~ 150		ASTM A403 WP316L, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A182 F316L, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 150		ASTM A182 F316L, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 150		ASTM A182 F316L, BL-RF, CL150, ASME B16.5		
FIGURE 8	15~150		ASTM A240 Gr.316L, RF,CL150, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B8M CL.2/A194 8M, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
	15 ~ 600		FLAT GASKET, RPTFE RF, CL150, ASME B16.21, ASME B16.5, T=3.2mm GYLON 3500 OR EQUAL		

VALVE					
PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
GATE VALVE	15 ~40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51P5-800R3	1
	15 ~40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41P5-150R3	1
	50 ~ 150		BODY: ASTM A351 CF3M, TRIM: ALLOY 20, RF, CL150, FLEXIBLE WEDGE, BB, API 600, HW.	Z40P5-150R4	
BALL VALVE	15 ~ 100		ASTM A351 CF3M, BALL: ALLOY 20, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41PF150R4	2
	150		ASTM A351 CF3M, BALL: ALLOY 20, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GO	Q341PF-150R4	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51P5-800R3	1
	15 ~ 40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41P5-150R3	1
	50 ~ 150		BODY: ASTM A351 CF3M, TRIM: ALLOY 20, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41P5-150R4	
CHECK VALVE	15 ~40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, SW, CL800, LIFT PISTON, BC, API 602.	H51P5-800R3	1
	15 ~ 40		BODY: ASTM A182 F316L, TRIM: ALLOY 20, RF, CL150, LIFT PISTON, BC, API 602.	H41P5-150R3	1
	50 ~ 150		ASTM A351 CF3M, TRIM: ALLOY 20, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44P5-150R4	

NOTES:

- For DN40 and below, socket weld valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: N0A

BASIC MATERIAL: PVC-U
 FLANGE RATING & FACING: GRAVITY FLOW
 CORROSION ALLOWANCE: 0 mm
 TEMPERATURE LIMIT: 60
 STRESS RELIEF:
 SERVICE: SN
 SERVICE LIMITE:




DESIGN TEMP.(°C):	45																		
DESIGN PRESS. (Barg):	Gravity																		
	Flow																		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~200		PVC-U, PE, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
FITTING					
ELBOW 90°	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
ELBOW 45°	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
REDUCER CON.	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
REDUCER ECC.	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
TEE EQUAL	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		
TEE REDU.	15 ~200		PVC-U, SOLVENT CEMENT JOINTED, GRAVITY FLOW, ISO 3633 OR EQUIVALENT		

Note:

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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1. Pipes and fittings as per EN1329 Part 1,2,3 or ASTM D2665 are also acceptable with approval of purchaser and owner.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميائى پارس خاورميانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: N0C

BASIC MATERIAL: PE
FLANGE RATING & FACING: GRAVITY FLOW
CORROSION ALLOWANCE: 0 mm
TEMPERATURE LIMIT: 60
STRESS RELIEF:
SERVICE: SN FRD
SERVICE LIMITE:

DESIGN TEMP.(°C):	45																		
DESIGN PRESS. (Barg):	Gravity																		
	Flow																		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
STRUCTURED (CORRUGATED) WALL PIPE	15~1200		HDPE, RING SEAL, INTERIOR SMOOTH, GRAVITY FLOW, SN8, EN 13476-3 OR EQUIVALENT		
FITTING					




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه <i>Middle East Kimiyay Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: N2A




BASIC MATERIAL: HDPE PE80
FLANGE RATING & FACING: PN16 (CL150) FF
CORROSION ALLOWANCE: 0 mm
TEMPERATURE LIMIT: 40
STRESS RELIEF:
SERVICE: SN
SERVICE LIMITE:

DESIGN TEMP.(°C):	40																			
DESIGN PRESS. (Barg):	11.8																			

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
HDPE PIPE	15~80		PE80 ISO 4427, PE, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
FITTING					
ELBOW 90°	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
ELBOW 45°	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
REDUCER CON.	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
REDUCER ECC.	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
TEE EQUAL	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
TEE REDU.	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
COUPLING FULL	15 ~80		PE80 ISO 4427, SF, S4(PN16), SN8, ISO 4427 OR EQUIVALENT		
FITTING					
FLANGE	15 ~80		PE80 ISO 4427, SF-FF, PN16, ISO 4427 OR EQUIVALENT CONNETCTION TO CL150 ASME B16.5		
BL FLANGE	15 ~80		PE80 ISO 4427, BL-FF, PN16, ISO 4427 OR EQUIVALENT CONNETCTION TO CL150		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميائى پارس خاورميانه <i>Middle East Kemiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
ASME B16.5					
FASTENER					
BOLT/NUT/ WASHER			ASTM A307 Gr.B/ASTM A563 Gr.A GALVANISED MACHINE BOLTS AND HEXAGON NUTS, WITH TWO 200HV WASHER, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~80		FLAT GASKET, MOD. PTFE, FF, CL150, ASME B16.21, ASME B16.5,T=3.2mm GYLON STYLE 3545 OR EQUIVALENT		
VALVE					
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, FF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1F	
	50 ~ 80		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, FF, CL150, FLEXIBLE WEDGE,BB, API 600, HW.	Z40H1-150C2F	
BALL VALVE	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, FF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1F	
	50~80		ASTM A216 WCB, BALL: SS316, PTFE SEAT, FF, CL150, FLOATING BALL,FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41 F2-150C2F	
GLOBE VALVE	15 ~ 40		BODY: ASTM A105,TRIM: 13Cr/STL, FF,CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1F	
	50~ 80		BODY: ASTM A216 WCB,TRIM: 13Cr/STL, FF,CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H1-150C2F	
CHECK VALVE	15 ~ 40		BODY: ASTM A105,TRIM: 13Cr/STL, FF, CL150, LIFT PISTON, BC,API 602.	H41H1-150C1F	
	50~ 80		ASTM A216 WCB, TRIM: 13Cr/STL, FF, CL150, SWING, BC, BS1868, ASME B16.34.	H44H1-150C2F	
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, FF,CL150,WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-50C2F	




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياى پارس خاورميانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: N2C




BASIC MATERIAL: PVC-C
FLANGE RATING & FACING: PN16 FF
CORROSION ALLOWANCE: 0 mm
TEMPERATURE LIMIT: 60
STRESS RELIEF:
DESIGN FACTOR:
SERVICE: CLO HC
SERVICE LIMITE:

DESIGN TEMP.(°C):	60																		
DESIGN PRESS. (Barg):	0.58																		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
PVC-U	15~300		PVC-C, PE, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
FITTING					
ELBOW 90°	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
ELBOW 45°	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
REDUCER CON.	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
REDUCER ECC.	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
TEE EQUAL	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
TEE REDU.	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
CAP	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
SADDLE	15 ~300	25	PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16) , ISO 15493 OR EQUIVALENT		
COUPLING FULL	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
(PN16) , ISO 15493 OR EQUIVALENT					
FLANGE					
FLANGE	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16), FF, CL150, ISO 15493 OR EQUIVALENT, ASME B16.5		
BL FLANGE	15 ~300		PVC-C, SOLVENT CEMENT JOINTED, S6.3 (PN16), BL-FF, CL150, ISO 15493 OR EQUIVALENT , ASME B16.5		
FASTENER					
BOLT/NUT/ WASHER			ASTM A307 Gr.B/ASTM A563 Gr.A GALVANISED MACHINE BOLTS AND HEXAGON NUTS, WITH TWO 200HV WASHER, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 300		FLAT GASKET, MOD. PTFE, FF, CL150, ASME B16.21, ASME B16.5,T=3.2mm GYLON STYLE 3545 OR EQUVALENT		
VALVE					
BALL VALVE	15 ~ 150		BODY: CPVC, CPVC BALL, PTFE SEAT, FF,CL150, FLOATING BALL, LO.	Q41VF-150U2	
DIAPHRAGM VALVE	15 ~ 150		BODY: CPVC, TRIM: CPVC, DIAPHRAGM: PTFE, FF, CL150, WEIR TYPE, LO.	G41VF-150U2	
	200~300		BODY: ASTM A216 WCB/PTFE LINED, TRIM: PTFE LINED, FF, CL150, WEIR RYPE, LO.	G41CF-150CF	
CHECK VALVE	25 ~150		BODY: CPVC, TRIM: CPVC, SWING TYPE, FF, CL150, LO.	H44PF-150U2	
	200~300		BODY: ASTM A216 WCB/PTFE LINED, TRIM: PTFE LINED, SWING TYPE, FF, CL150.	H44CF-150CF	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
BOLT/NUT/ WASHER			ASTM A307 Gr.B/ASTM A563 Gr.A GALVANISED MACHINE BOLTS AND HEXAGON NUTS, WITH TWO 200HV WASHER, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 100		FLAT GASKET, MOD. PTFE, FF, CL150, ASME B16.21, ASME B16.5,T=3.2mm GYLON STYLE 3545 OR EQUVALENT		
VALVE					
GLOBE VALVE	15 ~ 80		BODY : ASTM B62, BRONZE, TRIM: B62, J11T2-150T2 THREADED (NPT), CL150, HW.		
BALL VALVE	15 ~ 50		BODY: ASTM B62, BRONZE, TRIM: B62/PTFE, Q11F1-150T2 THREADED (NPT), CL150, FLOATING BALL, LO.		




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: U1A




BASIC MATERIAL:	CARBON STEEL PE COATED
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	1.6 mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
DESIGN FACTOR:	
SERVICE:	FW CWS CWR POC
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		




PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~40		ASTM A106 Gr. B,SMLS,PE, ASME B36.10M PE Externally Coated	SCH80	
	50~150		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M PE Externally Coated	SCH40	
	200~300		ASTM A106 Gr. B,SMLS,BE, ASME B36.10M PE Externally Coated	SCH20	
	350~450		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	SCH10	
	500~600		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	SCH20	
	700~1100		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	STD	
	1200		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	11.13mm	
	1400		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	11.91mm	
	1500		ASTM A672 Gr. B60 CL.12 , EFW, BE, ASME B36.10M PE Externally Coated	12.7mm	
PIPE NIPPLE					
	15~40		ASTM A106 Gr. B,SMLS,PBE, ASME B36.10M L=100mm PE Externally Coated	SCH80	4
	15~40		ASTM A106 Gr. B,SMLS,POEXTOE, ASME B36.10M L=100mm PE Externally Coated	SCH80	4

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه Middle East Kimiyayeh Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
FORGED FITTING					
ELBOW 90°	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
ELBOW 45°	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
TEE EQUAL	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
TEE REDU.	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG CON.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG CON.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PBE,MSS SP-95	AS PIPE	
SWG ECC.	20~40	15~25	ASTM A234 WPB, SMLS, PLEXTSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	50~100	15~40	ASTM A234 WPB, SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SOCKOLET	50~600	15~40	ASTM A105, SW, CL3000, MSS SP-97 PE Externally Coated		
WELDOLET	100~600	50~400	ASTM A105, BW,MSS SP-97 PE Externally Coated	AS PIPE	
COUPLING FULL	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
CAP	15 ~ 40		ASTM A105,SW, CL3000, ASME B16.11 PE Externally Coated		
GROOVED FITTING					
ELBOW 90°	50 ~ 300		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
ELBOW 45°	50 ~ 300		ASTM A234 WPB, LR, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, LR, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
TEE EQUAL	50 ~ 300		ASTM A234 WPB, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميائى پارس خاورميانه Middle East Kemiya Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
TEE REDU.	50 ~ 300		ASTM A234 WPB, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER CON.	50 ~ 300		ASTM A234 WPB, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER ECC.	50 ~ 300		ASTM A234 WPB, SMLS,BW,ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
CAP	50 ~ 300		ASTM A234 WPB, SMLS,BW, ASME B16.9 PE Externally Coated	AS PIPE	
	350~ 1500		ASTM A234 WPB, WELDED,BW,ASME B16.9 PE Externally Coated	AS PIPE	
FLANGE					
SW FLANGE	15 ~ 40		ASTM A105, SW-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	50 ~ 600		ASTM A105, WN-RF,CL150,ASME B16.5	AS PIPE	
WN FLANGE	700 ~ 1500		ASTM A105, WN-RF,CL150,ASME B16.47 B	AS PIPE	
BL FLANGE	15 ~ 600		ASTM A105, BL-RF,CL150,ASME B16.5		
FIGURE 8	15~300		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
BLANK	350~600		ASTM A515 Gr.70, RF,CL150, ASME B16.48		
SPACER	700~1500		ASTM A515 Gr.70, RF,CL150, MFR'S STD		
BLANK	700~1500		ASTM A515 Gr.70, RF,CL150, MFR'S STD		
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		
GASKET					
	15 ~ 600		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm KLINGER PSM-AS OR EQUAL.		
	700 ~ 1500		FLAT RING GASKET, SS REINFORCED GRAPHITE, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm KLINGER PSM-AS OR		

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
EQUAL.					
INSULATION GASKET KIT					
INSULATION GASKET	15 ~ 600		GLASS REINFORCED EPOXY G10, RF, CL150, ASME B16.21, ASME B16.5		
	700		GLASS REINFORCED EPOXY G10, RF, CL150, ASME B16.21, ASME B16.47 B		
INSULATION SLEEVE AND WASHER VALVE	15 ~ 700		GLASS REINFORCED EPOXY G10		
GATE VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SOLID WEDGE, BB, API 602, HW.	Z51H1-800C1	1
	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H1-150C1	1
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, NRS, API 600, HW.	Z45H1-150C2	
	350~400		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, NRS, API 600, BEVEL GEAR OP.	Z545H1-150C2	
	50 ~ 300		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, RS, API 600, HW.	Z40H1-150C2	
	350~400		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, NRS, API 600, BEVEL GEAR OP.	Z540H1-150C2	
BALL VALVE	15~40		ASTM A105, BALL: SS316, PTFE SEAT, SW, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, WITH NIPPLE, API 608, LO.	Q51F2-150C1	2
	15 ~ 40		ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1	2
	50~100		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2	2
	150		ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GEAR OP.	Q341F2-150C2	2
GLOBE VALVE	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H1-150C1	1
	50~ 150		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150,	J41H1-150C2	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياى پارس خاورميانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
Licensors: HALDOR TOPSOE 	TOPSOE No.		Rev. :Z01	Page : 158 of 174	

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			PARABOLIC DISC, BB, BS1873, HW OP.		
	200		BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, GEAR OP.	J541H1-150C2	
CHECK VALVE	15 ~40		BODY: ASTM A105, TRIM: 13Cr/STL, SW, CL800, LIFT PISTON, BC, API 602.	H51H1-800C1	1
	15 ~ 40		BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC, API 602.	H41H1-150C1	1
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44H1-150C2	
	50~ 600		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2	3
BUTTERFLY VALVE	80~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2	2,3
	150~ 600		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, WAFER LUG TYPE, API 609 CATEGORY B, GEAR OP.	D372F1-150C2	2,3
	80~ 100		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2	2
	150~ 1500		BODY: ASTM A216 WCB, DISC: SS304, SEAT: RPTFE, RF, CL150, FLANGED TYPE, API 609 CATEGORY B, GEAR OP. MATCH ASME B16.5 OR ASME B16.47 B	D342F1-150C2	2

NOTES:

- For DN40 and below, threaded valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
- Can only be used bellow 150°C.
- Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
- All inline pipe fittings and pipe accessories (excluding gaskets and fasteners) shall be PE externally PE coated as per MEKPCO-11-BE-9000-PI-SPC-011 Standard Engineering specification for Coat and Wrap.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه Middle East Chemicals Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PIPE CLASS: U1B




BASIC MATERIAL:	GALVANISED CARBON STEEL PE COATED
FLANGE RATING & FACING:	CL150 RF
CORROSION ALLOWANCE:	0 mm
TEMPERATURE LIMIT:	425
STRESS RELIEF:	ASME B31.3
DESIGN FACTOR:	
SERVICE:	PW
SERVICE LIMITE:	

DESIGN TEMP.(°C):	≤38	50	100	150	200	250	300	350	375	400	425		
DESIGN PRESS. (Barg):	19.6	19.2	17.7	15.8	13.8	12.1	10.2	8.4	7.4	6.5	5.5		

PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
PIPE					
	15~50		ASTM A53 Gr.B/GALV SMLS,PE, ASME B36.10M PE Externally Coated	SCH80	
	80		ASTM A53 Gr. B/GALV,SMLS,PE, ASME B36.10M PE Externally Coated	SCH40	
	100~150		ASTM A53 Gr. B,SMLS,BE, ASME B36.10M PE Externally Coated	SCH40	
PIPE NIPPLE					
	15~50		ASTM A53 Gr. B/GALV., SMLS, TBE, ASME B36.10M L=100mm PE Externally Coated	SCH80	4
FORGED FITTING					
ELBOW 90°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
ELBOW 45°	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
TEE EQUAL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
TEE REDU.	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
SWG CON.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG CON.	100	15~80	ASTM A234 WPB/GALV., SMLS, BLEXPSE,MSS SP-95 PE Externally Coated	AS PIPE	
SWG ECC.	20~80	15~50	ASTM A234 WPB/GALV., SMLS, TBE,MSS	AS PIPE	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيمياي پارس خاورميانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			SP-95 PE Externally Coated		
SWG ECC.	100	15~80	ASTM A234 WPB/GALV., SMLS, BLEXPSE, MSS SP-95 PE Externally Coated	AS PIPE	
THREADOLET	100~150	15~80	ASTM A105/GALV., SW, CL3000, MSS SP-97 PE Externally Coated		
WELDOLET					
COUPLING FULL	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
CAP	15 ~ 80		ASTM A105/GALV., NPT, CL3000, ASME B16.11 PE Externally Coated		
GROOVED FITTING					
ELBOW 90°	100 ~ 150		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
ELBOW 45°	100 ~ 150		ASTM A234 WPB, LR, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
TEE EQUAL	100 ~ 150		ASTM A234 WPB, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
TEE REDU.	100 ~ 150		ASTM A234 WPB, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER CON.	100 ~ 150		ASTM A234 WPB, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
REDUCER ECC.	100 ~ 150		ASTM A234 WPB, SMLS, BW, ASME B16.9 PE Externally Coated	AS PIPE	
CAP	100 ~ 150		ASTM A234 WPB, SMLS, BW, ASME B16.9	AS PIPE	
FLANGE					
Th FLANGE	15 ~ 80		ASTM A105/GALV., Th (NPT)-RF, CL150, ASME B16.5	AS PIPE	4
WN FLANGE	100 ~ 150		ASTM A105, WN-RF, CL150, ASME B16.5	AS PIPE	
BL FLANGE	15 ~ 80		ASTM A105/GALV., BL-RF, CL150, ASME B16.5		
	100 ~ 150		ASTM A105., BL-RF, CL150, ASME B16.5		
FIGURE 8	15 ~ 80		ASTM A515 Gr.70/GALV., RF, CL150, ASME B16.48		
	100 ~ 150		ASTM A515 Gr.70, RF, CL150, ASME B16.48		
SPACER					
BLANK					
FASTENER					
BOLT/NUT			A193 B7/A194 2H, GALVANISED, STUD BOLTS WITH TWO HEAVY HEX NUTS, FULL		




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه Middle East Kimiya Pars Co.
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
			THREAD, UNC THREAD TO ASME B1.1, ASME B18.2.1/ B18.2.2.		

GASKET					
	15 ~ 150		FLAT GASKET, SYNTHETIC FIBER WITH NITRILE BINDER, RF, CL150, ASME B16.21, ASME B16.5,T=3.2mm BG3000 OR EQUAL.		

INSULATION GASKET KIT					
INSULATION GASKET	15 ~ 150		GLASS REINFORCED EPOXY G10, RF, CL150, ASME B16.21, ASME B16.5		
INSULATION SLEEVE AND WASHER	15 ~ 150		GLASS REINFORCED EPOXY G10		




PART	NPS (L)	DESCRIPTION	COMMODITY CODE	NOTE
VALVE				
GATE VALVE	15 ~80	BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, SOLID WEDGE, BB, API 602, HW.	Z11H2-800C1P	1
	15 ~40	BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SOLID WEDGE, BB, API 602, HW.	Z41H2-150C1P	1
	50 ~ 150	BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, FLEXIBLE WEDGE, BB, NRS, API 600, HW.	Z45H2-150C2P	
BALL VALVE	15~80	ASTM A105, BALL: SS316, PTFE SEAT, Th(NPT)-F, CL800, FLOATING BALL, FULL BORE, THREE PIECE, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q11F2-800C1P	2
	15 ~ 40	ASTM A105, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO.	Q41F2-150C1P	2
	50~100	ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, LO	Q41F2-150C2P	2
	150	ASTM A216 WCB, BALL: SS316, PTFE SEAT, RF, CL150, FLOATING BALL, FULL BORE, SPLIT BODY, ANTIC STATIC AND FIRE SAFE DESIGN, API 608, GEAR OP.	Q341F2-150C2P	2
GLOBE VALVE	15 ~ 80	BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, SWIVEL PLUG, BB, API 602, HW OP.	J11H2-800C1P	1
	15 ~ 40	BODY: ASTM A105, TRIM: 13Cr/STL, RF, CL150, SWIVEL PLUG, BB, API 602, HW OP.	J41H2-150C1P	1
	50~ 150	BODY: ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, PARABOLIC DISC, BB, BS1873, HW OP.	J41H2-150C2P	

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميائى پارس خاورميانه <i>Middle East Chemicals Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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PART	NPS (L)	NPS (S)	DESCRIPTION	SCH	NOTE
CHECK VALVE	15 ~80		BODY: ASTM A105, TRIM: 13Cr/STL, Th(NPT)-F, CL800, LIFT PISTON, BC, API 602.	H11H2-800C1P	1
	15 ~ 40		BODY: ASTM A105,TRIM: 13Cr/STL, RF, CL150, LIFT PISTON, BC,API 602.	H41H2-150C1P	1
	50~ 150		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, SWING, BC, BS1868, ASME B16.34.	H44H2-150C2P	
	50~ 150		ASTM A216 WCB, TRIM: 13Cr/STL, RF, CL150, DUAL PLATE WAFER TYPE, API594.	H76H-150C2P	3
BUTTERFLY VALVE	50~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,WAFER LUG TYPE, API 609 CATEGORY B, LEVER OP.	D72F1-150C2P	2,3
	150		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150, WAFER LUG TYPE, API 609 CATEGORY B, GEAR OP.	D372F1-150C2P	2,3
	50~ 100		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGED TYPE, API 609 CATEGORY B, LEVER OP.	D42F1-150C2P	2
	150		BODY: ASTM A216 WCB,DISC: SS304, SEAT: RPTFE, RF,CL150,FLANGED TYPE, API 609 CATEGORY B, GEAR OP. MATCH ASME B16.5 OR ASME B16.47 B	D342F1-150C2P	2




NOTES:

1. For DN80 and below, threaded valves shall be used wherever possible. Flanged valves may be used for pumps, equipment connections, tank nozzles and instruments.
2. Can only be used bellow 150°C.
3. Don't connect wafer check valve directly with wafer butterfly valve without spool piece.
4. All inline pipe fittings and pipe accessories (excluding gaskets and fasteners) shall be PE externally PE coated as per MKP-11-BE-9000-PI-SPC-011 Standard Engineering specification for Coat and Wrap.
5. In this pipe class, galvanized pipes and fittings shall be hot dip galvanized.




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت کیمیای پارس خاورمیانه <i>Middle East Kimiyay Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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WALL THICKNESS TABLE




DN	Pipe O.D	Pipe Class							
		B24, B24A , B24U, C1A		D24		F24		H34	
10	17.1								
15	21.3	Sch80	3.73	Sch80	3.73	SCH160	4.78	SCH160	4.78
20	26.7		3.91		3.91		5.56		5.56
25	33.4		4.55		4.55		6.35		6.35
40	48.3		5.08		5.08		7.14		7.14
50	60.3	Sch40	3.91	Sch40	3.91	SCH80	5.54		8.74
80	88.9		5.49		5.49		7.62		11.13
100	114.3		6.02		6.02		8.56		13.49
150	168.3		7.11		7.11		10.97		18.26
200	219.1	SCH20	6.35	Sch30	8.18		12.7	SCH140	20.62
250	273		6.35		7.80		15.09		25.4
300	323.8		6.35		8.38		17.48		28.58
350	355.6	SCH20	7.92		9.53		19.05		31.75
400	406.4		7.92		9.53		21.44		36.53
450	457		7.92		11.13		23.83		39.67
500	508	SCH20	9.53		12.7		26.19		44.45
600	610		9.53		14.27		30.96		52.37
700	711	STD	9.53		15.88		32		
750	762		9.53		15.88		32		
800	813		9.53		15.88		32		
850	864								36
900	914		9.53						
1000	1016		9.53						
1050	1067		9.53						
1100	1118		9.53						
1200	1219		11.13						
1400	1422		11.91						
1500	1524		12.7						
1600	1626		14.27						
1800	1829		15.88						

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شركت كيميای پارس خاورميانه <i>Middle East Kemiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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DN	Pipe O.D	Pipe Class							
		H24		B40, B50, S1A, S1B		D40		F40, F44	
10	17.1								
15	21.3	SCH160	4.78	SCH40S	2.77	SCH40S	2.77	SCH40S	2.77
20	26.7		5.56		2.87		2.87		
25	33.4		6.35		3.38		3.38		
40	48.3		7.14		3.68		3.68		
50	60.3		8.74		SCH10S		2.77		SCH10S
80	88.9	11.13	3.05	3.05		5.49			
100	114.3	SCH120	11.13	3.05	3.05	6.02			
150	168.3		14.27	3.4	SCH40S	7.11	7.11		
200	219.1		18.26	3.76	SCH30	7.04	8.18		
250	273		21.44	4.19		7.8	9.27		
300	323.8		25.4	4.57	8.38	9.53			
350	355.6		27.79	4.78	9.53	9.53			
400	406.4		30.96	4.78	9.53	SCH80S	12.7		
450	457		34.93	4.78	11.13		12.7		
500	508		38.10	5.54	12.7	SCH40	15.09		
600	610			6.35	14.27		17.48		
700	711				15.88	19.05			
750	762				15.88	20.62			
800	813				15.88	22.23			
850	864				15.88	23.83			
900	914					25.4			
1000	1016								
1200	1219								
1400	1422								
1500	1524								
1600	1626								
1800	1829								

Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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DN	Pipe O.D	Piping Class Code					
		N2C (PVC-C) S6.3 (PN16)	N0A (PVC-U) Gravity Flow	N2D (PP-R) S5	N2A (PE80)		
15	20	1.5		1.9	2.3		
20	25	1.9		2.3	3.0		
25	32	2.4	3.0	2.9	3.6		
32	40	3.0	3.0	3.7	4.5		
40	50	3.7	3.0	4.6	5.6		
50	63	4.7	3.0	5.8	7.1		
65	75	5.6	3.0	6.8	8.4		
80	90	6.7	3.0	8.2	10.1		
100	110	8.1	3.2	10			
125	140	10.3					
150	160	11.8	3.2				
200	225	14.7					
250	250						
250	280	15.0					
300	315	17.5					
350	355						
400	400						
500	500						




Contractor:  TIANCHEN CORP. CHINA	Project	MEKPCO Methanol Project			Owner :  شرکت کیمیای پارس خاورمیانه <i>Middle East Kimiya Pars Co.</i>
	Unit	General Technical	PHASE	As Built Drawing	
	Doc. Title	Piping Material Class			
	Owner No.	MKP-11-AS-9000-PI-SPC-006			
	Contractor No.	MKP-11-AS-9000-MC03-SPC-001			
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DN	Pipe O.D	U1A						
10	17.1							
15	21.3	Sch80	3.73					
20	26.7		3.91					
25	33.4		4.55					
40	48.3		5.08					
50	60.3	Sch40	3.91					
80	88.9		5.49					
100	114.3		6.02					
150	168.3		7.11					
200	219.1	SCH20	6.35					
250	273		6.35					
300	323.8		6.35					
350	355.6	SCH10	6.35					
400	406.4		6.35					
450	457		6.35					
500	508	SCH20	9.53					
600	610		9.53					
700	711	STD	9.53					
750	762		9.53					
800	813		9.53					
850	864							
900	914		9.53					
1000	1016		9.53					
1050	1067		9.53					
1100	1118		9.53					
1200	1219		11.13					
1400	1422		11.91					
1500	1524		12.7					
1600	1626		14.27					
1800	1829		15.88					

Contractor:  TIANCHEN CORP. CHINA	PROJECT	MKP Methanol Project			Owner :  شركة كينلونج الشرق الأوسط Middle East Kinlong Pipe Co.	
	UNIT	General Technical	PHASE	As Built Drawing		
	Doc. Title :	Engineering Standard Specification for Piping Material Marking				
	Owner No.	MKP-11-AS-9000-PI-SPC-007				
	Contractor No.	MKP-11-AS-9000-MC13-SPC-001				
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Engineering Standard Specification for Piping Material Marking

Z01	30.04.2020	As Built	Liu Jianxin	Liu Man	Wang Meng
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Contractor:  TIANCHEN CORP. CHINA	PROJECT	MKP Methanol Project			Owner :  شركت كيميايي پارس خاورميانه Middle East Rimlago Pars Co.	
	UNIT	General Technical	PHASE	As Built Drawing		
	Doc. Title :	Engineering Standard Specification for Piping Material Marking				
	Owner No.	MKP-11-AS-9000-PI-SPC-007				
	Contractor No.	MKP-11-AS-9000-MC13-SPC-001				
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1. SCOPE

- (1) This specification covers general requirements related to the identification and marking of piping materials by color coding and marking (including stamping, stenciling, pressing, cast molding, etc.) for the MEKPCO Methanol Project.
- (2) This specification applies to the following types of piping material:
 - ① Pipe
 - ② Butt Welding Fitting
 - ③ Forged Fitting
 - ④ Flanges and Orifice Flange
 - ⑤ Bolts and Nuts
 - ⑥ Valves
 - ⑦ Gaskets

2. GENERAL

- (1) Identification shall be done by painting discrimination color and/or marking.
- (2) Punching depth shall not exceed 1 mm.
- (3) Stenciling color shall be black, however for piping components whose surfaces are black or dark, it shall be white.
- (4) The identification shall be clearly indicated and shall not be easily erasable.
- (5) The quality of paint or ink as applied shall be such that it shall have a life of not less than 1 year in unheated storage under cover without loss of any definition. The dried film shall not contain more than 0.025% by mass of each of the following metals, Lead, Tin, Zinc or Copper. Additionally the marking substance shall not contain sulphur or Halogens such as Chlorine.

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(6) Painting shall be done at locations such that there is no interference with the use of materials such as marking, welding bevels, etc.

(7) There shall be no chemical or physical reaction between the marking material and any protective coating used.

3. COLOR CODING

(1) Material shall be indicated by color coding. The color coding shall be performed by the manufacturer, except for color coding for wall thickness and for gaskets, as indicated in paragraph 5 of this specification.

(2) Colors for each material shall be as indicated in Table 1 "List of Color Coding for Material".

(3) Colors for each material wall thickness shall be as indicated in Table 2 "List of Color Coding for Wall Thickness".

(4) Paint colors are designated according to RAL system.

(5) Color coding for gaskets shall be performed at field and in accordance with Paragraph 7. Color Coding for Gaskets.










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Table 1 List of Color Coding for Material

MATERIAL SPECIFICATION	MATERIAL CATEGORY	COLOR	
Carbon Steel			
A106 Gr.B	PIPE	NONE	
A672 Gr. B60 CL.12	PIPE	NONE	
A53 Gr.B -S GALVANIZED	PIPE	NONE	
A53 Gr.B -W GALVANIZED	PIPE	NONE	
A234-WPB	FITTING	NONE	
A234-WPB-W	FITTING	NONE	
A234-WPB GALVANIZED	FITTING	NONE	
A105	FITTING	NONE	
A105 GALVANIZED	FITTING	NONE	
1-1/4CR-1/2MO			
A335-P11	PIPE	SKY BLUE	RAL 5015
A335-P22	PIPE	SKY BLUE	RAL 5015
A691-Gr. 1 1/4 Cr CL22	PIPE	SKY BLUE	RAL 5015
A234-WP11 CL2	FITTING	SKY BLUE	RAL 5015
A234-WP11-W CL2	FITTING	SKY BLUE	RAL 5015
A234-WP22	FITTING	SKY BLUE	RAL 5015
A182-F11 CL2	FITTING	SKY BLUE	RAL 5015
TYPE 304SS			
A312-TP304	PIPE	NONE	
A312-TP304 EFW	PIPE	NONE	
A403-WP304S	FITTING	NONE	
A403-WP304WX	FITTING	NONE	
A182-F304	FITTING	NONE	
A182-F304	FLANGE	NONE	
TYPE 304 SS FOR OXYGEN SERVICE WITH INTERNAL SURFACE REQUIREMENT			
A312-TP304(S)	PIPE	YELLOW	RAL 1023
A403-WP304S (S)	FITTING	YELLOW	RAL 1023
A182-F304 (S)	FITTING	YELLOW	RAL 1023

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A182-F304 (S)	FLANGE	YELLOW	RAL 1023
TYPE 304L SS			
A312-TP304L	PIPE	ORANGE	RAL 2011
A312-TP304L EFW	PIPE	ORANGE	RAL 2011
A358 Gr.304L CL1	PIPE	ORANGE	RAL 2011
A403-WP304LS	FITTING	ORANGE	RAL 2011
A403-WP304LWX	FITTING	ORANGE	RAL 2011
A182-F304L	FITTING	ORANGE	RAL 2011
A182-F304L	FLANGE	ORANGE	RAL 2011
TYPE 316SS			
A312-TP316	PIPE	PINK	RAL3015
A312-TP316 EFW	PIPE	PINK	RAL3015
A403-WP316S	FITTING	PINK	RAL3015
A403-WP316WX	FITTING	PINK	RAL3015
A182-F316	FITTING	PINK	RAL3015
A182-F316	FLANGE	PINK	RAL3015
TYPE 316L SS			
A312-TP316L	PIPE	GREEN	RAL6016
A312-TP316L EFW	PIPE	GREEN	RAL6016
A403-WP316LS	FITTING	GREEN	RAL6016
A403-WP316L WX	FITTING	GREEN	RAL6016
A182-F316L	FITTING	GREEN	RAL6016
A182-F316L	FLANGE	GREEN	RAL6016
TYPE 321 SS			
A312-TP321	PIPE	WHITE	RAL9003
A358-321 EFW CLASS 1 100% RT	PIPE	WHITE	RAL9003
A403-WP321 S	FITTING	WHITE	RAL9003
A403-WP321WX	FITTING	WHITE	RAL9003
A182-F321	FITTING	WHITE	RAL9003
A182-F321	FLANGE	WHITE	RAL9003
TYPE 321H SS			
A312-TP321H	PIPE	RED	RAL3001
A403-WP321H-S	FITTING	RED	RAL3001
A182-F321H	FITTING	RED	RAL3001
A182-F321H	FLANGE	RED	RAL3001

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NON FERROUS METAL			
TYPE MONEL			
B165 N04400 ANNEALED	PIPE	NONE	
B366 N04400	FITTING	NONE	
B564 N04400	FITTING	NONE	
B564 N04400	FLANGE	NONE	

Table 2 List of Color Coding for Wall Thickness

WALL THICKNESS	COLOR	
SCH 10 AND SCH 10S	BLACK	RAL 9017
SCH 20	WHITE	RAL9003
SCH 30	GREEN	RAL6016
SCH 40 AND SCH 40S	LIGHT GREEN	RAL6027
SCH 60	SKY BLUE	RAL 5015
SCH 80 AND SCH 80S	ORANGE	RAL 2011
SCH 100	RED	RAL 3001
SCH 120	BLUE	RAL5012
SCH 140	BROWN	RAL8004
SCH 160	PINK	RAL3015
STD	YELLOW	RAL 1023
XS	WHITE+GREEN	RAL9003+ RAL6016
XXS	WHITE+LIGHT GREEN	RAL9003+ RAL6027
11.91 mm	WHITE+SKY BLUE	RAL9003+ RAL 5015
12.7 mm	WHITE+ORANGE	RAL9003+ RAL 2011
14.27 mm	WHITE+RED	RAL9003+ RAL 3001
15.88 mm	WHITE+BLUE	RAL9003+ RAL5012
17.48 mm	WHITE+BROWN	RAL9003+ RAL8004
19.05 mm	WHITE+PINK	RAL9003+ RAL3015
20.05 mm	WHITE+YELLOW	RAL9003+ RAL 1023
20.62 mm	WHITE+BLACK	RAL9003+ RAL 9017
22.23 mm	BLACK+GREEN	RAL9017+ RAL6016
23.83 mm	BLACK+LIGHT GREEN	RAL9017+ RAL6027
30 mm	BLACK+SKY BLUE	RAL9017+ RAL 5015
32 mm	BLACK+ORANGE	RAL9017+ RAL 2011
34 mm	BLACK+RED	RAL9017+ RAL 3001
36 mm	BLACK+BLUE	RAL9017+ RAL5012




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38 mm	BLACK+BROWN	RAL9017+ RAL8004
42 mm	BLACK+PINK	RAL9017+ RAL3015
44 mm	BLACK+YELLOW	RAL9017+ RAL 1023
46 mm	RED+GREEN	RAL3001+ RAL6016
50 mm	RED+LIGHT GREEN	RAL3001+ RAL6027
60 mm	RED+SKY BLUE	RAL3001+ RAL 5015
64 mm	RED+ORANGE	RAL3001+ RAL 2011
68 mm	RED+BLUE	RAL3001+ RAL5012
73 mm	RED+BROWN	RAL3001+ RAL8004

4. MARKING

4.1 Method of Marking

- 4.1.1** Marking may be done either by stamping, pressing, stenciling, molding, etc. Stencil marks must not be easily erasable and chloride free water-insoluble ink shall be used.
- 4.1.2** Marking shall be carried out firstly by the manufacturer and if necessary by the stockiest who should ensure that the marking is in a good condition and easily legible. Fabricator shall ensure that the marks are correctly transferred to the fabricated item.
- 4.1.3** Pipe and tube shall be marked by stenciling minimum one part of the piece.
- 4.1.4** In case it is physically impossible to apply the required marking (e.g. small size) it would be accepted to apply the marking on a durable, securely affixed metal tag or to codify the marking.
- 4.1.5** If applied, those plans shall be mentioned in fabrication procedure and get prior approval from OWNER/TCC.
- 4.1.5** If vendor find or intend to select alternative procedure, vendor shall get the written approval by OWNER/TCC before commencement of such marking work.
- 4.1.6** Marking shall be carried out, in general, with regard to the following matters using easily identifiable symbols.

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- (1) Size (nominal diameter)
- (2) Wall Thickness (schedule number)
- (3) Rating
- (4) Material Symbol
- (5) Manufacturer's Name or Trade Mark
- (6) Vendor Work Number, Manufacturing Number or Heat No.

4.2 Definitions of Identification Symbols

- (1) Size (nominal diameter)

The nominal sizes of piping shall be indicated in "inches". The unit designation may be omitted.

- (2) Schedule Number or Rating

The schedule numbers or rating number of items whose wall thicknesses are required to be so indicated shall have the letters "Sch." preceding the number, wall thickness of other items shall be indicated in millimeters, with the unit designation omitted.

- (3) Material Symbol

Material is indicated by the symbol denoting the steel type, according to the following example.




Example: A53-S-Gr. B TP:S SMLS,

A106-Gr. B SMLS

A312-TP-304

- (4) Manufacturer's Name or Trade Mark

The manufacturer's name or trade mark of abbreviated form of company name of the manufacturer (or vendor) shall be affixed on the products.

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(5) Vendor Work Order No., Manufacturing No. or Heat No.

These identification numbers are assigned to each specific order from purchaser, and will be the key to fabricator's production control.

5. MARKING PROCEDURE

Color coding and marking shall be done according to the following procedures. Refer to par. 6 color coding method.

SCOPE OF MARKING AND COLOR CODING WORK			
	MARKING	MATERIAL COLOR	THICKNESS COLOR
Pipes	M	M/F (NOTE)	F
B. W. Fittings	M	M	F
Forged Fittings	M	-	-
Flanges	M	M	F
Orifice Flange	M	M	F
Bolts and Nuts	M	-	-
Valves	M	-	-
M: Manufacturer		F: Field	




NOTE: 1-1/2 Under straight pipe material code painting work by field site.

5.1 Pipes

5.1.1 Marking

The manufacturer's standard marking shall include the following matters.

- (1) Nominal Diameter
- (2) Schedule No. (wall thickness)
- (3) Material Symbol
- (4) Trade Mark
- (5) Work No., Mfg. No. or Heat No.

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5.1.2 Color Coding

The colors denoting material, as described in Para. 3. "COLOR CODING" shall be painted, along the whole length of a pipe, in the manner shown in Fig. 1.

5.2 Butt Welding Fittings

5.2.1 The marking shall indicate the following:

- (1) Size (nominal diameter)
- (2) Wall Thickness (schedule number)
- (3) Material Symbol
- (4) Manufacturer's Name or Trade Mark
- (5) Work No., Mfg. No. or Heat No.

5.2.2 The colors denoting material, as described in para. 3 "COLOR CODING" shall be painted in the manner shown in Fig. 1.

5.3 Forged Fittings




The marking shall indicate the following:

- (1) Nominal Diameter
- (2) Rating
- (3) Manufacturer's Trade Mark of Abbreviations

5.4 Flanges and Orifice Flange

The marking which shall be done on the side of the flanges, shall indicate the following:

- (1) Rating
- (2) Size (nominal diameter)
- (3) Shape

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(4) Material Symbol

(5) Manufacturer's Trade Mark or Abbreviations

(6) Work No., Mfg. No. or Heat No.

5.5 Bolts and Nuts

The stamp marks given below shall be provided at the heads of machine bolts, one heads of stud bolts and one side of each nut.




BOLT OR NUT	MATERIAL	STAMPING MARK
Bolt	A193GrB7	B7
Nut	A194Gr2H	2H
Bolt	A193GrB16	B16
Nut	A194Gr4	4
Bolt	A307GrB	B
Nut	A563GrA	A
Bolt (Note)	A453-660-B	660-B
Nut (Note)	A453-660-B	660-B

Note: Refer to product marking ANSI-B1.1 ASTM SA-453/S A-453M par. 14.

5.6 Valves

All valves should be identified on the body or handle as follows:

- (1) Nominal diameter
- (2) Rating
- (3) Material Symbol (Body and trim material shall be identified as a minimum)
- (4) Trade Mark
- (5) Flow (If required, EX. Glove, check etc.)
- (6) Work Number or Manufacturing Number (Only for cast steel valve)
- (7) Valve Tag NO. defined in P&ID.

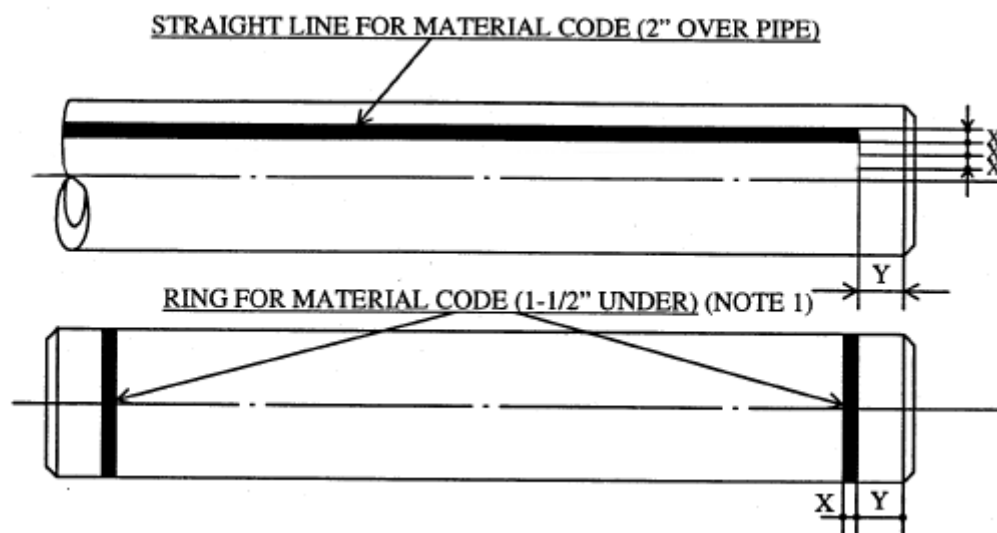
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Identification marks other than those in this specification shall be in accordance with the individual applicable specifications.

Note: Adhesive markers may be used for small bore items which would be difficult to mark otherwise.

In such cases the procedure shall be submitted for approval prior to use.




6. COLOR CODING METHOD



NOTE:

1. The straight line for material code(1 1/2" under) shall be painted at field site.

Fig. 1 (a) COLOR CODING OF PIPES

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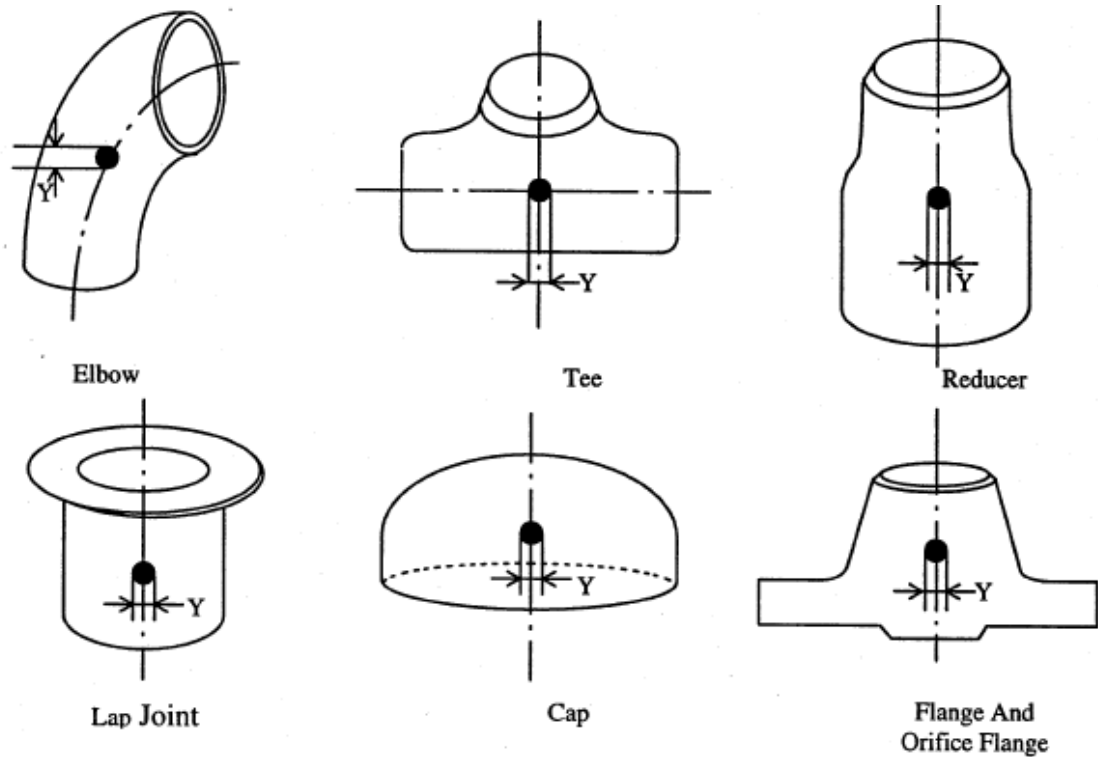





Fig. 1 (b) COLOR CODING OF BUTT WELDING FITTINGS

Width of Marking (mm)

Nominal Dia. (inch)	X	Y
1/2-1	3 ~ 5	15
1 1/4-2 1/2	5 ~ 8	20
3-6	8 ~ 10	25
8 and over	10 ~ 15	30

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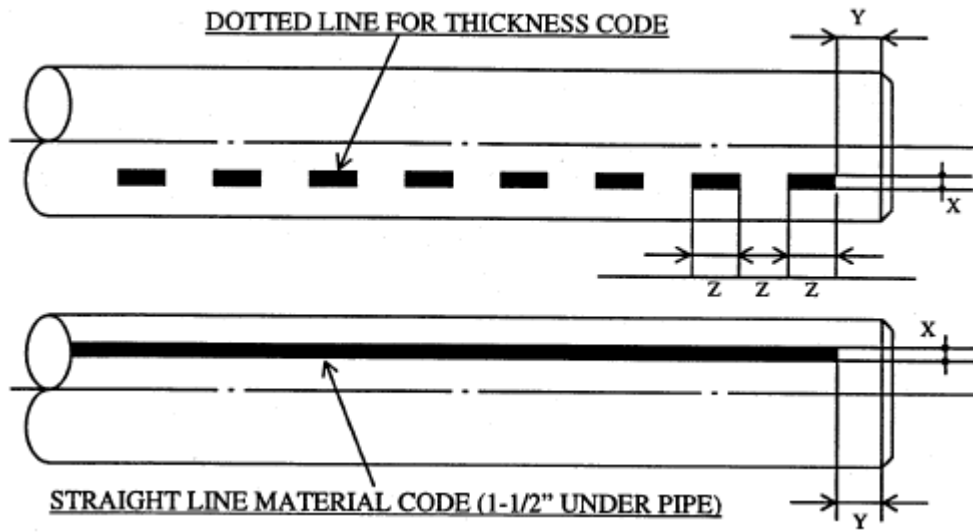





Fig. 2 (a) COLOR CODING OF PIPES AT FIELD (ONE COLOR)

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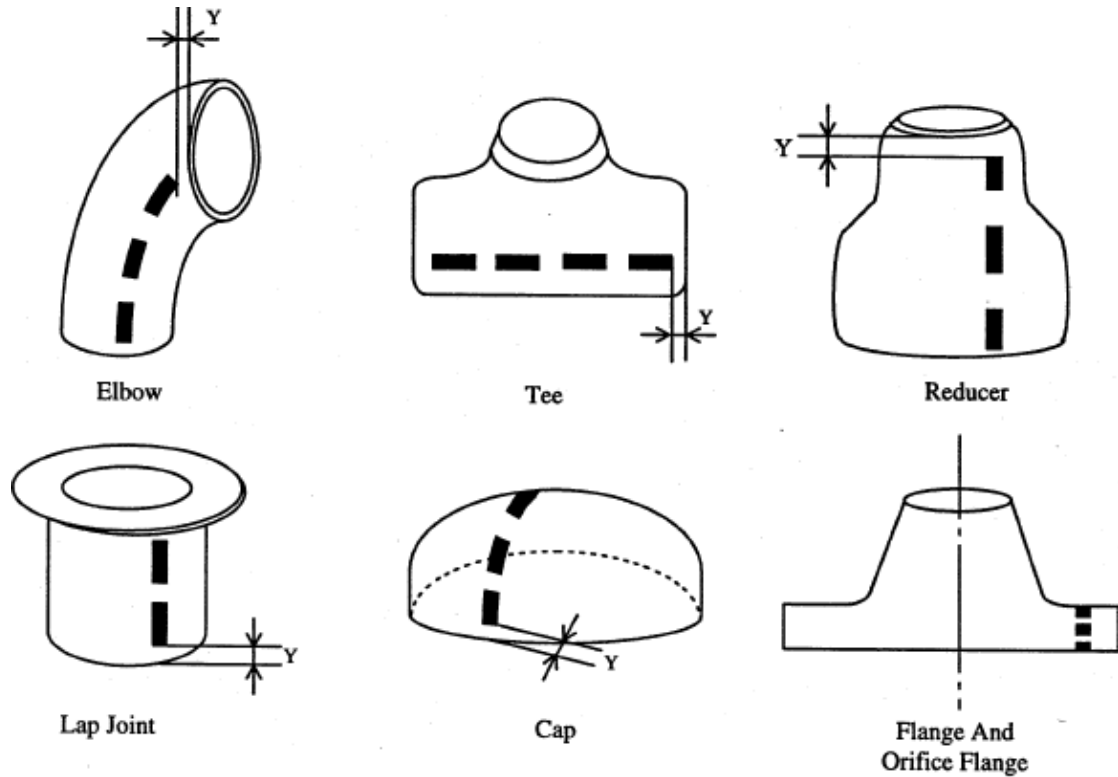





Fig. 2 (b) COLOR CODING OF BUTT WELDING FITTINGS AT FIELD (ONE COLOR)

Width of Marking (mm)

Nominal Dia. (inch)	Y	Z
1/2-1	15	15-50
1 1/4-2 1/2	20	20 - 50
3-6	25	25 - 100
8 and over	30	30 - 100

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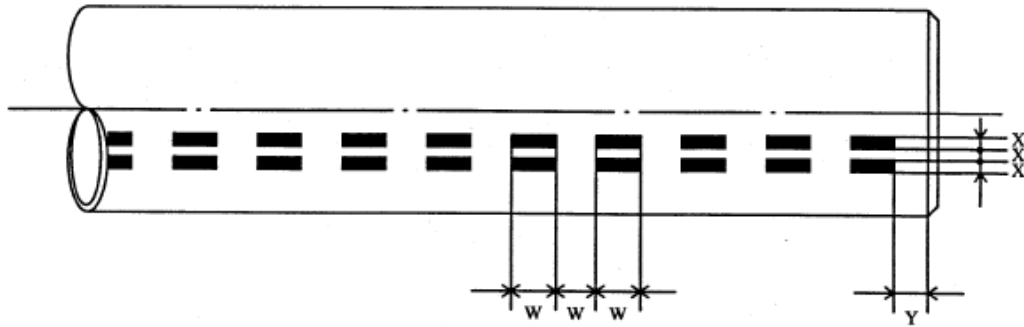


Fig. 3(a) COLOR CODING OF PIPES AT FIELD (TWO COLOR)

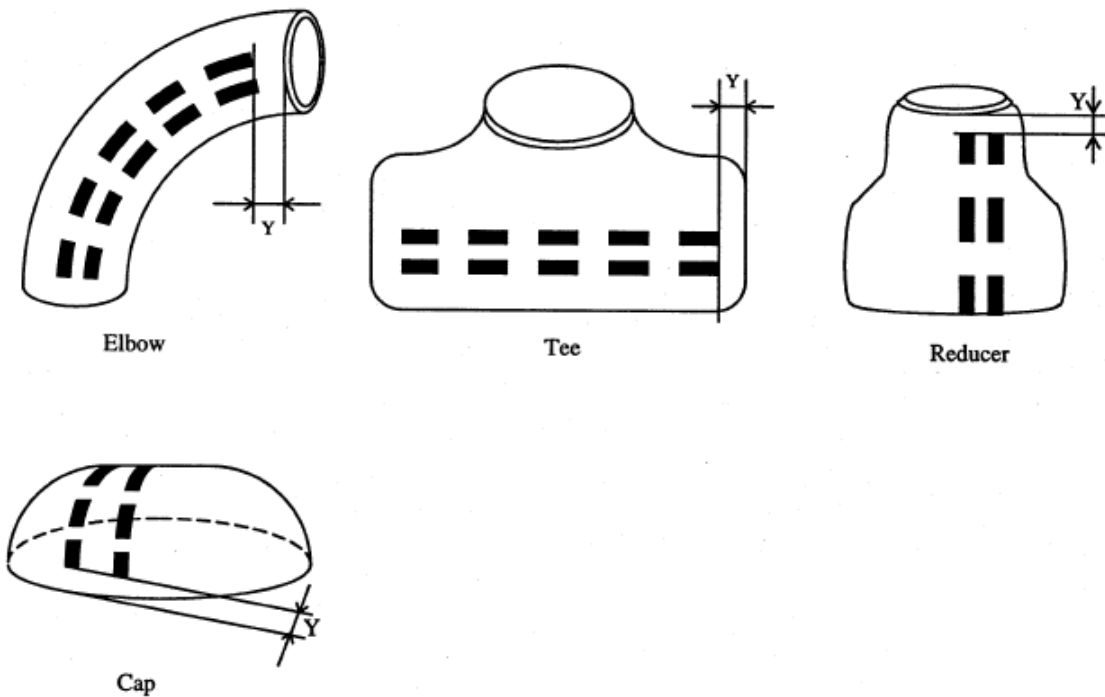





Fig. 3 (b) COLOR CODING OF BUTT WELDING FITTINGS AT FIELD (TWO COLOR)

Width of Marking (mm)

Nominal Dia. (inch)	W	X	Y	Z
8 and over	50	15	30	50

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7. COLOR CODING FOR GASKET (AT FIELD)

7.1 Material Color Coding

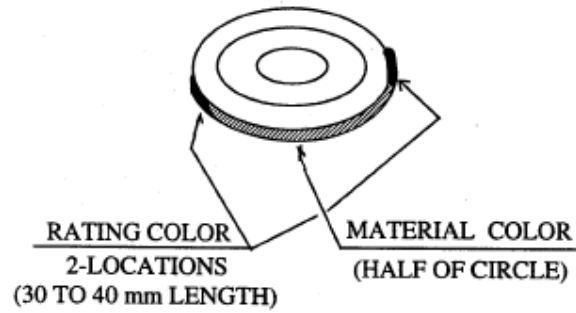
NO.	TYPE	WINDING	FILLER	INNER RING	OUT RING	COLOR	
1	FLAT	SS316	GRPH			YELLOW	RAL1023
2	FLAT	SYNTHETIC FIBER WITH NITRILE BINDER				RED	RAL3001
3	SPIRAL WOUND	N04400	THERMOCULITE	N04400	SS316	SKY BLUE	RAL1023
4	SPIRAL WOUND	SS316L	GRPH	SS316	CS	GREEN	RAL6016
5	SPIRAL WOUND	SS321	GRPH	SS321	CS	BLUE	RAL5012
6	RING	SOFT IRON				LIGHT GREEN	RAL6027
7	RING	A182 F5				BROWN	RAL8004
8	RING	A182 F304L				PINK	RAL3015
9	RING	A182 F321H				WHITE	RAL9003




7.2 Rating Color Coding (only for spiral wound gasket)

RATING	COLOR	
CL125/CL150	NONE	
CL300	RED	RAL3001
CL600	ORANGE	RAL 2011
CL900	PURPLE	RAL 4006
CL1500	BLACK	RAL 9017

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	Doc. Title :	Engineering Standard Specification for Piping Material Marking			
	Owner No.	MKP-11-AS-9000-PI-SPC-007			
	Contractor No.	MKP-11-AS-9000-MC13-SPC-001			
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7.3 Location of Color Coding



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	Unit	General Technical	PHASE	As Built Drawing		
	Doc. Title	Material Standard Specification for Piping Material Specification				
	Owner No.	MKP-11-AS-9000-PI-SPC-012				
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Material Standard Specification for Piping Material Specification

Z01	30.04.2020	As Built	Liu Jianxin	Liu Man	Wang Meng
1	11.05.2016	Final Issue	Liu Jianxin	Liu Man	Wang Meng
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REV.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED

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1. SCOPE

This specification covers the minimum mandatory requirements for the material specifications for piping, valves, and fittings for new piping for use in general, and utility services.

The preamble section of this instruction must be attached to the relevant selected piping class for MKP Methanol Project.




This specification shall be applied to piping material indicated on P&ID and utility flow diagrams. However, piping systems which are furnished as a regular part of proprietary or standardized equipment (or package facility) shall be in accordance with equipment manufacturer's standards.

2. REFERENCES

The selection of material, and the design, construction, maintenance, and repair of equipment and facilities covered by this instruction shall comply with the latest edition of the references listed below, unless otherwise noted.

2.1 Codes and Standards




ASME B1.1	Unified Inch Screw Threads (UN and UNR Thread Form)
ASME B1.20.1	Pipe Threads, General Purpose (Inch)
ASME B16.5	Pipe Flanges and Flanged Fittings NPS 1/2 through NPS 24 Metric/Inch Standard
ASME B16.9	Factory-Made Wrought Steel Butt Welding Fittings
ASME B16.10	Face-to-Face and End-to-End Dimensions of Valves
ASME B16.11	Forged Steel Fittings, Socket-Welding and Threaded
ASME B16.20	Metallic Gaskets for Pipe Flanges - Ring Joint, Spiral Wounds and Jacketed
ASME B16.21	Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.25	Butt Welding Ends
ASME B16.28	Wrought Steel Butt Welding Short Radius Elbows and Returns
ASME B16.34	Valves - Flanged, Threaded, and Welding End
ASME B16.36	Orifice Flanges
ASME B16.47	Large Diameter Steel Flanges NPS 26 through NPS 60
ASME B16.48	Steel line Blanks

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- ASME B18.2.1 Square and Hex Bolts and Screws (Inch Series)
- ASME B18.2.2 Square and Hex Nuts (Inch Series)
- ASME B31.3 Process Piping
- ASME B36.10M Welded and Seamless Wrought Steel pipe
- ASME B36.19M Stainless Steel Pipe
- ASME Code, Section VIII. Div.1
- API STD 594 Check Valves: Flanged, Lug, Wafer and Butt-welding
- API STD 598 Valve Inspection and Testing
- API STD 599 Metal Plug Valves - Flanged, Threaded and Welding Ends
- API STD 600 Bolted Bonnet Steel Gate Valves for Petroleum and Natural Gas Industries
- API STD 602 Steel Gate, Globe and Check Valves for Sizes DN 100 and Smaller for the Petroleum and Natural Gas Industries
- API STD 603 Corrosion-Resistant, Bolted Bonnet Gate Valves - Flanged and Butt-Welding Ends
- API STD 607 Fire Test for Soft-Seated Quarter-Turn Valves
- API STD 608 Metal Ball Valves—Flanged, Threaded and Welding Ends
- API STD 609 Butterfly Valves: Double Flanged, Lug- and Wafer-Type American Society of Mechanical Engineers

2.2 American Society for Testing and Materials

- ASTM A36 Carbon Structural Steel
- ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
- ASTM A105 Carbon Steel Forgings for Piping Applications
- ASTM A106 Seamless Carbon Steel Pipe for High-Temperature Service
- ASTM A182 Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service
- ASTM A193 Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
- ASTM A194 Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
- ASTM A216 Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service

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ASTM A234	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
ASTM A240	Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM A312	Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM A350	Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
ASTM A351	Castings, Austenitic, for Pressure-Containing Parts
ASTM A358	Electric-Fusion-Welded Austenitic Chromium-Nickel Stainless Steel Pipe for High-Temperature Service and General Applications
ASTM A395	Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures
ASTM A403	Wrought Austenitic Stainless Steel Piping Fittings
ASTM A515	Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher- Temperature Service
ASTM A672	Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures
ASTM A790/A790M	Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe
ASTM A815	Wrought Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings
ASTM B61	Steam or Valve Bronze Castings
ASTM B62	Composition Bronze or Ounce Metal Castings
ASTM B160	Nickel Rod and Bar
ASTM B161	Nickel Seamless Pipe and Tube
ASTM B162	Nickel Plate, Sheet, and Strip
ASTM B165	Standard Specification of Nickel-Copper Alloy (UNS N04400)* Seamless Pipe and Tube
ASTM B366	Factory-Made Wrought Nickel and Nickel Alloy Fittings
ASTMA494	Standard Specification for Castings, Nickel and Nickel Alloy
ASTM B564	Nickel Alloy Forgings

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2.3 British Standard (BS)

- BS 1868 Specification for steel check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
- BS 1873 Specification for steel globe and globe stop and check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries




2.4 European Standard (EN)

- EN 1092-1 Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated

3. DESIGN

3.1 General

- 3.1.1 All piping shall be designed, fabricated, installed, examined, and tested in accordance with applicable local codes and the applicable sections of ANSI B31.
- 3.1.2 The carbon content of carbon steel material to be welded shall not exceed 0.23%.
- 3.1.3 The use of flanges in piping, shall be limited to connections at flanged EQUIPMENT and valves. Flanges shall also be provided in special cases such as:
- (1) Where frequent dismantling of piping is required
 - (2) To provide clearances for dismantling of EQUIPMENT such as compressors, reactor heads, etc
 - (3) Where steel piping is connected to non-metallic or non-ferrous piping.
 - (4) Insulating flanges should be used for underground / above ground battery limits.
- 3.1.4 Reinforcing pads shall be the same material as the pipe.
- 3.1.5 Materials containing asbestos are prohibited.
- 3.1.6 Supports shall not be directly attached to alloy pipe by welding. Where welding is unavoidable supports having the same chemical composition as pipe shall be used.

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- 3.1.7 Flange shall be used for where steel piping is connected to non-metallic or non-ferrous piping.
- 3.1.8 Insulating flanges should be used for underground / above ground battery limits.
- 3.1.9 Pipe wall thickness shall be as indicated in the individual pipe classes. Where a heavier pipe wall thickness is used than required by the line classification, the inside of the connecting heavier pipe or fitting will be machined to an inside diameter equal to that of the lighter pipe or fitting with a taper 1:4.




3.2 Corrosion Allowance

The individual piping classes specify the amount of corrosion allowance included in the pipe wall and fitting schedules.

Corrosion allowance for carbon steel piping is 1.6mm as a minimum. Where services require additional corrosion allowance they shall be determined based on the criteria specified by Material Engineer.

3.3 Pipe

- 3.3.1 Carbon steel pipes used for process and/or steam lines shall be manufactured by open hearth, electric furnace or basic oxygen process.
- 3.3.2 Pipe sizes: 1¼", 2½", 3½", 5", 7", 9", 22" and 26" shall not be used except for connections to equipment requiring these sizes.
- 3.3.3 Pipe sizes smaller than 1/2" shall not be used except for instrumentation and analyser.
- 3.3.4 In general, where a specification break occurs between two connecting lines, the higher specification shall include the first block, check or relief valve on the lower specification line.
- 3.3.5 Pipe wall thickness is indicated in the individual pipe classes. Where a heavier pipe wall thickness is used than required by the line classification, the inside of the connecting heavier pipe or fitting will be machined to an inside diameter equal to that of the lighter pipe or fitting with a taper 1:4.
- 3.3.6 Nominal pipe size shall be specified in inches and wall thickness shall be shall be in accordance with ASME B36.10M and ASME B36.19M.




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3.4 Fittings

- 3.4.1 The type of fittings shall be in accordance with the individual piping classes.
- 3.4.2 Dimensions shall be as follows:
- (1) Socket welded and threaded fittings : ASME B16.11
 - (2) Butt welded fittings : ASME B16.9
- 3.4.3 Wall thickness of butt welding type fittings shall be equal to the nominal wall thickness of connected pipe.
- 3.4.4 When fittings are specified heavier than that of the pipe and this results in a misalignment greater than 1/16" between the inside surface of the components to be joined, the fitting shall be taper bored to reduce the difference to 1/16" maximum.
- 3.4.5 Directional changes in piping arrangements shall be 45°, 90° turns. Use of return bend fitting is not permitted. In this case two 90° elbows shall be used.
- 3.4.6 Butt welding elbows shall be generally of long radius type (R = 1.5 D). Short radius welding elbows (R=D) shall be used where required max clearance purposes and shall be indicated on piping drawings as "SR".
- 3.4.7 Fittings shall conform to the requirements of the following standard including any special requirements noted in individual piping material specification:
- (1) Butt welding fittings shall conform to ASME B 16.9.
 - (2) Forged socket welding and screwed fittings shall conform to ASME B16.II.
 - (3) Galvanized fittings shall conform to ASME B 16.11
- 3.4.8 Changes in line sizes shall be made by eccentric or concentric reducers and swages. Bushings, reducing elbows, reducing and straight laterals are not permitted except for instrument piping and sewers.

3.5 Flanges

- 3.5.1 Welding neck flanges, blind flanges, spectacle plates, spacers, and jack screws for carbon steel piping shall be in accordance with the ASME B16.5, ASME B16.47, B16.48, EN 1092 and Project Standards.
- 3.5.2 Dimensions shall be as follows:
- ASME (Class 150 - 1500 : 24" and smaller) : ASME B16.5
- ASME (Class 150 - 300 : 26" ~60" RF) : ASME B16.47 Series B
- ASME (Class 600 - 900 : 26" ~36" RF) : ASME B16.47 Series B
- ASME (Class 150 - 600 : 26" ~60" RJ) : ASME B16.47 Series A

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ASME (Class 900 : 26"~48" RJ) : ASME B16.47 Series A
EN1092 (Class 150: Larger than 60") : EN 1092




- 3.5.3 Flange facing finish of raised face and flat face shall be serrated finish in accordance with ASME B16.5. The resultant surface finish for raised face shall have a roughness of 125 to 250 Ra maximum. Finishes shall be judged by visual comparison with surface finish roughness standard conforming to ASME B46.1
- 3.5.4 Slip-on flanges are not permitted under any circumstances.
- 3.5.5 Lap joint flanges shall not be used under any circumstances.
- 3.5.6 Ring joint flanges shall have a flat bottom groove with the intersection between the bottom and the sides of the groove machined to a smooth 0.125 inch (3 mm) minimum radius.
- 3.5.7 Flat face flanges with full faced gaskets shall be used against flat face cast iron or non-metal valves and equipment.

3.6 Bolts and Nuts

- 3.6.1 Bolts and nuts shall be purchased in accordance with the specific ASTM number per individual piping class.
- 3.6.2 Bolting lengths for standard flanged joint shall be determined in accordance with ASME B16.5.
- 3.6.3 Studs shall be full length threaded and length shall be measured from first thread to the last thread.
- 3.6.4 Bolt/Nut threads shall be as per ASME B 1.1 (class 2A for bolts and 2B for nuts).
- 3.6.5 Nuts for bolts and studs shall be standard hexagonal heavy series in accordance with ASME B 18.2.2.
- 3.6.6 Bolts shall be protected by a rust preventive oil spray.

3.7 Gaskets

- 3.7.1 Dimensions shall be as follows:
- (1) Spiral wound gasket for RF : ASME B16.20
 - (2) Ring joint gasket : ASME B16.20
 - (3) Non-metallic gasket : ASME B16.21




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- 3.7.2 Spiral-wound gaskets shall be specified with inner rings in accordance with the individual piping class.
- 3.7.3 Full face gaskets shall be furnished with bolt hole punches.
- 3.7.4 Gasket shall be asbestos free.
- 3.7.5 Unless otherwise noted, lap joint shall be considered equivalent to RF flanges.

3.8 Valves

This section details the technical requirements for furnishing, delivering, and installing butterfly, globe, gate, check, plug, and ball valves.




- 3.8.1 Butterfly valves may be used for blocking or throttling purposes. As a rule, they shall be limited to water and air services.
- 3.8.2 Butterfly valve design shall meet the requirements of API 609..
- 3.8.3 Steel gate valves 2-½ inch and larger shall be designed and constructed in accordance with ASME B16.10 and API 600.
- 3.8.4 Steel globe valves 2-½ inch and larger shall be designed and constructed in accordance with BS1873.
- 3.8.5 Steel swing check valves 2-½ inch and larger shall be designed and constructed in accordance with BS1868.
- 3.8.6 Steel gate, globe and check valves 2 inches and smaller shall have their pressure ratings in accordance with ANSI B16.34 and shall be of forged material, and designed and constructed in accordance with API 602.
- 3.8.7 Gate and globe valves shall have bolted packing gland and a fixed backseat.
- 3.8.8 All forgings shall be clean and free from unacceptable defects. Repair of unacceptable defects is not allowed on forgings.
- 3.8.9 Ball valves shall be in accordance with API 608.
- 3.8.10 For ball valves with soft seats, socket weld ends and three piece body, to protect the body seat rings, the valve shall be taken apart before welding.
- 3.8.11 Ball, plug, and butterfly valves shall have blowout proof stems whose retention shall comply with ANSI B16.34, Paragraph 6.5.
- 3.8.12 Dual or single plate wafer check and swing check valves shall not be used before the suction and after the discharge of the reciprocating pumps and compressors or similar pulsating conditions.

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- 3.8.13 Flanged and weld-end valves shall conform to the face-to-face and end-to-end dimensions of ANSI B16.10 for each respective pressure class.
- 3.8.14 The valve and operator assemblies shall be designed and assembled so critical parts cannot become disengaged due to vibration and/or assemble orientation. Particular attention should be given to drive keys to assure that they are locked or “captured” by means other than press fits or the use of adhesives.
- 3.8.15 Gate and globe valves shall be provided with the manufacturer’s standard operator or hand-wheel for seating the valve.
- 3.8.16 Supply quarter turn valves with locking devices on the handles if required in the relative document.
- 3.8.17 Provide valve handle extensions of extended bonnets on valves installed in pipelines designated to be insulated. Handle extensions shall be suitable to provide a minimum of 2 inches clearance between the handle and the outside of the insulation jacket.
- 3.8.18 Soft seated quarter turn valves for flammable, explosive service shall be anti-static and fire safe design and shall be fire tested to API 607. Other valves shall be fire tested to API 6FA.
- 3.8.19 Gear or motor operated valves shall be provided as indicated on the Piping and Instrument Diagrams (P&IDs). If none are indicated, gear operators shall be equipped as bellow. Valves with chain or gear operators shall have an indicator to show if open or closed.

Pressure Class (Lb)	Gate	Globe
150	DN350 (14”) and over	DN200 (8”) and over
300	DN350 (14”) and over	DN200 (8”) and over
600	DN300 (12”) and over	DN150 (6”) and over
900	DN200 (8”) and over	DN150 (6”) and over
1500	DN150 (6”) and over	DN100 (4”) and over

Pressure Class (Lb)	Ball
150	DN150 (6”) and over
300	DN150 (6”) and over

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600	DN100 (4") and over	
900	DN80 (3") and over	

Pressure Class (Lb)	Plug	Butterfly
150	DN150 (6") and over	DN150 (6") and over
300	DN150 (6") and over	DN150 (6") and over
600		DN100 (4") and over

3.8.20 The preferred location for swing check, tilting check, and dual plate wafer check valves is in the horizontal run of piping. Gear operators for gate and globe valves shall be bevel type unless spur type are specifically stated in the requisition. Both bevel and spur gear operators shall be the type with 4 or 8 bolt mountings which allows them to be orientated on site any of 0° to 90° positions.

3.9 Vents, Drains, and Sample Connections

3.9.1 Valves at low point drains and high point vents shall be welded on the process side and threaded and plugged on the vent or drain side.

3.9.2 High point vents without valves shall have threaded fittings with plugs. Plugs in welded piping shall be seal welded after completion of field pressure testing.

3.9.3 Valves in vent and drain piping shall have the same trim as valves in the process piping.




3.10 Branch Connection

Branch connections for new construction of metallic piping shall be made in accordance with ASME B31.3.

3.11 Miscellaneous

(1) Threaded unions are permitted only for utility services such as air, water, nitrogen, and steam condensate. Unions shall be limited to ASME Class 300. Flanges shall be used in place of unions for socket welded piping.

(2) An anti-seize sealant compound shall be applied to threaded connections. Teflon tape of 1" width is an acceptable alternate for temperatures up to 400° F (205° C).

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	Unit	General Technical	PHASE	As Built Drawing		
	Doc. Title	Material Standard Specification for Piping Material Specification				
	Owner No.	MKP-11-AS-9000-PI-SPC-012				
	Contractor No.	MKP-11-AS-9000-MC02-SPC-001				
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- (3) Where seal welding of threaded connections is required, the use of anti-seize sealant is prohibited. Threaded connections shall be made up dry.
- (4) Above 200°C threaded joints shall be seal welded with a full strength fillet weld.
- (5) All threaded joints irrespective of pressure and temperature in lines carrying toxic fluid shall be seal welded with a full strength fillet weld.




4. PIPE CLASS

Detail material selection for each service see document MKP-11-BE-9000-PI-SPC-006 Piping Material Class.




5. **ABBREVIATIONS**

The following abbreviations are used in this instruction for piping and valve instructions:

BB	Bolted Bonnet
BC	Bolted Cover
BE	Beveled End
BL	Blind
BLE	Large End Bevel
BW	Butt Welding
CS	Carbon Steel
EFW	Electric Fusion Weld
ERW	Electric Resistant Weld
FF	Full Face (Flat Face)
GALV.	Galvanized
GO	Gear Operation
HF	Hard Faced
HW	Hand Wheel
LO	Lever Operation
LR	Long Radius
NPS	Nominal Pipe Size
NPTF	Female NPT Thread
NRS	Non Rising Stem
OD	Outside Diameter

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OP	Operation
OS&Y	Outside Screw and Yoke
PE	Plain End
PBE	Both End Plain
PB	Pressure Seal Bonnet
PLE	Large end plain
POE	One end plain
PSE	Small end plain
PC	Pressure Seal Cap
PTFE	Ploy tetra Fluoro ethylene
PWHT	Post Weld Heat Treatment
R	Radius
RF	Raised Face
RS	Rising Stem
RTFE	Reinforced PTFE
RJ	Ring Joint
(S)	With Smooth Internal Surface for Oxygen Service
SCH	Schedule
SF	Socket Fusion Bonded
SLD	Solid
SMLS	Seamless
SR	Short Radius
SS	Stainless Steel
STL	Stellite
SW	Socket Weld
TE	Threaded End
Th(NPT)-F	Female NPT thread
TBE	Both End Thread
TOE	One end thread
TSE	Small end thread
UB	Union Bonnet
WB	Welded Bonnet
WDG	Wedge
WN	Welding Neck

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WND

Wounded

6. COMMODITY CODING SYSTEM FOR VALVES

The valve type consists of the following parts.



For Example: Z541H1-150C2J

Part No.	No. of Digits	Description
1	1	Valves Type
2	1	Operation Type (HW, Lo will be omitted)
3	1	Type of Connection
4	1	Structural Style
5	2	Trim Material
6	3~4	Pressure Class
7	2	Body Material of the Valves
8	1	Additional information