

Piping & Valve Material Specification

PROJECT: BHUSAWAL 1X660MW

1. General

This specification covers the basic requirements for the design and materials of process and utility piping for the Gypsum dewatering system of Flue Gas Desulfurization Plant.

2. Material Selection

- 1) Basically, rubber lined pipes are selected to prevent the corrosion and erosion for process service, namely slurry line.
- 2) Class AA60 is applied according to process line conditions.
- 3) For utility services, other classes are applied.
- 4) In principle, piping material will conform to ASTM, but ASTM equivalent material specified by other authorized code may be applied.
- 5) Non-asbestos type shall be used for Packing and Gasket.

3. Design of Piping Component

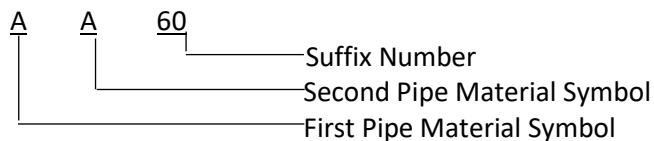
- 1) In principle, each component of all piping will be selected from ANSI ASME or international standard in the dimensions and other requirements.
- 2) Metric series are applied to the bolt thread.
- 3) Nozzle weld tees or extruded tees are used as branch connection in lined piping, in general.
- 4) Short radius elbow may be used for 550mm or larger size piping.
- 5) Fittings for 50 and smaller galvanized piping shall be of screwed type.

4. Piping Material

1) Symbols of Piping Service Class

Piping service class name is composed of the following symbols.

Example:



Note:

First Pipe Material Symbol	
A: Lining	AA: Rubber Lining
B : Stainless Steel/G.I	BA: 304 Stainless steel/G.I
C: Carbon Steel	CA: A53 Gr.B Welded
	CC: A53 Gr.B or A106 Gr.B/C
	CG: Galvanized

2) Class No. and Fluid Designation

CLASS NO.	FLUID NAME	SYMBOL	
AA60	Gypsum Slurry Filtrate Slurry Waste Water Duct Drain Belt filter Vent Gas	GS FS WW DD VBG	
BA01	Instrument Air Lube Oil (Low Pressure)	AI* LOL	*Inst. Air piping can be GI Pipe also.
CC01	Process Water Raw Water Cooling Water Supply Cooling Water Return Vacuum Pump Vent Antifoam Agent	WP WR WCS WCR VG AA	Note 1

Note I

Class AA60 shall also be applied for process water service line in contact with corrosive and abrasive media.

3) Abbreviations

Abbreviations used throughout this specification are as follows:

BB	:	Bolted Bonnet
BC	:	Bolted Cover
BE	:	Bevel End
BW	:	Butt Weld
CAL	:	Calculation
CR	:	Chloroprene Rubber
E	:	Electric Resistance Weld
EPDM	:	Ethylene Propylene Diene Methylene Rubber
Eq	:	Equal
FE	:	Flange End
FF	:	Flat Face
G. OP	:	Gear Operation
Gal.	:	Galvanized

HEX.	:	Hexagon
IIR	:	Isobutyl Isoprene Rubber
ISRS	:	Inside Screw Rising Stem
La	:	Larger
L.OP	:	Lever Operation
NB	:	Nominal Bore
NW	:	Nozzle Weld
OS&Y	:	Outside Screw & York
PE	:	Plane End
PP	:	Poly Propylene
PTFE	:	Poly Tetra Fluoro Ethylene
RF	:	Raised Face
R/L	:	Rubber lined or rubber seated
S	:	Seamless
SB	:	Screw Bonnet
SC	:	Screw Cover
SCH	:	Schedule No.
SCR'D	:	Screwed
Sm	:	Smaller
SO	:	Slip On
St.	:	Stellite
SW	:	Socket Weld
W	:	Weld
WN	:	Welding Neck
W/LINING	:	With Lining
V#	:	Valve No.
13 CR	:	13% CHROMIUM

CLASS	Max. Press. (MPaG)	1.0		C. A. mm
AA60 (1/1)	Max. Temp. (degC)	70		
FLUID	GYPSUM SLURRY			
ITEM	Size	Thickness	Specification	
PIPING	DN25 – DN50	Heavy	IS 1239 SML PE (I:R/L)	
	DN65 – DN150	Heavy	IS 1239 E. R. W BE (I:R/L)	
	DN200 – DN300	SCH20	IS 3589 Gr. 410 E. R. W BE (I:R/L)	
	DN350 – DN400	SCH10	IS 3589 Gr. 410 E. R. W BE (I:R/L)	
	DN450 – DN500	SCH10	IS 3589 Gr. 410 E. R. W BE (I:R/L)	
	DN550 –DN1000	7. 9T	IS 3589 Gr. 410 E. R. W BE (I:R/L)	
	DN1100–DN1200	9. 5T	IS 3589 Gr. 410 E. R. W BE (I:R/L)	
FITTING	DN25 – DN50	Suit to PIPE	SA234 WPB (I:R/L) ASME-B16. 9	
	DN65 – DN150	Suit to PIPE	SA234 WPB (I:R/L) ASME-B16. 9	
	DN200 – DN300	Suit to PIPE	SA234 WPB (I:R/L) ASME-B16. 9	
	DN350 – DN500	Suit to PIPE	SA234 WPB (I:R/L) ASME-B16. 9	
	DN550 –DN1000	Suit to PIPE	IS 2062 Gr. B (Plate formed) (I:R/L) ASME-B16. 9	
	DN1100–DN1200	Suit to PIPE	IS 2062 Gr. B (Plate formed) (I:R/L) ASME-B16. 9	
FLANGE	DN25 – DN600		S0 IS2062 Gr. B(Plate) FF (I:R/L) ASME-B16. 5 Cl. 150	
	DN650 –DN1800		S0 IS2062 Gr. B(Plate) FF (I:R/L) AWWA-C207 Cl. B	
PINCH VALVE	DN25 – DN150		PN 16 BODY-A126-B TRIM-13CR SLEEVE-CR LINING-IIR FF HAND WHEEL	
GASKET	DN25 – DN600		V-2000 RUBBER RUBBER OR EQ. ASME150 4.0 mm T FLAT RING	
	DN650 –DN1800		V-2000 RUBBER RUBBER OR EQ. AWWA CL. B 4.0 mm T FLAT RING	
BOLT & NUT	ALL SIZE		STUD U HEAVY NUT A307–GR. B/A563–GR. A FINISHED	
Note: I: R/L - Replaceable Wear Resistant Isobutyl Isoprene rubber lining of minimum 4mm thickness				

CLASS	Max. Press. (MPaG)	1		C. A. mm
BA01 (1/1)	Max. Temp. (degC)	45		
FLUID	INSTRUMENT AIR			
ITEM	Size	Thickness	Specification	
PIPING	DN6- DN150	Heavy	IS1239-I (Galv.) SML Screwed	
FITTING	DN6 - DN150	Suit to PIPE	IS1239-II (Galv.) Screwed	
FLANGE	DN6 - DN150		SO IS2062 Gr.B (Galv.) Screwed	
GATE VALVE	DN6 - DN50		API-602 PN 16 Body:A182-F304 Disc:AISI304 Stem:13%CR SW/NPT Thread for Inst Air BB, OS&Y HAND WHEEL	
	DN65 - DN250		ASME-B16.34 PN 16 Body:A351-CF8 Disc:AISI304 Stem:13%CR RF/BW BB, OS&Y HAND WHEEL	
GASKET	DN6 - DN150		V-6500 NON-ASBESTOS OR EQ. ASME150 4.0 mm T FLAT RING	
	DN200- DN250		V-6500 NON-ASBESTOS OR EQ. ASME150 4.0 mm T FLAT RING	
BOLT & NUT	ALL SIZE		STUD U HEAVY NUT A307-GR. B/A563-GR. A FINISHED	

CLASS	Max. Press. (MPaG)	0.11for VG	0.85 for Water	C. A. mm
CC01 (1/1)	Max. Temp. (degC)	155 for VG	45 for Water	
FLUID	WATER, VENT GAS			
ITEM	Size	Thickness	Specification	
PIPING	DN6 – DN50	Heavy	IS1239-I SML Screwed	
	DN65 – DN150	Heavy	IS1239 E. R. W BE	
	DN200 – DN300	SCH20	IS3589 Gr. 410 E. R. W BE	
FITTING	DN6 – DN150	Suit to PIPE	BW IS1239-II	
	DN200 – DN300		BW SA234-WPB ASME-B16.9	
FLANGE	DN6 – DN300		SO IS2062 Gr. B(Plate) RF ASME-B16.5 Cl.150	
GATE VALVE	DN6 – DN50		API-602 PN16 Body:A105 Disc& stem:13CR SEAT STELLITE STL SW BB, OS&Y HAND WHEEL	
	DN65 – DN300		ASME-B16.34 PN16 Body:A395/A216WCB Disc& Stem:13CR RF/BW BB, OS&Y HAND WHEEL	
GLOBE VALVE	DN6 – DN50		API-602 PN16 Body:A105 Disc& stem:13CR SEAT STELLITE STL SW BB, OS&Y HAND WHEEL	
	DN65 – DN300		ASME-B16.34 PN16 Body:A395/A216WCB Disc& Stem:13CR RF/BW BB, OS&Y HAND WHEEL	
CHECK VALVE	DN6 – DN50		API-602 PN16 Body:A182 Gr 304 Trim:SS304 SEAT STELLITE STL SW BC, LIFT	
	DN65 – DN300		ASME-B16.34 PN16 A395 13CR RF BC, SWING	
BALL VALVE	DN6 – DN100		ASME-B16.34 PN16 Body:A105 Ball & Stem: AISI304 Seat:PTFE RF BALL LEVER. FULL BORE	
BUTTERFLY VALVE	DN50 – DN150		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER LEVER.	
	DN50 – DN150		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER AIR CYLINDER W/L. SWITCH	
	DN50 – DN150		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER ELECTRIC MOTOR W/L. SWITCH	
	DN200 – DN300		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER WHEEL WITH GEAR	
	DN200 – DN300		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER AIR CYLINDER W/L. SWITCH	
	DN200 – DN300		ASME-B16.34 PN16 Body: A216-WCB Trim:13CR Lining: EPDM Seals: Viton RF WAFER ELECTRIC MOTOR W/L. SWITCH	
GASKET	DN6 – DN150		V-6500 NON-ASBESTOS OR EQ. ASME150 4.0 mm T FLAT RING	
	DN200 – DN300		V-6500 NON-ASBESTOS OR EQ. ASME150 4.0 mm T FLAT RING	
BOLT & NUT	ALL SIZE		STUD U HEAVY NUT A307-GR. B/A563-GR. A FINISHED	