

1. Specification

Supply, pre-despatch inspection and safe delivery of Electro fusion HDPE saddles of various sizes as per following table:

Table.1: Details of Electro fusion HDPE saddles

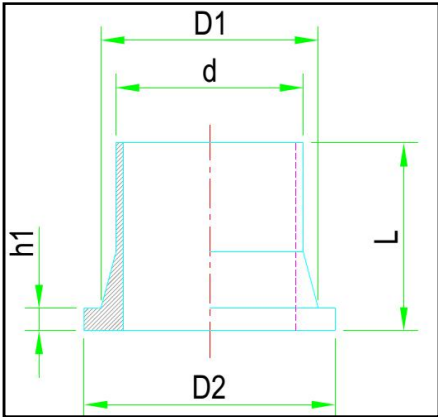
S. No	Item description	Size/ Dimension	Size of pipe on which saddle is to be installed	Quantity (no)
1.	900DN x 500 DN Flanged end Electro fusion HDPE saddle assembly consisting of 1 no of 900DN x 500 DN Electro fusion HDPE saddle, 1 no of 500DN HDPE flange adaptor (stub end), 1 no of 500DN SS316 slip on flange, EPDM gasket and Hot dip galvanised fasteners	900DN x 500 DN	900DN	1
2.	630DN x 200 DN Flanged end Electro fusion HDPE saddle assembly consisting of 1 no of 630DN x 200 DN Electro fusion HDPE saddle, 1 no of 200DN HDPE flange adaptor (stub end), 1 no of 200DN HDPE sandwich slip on flange, EPDM gasket and Hot dip galvanised fasteners	630DN x 200 DN	630DN	4
3.	630DN x 110 DN Flanged end Electro fusion HDPE saddle assembly consisting of 1 no of 630DN x 110 DN Electro fusion HDPE saddle, 1 no of 110DN HDPE flange adaptor (stub end), 1 no of 110DN HDPE sandwich slip on flange, EPDM gasket and Hot dip galvanised fasteners	630DN x 110 DN	630DN	1
4.	630DN x 63 DN Flanged end Electro fusion HDPE saddle assembly consisting of 1 no of 630DN x 75 DN Electro fusion HDPE saddle, 1 no of 75x63 DN HDPE Long reducer, 1 no of 63DN HDPE flange adaptor (stub end), 1 no of 63DN HDPE sandwich slip on flange, EPDM gasket and Hot dip galvanised fasteners	630DN x 63 DN	630DN	1
5.	630DN x 50 DN Flanged end Electro fusion HDPE saddle assembly consisting of 1 no of 630DN x 75 DN Electro fusion HDPE saddle, 1 no of 75x50 DN HDPE Long reducer, 1 no of 50DN HDPE flange adaptor (stub end), 1 no of 50DN HDPE sandwich slip on flange, EPDM gasket and Hot dip galvanised fasteners	630DN x 50 DN	630DN	1

Note:

- a. Regarding the items S.no 1 to 5 in the Table.1, Assembly of Electro fusion HDPE saddle assembly consisting of 1 no of Electro fusion HDPE saddle, 1 no of HDPE flange adaptor (stub end), 1 no of slip on flange, EPDM gasket and Hot dip galvanised fasteners are considered as one item. Electro fusion HDPE saddle shall be jointed with HDPE flange adaptor (stub end) by butt fusion welding.
- b. Bidder (s) shall quote for supply of all five different sizes of Electro fusion saddle assemblies item-wise. However, evaluation will be based on consolidated total basis. Bid consisting of part items will be treated as incomplete offer and shall not be considered for evaluation.
- c. **Specification of Electro fusion saddle and flange adaptor**
 - i. All HDPE items shall be made of PE100 grade as per IS 4984 latest edition
 - ii. The pressure rating of Electro fusion saddle, flange adaptor and reducer shall be PN10 as per IS 4984 latest edition.
 - iii. The Electro fusion saddle assembly shall be suitable for installation through electro fusion welding to HDPE pipeline at the purchaser's site.
 - iv. The material used for the manufacture of saddle assembly should not constitute toxic hazard, should not support microbial growth and should not give rise to unpleasant taste or odour, cloudiness or discoloration of, water. Pipe manufacturers shall obtain a certificate to this effect from the manufacturers of raw material.
 - v. The material grading shall be given by Raw material supplier and in case of master batch by the manufacturer.
 - vi. The colour of the saddle shall be black. The resin shall be compounded with carbon black. The carbon black content in the material shall be with $2.5\pm 0.5\%$ and dispersion of the carbon black shall be satisfactory when tested in accordance with latest standard of IS 2530.
 - vii. The specified base density shall be between 940.5 kg/m^3 and 946.4 kg/m^3 (both inclusive) when determined at 27°C as per latest standard of IS 7328.
 - viii. The Melt flow rate (MFR) of the HDPE material shall be between 0.41 and 1.10 (both inclusive) when tested at 190°C with nominal load of 5 kgf as determined by method prescribed in latest standard of IS 2530. The MFR of the HDPE material shall also be within ± 20 percent of the value declared by the manufacturer.
 - ix. The percentage of anti-oxidant used shall not be more than 0.3 percent by mass of finished resin. The anti-oxidant used shall be physiologically harmless and shall be selected from the list given in IS 10141.
 - x. Addition of not more than 10% of the manufacturer's own rework material resulting from manufacture of pipes is permissible. No other reworked or recycled material is acceptable.
 - xi. Temperature ($^\circ\text{C}$) and pressure (Kg/Sq.cm g) rating shall be as follows:

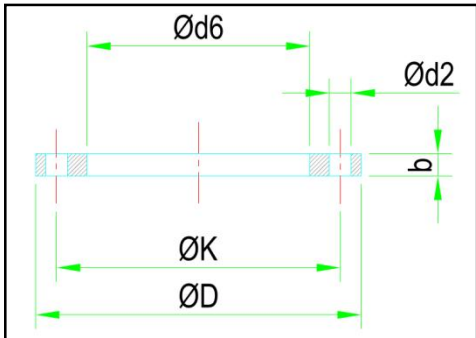
Temperature ($^\circ\text{C}$)	-20	0	23	38	50
Pressure (Kg/Sq.cm g)	10.55	10.55	10.55	8.4	4.6

xii. Dimensions of HDPE flange adaptor (stub ends) shall be as per following table.

Table.2: Dimensions of HDPE flange adaptor (stub ends)		
		
Nominal diameter d (mm)	D1(mm)	Outer diameter D2(mm)
50	60	88
63	72	103
110	119	158
200	210	269
500	530	585

d. Specification of slip on flange

- i. Material of construction of 500NB slip on flange shall be SS316 and material of construction of slip on flanges of other sizes (i.e 50 DN, 63 DN,110 DN & 200 DN) shall be PE- MS- PE (Sandwich flanges).
- ii. The pressure rating of the flanges shall be 150 class.
- iii. The flanges shall have Smooth finish.
- iv. The flanges shall have Flat Faced (Suitable for connection with HDPE Sandwich Flange & Stub End joint).
- v. Dimensions of slip on flange shall be as per following table.

Table.3: Dimensions of slip on flange			
			
Nominal diameter of HDPE pipe d (mm)	Inner diameter $\phi d6$ (mm)	Pitch circle diameter ϕK (mm)	Outer diameter ϕD (mm)
50	61.9	120.7	150
63	74.6	139.7	180
110	128	190.5	230
200	221.5	298.5	345
500	533	635	700

e. Specification of Gasket

- i. Material of construction of Gasket shall be EPDM (Ethylene-Propylene-Diene Terpolymers)
- ii. The dimensions of the gasket shall be as follows:

Table.4: Dimensions of the gaskets	
Nominal diameter of HDPE pipe d (mm)	Dimensions in mm: Outside diameter (OD) X Inside diameter (ID) X Thickness (thk)
50	OD 88 X ID 42 X 5thk
63	OD 102 X ID 53 X 5thk
110	OD 158 X ID 83 X 5thk
200	OD 268 X ID 161 X 5 thk
500	OD 585 X ID 421 X 5thk

f. Specification of Fasteners

- i. Material of construction of Fasteners shall be hot dip galvanized Mild steel
- ii. The dimensions and quantity of the Fasteners shall be as follows:

Table.5: Dimensions of the Fasteners			
Nominal diameter d (mm)	Size	Quantity per flange	Total Quantity to be supplied
50	M14	4 no	4 no
63	M18	4 no	4 no
110	M18	8 no	8 no
200	M22	8 no	32 no
500	M30	20 no	20 no

g. Pre-despatch Inspection & Testing

The supplier is required to follow the QAP in given in the following table. The supplier shall organize Pre-despatch Inspection at their workshop for witnessing to M/s BARC representative. The supplier shall give a prior notice of two weeks while inviting for inspection. However, BARC reserves the right to waive off the inspection or seek for virtual inspection.

QAP for of the electro fusion saddle assembly

S.no	Test parameter	Type of method/check	Acceptance norm	Review/witness by M/s BARC
A. Raw Material: PE 100 Natural resin				
1	Density	Measurement	As per latest version of IS:4984	Review of test certificate of raw material supplier
2	Melt flow rate	Measurement		
3	Thermal stability	Measurement		
B. HDPE saddle, HDPE reducer and HDEP flange adaptor (stub ends)				
1.	Visual appearance	Visual	As per latest version of IS:4984	witness
2.	Colour	Visual		witness
3.	Dimensions	Measurement	As per Table.2	witness
4.	Hydraulic proof test	Visual	As per latest version of IS:8360	Review of test report

C. Slip on flange				
1.	Composition	Visual	As per ASTM A240/relevant standard	Review of material test certificate
2.	Dimensions	Measurement	As per Table.3	witness
D. Gasket				
1.	Composition	Visual	As per relevant ASTM	Review of material test certificate
2.	Dimensions	Measurement	As per Table.4	witness
E. Fasteners				
1.	Composition	Visual	As per ASTM A153	Review of material test certificate
2.	Dimensions	Measurement	As per Table.5	witness

h. Packing

All items shall be despatched in suitable packing to avoid ingress of dust and handling, safe transit and storage.

i. Place of delivery

Odisha Sand Complex (OSCOM),
P.O:Matikhalo, Chhatrapur,
District: Ganjam,Odisha, Pin: 761045.

j. Guarantee

The Supplier should give guarantee for trouble free operation of twelve (12) Months from the date of final acceptance.