



ROTOLINING CARBON STEEL SPOOLS

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Rotolining is a unique process to provide anti-corrosive lining on inner side of carbon Steel fittings and Chemical/food storage vessels by using Polyethylene powder during rotomoulding process. PE material is chemically inert to most of the chemicals. A detailed Chemical resistance chart can be submitted on request to decide compatibility of PE material with various transmission chemicals.

To achieve a very good mechanical and chemical bond between carbon steel fitting and PE material, the inside surface of the fittings are first grit blasted to a cleanliness level of Swedish standard SIS-05 5900 SA 2 1/2 to remove rust, weld marks etc. By grit blasting the inside surface of fittings become rough and clean to obtain proper adhesion between steel and PE material. To obtain very good chemical bond between steel and PE material, a special binder material called Adhesive Polyethylene is incorporated in sufficient proportion along with main PE material formulation.

THERMAL RESISTANCE

Muna Noor Plastic Industries can provide anti corrosive rotolining in different lining materials depending upon the working environment and chemical composition of transmission fluid. Polyethylene material is recommended for operating temperature up to 60°C, while in case of higher operating temperature up to 85°C, Cross Linked PE (XLPE) or Polypropylene can be used.

ROTO LINING PROCESS

During rotolining process carbon steel fittings are mounted on a steel spider, which rotates around two perpendicular axis simultaneously inside heating oven. PE moulding powder containing sufficient amount of Adhesive binder is placed inside hollow fittings. The fittings are heated inside an oven up to melting temperature of PE powder while it is rotating around two perpendicular axis. Thereafter, fittings are cooled by air blowers to solidify molten material adhered inside fitting. Oven heating temperature, heating / cooling time and rotation speeds are precisely controlled by a computerized PLC





programme to obtain uniform lining thickness throughout internal surface of fittings within tolerance limit. Precise process control ensures seamless continuous smooth finished internal lining even at edges, corners and welded beads.

FITTINGS FABRICATION

Carbon steel fittings shall be fabricated to suit rotolining process. Take care of following points during fabrication of steel spools or vessels intended for rotolining.

- Provide minimum 6 mm radius at corners and edges for smooth flow of powder to avoid moulding defects.
- Grind all internal welded beads to achieve smooth curved finish wherever possible.
- Avoid using hollow pipe sections to provide vertical or horizontal pipe supports for uniform heating of external spool surface where internal rotolining is required. If hollow section is absolutely necessary then it should be greater than 300 mm Nominal pipe diameter having maximum length of 300 mm. Keep one end open for hot air to flow inside hollow pipe section.
- Flanged Branch connections for fixing instruments shall be of minimum 3/4" nominal pipe diameter

protruding maximum 6" from the main spool. Most preferred size of branch connection is 2" nominal pipe diameter protruding maximum 12" from the main spool to obtain better finish and uniform lining.

RETAINER RINGS

Suitable size and width of steel machined retainer rings to be provided at every flanged joint over raised face to protect PE rotolined material from internal fluid pressure, dust and UV radiation.

LINING WALL THICKNESS

Lining thickness in a range of 5 to 8 mm can be uniformly applied on internal surface of spools and vessels. Tolerance on nominal thickness shall be $\pm 20\%$.

ROTLINING CAPABILITY OF MUNA NOOR

- The maximum length shall not be more than 2000 mm for nominal pipe diameter of 1 1/2".
- For 90° bends length shall not be more than 1415 mm.
- The maximum length shall not be more than 4000 mm for 2" & 3" nominal pipe diameter. For 90° bends length shall not be more than 2800 mm.
- The maximum length shall not be more than 4000 mm for nominal

pipe diameter of 4" to 18". For 90° bends length shall not be more than 2800 mm.

- The maximum length shall not be more than 3500 mm for nominal pipe diameter of 20" to 36". For 90° bends length shall not be more than 2475 mm.
- Weight of individual spools shall not exceed 2250 kgs .
- Refer our Drawing number RD PD 752 B01 to know more about dimensions limitations.
- Provide detailed isometric piping layout or engineering drawings with weight, chemical composition, concentration, operating temperature etc while forwarding your purchase enquiries.

QUALITY CONTROL

Detailed QC procedure can be submitted for approval from project consultants and concerned authority. Our team of qualified and competent engineers will undertake thorough inspection of grit blasting and cleaning operations, moulding parameters set by machine operator, post moulding and finishing operations. Salt Test & Surface roughness of blasted spools, Lining wall thickness, Holiday Test, Adhesion Test etc. is carried out with Elcometer Measuring and Testing Instruments.

ABOUT MUNA NOOR

Muna Noor is one of Oman's leading manufacturers and suppliers of plastic pipe systems, meeting the needs of the construction, civil, agricultural, industrial and petrochemical industries, primarily in the Middle East, but also supplying Asia and North Africa.

To date Muna Noor's divisions deliver large-scale and bespoke uPVC, HDPE, DWC and Multi-layer HDPE pipes, fittings, plastic fabrication, lining for steel pipe, traditional and electro fusion welding solutions, complete irrigation systems, SCADA control systems and a multiplicity of valves and controls for water.

The company continues to develop product state-of-the-art solutions with the aim to exceed client expectations and collaborate on new and exciting projects.

As an ISO 9001:2008 certified company, our primary commitment is to deliver quality products and services to clients. Muna Noor's quality and success has also been recognised by financial industry leaders in the region and has been made a subsidiary by the Boubyan Petrochemical Company (K.S.C), which is a blue chip company of the Kuwait Stock Exchange and premium institution in Kuwait for investment in the field of petrochemicals by the private sector.



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