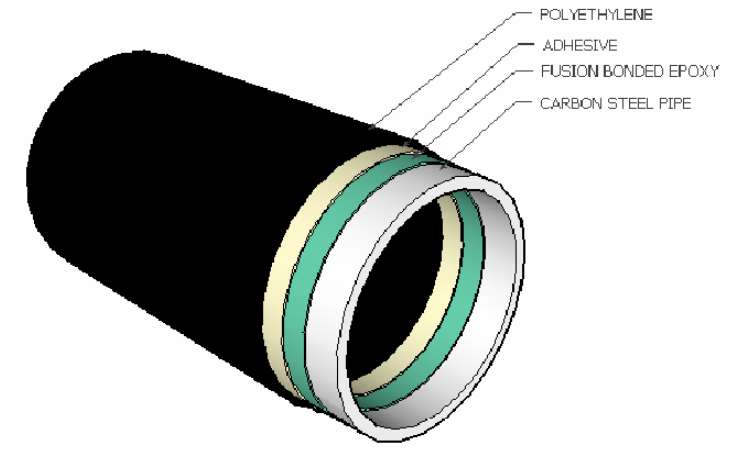
SCAN INDIA

ISO 9001:2008 CERTIFIED ORGANIZATION

"SMOOTHFLOW®" 3LPE Coating and Lining



PRODUCT DISCRIPTION:

"SMOOTHFLOW®" 3LPE pipes are carbon steel pipes coated externally and internally with 3 layer polyethylene. The external coating is provided for corrosion resistance, chemical resistance, electrical resistance, and has very low moisture permeability. Internal coating provides low frictional resistance thereby increasing "C" value, it also prevents encrustation. The three coating layers in 3-LPE coated pipe are as follows:

Layer 1: This is the corrosion protective layer. This layer is of fusion bonded epoxy which offers very good corrosion protection. The fusion bonded epoxy has a very good bonding with the blasted steel surface.
Layer 2: This layer is the copolymer adhesive. The copolymer adhesive is a maleic anhydride grafted polyethylene compound. This material has good chemical bonding to the fusion bonded epoxy and the top layer polyethylene
Layer 3: This layer is for physical protection and consists of polyethylene. Since the copolymer adhesive and polyethylene are similar, they bond well with each other.

STANDARDS AND SPECIFICATIONS:

"SMOOTHFLOW®" 3LPE pipes are manufactured according the following standards:

- DIN 30670
- CSA Z245.21
- AS 4321
- IS 3589

FEATURES OF "SMOOTHFLOW®" 3LPE PIPES:

Corrosion Resistance :
- 3LPE Coating prevents steel pipe from internal and external corrosion.
- Because of smooth internal 3LPE lining, encrustation is avoided.
- Excellent chemical resistance properties.

Drinking Water Safe :
- Polyethylene used for internal 3LPE lining is food and potable water contact approved.
- Inert polyethylene lining will not react with water thereby ensuring clean and pure drinking water.

High Impact Resistance & Ductility :
- Ability to absorb vibrations from rail road traffic, water hammer and pressure surges.
- Local deformation prevents brittle failure.

Low Frictional Coefficient :
- Hazen Williams coefficient or 'C' value is 150 which stay constant through out the life of the pipe.
- Less frictional losses because of high 'C' value compared to other pipe linings.

High Abrasion Resistance :
- Polyethylene has got the highest abrasion resistance amongst all pipe materials.
- 3LPE inner lining can be used for carrying aggressive fluids like raw and saline water.

High Bond Strength :
- The external and internal 3LPE coating and lining is bonded firmly to the mild steel pipe surface and the mean adhesion strength is 125 kg/cm².

Long Working Life :
- Pipe has constant performance characteristics through out the life span. Service life of more than 75 years.

Customized Solutions :
- "SMOOTHFLOW®" 3LPE external coating and internal lining can be applied from diameters 400 mm to 2500 mm with lengths of up to 12m.
- "SMOOTHFLOW®" 3LPE external coating can be applied from diameters 25 mm to 2500 mm with lengths of up to 12m.

APPLICATIONS:

3 layer polyethylene coating is the preferred method of corrosion protective coating applied on steel pipes used in oil & gas applications. Engineers and end users the world over specify 3LPE coating for its versatility & flexibility for its use in varied environment from hot & sandy desert soil of the Gulf to harsh frosty sea beds in the Artic region. This has been proved by the numerous years in services of 3PLE Coating. This coating has also found its use in projects for portable water & raw water. Engineers have realized that to protect the pipeline from corrosion, a thorough & proven coating system is required.

"SMOOTHFLOW®" pipes are used in the following applications where the pipes are either buried or submerged:
• Drinking water pipelines.
• Oil and gas pipelines (Only external 3LPE coating)
• Sewage and waste water applications
• In plant process water applications

UNIQUENESS OF "SMOOTHFLOW®" 3LPE COATING PROCESS:

In conventional 3-layer polyethylene coatings, the outer polyolefin covering is usually applied by extrusion. The outer polyethylene coating is normally applied by a side-wrap extrusion process wherein a continuous sheet of molten polyethylene is wrapped helically around the exterior circumference of the pipe immediately after the FBE and adhesive have been applied.

Most steel pipes used in pipelines are welded pipes. The manufacturing processes used to produce large diameter pipes produce welds that protrude both above and into the pipe diameter. In the conventional 3-layer side-wrap extrusion process, soft silicone rubber rollers are used to apply pressure to the extruded sheet to improve contact between the layers, promote adhesion and smoothing of the polyethylene layer and push the molten polymer into to surface irregularities, including the raised weld. The effectiveness of the silicone roller depends largely on the weld geometry.
With high raised welds or square welds molten polymer can be pushed into the weld on the incoming side of the weld as the pipe rotates towards the roller. However, it may not be able to improve the contact on the exit side, resulting in voids at the weld neck.

With the traditional side-wrap extrusion application, protruding (raised) weld seams lead to a variety of coating problems. The most common problems are:
• Tenting, in which voids develop at the base of the weld neck.
• Thinning across the top of the weld, resulting in the thickness of the coating being well below the specification at the top of the weld.
• The voids at the weld neck area produce pinholes and entrap water during the cooling stage.

Scan India uses a specially developed process for applying all of the components in powder form using powder coating techniques. The process provides a graded monolithic structure of coating where there is no definite boundary between the three layers. Thus this coating behaves like a single layer coating thereby eliminating interlayer adhesion failures. This is also the only process with which internal 3LPE coating can be applied. Customization of coating and lining thicknesses, length and diameter variations in pipes are easily taken care of in this process which helps in mobilizing the plant for orders of small magnitudes also.

FIELD JOINT GIRTH WELD COATINGS:

Field joints on girth welds are coated onsite both internally and externally by cold applied liquid polymer coating. This liquid polymer coating is approved for contact with potable water. The factory applied 3LPE coating and field applied liquid polymer coating has got good compatibility with each other. The liquid polymer coating is a two part, 100% VOC free compound designed for potable water pipelines. It becomes touch dry in 20 minutes and is ready for use in 60 minutes.

ABOUT SCAN INDIA:

Scan India is a pioneer in corrosion protective coatings on carbon steel pipes. In 2006, Scan India started production of "SMOOTHFLOW®" pipes. These are carbon steel pipes coated externally and internally with 3 layer polyethylene (3LPE) coating intended for buried or submerged application. Scan India is the first and till date only company to adapt 3 layer polyethylene coating technology for internal pipe coating. Scan India produces various other types of anti corrosion coatings and flow assurance coatings like FBE, Dual layer FBE, Internal FBE and internal 3LPE. Scan India is an ISO 9001:2008 certified organization.

MANUFACTURING CAPABILITIES:

- Diameter range
  External coating only: 25 mm to 2500 mm
  Internal and external coating: 400mm to 2500 mm
- Pipe length 6 m to 12 m
- Operating temperature range -40° C to 80° C
- Coating thickness
  Internal lining: Maximum up to 2.0 mm
  External coating: Maximum up to 3.7 mm

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