



شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امور تدوین استانداردها

IGS

مشخصات فنی خرید

پوشش پلی یورتان مایع برای تعویض و تعمیر پوشش سطوح خارجی خطوط لوله فولادی مدفون، پوشش سرجوش ها ، لوله کشی تاسیسات مدفون ، پوشش دهی جدید شیرآلات ، اتصالات و سایر اجزاء لوله کشی

External Liquid Polyurethane Coating for Rehabilitation and Repair of Buried Steel Pipelines , coating of Field joints , Buried Steel pipings and new Coating of valves , Fittings and other piping components



FOREWORD

This standard is intended to be mainly used by NIGC and contractors, and has been prepared based on interpretation of recognized standards, technical documents, knowledge, backgrounds and experiences in natural gas industry at national and international levels.

Iranian Gas Standards (IGS) are prepared, reviewed and amended by technical standard committees within NIGC Standardization division and submitted to the NIGC's "STANDARDS COUNCIL" for approval.

IGS Standards are subject to revision, amendment or withdrawal, if required. Thus the latest edition of IGS shall be checked/inquired by NIGC employees and contractors.

This standard must not be modified or altered by NIGC employees or its contractors. Any deviation from normative references and / or well-known manufacturer's specifications must be reported to Standardization division.

The technical standard committee welcomes comments and feedbacks about this standard, and may revise this document accordingly based on the received feedbacks.

GENERAL DEFINITIONS:

Throughout this standard the following definitions, where applicable, should be followed:

- 1- "STANDARDIZATION DIV." is organized to deal with all aspects of industry standards in NIGC. Therefore, all enquiries for clarification or amendments are requested to be directed to mentioned division.
- 2- "COMPANY": refers to National Iranian Gas Company (NIGC).
- 3- "SUPPLIER": refers to a firm who will supply the service, equipment or material to NIGC whether as the prime producer or manufacturer or a trading firm.
- 4- "SHALL": is used where a provision is mandatory.
- 5- "SHOULD": is used where a provision is advised only.
- 6- "MAY": is used where a provision is completely discretionary.

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1. SCOPE

This standard specification covers the minimum requirements for material, surface preparation, application, quality assurance and inspection of liquid polyurethane to be used for preventing external corrosion of underground steel pipeline systems. The coating system may be used at operating temperatures up to 80 °C (T_{max}) for applications as follow:

- Rehabilitation of buried pipelines and pipings coatings.
- Field joints and repair of buried pipelines and pipings, valves, fittings and other pipeline and piping components coated with dual layer FBE or liquid epoxy or liquid polyurethane coating systems.
- New coating of buried pipings, valves, fittings and other piping components.

The liquid polyurethane shall be a two-component, 100% solid and solvent free coating. The polyurethane shall be of the type that can be applied by using either plural component spray equipment or brushes and rollers for brush grades.

Note 1: This standard specification does not cover shop or factory coating of line pipes.

Note 2: If the operating temperature is more than 60 °C or for field joints and pipe sizes with O.D. 30" and larger, the minimum thickness of coating shall be 1500 µm. For smaller sizes and lower temperatures, the minimum thickness of coating shall be 1000 µm.

Note 3: Manual / hand application is acceptable for repair and where spraying is not feasible / practical or for small areas.

Note4: This standard withdraws and replaces IGS-M-TP-14-1(0) and IGS-M-TP-20-1(1) standards.

2. REFERENCES

Throughout this standard specification, the following standards and codes are referred to, the edition of them, that are in effect at the time of issue of this standard specification (2015) shall, to the extent specified herein, form part of this standard specification. The applicability of changes in standards and codes that occur after the date of standards that referred shall be mutually agreed upon by the purchaser and manufacturer or supplier.

2.1 Normative references

ASTM D 543 (2006) "Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents"

ASTM D 570 – 98 (2010) "Standard Test Method for Water Absorption of Plastics"

ASTM D 1640 – 03 (2009) "Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature"

ASTM D 4060 (2001) "Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser"

ASTM D 4285 (1999) "Standard Test Method for Indicating Oil or Water in Compressed Air"

ASTM D 4940 (2010) "Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blasting Abrasives"

BS EN 10290 (2002) "Steel Tubes and Fittings for Onshore and Offshore Pipelines – External Liquid Applied Polyurethane and Polyurethane-Modified Coatings"

BS EN ISO 868 (2003) "Plastics and Ebonite – Determination of Indentation Hardness by Means of a Durometer (Shore Hardness)"

BS EN ISO 4624 (2003) "Paints and Varnishes – Pull-Off Test for Adhesion"

BS EN ISO 8502-3 (2000) "Preparation of Steel Substrates before Application of Paints and Related Products – Test for Assessment of Surface Cleanliness – Part 3: Assessment of Dust on Steel Surface Prepared for Painting (Pressure Sensitive Tape Method)"

BS EN ISO 8502-6 (2000) "Preparation of Steel Substrates before Application of Paints and Related Products – Test for Assessment of Surface Cleanliness – Part 6: Extraction of Soluble Contaminants for Analysis – The Bresle Method"

BS EN ISO 8502-9 (2001) "Preparation of Steel Substrates before Application of Paints and Related Products – Test for the Assessment of Surface Cleanliness – Part 9: Field Method for the Conduct Metric Determination of Water-Soluble Salts"

BS EN ISO 8503-2 (1995) "Preparation of Steel Substrates before Application of Paints and Related Products –Surface Roughness Characteristics of Blast-Cleaned Steel Substrates – Part2: Method for the Grading of Surface Profile of Abrasive Blast-Cleaned Steel – Comparator Procedure"

BS EN ISO 11124 (all parts) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Metallic Blast-Cleaning Abrasives"

BS EN ISO 11126 (all parts) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives"

IGS-M-PL-001-2(0) (2013) "SMLS/HFW/SAWH Carbon Steel Pipes, Grades B to X80, Sizes 6 to 56 inch."

ISO 8501-1 (2007) "Preparation of Steel Substrates before Application of Paints and Related Products – Visual Assessment of Surface Cleanliness – Part 1: Rust Grades and Preparation Grades of Uncoated Steel Substrates and of Steel Substrates after Overall Removal of Previous Coatings"

ISO 8503-5 (2003) "Preparation of Steel Substrates before Application of Paints and Related Products –Surface Roughness Characteristics of Blast-Cleaned Steel Substrates – Part 5: Replica Tape Method for the Determination of the Surface Profile"

ISO 21809-3 (2008) "Petroleum and Natural Gas Industries – External Coatings for Buried or Submerged Pipelines Used in Pipeline Transportation Systems – Part 3: Field Joint Coating"