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شرکت ملی گاز ایران
مدیریت پژوهش و فناوری
امور تدوین استانداردها

IGS

دستورالعمل اجرایی

پوشش اپوکسی درون لوله های خطوط انتقال گاز طبیعی

Internal Epoxy Coating of Line Pipe for Sweet Gas Transmission
Services



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شرکت ملی گاز ایران



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باسلام،

به استحضار می‌رساند در جلسه ۱۷۴۳ مورخ ۱۳۹۶/۵/۲۲ هیأت مدیره، نامه شماره گ.ا.دب ۶۳۲۷۳/۰۰۰/۹۶ مورخ ۹۶/۵/۱۷ مدیر پژوهش و فناوری در مورد تصویب نهایی استانداردها به شرح زیر مطرح و مورد تصویب قرار گرفت.



۱. مشخصات فنی شتاب نگار زلزله در سیستم قطع خودکار ایستگاه‌های گاز شهری



IGS-M-IN-305(1)

۲. مشخصات فنی اتصالات چدنی مالپیل یا داکتیل



IGS-M-PL-037(1)

۳. مشخصات فنی مواد ضد کف برای سیستم شیرین سازی گاز طبیعی



IGS-M-CH-031(1)

۴. دستورالعمل اجرای پوشش اپوکسی درون لوله‌های خطوط انتقال گاز طبیعی



IGS-C-PL-023(1)



این تصمیم به منزله مصوبه مجمع عمومی شرکت‌های تابعه محسوب می‌شود.



الهام ملکی

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FOREWORD

This standard is intended to be mainly used by NIGC and contractors and has been prepared on interpretation recognized standards, technical documents, knowledge, backgrounds and experiences in gas industries 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 users.

This standard must not be modified or altered by the end users within NIGC and her contractors.

Any deviation from normative references and / or well-known manufacturer's specifications must be reported to Standardization division.

Any comments from concerned parties on NIGC distributed IGS are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS:

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

1-"STANDARDIZATION DIV." has been organized to deal with all aspects of industrial standards in NIGC. Therefore, all queries for clarification or amendments are requested to be directed to mentioned div.

2- "COMPANY": refers to national Iranian gas company.

3- "SUPPLIER": refers to a firm who will supply the service, equipment or material to IGS specification 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. INTRODUCTION

1.1 Scope

This standard specification specifies the NIGC's requirements and recommendations for the factory application of liquid epoxy as internal coating for non-corrosive service (flow coat) to externally coated line pipes for use in single phase gas transmission pipelines with the objective of reducing surface roughness and pressure losses. The internal coating shall be applied by airless spray or other suitable spraying techniques. Brush application shall only be used for small repair jobs. It specifies the requirements for coating materials, coating application, inspection and testing and gives procedures for the qualification of coating materials and coating applicators.

Note : the use of this standard to apply in pipelines by taking all the necessary items, especially economic and technical considerations is allowed.

1.2 Information to be submitted by the purchaser

For a project qualification, the purchaser shall supply technical information to the contractor or applicator regarding the project, in particular the installation and operating conditions.

This information shall contain as a minimum:

- project name;
- the type and thickness of coating required;
- the maximum and minimum operating temperature of the pipeline;
- description of steel pipe;
- the applicable line pipe specification;
- the geographical area;
- expected ambient temperatures during installation;
- installation method;
- length of coating cut back;
- whether temporary protection of bare pipe ends is required;
- internal pipe marking requirements.

1.3 Information to be submitted by the contractor or applicator

The contractor shall submit information to the purchaser on the coating system to be used.

This information shall contain as a minimum:

- Coating manufacturer's product data sheet;
- Coating system qualification information;
- Coating application procedures;
- Name(s) of the proposed coating applicator(s);
- Applicator's qualification information;
- Quality control plan.

The contractor shall confirm that the coating system is suitable for use under the specified conditions.

1.4 Quality assurance system

The applicator and the coating manufacturer shall implement a quality management system in accordance with ISO/TS 29001.

1.5 Retention of records

Contract records shall be retained by the applicator and made available to the purchaser upon completion of the project.

1.6 Measuring devices

The applicator shall control measuring devices in accordance with ISO 10012.

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

API RP 5L1 (2002) "Recommended Practice for Railroad Transportation of Line Pipe"

API RP 5LW (1996) "Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels"

ASTM D4285 (2012) "Standard Test Method for Indicating Oil or Water in Compressed Air"

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

IGS-C-PL-001(0) (2014) "Loading, Handling and Storage of Externally Coated Pipes"

ISO 10005 (2005) "Quality Management Systems – Guidelines for Quality Plans"

ISO 10012 (2003) "Measurement Management Systems–Requirements for Measurement Processes and Measuring"

ISO 11124-1 (1997) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Metallic Blast-Cleaning Abrasives – Part 1: General Introduction and Classification"

ISO 11124-2 (1997) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Metallic Blast-Cleaning Abrasives – Part 2: Chilled-Iron Grit"

ISO 11124-3 (1997) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Metallic Blast-Cleaning Abrasives – Part 3: High-Carbon Cast-Steel Shot and Grit"

ISO 11124-4 (1997) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Metallic Blast-Cleaning Abrasives – Part 4: Low-Carbon Cast-Steel Shot"

ISO 11126-1:1997/Cor 1&2:1997 "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 1: General Introduction and Classification"

ISO 11126-3 (1998) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 3: Copper Refinery Slag"

ISO 11126-4 (1998) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 4: Coal Furnace Slag"

ISO 11126-5 (1998) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 5: Nickel Refinery Slag"

ISO 11126-6 (1998) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 6: Iron Furnace Slag"

ISO 11126-7:2001/Cor 1:1999 "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 7: Fused Aluminium Oxide"

ISO 11126-8 (1998) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 8: Olivine Sand"

ISO 11126-9 (1999) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 9: Staurolite"

ISO 11126-10 (2000) "Preparation of Steel Substrates before Application of Paints and Related Products –Specifications for Non-metallic Blast-Cleaning Abrasives – Part 10: Almandite garnet"

ISO 1524 (2013) "Paints, Varnishes and Printing Inks – Determination of Fineness of Grind"

ISO 15741 (2001) "Paints and Varnishes – Friction-Reduction Coatings for the Interior of On-and Offshore Steel Pipelines for Non-Corrosive Gases"

ISO 2409 (2013) "Paints and Varnishes – Cross-Cut Test"

ISO 2431 (2011) "Paints and Varnishes –Determination of Flow Time by Use of Flow Cups"

ISO 2808 (2007) "Paints and Varnishes – Determination of Film Thickness"

ISO 2811-1 (2011) "Paints and Varnishes – Determination of Density– Part 1: Pyknometer method"

ISO 2811-2 (2011) "Paints and Varnishes – Determination of Density– Part 2: Immersion Body (Plummet) method"

ISO 2811-3 (2011) "Paints and Varnishes – Determination of Density– Part 3: Oscillation method"

ISO 2811-4 (2011) "Paints and Varnishes – Determination of Density– Part 4: Pressure Cup method"

ISO 2812-1 (2007) "Paints and Varnishes – Determination of Resistance to Liquids – Part 1: Immersion in Liquids Other than Water"

ISO 2812-2 (2007) "Paints and Varnishes – Determination of Resistance to Liquids – Part 2: Water Immersion Method"

ISO 2815 (2003) "Paints and Varnishes – Buchholz Indentation Test"

ISO 3233-1 (2013) "Paints and Varnishes – Determination of the Percentage Volume of Non-Volatile Matter– Part 1: Method Using a Coated Test Panel to Determine Non-Volatile Matter and to Determine Dry Film Density by the Archimedes Principle"

ISO 3233-2 (2014) "Paints and Varnishes – Determination of the Percentage Volume of Non-Volatile Matter – Part 2: Method Using the Determination of Non-Volatile-Matter Content in Accordance with ISO 3251 and Determination of Dry Film Density on Coated Test Panels by the Archimedes Principle"

ISO 3233-3 (2015) "Paints and Varnishes – Determination of the Percentage Volume of Non-Volatile Matter – Part 3: Determination by Calculation from the Non-Volatile-Matter Content Determined in Accordance with ISO 3251, the Density of the Coating Material and the Density of the Solvent in the Coating Material"

ISO 3251 (2008) "Paints, Varnishes and Plastics –Determination of Non-Volatile-Matter Content"

ISO 4287:1997/Amd 1: 2009 "Geometrical Product Specifications (GPS) – Surface Texture: Profile Method – Terms, Definitions and Surface Texture Parameters"

ISO 4628-1 (2003) "Paints and Varnishes–Evaluation of Degradation of Coatings – Designation of Quantity and Size of Defects, and of Intensity of Uniform Changes in Appearance –Part 1: General Introduction and Designation System"

ISO 4628-2 (2003) "Paints and Varnishes–Evaluation of Degradation of Coatings – Designation of Quantity and Size of Defects, and of Intensity of Uniform Changes in Appearance –Part 2: Assessment of Degree of Blistering"

ISO 6743-4 (2015) "Lubricants, Industrial Oils and Related Products (Class L) – Classification –Part 4: Family H (Hydraulic Systems)"

ISO 6860 (2006) "Paints and Varnishes–Bend Test (Conical Mandrel)"

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 8502-2 (2005) "Preparation of Steel Substrates before Application of Paints and Related Products –Tests for the Assessment of Surface Cleanliness– Part 2:Laboratory Determination of Chloride on Cleaned Surfaces"

ISO 8502-3 (1992) "Preparation of Steel Substrates before Application of Paints and Related Products –Tests for the Assessment of Surface Cleanliness– Part 3:Assessment of Dust on Steel Surfaces Prepared for Painting (Pressure-Sensitive Tape Method)"

ISO 8502-4 (1993) "Preparation of Steel Substrates before Application of Paints and Related Products –Tests for the Assessment of Surface Cleanliness– Part 4:Guidance on the Estimation of the Probability of Condensation Prior to Paint Application"

ISO 8502-6 (2006) "Preparation of Steel Substrates before Application of Paints and Related Products –Tests for the Assessment of Surface Cleanliness– Part 6:Extraction of Soluble Contaminants for Analysis –The Bresle Method"

ISO 8503-2 (2012) "Preparation of Steel Substrates before Application of Paints and Related Products – Surface Roughness Characteristics of Blast-Cleaned Steel Substrates – Part 2: Method for the Grading of Surface Profile of Abrasive Blast-Cleaned Steel – Comparator Procedure"

ISO 8503-4 (2012) "Preparation of Steel Substrates before Application of Paints and Related Products – Surface Roughness Characteristics of Blast-Cleaned Steel Substrates – Part 4: Method for the Calibration of ISO Surface Profile Comparators and for the Determination of Surface Profile – Stylus Instrument Procedure"

ISO 8504-2 (2000) "Preparation of Steel Substrates before Application of Paints and Related Products –Surface Preparation Methods– Part 2:Abrasive Blast-Cleaning"

ISO 9001 (2015) "Quality Management Systems–Requirements"

ISO 9227 (2012) "Corrosion Tests in Artificial Atmospheres–Salt Spray Tests"