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IGS

مشخصات فنی خرید

نوار پوشش سرد خارجی برای خطوط لوله فلزی مدفون

Cold-Applied Outer-Layer Tape for Buried Steel linePipes



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شرکت ملی گاز ایران



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باسلام،

به استحضار می‌رساند در جلسه ۱۹۸۵ مورخ ۱۴۰۱/۰۸/۰۱ هیأت مدیره، نامه شماره گ.۱۰۷۸۶۸/۰۰۰/۹ مورخ ۱۴۰۱/۰۷/۲۰ آن مدیریت درمورد تصویب نهایی مقررات فنی شرکت ملی گاز ایران به شرح زیر مطرح و مورد تصویب قرار گرفت.

۱- دستورالعمل نوار پلاستیکی خود ممزوج سه لا برای سرجوش ها و بازسازی خطوط لوله فلزی

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۲- مشخصات فنی خرید نوار پوشش سرد خارجی برای خطوط لوله فلزی مدفون

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Foreword

This standard specification is intended to be mainly used by N.I.G.C. and contractors, and has been prepared base on interpretation of recognized standards and technical documents, as well as knowledge, backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Specification (IGS) are prepared, reviewed and amended by technical standard committees within NIGC standardization division of research and technology management and submitted to "the standards council of NIGC" for approval.

IGSs are subjected to revision, amendment or withdrawal, if required, and thus the latest edition of IGS shall be checked / inquired by NIGC'S users.

This standard must not be modified or altered by NIGC employees or its contractors. Any deviation or conflicts between this specification and other applicable standards, codes, procedure or well-known manufacturer's specifications must be resolved in writing by the user or its representative through Manager, Engineering Department or standardization division of NIGC.

The technical standard committee welcomes comments and feedbacks from concerned or interested corporate and individuals 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 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. SCOPE

This standard specification covers the minimum requirements for cold applied outer – layer tape to be applied as mechanical protection over the inner – layer tape systems to the exterior of all diameters of buried steel linepipes for long – term protection and prevention of underground corrosion when the maximum continuous operating temperature is 50 °C.

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 issues of this standard specification shall, to the extent specified herein form part of this standard specification. The applicability of changes in codes and standards that occur after the date of standard, shall be mutually agreed upon by the purchaser and manufacturer and /or applicator.

2.1 Normative References

ASTM D 149 (2004) "Test method for dielectric breakdown voltage and dielectric strength of solid electrical insulating materials at commercial power frequencies"

ASTM D 1000 (2008) "Standard test method for pressure – sensitive adhesive – coated tapes used for electrical and electronic applications"

ASTM D 4218 (2008) "Standard test method for determination of carbon black content in polyethylene compounds by the muffle – furnace technique"

ASME B 31.8 (2018) "Gas transmission and distribution piping systems"

EN 12068 (1999) "Cathodic protection – External organic coatings for the corrosion protection of buried or immersed steel pipeline used in conjunction with Cathodic protection Tapes and shrinkable materials"

ISO 9001 (2015) "Quality system – Model for quality assurance in design, development, production, installation and servicing"

2.2 Informative References

ANSI/AWWA C214 (2007) "Standard for tape coating systems for the exterior of steel water pipelines"

EN 10204 (2004) Metallic Products-Types of Inspection Documents

3. DEFINITION

Batch

The batch shall consist of an indefinite number of rolls, offered for acceptance, of materials manufactured by a single plant run through the same processing equipment with no change in ingredient materials.

Coating System

The complete number and types of coats applied to a substrate in a predetermined order. (when used in a broader sense, surface preparation, pretreatments, dry film thickness, and manner of application are included.)

Maximum continuous operating temperature

Maximum continuous operating temperature of the medium transported through the buried or immersed coated pipeline

4. REQUIREMENTS

4.1 Description

The outer – layer tape shall be a two – layer tape consisting of a polyethylene backing layer with a butyl adhesive layer.

The primary functions of the outer – layer tape shall be to provide mechanical and outdoor weathering protection to the tape system, and secondarily, to contribute to the overall corrosion protection properties of the system. The outer- layer tape backing shall be compounded so that it will be resistant to outdoor weathering and ultraviolet – light.

The manufacturer shall certify that the backing material is polyethylene only, containing not less than 3.0 percent nor more than 7.0 percent, by weight, of non–polyethylene material consisting of pigments, antioxidants, and stabilizers.

The manufacturer shall certify that the elastomer content of the adhesive layer is not less than 20 percent by weight.

The outer – layer tape shall be made from materials that provide high electrical resistivity, low moisture absorption and permeability, and resistance to corrosive environments.

4.2 Properties

4.2.1 The plastic backing shall be smooth and uniform, free from visible faults such as fish eyes, slits, folds, break, uneven or frayed edges and other defects that could affect appearance or serviceability.

4.2.2 The adhesive layer shall be smooth and uniform and as free from lumps and bare spots as the best commercial practice will permit. There shall be no adhesive transfer when the tape is unwound from the roll.

4.2.3 The outer – layer tape shall be sufficiently pliable for normal application operations and shall be suitable for hand apply and wrapping machine applications, and no significant wrinkles or blisters shall be developed during application even under sunlight.

4.2.4 The outer – layer tape shall be compatible with the Inner – layer tape.

4.2.5 The outer – layer tape shall comply with the requirements of Table 2, and when applied over the Inner – layer tape, shall provide an effective bond to the Inner – layer tape.

4.2.6 The color of polyethylene backing shall be white.

4.2.7 The tape shall be supplied in rolls wound on polyethylene hollow cores pipe. Hollow cores shall have a typical inside diameter according to Table 1

4.2.8 Unless otherwise specified, the outer – layer tape shall be supplied in the following dimensions:

Table 1- Roll size

LENGTH(m)	WIDTH(mm)	Hollow Core(mm)
10	50	38
20	100	75
30	150 For hand applied machine	75

Table 2: Physical Properties of Outer – Layer Tape

ITEM	PROPERTY	UNIT	QUALIFICATION TEST	BATCH CERTIFICATE TEST	REQUIREMENT	TEST METHOD
1	Width deviation	mm	*	*	±5	see 4.3.1
2	Total thickness, min Backing min Adhesive min	μm	*	*	500 300 200	ASTM D 1000
3	Tensile strength , min	N/mm width	*	*	7	ASTM D 1000
4	Elongation , min	%	*	*	400	ASTM D 1000
5	Adhesion to backing, min	N/mm width	*	*	0.5	ASTM D 1000
6	Dielectric strength , min	V/mm	*	*	22000	ASTM D 149
7	Non-polyethylene material	% by weight	*	-	min 3.0 max 7.0	ASTM D 4218 (see 4.3.3)
8	Water absorption, 23°C , max	% by weight	*	*	0.1	ASTM D 570