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Q/SY

ENTERPRISE STANDARD OF

CHINA NATIONAL PETROLEUM CORPORATION

Q/SY 06323-2019

Replacing Q/SY 1694-2014

Standard of liquid applied polyurethane joint coatings for buried steel pipelines

埋地钢质管道液体聚氨酯补口防腐层技术规范

(English Translation)

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Note on this edition

This standard was reviewed in 2019 and the review concluded that it remains valid.

At the same time as the review conclusion was published, the standard was renumbered in accordance with the Notice on adjusting the numbering rules of the Group company's enterprise standards (Zhongyouzhi [2016] No. 434).

The technical content of this printing is identical to the previous edition.

Only the cover has been changed: the number Q/SY 1694-2014 has been changed to Q/SY 06323-2019, and the issuing body has been changed to "China National Petroleum Corporation" in accordance with the company seal.

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 Directives for standardization - Part 1: Structure and drafting of standards.

This standard was proposed by PetroChina Natural Gas & Pipeline Company.

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This standard is under the jurisdiction of the Petroleum and Petrochemical Engineering Construction Standardization Technical Committee of the CNPC Standardization Committee.

Drafting organizations of this standard: China Petroleum Pipeline Anticorrosion Engineering Co., Ltd.; PetroChina Natural Gas & Pipeline Company; China Petroleum Pipeline Construction Project Management Department; China Petroleum Pipeline Research Institute; China Petroleum Pipeline Engineering Co., Ltd.

1 Scope

This standard specifies the technical requirements for the design, application and inspection of liquid polyurethane joint coatings for buried steel pipelines.

This standard is applicable to the design, application and inspection of liquid polyurethane joint coatings on buried steel pipelines conveying media at temperatures not higher than 80 °C, where the line pipe body is coated with polyolefin, epoxy or polyurethane coatings.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition (including all amendments) applies.

GB/T 1724 Methods for determination of fineness of paints

GB/T 1728 Determination of drying time of coatings of paints and putties

GB/T 2411 Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)

GB 6514 Safety code for painting - Safety, ventilation and air cleaning for the painting process

GB 7692 Safety code for painting - Safety and ventilation for the pretreatment process

GB/T 8923.1 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

GB/T 9264-2012 Paints and varnishes - Assessment of sag resistance

GB/T 18570.3 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)

GB/T 18570.9 Preparation of steel substrates before application of paints and related

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products - Tests for the assessment of surface cleanliness - Part 9: Field method for the conductometric determination of water-soluble salts

GB/T 23257-2009 Polyethylene coating for buried steel pipeline

GB 50369-2006 Code for construction and acceptance of oil and gas transmission pipeline engineering

SY/T 0315-2013 Technical specification for fusion bonded epoxy coating of steel pipeline

SY/T 0407 Specification for surface preparation of steel before coating

SY/T 0457-2010 Technical standard of liquid epoxy internal coating for steel pipeline

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 liquid polyurethane

A solvent-free two-component liquid coating, whose component A consists mainly of polyols and whose component B is an isocyanate monomer or an isocyanate prepolymer.

3.2 automatic spraying

A joint coating method using a two-component high-pressure airless spraying machine fitted with a rotating spray frame and a heating device, in which the rotating frame carries the spray gun back and forth around the full circumference of the girth weld.

3.3 hand spraying

A coating method using a two-component high-pressure airless spraying machine fitted with a hand-held spray gun and a heating device, in which the operator holds and directs the spray gun.

3.4 hand brush

A coating method in which the operator applies the coating by hand with a paint brush.

4 Basic provisions

4.1

The liquid polyurethane coating selected shall have passed quality assessment testing by a testing body with national metrology accreditation or by a foreign third-party testing body.

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4.2
The grade of the liquid polyurethane joint coating shall be selected to match the coating of the main pipeline.

4.3
The liquid polyurethane joint coating should be applied by automatic spraying. Where automatic spraying cannot be carried out, for example because the space on site is too narrow, hand spraying may be used. Repairs may be carried out by hand brush.

4.4
Joint coating operators shall have received job skill training in the liquid polyurethane joint coating process and passed it, and shall have obtained the approval of the owner or the supervisor, before they may work with a certificate.

4.5
The joint coating contractor shall be equipped with complete liquid polyurethane automatic spraying units for joint coating; each unit shall include at least blasting equipment, automatic spraying equipment and a complete set of inspection instruments.

4.6
On the basis of the pipeline anticorrosion joint design and the instructions for use of the joint coating product, and taking account of the working environment, the joint coating contractor shall prepare a joint coating work instruction, a quality inspection plan and an HSE work instruction, and shall have them approved by the owner or the supervisor.

4.7
In addition to complying with this standard, the design, application and acceptance of liquid polyurethane joint coatings for buried steel pipelines shall also comply with the relevant national standards in force.

5 Joint coating

5.1
Liquid polyurethane joint coatings are divided into a normal grade, a reinforced grade and a special reinforced grade, and their thickness shall comply with Table 1. The design shall determine the joint coating grade according to the type of line pipe coating, the way the pipeline is laid and the construction conditions.

6 Materials

6.1
Performance of the liquid polyurethane coating

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