



NACE Standard TM0185-2006  
Item No. 21217

## Standard Test Method

# Evaluation of Internal Plastic Coatings for Corrosion Control of Tubular Goods by Autoclave Testing

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### Foreword

This NACE standard test method has been prepared to provide manufacturers, applicators, and users of internal pipe coatings with a method of comparing the performance of these coatings. The method used in this standard is not intended to correlate with any particular field performance, but is intended solely to compare samples of internally coated tubular goods under uniform laboratory test conditions.

This standard was originally prepared in 1985 by NACE Work Group T-1G-6c of Unit Committee T-1G on Protective Coatings, Elastomers, and Other Nonmetallic Materials for Oilfield Use. It was reviewed by T-1G-6 and reaffirmed by Unit Committee T-1G in 1988, 1993, and 2000, and in 2006 by Specific Technology Group (STG) 33 on Oil and Gas Production—Nonmetallics and Wear Coatings (Metallic). This standard is issued by NACE International under the auspices of STG 33.

In NACE standards, the terms *shall*, *must*, *should*, and *may* are used in accordance with the definitions of these terms in the *NACE Publications Style Manual*, 4th ed., Paragraph 7.4.1.9. *Shall* and *must* are used to state mandatory requirements. The term *should* is used to state something considered good and is recommended but is not mandatory. The term *may* is used to state something considered optional.

TM0185-2006

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Standard  
Test Method**

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### Section 1: General

1.1 This standard establishes a laboratory test method for evaluating the performance of plastic coatings for tubular goods in specific environments at elevated temperatures and pressures by use of an autoclave.

1.2 This standard is intended to standardize laboratory test

procedures and aid in evaluating the general performance of plastic coatings for tubular goods.

1.3 The data obtained from this test may not be indicative of the performance of plastic coatings for tubular goods in actual field service and may not provide any direct correlation to such performance.

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### Section 2: Principle

2.1 The corrosion protection of steel tubular goods by a plastic coating may be altered by exposure to elevated temperatures and pressures and by the composition of the corrosive media. An autoclave is a static test vessel used to

expose coated test specimens to corrosive environments at elevated temperatures and pressures so that the effect of such changes may be evaluated.

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### Section 3: Test Apparatus

#### 3.1 Autoclave

3.1.1 The autoclave shall be rated to a working pressure and temperature with adequate pressure gauges and indicating temperature controllers to withstand the test conditions.

3.1.2 A continuous recorder shall be adapted to the autoclave as a monitor to ensure that the designated pressure and temperature are maintained throughout the test period.

3.1.3 The autoclave shall be manufactured from a suitable material to withstand the corrosive nature of the various test media that may be used during testing. When hydrogen sulfide (H<sub>2</sub>S) or chloride solutions are used in the test media, care should be taken to prevent failure of the autoclave components.<sup>1</sup>

#### 3.2 Autoclave Heating

3.2.1 The autoclave shall be heated in a manner that will provide uniform heating during the test. Typical

methods include an electrical jacket and a heated oil bath.

3.2.2 The heating zone shall extend from the bottom of the autoclave to a point above the top of the test specimen contained within and must ensure uniform heating of the test specimen and test media.

3.2.3 The temperature of the autoclave shall be controlled to within 6°C (10°F) of the designated test temperature.

3.3 The autoclave shall be pressurized in such a manner as to provide and maintain a known reproducible pressure and gas mixture concentration for the duration of the test.

#### 3.4 Autoclave Safety

3.4.1 All manufacturers' recommended safety practices for specific equipment shall be followed.

3.4.2 Current known safety procedures required for high-pressure and high-temperature test equipment and related apparatus and flammable or toxic gas (especially H<sub>2</sub>S) shall be observed.

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### Section 4: Test Specimen

4.1 The test specimen shall be selected from internally coated tubular goods.

4.1.1 For actual evaluation of various coating materials, the test specimen should be prepared in the laboratory to eliminate variables encountered through plant production.