

ICS 47.020.05

CCS A 29



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43498-2023

**Test method of flow dependent corrosion using pipe apparatus
with seawater**

管路冲刷腐蚀试验方法

(English Translation)

Issued on: December 28, 2023

Implemented on: July 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Principle
5 Sample preparation and technical requirements
6 Test device
7 Test conditions
8 Test step
9 Result Assessment
10 Test Report
Appendix A (normative) Flush test pipeline device structure
Appendix B (normative) Straight pipe section electrochemical test device
Appendix C (normative) Electrochemical test device for elbow section
Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

1 Scope

This document describes the test equipment, test conditions, test procedures, result evaluation and test report for pipeline erosion and corrosion testing:

This document is applicable to the evaluation of the erosion and corrosion resistance of metal pipelines in seawater media: The erosion and corrosion tests of pipelines in other media should be used as a reference:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated references for documents, only the version corresponding to the date applies to this article; for undated referenced documents, the latest version (including all modification orders) applies to this document:

GB/T 228.1-2010 Tensile testing of metallic materials Part 1: Room temperature test methods
GB/T 8170 Numerical rounding rules and expression and determination of limit values
GB/T 10123 Corrosion terminology for metals and alloys
GB/T 16545 Corrosion of metals and alloys Removal of corrosion products from corrosion specimens
GB/T 17848-1999 Sacrificial anode electrochemical performance test method
GB/T 18590 Corrosion pitting assessment method for metals and alloys
GB/T 24196 Corrosion electrochemical test methods for metals and alloys - Guidelines for potentiostatic and potentiodynamic polarization measurements

3 Terms and definitions

The terms and definitions defined in GB/T 10123 apply to this document:

4 Principles

The pipeline erosion corrosion test is to flow the corrosive medium through the inner surface of the metal pipeline sample at a certain flow rate and flow pattern:

The relative movement between the surface and the corrosive medium simulates the erosion and corrosion process of the corrosive fluid on the inner surface of the sample under actual working conditions: By analyzing the corrosion shape Measure appearance, erosion corrosion rate, etc., test and evaluate the erosion corrosion resistance of metal pipeline samples:

5 Sample preparation and technical requirements

5.1

Sampling

5.1.1

Pipe material

The sample pipe section should be cut directly from the parent material pipe section and maintain the shape of the pipe: The length of the pipe section should be 10 times the inner diameter of the pipe, or it is determined according to the test requirements and is generally controlled at 5 to 15 times the inner diameter of the pipe:

5.1.2

Welded pipe fittings

The pipe section sample should at least include the weld, heat-affected zone and base metal zone:

5.1.3

Pipe components such as elbows and reducers

The material and specifications of the sample should be the same as the actual pipeline:

5.1.4

The specifications, shapes, and lengths of the samples in the same batch should be consistent, and the number of parallel samples should be at least 3:

5.2

Preparation of specimens

5.2.1

It is advisable to use gas cutting, electric saw and other methods to intercept the sample: Sandpaper should be used to remove the affected parts of the thermal cutting to avoid processing damage: