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

GB/T 29168.4-2024

**Petroleum and natural gas industries - Bends, fittings and
flanges for pipeline transportation systems - Part 4: Cold bends**

石油天然气工业 管道输送系统用弯管、管件和法兰 第4部分：冷弯管

(English Translation)

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Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 Symbols and abbreviations	
4.1 Symbols	
4.2 Abbreviations	
5 Cold-bent pipe code	
6 Design	
6.1 Load	
6.2 Design Method	
6.3 Bend wall thickness	
7 Information provided by the purchaser	
7.1 General Information	
7.2 Additional Information	
7.3 Main tube information	
8 Manufacturing	
8.1 General requirements	
8.2 Mother pipe	
8.3 Manufacturing process specifications	
8.4 Bends for evaluation tests	
8.5 Cold pipe bending	
8.6 Heat treatment after bending	
8.7 Forming and sizing after bending	
8.8 Butt-jointed steel pipes	
8.9 Pipe end treatment	
9 Tests, inspections and technical requirements	
9.1 General	
9.2 Test and inspection requirements	
9.3 Chemical composition	
9.4 Mechanical test	

9.5 Nondestructive Testing

9.6 Size

9.7 Anti-corrosion layer detection

9.8 Measurement

9.9 Hydrostatic test

10 Sign

Appendix A (informative) Structural changes of this document compared with ISO 15590-4:2019

Appendix B (Informative) Technical differences between this document and ISO 15590-4:2019 and their causes

Appendix C (Normative) Cold-bent pipes for acid service environments

Appendix D (Normative) Manufacturing Process Specifications

Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 4 of GB/T 29168 "Pipe elbows, fittings and flanges for pipeline transportation systems in the petroleum and natural gas industry".

GB/T 29168 has published the following parts.

- Part 1: Induction heating pipe bending;
- Part 2: Pipe fittings;
- Part 3: Flanges;
- Part 4: Cold-bent pipes.

This document is modified to adopt ISO 15590-4:2019 "Factory elbows, fittings and flanges for pipeline transportation systems in the petroleum and natural gas industry Part 4 Part. Factory Cold-Bent Pipes.

This document has more structural adjustments compared to ISO 15590-4:2019. Here is a comparison of the structural number changes between the two documents.

See Appendix A for the table.

This document has many technical differences compared to ISO 15590-4:2019.

A single vertical line (?) is used to indicate these technical differences. A list of these

technical differences and their reasons is given in Appendix B.

The following editorial changes were made to this document.

--- In order to coordinate with the existing standards, the name of the standard will be changed to "Bends, pipe fittings and flanges for pipeline transportation systems in the petroleum and natural gas industry Part 4: Cold-bent pipes.

Introduction

Bends, pipe fittings and flanges are important and indispensable structural parts for the construction of long-distance pipelines and valve chambers at stations.

The procurement and application of pipes for industrial pipeline transportation systems have been formulated for induction heating bends, pipe fittings, this document is based on ISO 15590-4, and refers to relevant domestic and foreign standards.

The research results and practical experience of the application basic research and technical standards of cold-bent pipes for oil and gas pipeline construction. GB/T 29168 "Bends, fittings and flanges for pipeline transportation systems in the petroleum and natural gas industry" is planned to consist of four parts.

--- Part 1: Induction heating pipe bending. The purpose is to specify the application of carbon steel or low alloy steel seamless steel pipe, high frequency welded pipe and straight seam buried pipe Technical requirements for the design, manufacture and inspection of induction heating bends made from arc-welded steel pipe as parent pipe.

--- Part 2: Pipe fittings. The purpose is to specify the pipe fittings applicable to the use of carbon steel or low alloy steel plates, seamless steel pipes and welded steel pipes.

Technical requirements for the manufacture and inspection of welded pipe fittings.

--- Part 3: Flanges. The purpose is to specify neck welding flanges and blind flanges suitable for carbon steel or low alloy steel forgings, as well as anchoring Technical requirements for the manufacture and inspection of flanges, slip-on flanges and orifice flanges.

--- Part 4: Cold-bent pipes. The purpose is to specify the radius of application of low-carbon low-alloy seamless and welded steel pipes not less than 5OD, Technical requirements for the design, manufacture and inspection of cold-bent pipe produced by cold bending in factories and on site.

During the construction of pipeline engineering, in order to meet the needs of medium diversion, and relief, and improve the main steel pipe in the pipeline system under harsh loads, Due to the abnormal external loads, a large number of pipeline structures are often required in the construction of pipeline laying, valve rooms, stations and booster stations.

Pipeline structural parts can be divided into elbows, pipe fittings and flanges according to their geometric shapes and application environments.

Different, pipe bending can be divided into induction heating pipe bending and cold bending, tees can be divided into welding tees, hot extrusion tees, cold pressing tees, etc.

Based on factors such as type, geometry, production and processing technology, and inspection requirements, GB/T 29168 is based on different bending processes.

GB/T 29168 divides pipe bending into Part 1.induction heating pipe bending and Part 4.cold bending; Part 2.carbon steel or low alloy pipe bending.

Technical requirements for pipe fittings made of seamless steel pipes and welded steel pipes, such as elbows, caps, tees, reducers, etc.; Part 3 is carbon steel and technical requirements for low alloy steel forged flanges.

Bend pipes for oil and gas industry pipeline transportation systems, Pipe fittings and flanges Part 4: Cold-bent pipes

1 Scope

This document specifies the design, manufacture, testing and maintenance of cold-bent pipes for pipeline transportation systems designed in accordance with GB 50251, GB 50253 and GB/T 24259.

Inspection and testing, technical requirements and marking.

This document applies to cold-bent pipes with a radius of not less than 5OD, which are cold-bent in factories and on-site for use in pipeline transportation systems in the petroleum and natural gas industries.

manufacturing and inspection.

This document applies to cold-bent pipes made of low carbon low alloy seamless and welded steel pipes.

Note: These materials are typical C-Mn steel or low alloy steel, which are consistent with the strength level of pipeline steel pipes in GB/T 9711.

This document does not apply to pipe bends produced using other manufacturing processes.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the latest version (including all