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OF CHINA**

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GB/T 20801.2-2006

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**Pressure piping code – Industrial piping –**

**Part 2: Materials**

**压力管道规范 工业管道**

**第 2 部分：材料**

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## Foreword

This Standard corresponding to ISO 15649: 2001 *Petroleum and natural gas industries – Piping*, this is not equivalent to ISO 15649: 2001.

GB/T 20801 *Pressure piping code – Industrial piping* will be divided into six parts as follows:

- Part 1: General;
- Part 2: Material;
- Part 3: Design and calculation networks;
- Part 4: Fabrication and assembly;
- Part 5: Inspection and testing;
- Part 6: Safeguarding

This Standard is part two of GB/T 20801.

This Standard was proposed by Subcommittee 3 on Pressure Pipeline of National Technical Committee 262 on Boilers and Pressure Vessels of Standardization Administration of China.

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# Pressure piping code – Industrial piping – Part 2:

## Materials

### 1 Scope

This Part specifies the basic requirements for construction materials of pressure piping. These basic requirements include the provisions for material selection, application limit, inspection requirements and marking.

### 2 Normative References

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB 150 Steel Pressure Vessels

GB/T 229-1994 Metallic Materials-Charpy Notch Impact Test (eqv ISO 148:1983)

GB/T 700-2006 Carbon Structural Steels

GB 713-1997 Carbon and Low Alloy Steel Plates for Boilers (neq ISO 5832-4:1996)

GB/T 1220-1992 Stainless Steel Bars

GB/T 1348-1988 Spheroidal Graphite Iron Castings

GB/T 2054-2005 Nickel and Nickel Alloy Sheets

GB/T 2882-2005 Product of Geographical Indication-Fuling Mustard Tuber

GB/T 3077-1999 Alloy Structure Steels

GB 3087-1999 Seamless Steel Tubes for Low and Medium Pressure (neq ISO 9329-1:1989)

GB/T 3091-2001 Welded Steel Pipe for Low Pressure Liquid Delivery (neq ISO 559:1991)

GB/T 3098.1-2000 Mechanical Properties of Fasteners-Bolts, Screws and Studs (idt ISO 898-1:1999)

GB/T 3098.6-2000 Mechanical Properties of Corrosion-resistant Stainless-steel Fasteners-Part 1: Bolts, Screws and Studs (idt ISO 3506 1:1997)

GB 3531-1996 Low Alloy Steel Plates for Low Temperature Pressure Vessels

GB/T 3621-1994 Titanium and Titanium Alloy Plate and Sheet

GB/T 3624-1995 Titanium and Titanium Alloy Tubes

GB/T 3880.2-2006 Wrought Aluminium and Aluminium Alloy Plates Sheets and Strips for General Engineering-part 2: Mechanical Properties

GB/T 4237-1992 Hot Rolled Stainless Steel Sheets and Plates

GB/T 4437.1-2000 Aluminium and Aluminium Alloy Extruded Tubes-Part 1: Seamless Tubes

GB 5310-1995 Seamless Steel Tubes and Pipes for High Pressure Boiler

GB 6479-2000 Seamless Steel Tubes for High-pressure for Chemical Fertilizer

Equipments"(neq ISO 9329 2:1997)

GB/T 6614-1994 Titanium and Titanium Alloy Castings

GB 6654-1996 Steel Plates for Pressure Vessels

GB/T 6893-2000 Aluminium and Aluminium Alloy Cold Drawn (Rolled) Seamless Tubes

GB/T 8163-1999 Seamless Steel Tubes for Liquid Service (neq ISO 559:1991)

GB/T 9439-1988 Grey Iron Castings

GB/T 9440-1988 Malleable Iron Castings (neq ISO5922:1981)

GB/T 9711.1-1997 Petroleum and Natural Gas Industries-Steel Pipe for Pipelines-Technical Delivery Conditions-Part 1: Pipes of Requirement Class A (eqv ISO 3183 1:1996)

GB 9948-2006 Seamless Steel Tubes for Petroleum Cracking

GB/T 12229-2005 General Purpose Industrial Valve-Specification of Spheroidal Graphite Iron Castings

GB/T 12230-2005 General Purpose Industrial Valve-Specification of Stainless Steel Castings

GB/T 12459-2005 Steel Butt-welding Seamless Pipe Fittings

GB/T 12771-2000 Welded Stainless Steel Pipes for Liquid Delivery

GB/T 12778-1991 Metallic Materials-Determination of Charpy Impact Fracture Surface

GB/T 13401-2005 Steel Plate Butt-welding Pipe Fittings

GB/T 14976-2002 Stainless Steel Seamless Tubes for Fluid Transport

GB/T 16253-1996 Steel Castings for Pressure Purposes (eqv ISO 4991:1994)

GB/T 16598-1996 Titanium and Titanium Alloy Disc and Ring

GB/T 18984-2003 Seamless Steel Tubes for Low-temperature-service Piping

GB/T 20801.1-2006 Pressure Piping Code-Industrial Piping-Part 1: General

GB/T 20801.3-2006 Pressure Piping Code-Industrial Piping-Part 3: Design and Calculation

HG/T 3651-1999 Unalloyed Titanium and Titanium Alloy Butt-welding Seamless Pipe Fittings

HG/T 20537.3-1992 Technical Requirements for Austenitic Stainless Welded Steel Pipe of Chemical Plant Installations

HG/T 20537.4-1992 Standard Specification for Large Diameter Welded Austenitic Stainless Steel Chemical Plant Installations Tubes

JB 4726-2000 Carbon and Low-alloy Steel Forgings for Pressure Vessels

JB 4727-2000 Low-alloy Steel Forgings for Low Temperature Pressure Vessels

JB 4728-2000 Stainless Steel Forgings for Pressure Vessels

JB 4741-2000 Nickel-copper Alloy Hot Rolled Plate for Pressure Vessels

JB 4742-2000 Nickel-copper alloy Seamless Tube and Pipe for Pressure Vessels

JB 4743-2000 Nickel-copper Alloy Forgings for Pressure Vessels

JB/T 7248-1994 Technical specification for low temperature service steel casting for valves

YB/T 5264-1993 Corrosion-resisting Alloy Forging

YB/T 5353-2006 Corrosion-resisting Hot-rolled Plates

### 3 Terms and Definitions

In addition to the terms and definitions specified in this part, the terms and definitions in other parts of GB/T 20801 shall also apply.

#### 3.1 Low temperature and lower stress service

Means meet the services as follows:

- a) Maximum operating pressure at low temperature not exceed 30% of maximum permissible operating pressure at ambient temperature;
- b) Total of axial (tensile) stress from pressure, weight and displacement not exceed 10% of minimum tensile strength value specified in material standard (when calculate the displacement stress, stress intensification factor shall not be taken into account);
- c) Limit to the pipeline with Class GC2, and minimum design temperature not lower than  $-101^{\circ}\text{C}$ .

Note: Maximum permissible operating pressure of straight pipe and butt welding pipe shall be determined by GB/T 20801.3-2006; maximum permissible operating pressure of flange and valve components shall be selected according to rated value of pressure at ambient temperature specified in corresponding standard.

#### 3.2 Electric resistance-welded pipe

A pipe take itself (strip coil) as current loop, heated with resistance and continuously butt welding under pressure.

#### 3.3 Electric-fusion welded pipe

A pipe of butt welded in vertical on preformed billet with automatic arc welding or manual arc welding.

#### 3.4 Plat welded pipe

A fusion welding pipe with a or two vertical straight weld which takes performing plate as billet.

#### 3.5 Inspection certificate

A form of certificate of quality of material. The document for inspection which according to provisions of standard and contract by independent authorize department or personnel except for production department of manufactory and carry out inspection and test as batch or sampling and shown as results.

Inspection certification of manufactory shall be signed and validation by inspection department of manufactory independent of production department. There are provisions of laws and regulations, issued the inspection certificate by statutory inspection department.

#### 3.6 Severe cyclic

Comply with the regulations of Clause 3.4 in GB/T 20801.3-2006.