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

DL/T 1401-2015

**Steel pipe manufacturing technical requirements for steel
structures of substation and transmission line
(English Translation)**

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11.1 Packaging and marking

11.2 Transport and storage

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work Part 1. Standard Structure and Preparation" this standard is proposed and managed by the China Electricity Enterprise Federation.

This standard was drafted. Power Industry Power Equipment and Line Equipment Quality Inspection and Testing Center, Weifang Changan Iron Tower Co., Ltd., Nanjing Daji Iron Tower Manufacturing Co., Ltd., Zhejiang Shengda Tower Co., Ltd., Jiangsu Yulong Steel Tube Co., Ltd., Fujian Electric Power Survey and Design Institute, Changshu Fengfan Power Equipment Co., Ltd., Qingdao Huijintong Power Equipment Co., Ltd., Anhui Hongyuan Tower Co., Ltd., Qingdao Wuxiao Group Co., Ltd.

1 Scope

This standard specifies the classification, ordering content, materials, manufacturing process, technical requirements, inspection rules, and packaging of steel pipes for power transmission and transformation steel structures.

Loading, marking, transportation, storage and other requirements. The types of steel pipes covered by this standard include straight seam high-frequency resistance welded steel pipes (HFW) and straight seam submerged arc welded steel.

Pipe (SAWL), combined gas-shielded and submerged arc welded steel pipe (COWL), spiral seam submerged arc welded steel pipe (SAWH), and seamless steel Tube (SMLS).

This standard applies to steel pipe towers, steel pipe rods, and steel pipe supports used for power transmission and transformation. Equal section for other similar steel structure products Steel pipe can be implemented by reference.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 222 Allowable deviation of chemical composition of finished steel GB/T 223 (all parts) Chemical analysis methods for iron and steel GB/T 228.1 Tensile test for metallic

materials-Part 1. Room temperature test method GB/T 229 Charpy pendulum impact test method for metallic materials GB/T 231.1 Brinell hardness test for metallic materials-Part 1. Test method GB/T 232 Bend test method for metallic materials GB/T 244 Bend test method for metal pipes GB/T 246 Metal tube flattening test method GB/T 700 carbon structural steel GB/T 709 size, shape, weight and allowable deviation of hot-rolled steel plate and steel strip GB/T 985.1 Recommended grooves for gas welding, electrode arc welding, gas shielded welding and high energy beam welding GB/T 985.2 Recommended grooves for submerged arc welding GB/T 1591 low alloy high strength structural steel GB/T 2102 Acceptance, packaging, marking and quality certificate of steel pipes GB/T 2650 Welded joint impact test method GB/T 2651 Tensile test method for welded joints GB/T 2653 Welded joint bending test method GB/T 2654 Welded joint hardness test method GB/T 2970 Ultrasonic inspection method for thick steel plate GB/T 2975 Sampling locations and sample preparation for mechanical properties test of steel and steel products GB/T 3274 Carbon structural steel and low alloy structural steel hot rolled thick steel plate and steel strip GB/T 3323 Radiography of fusion welded metal joints GB/T 3524 Hot rolled steel strip of carbon structural steel and low alloy structural steel GB/T 4336 Spark source atomic emission spectrometric analysis method for carbon steel and medium and low alloy steel (conventional method) GB/T 5117 electrode for non-alloy steel and fine grain steel GB/T 5293 Carbon steel wire and flux for submerged arc welding DL/T 1401-2015 GB/T 7735 Eddy current flaw detection method for steel pipes GB/T 8110 Carbon steel, low alloy steel welding wire for gas shielded arc welding GB/T 8162 seamless steel pipe for structure GB/T 9711 steel pipe for pipeline transportation system in oil and gas industry GB/T 10045 Carbon steel flux-cored wire GB/T 11345 Nondestructive testing of welds Ultrasonic testing technology, testing grades and evaluation GB/T 12470 Low alloy steel welding wire and flux for submerged arc welding GB/T 17493 low alloy steel flux-cored wire GB/T.20066 Sampling and sample preparation methods for determination of chemical composition of steel and iron GB/T.20123 Determination of total carbon and sulfur content of iron and steel. Infrared absorption method after combustion in high frequency induction furnace (conventional method) GB 50661 steel structure welding code HG/T 2537 Carbon dioxide for welding HG/T 3728 Welding mixed gas argon-carbon dioxide JB/T 3223 Welding material quality management regulations JG/T 203 steel structure ultrasonic flaw detection and quality classification method SY/T 6423.1 Non-destructive testing methods for steel pipes in the oil and gas industry. Part 1. Radiographic inspection of weld seam defects SY/T 6423.2 Non-destructive testing methods for steel pipes in the oil and gas industry. Part 2. Welded steel pipes with longitudinal and/or transverse defects Automatic ultrasonic testing SY/T 6423.3 Non-destructive testing methods for steel pipes in the oil and gas industry. Part 3. Defective delamination of steel strips/steels for welded steel pipes Automatic ultrasonic testing

3 Terms and definitions

The following terms and definitions apply to this document.

Equal cross section steel pipe Steel tubes of the same shape and size in any cross section.

Longitudinal seam electric-welded steel pipe; HFW Steel pipe with longitudinal straight welds manufactured by high frequency (frequency not less than 70kHz) resistance welding process.

Longitudinal seam submerged-arc welded steel pipe; SAWL Steel pipe with longitudinal straight welds manufactured by submerged arc welding.

Combination gas metal-arc and submerged-arc welded steel pipe; COWL A steel pipe with longitudinal straight welds manufactured by the combined process of molten electrode gas shielded welding and submerged arc welding.

Helical seam submerged-arc welded steel pipe; SAWH Steel pipe with spiral welds manufactured by submerged arc welding.

Seamless steel pipe; SMLS Welded steel pipes manufactured by hot rolling (extrusion, expansion) and cold drawing (rolling) processes.

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Cold-expanded method A process for permanently expanding the diameter of a steel pipe mechanically at ambient temperature.

Cold sizing

A process for permanently increasing or decreasing the diameter of a steel pipe at ambient temperature.

4 General

4.1

The manufacturing and inspection of steel pipes for power transmission and transformation steel structures shall meet the requirements of the order contract and this standard, and those not specified in this standard shall comply with Comply with the relevant national and industry standards.

4.2

Other materials or processing technology requirements involved in the manufacture of steel pipes for power transmission and transformation steel structures shall be implemented in accordance with the corresponding national or industry standards.