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Hot rolled longitudinally profiled steel plate

热轧纵向变厚度钢板

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Hot rolled longitudinally profiled steel plate

1 Scope

This Standard specifies the terms and definitions, classification and codes, order content, dimensions, shape, weight, technical requirements, dimensional measurements, test methods, inspection rules, packaging, marks and quality certificates of hot rolled longitudinally profiled steel plate.

This Standard is applicable to the hot rolled longitudinally profiled steel plate of general structure and of which the engineering thickness is 10mm~400mm (hereinafter referred to as LP steel plate).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 222, *Method of sampling steel for determination of chemical composition and permissible variations for product analysis*

GB/T 247, *General rule of package mark and certification for steel plates (sheets) and strips*

GB/T 699, *Quality carbon structural steels*

GB/T 700, *Carbon structural steels*

GB/T 711, *Hot-rolled Quality Carbon Structural Steel Plates, Sheets and Wide Strips*

GB/T 712, *Ship and ocean engineering structural steel*

GB/T 713, *Steel plates for boilers and pressure vessels*

GB/T 714, *Structural steel for bridge*

GB/T 1591, *High strength low alloy structural steels*

GB/T 2970, *Method for ultrasonic testing of thicker steel plates*

GB/T 3077, *Alloy structure steels*

The part of variable thickness of which the upper and lower surfaces are not parallel in LP steel plate.

3.4 slope

The half thickness of the thick end of variable thickness section of LP steel plate minus the half thickness of the thin end and then divided by the length of variable thickness section.

Example: The slope of Type 01 LP steel plate $k=(h_2/2-h_1/2)/L_1$.

3.5 nominal thickness of longitudinally profiled steel plate

The nominal thickness of each equal thickness section of LP steel plate.

3.6 thickness tolerance of longitudinally profiled steel plate

The allowable deviation of thickness of each equal thickness section of LP steel plate.

4 Classification and codes

4.1 Types

There are ten types of LP steel plate. The type models are 01~10. See Figure 1 for corresponding shape of each type. Agreed by the supplier and the purchaser, other types of LP steel plates can be supplied.

4.2 Expression methods for designations

The designation of LP steel plate consists of three parts: steel designation of product standard, LP steel plate code (LP) and type number of LP steel plate. See Annex A for steel designations of common product standards.

Example: Q345GJC-LP01

Q345GJC -- Designation in GB/T 19879;

LP -- Code of LP steel plate;

01 -- LP steel plate of which the type is 01.

6.1.1 The size range of LP steel plate shall comply with the following provisions:

- a) Nominal thickness of LP steel plate: 10mm~400mm;
- b) Nominal width of LP steel plate: 900mm~5200mm;
- c) Nominal length of LP steel plate: 2000mm~25000mm;
- d) Maximum thickness change rate of thickened section of LP steel plate: 8mm/m (equivalent to slope of 0.004);
- e) Maximum thickness difference of LP steel plate: 45mm.

6.1.2 See Annex B for the size range of different types and areas.

6.2 Size and tolerance

The size deviation of each segment of LP steel plate shall meet the requirements of the corresponding product standards. Measure the head and tail of each thickened segment for the thickness of LP steel plate. If the head and tail of the thickened segment are connected to the equal-thickness segment, it can use the thickness of the equal-thickness segment to replace.

6.3 Shape

The shape deviation of LP steel plate shall meet the requirements of the corresponding product standards.

6.4 Weight

LP steel plate is delivered in theoretical weight. See Annex C for the calculation method of theoretical weight. Agreed by the supplier and the purchaser, it can also use other theoretical weight calculation methods.

7 Technical requirements

7.1 Chemical composition

7.1.1 The chemical composition of each designation of LP steel plate shall comply with the provisions of GB/T 699, GB/T 700, GB/T 711, GB/T 712, GB/T 713, GB/T 714, GB/T 1591, GB/T 3077, GB/T 3274, GB/T 11251, GB/T 19879, GB/T 28410, GB/T 28415, GB/T 28905 or GB/T 28907, GB/T 31944 or GB/T 34560.5. Agreed by the supplier and the purchaser, the chemical composition specified in other product standards can also be used.

7.1.2 When the purchaser requires to guarantee the performance of the steel plate in the thickness direction, the S content shall meet the requirements of

GB/T 5313.

7.1.3 The allowable deviation of the chemical composition of the finished steel sheet shall meet the requirements of GB/T 222.

7.2 Delivery state

The delivery state of LP steel plate shall meet the requirements of the corresponding product standards. If it requires other delivery states, it shall be determined by the supplier and the purchaser via consultation.

7.3 Mechanical properties and process properties

7.3.1 Except the LP steel plate of types 06, 07 and 08, the mechanical properties and process properties shall meet the requirements of corresponding product standards.

7.3.2 For LP steel plate of types 06, 07 and 08, the acceptance indicators for the mechanical properties and process properties shall be determined by the supplier and the purchaser via consultation.

7.4 Surface quality

7.4.1 The surface of LP steel plate shall be free of cracks, bubbles, scars, folds, inclusions and pressed iron oxide scales or foreign objects. The steel plate must not have visible delamination.

7.4.2 The surface of LP steel plate is allowed to have a thin layer of iron oxide scale, rust, which does not hinder the inspection of surface defects, and insignificant surface roughness, scratches, indentations and other local defects caused by the peeling of the pressed iron scale. But the depth shall not be greater than half of the thickness tolerance, and the minimum allowable thickness of steel plate shall be guaranteed.

7.4.3 The surface of LP steel plate is allowed to be ground and cleaned, but the use requirements of the steel plate shall be guaranteed. The grinding and cleaning positions shall be smooth without edges. When welding repair is needed, it shall be carried out according to GB/T 14977.

7.5 Ultrasonic testing

As required by the purchaser and indicated in the contract, LP steel plate can be subjected to the ultrasonic testing. The inspection method shall meet the requirements of GB/T 2970 or other standards. The acceptance levels shall be indicated in the contract.

7.6 Special requirements

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