A283Gr.A/B/C/D Steel Plates

Standard Specificator for Low and Intermediate Tensile Strength Carbon Steel Plates.

1. Scope

1.1 This specification covers four grades (A, B, C and D) of carbon steel plates of structural quality for general application.

1.2 When the steel is to be welded, a welding procedure suitable for the grade of steel and intended use or service is to be utilized. See Appendix X3 of Specification A6/A6M for information on weldability.

1.3 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exactly equivalents; therefore, each system is to be used independently of the other, without combining values in any way.

1.4 For plate produced from coil and furnished without heat treatment or with stress relieving only, the additional requirements, including additional testing requirements and the reporting of additional test results, of Specification A6/A6M apply.

1.5 This specification contains notes or footnotes, or both. that provide explanatory material. Such notes and footnotes, excluding those in tables and figures, do not contain any mandatory requirements.

2. General Requirements for Delivery

2.1 Plates furnished under this specification shall con-form to the requirements of the current edition of Specification A6/A6M, for the specific date ordered, unless a conflict exists, in which case this specification shall prevail.

2.2 Coils are excluded from qualification to this specification until they are processed into finished plates. Plates produced from coil means plates that have been cut to individual lengths from a coil. The processor directly controls, or is responsible for, the operations involved in the processing of a coil into finished plates. Such operations include decoiling, leveling, cutting to length, testing, inspection, conditioning, heat treatment (if applicable), packaging, marking, loading for shipment, and certification.

Note 1-For plates produced from coil and furnished without heat treatment or with stress relieving only, two test results are to be reported for each qualifying coil. Additional requirements regarding plate produced from coil are described in Specification A6/A6M.

3. Process

3.1 The steel shall be made by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

Table 1 Chemical Requirements

|  |  |
| --- | --- |
| Elements | Heat Analysis, % |
|  | Grade A | Grade B | Grade C | Grade D |
| Carbon, max | 0.14 | 0.2 | 0.24 | 0.27 |
| Manganese, max | 0.9 | 0.9 | 0.9 | 0.9 |
| Phosphorus, max | 0.035 | 0 | 0.035 | 0.035 |
| Sulphur, max | 0.04 | 0 | 0.04 | 0.04 |
| Silicon |  |  |  |  |
| Plates 1-1/2 in. (40 mm) and   under, max | 0.4 | 0.4 | 0.4 | 0.4 |
| Plates over 1-1/2 in. (40   mm) | 0.15-0.40 | 0.15-0.40 | 0.15-0.40 | 0.15-0.40 |
| Copper, min % when copper is specified | 0.2 | 0.2 | 0.2 | 0.2 |

Table 2 Tensile RequirementsA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Grade A | Grade B | Grade C | Grade D |
| Tensile Strength, ksi (MPa) | 45-60 (310-415) | 50-65 (345-450) | 55-75 (380-515) | 60-80 (415-550) |
| Yield Point, min, ksi (MPa) | 24 (165) | 27 (185) | 30 (205) | 33 (230) |
| Elongation in 8 in. (200 mm), min %B | 27 | 25 | 22 | 20 |
| Elongation in 2 in. (50 mm), min %B | 30 | 28 | 25 | 23 |

A See Specimen Orientation under the Tension Tests section of Specification A6/A6M.

B For plates wider than 24 in. (600 mm), the elongation requirement is reduced two percentage points. See elongation requirement adjustment in the Tension Tests section of Specification A6/A6M.

4. Chemical Requirements

4.1 The heat analysis shall conform to the requirements prescribed in Table 1.

4.2 The steel shall conform on product analysis to the requirements prescribed in Table 1, subject to the product analysis tolerance in Specification A6/A6M.

5. Tensile Requirements

5.1 Material as represented by the test specimens shall conform to the requirements as to tensile properties prescribed in Table 2.

Supplementary Requirements

Supplementary requirements shall not apply unless specified in the order or contract. Standardized supplementary requirements for use at the option of the purchaser are listed in Specification A6/A6M. Those that are considered suitable for use with this specification are listed by title :

S2. Product Analysis.

S2.1 Product analyses shall be made for those elements specified or restricted by the applicable product specification for the applicable grade, class, and type. Specimens for analysis shall be taken adjacent to or from the same relative location as that from which the tension test specimen was taken.

S3. Simulated Post-Weld Heat Treatment of Mechanical Test Coupons

S3.1 Prior to testing, the test specimens representing the structural product for acceptance purpose for mechanical properties shall be thermally treated to simulate a post-weld heat treatment below the critical temperature (AC3), using the heat treatment parameters (such as temperature range, time, and cooling rates) specified in the order. The test results for such heat-treated test speciments shall meet the applicable product specification requirements.

S5. Charpy V-Notch Impact Test

S5.1 Charpy V-Notch impact tests shall be conducted in accordance with Specification A673/A673M.

S5.2 The frequency of testing, the test temperature to be used, and the absorbed energy requirements shall be as specified on the order.

S6. Drop Weight Test

Drop-weight tests shall be made in accordance with Test Method E208. The specimens shall represent the material in the final condition of heat treatment. Agreement shall be reached between the purchaser and the manufacturer or processor as to the number of pieces to be tested and whether a maximum mil-ductility transition (NDT) temperature is mandatory or if the test results are for information only.

S8. Ultrasonic Examination

S8.1 The material shall be ultrasonically examined in accordance with the requirement specified on the order

S15. Reduction of Area.

S15.1 The reduction of area, as determined on the 0.500-in. (12.5-mm) diameter round tension test specimen in accordance with Test Methods and Definitions A370, shall not be less than 40%.

S97. Limitation on Rimmed or Capped Steel

S97.1 The steel shall be other than rimmed or capped.

If you have any other requirement for steel plate, please feel free to contact us.