26-734

MATERIAL SPECIFICATION STRUCTURAL STEEL

1.0 PURPOSE

1.1 It is the purpose of this material specification to list in concise form of the material requirement for STRUCTURAL steel for use in welded fabrication.

1.2 Product forms covered by this specification are plate, sheet, tube, channel and angle for use in welded fabrications.

1.3 This material specification is intended to aid the purchasing department in procuring and the vendor in supplying a material which meets the needs of its intended use, and the quality control department in the inspection and release of incoming material.

1.4 Equivalent or higher grades may be used by the supplier provided they meet the requirement of this specification. When substituted grades do not meet the requirements of this specification, they may be used provided the supplier informs and receives approval from SARA SAE prior to commencement of fabrication.

2.0 REQUIREMENTS

2.1 The requirements of specification SES 26-590, SES 26-740 & SES 26-744 shall apply in addition to the following specific requirements.

2.1.1 **Chemical composition**: Chemical composition limits are listed below. An analysis of each heat of steel is made by the manufacturer, preferably from a ladle sample taken at or near the time of pouring. The listed elements shall be reported in weight percent. Reporting of residual elements is not required, but total residuals must not exceed 1%.

ELEMENTS	COMPOSITION RANGE (%)
Carbon (C)	0.31 (max.)
Manganese (Mn)	1.30 (max.)
Silicon (Si)	0.40 (max.)
Sulphur (S)	0.050 (max.)
Phosphorus (P)	0.040 (max.)
Carbon Equivalence (CE), CE= C+Mn/6+(Cr+Mo)/5+(V+Ni+Cu)/15	0.45 (max.)

- There are no silicon requirements for ASTM A-36 shapes and bars. Also, there are no silicon requirements for ASTM A-36 plates with a thickness of less than 1-1/2"
- Carbon maximum is based on section thickness. The maximum listed is for section of 8" and grater. Smaller sizes have lower maximum allowable carbon content per ASTM A-516.

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3.0 HEAT TREATMENT:

3.1 When notch toughness is required for ASTM A516 plate 1.5-inchs (40mm) and under in thickness the, plate shall be supplied in the normalized condition.

3.2 Plates over 1.5-inches (40mm) shall be supplied in the normalized condition, Regardless of whether or not notch toughness tests are required.

4.0 MECHANICAL PROPERTIES:

4.1 For design purpose uses 36,000 PSI (248 MPa) for yield strength. Material supplied to meet this specification shall have a minimum yield strength of 36,000 PSI (248 MPa)

4.2 ASTM A 516 should be used for application requiring notch toughness. Specific heat treatments to achieve sufficient impact toughness for sizes greater than 1.5-inches (40 mm) may be required.

4.3 Commercial sheet provided to this specification may have yield strength in the 30-50 KSI range. Tensile testing is not required and actual mechanical properties may not be reported for commercial sheet grades.

5.0 **REFERENCE SPECIFICATIONES:** - the following list of typical industry specifications and grades that may be used as reference specifications for purchasing, but do not necessarily meet all the requirements of this specification. When welding is involved, the maximum carbon equivalent value listed in this specification must be met

AISI 1018-1026 AISI 1010-1024	All Shapes
ASTM A- 106	Seamless Carbon Steel Pipe
ASTM A- 500	Tubing in rounded & Shapes
ASTM A- 105	Carbon Steel Forgings
ASTM A- 36	Shapes, Plates, Bars
ASTM A- 516 Grade 55,60,70	Plates
ASTM A- 1011 Grade CS & DS, All Types	Sheet & Strip
CSA G 40.21 44W	Plates
BS 4360-43 & 50 EN10025 S355 & S275	All Shapes
DIN 17121 ST 52.3 DIN 1629 ST 52 DIN 2448 ST 52 EN 10210 S355 J2H EN10297 E355	Tubes

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