

AEROSPACE MATERIAL SPECIFICATION



AMS-QQ-S-700A

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Superseding AMS-QQ-S-700

(R) Steel, Sheet and Strip, Medium and High Carbon

1. SCOPE AND CLASSIFICATION:

1.1 Scope:

This specification covers medium and high carbon sheet and strip steel for general fabrication purposes.

1.2 Application:

These materials are typically used for parts where the modulus / stiffness of steel is required and high strength is not needed, but usage is not limited to such applications.

1.3 Classification:

Steel sheet and strip shall be furnished in accordance with the following classifications:

1.3.1 Fabrication Method:

- Type 1 Hot rolled
- Type 2 Hot rolled stress-relief annealed
- Type 3 Hot rolled and annealed
- Type 4 Hot rolled and spheroidized annealed
- Type 5 Cold rolled annealed last
- Type 6 Cold rolled spheroidized annealed
- Type 7 Cold rolled, annealed, and skin passed (temper rolled)
- Type 8 Cold rolled full hard

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1.3.2 SAE Number:

1025
1030
1035
1045
1050
1055
1065
1074
1080
1084
1085
1086
1095

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2232 Tolerances, Carbon Steel, Sheet, Strip and Plate
MAM 2232 Tolerances, Metric, Carbon Steel, Sheet, Strip and Plate
AMS 2259 Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2370 Quality Control Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock
AMS 2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys, Sheet, Strip, Plate and Aircraft Tubing
AS 4194 Sheet and Strip Surface Finish Nomenclature

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 480/A 480M Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

TABLE 1 - Chemical Composition - Cast or Heat Analysis; Percent

UNS Number	SAE Number	Carbon	Manganese
G10250	1025	0.22 to 0.28	0.30 to 0.60
G10300	1030	.27 to .34	.60 to .90
G10350	1035	.31 to .38	.60 to .90
G10450	1045	.42 to .50	.60 to .90
G10500	1050	.47 to .55	.60 to .90
G10550	1055	.52 to .60	.60 to .90
G10650	1065	.59 to .70	.60 to .90
G10740	1074	.69 to .80	.60 to .90
G10800	1080	.74 to .88	.60 to .90
G10840	1084	.80 to .94	.60 to .90
G10850	1085	.84 to .94	.70 to 1.00
G10860	1086	.80 to .94	.30 to .50
G10950	1095	.90 to 1.04	.30 to .50

3.1.1 For all grades, phosphorus shall not exceed 0.040%, sulfur shall not exceed 0.050%, and silicon shall be within the range 0.10 to 0.30%

3.1.2 Type of Steel: Steel shall be fully silicon killed unless otherwise specified in the contract or order. Aluminum may be added in sufficient amounts to control grain size.

3.1.3 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition:

3.2.1 Shall be as ordered (see 1.3)

3.2.2 Hot-rolled sheet and strip: Unless otherwise specified, hot-rolled sheet and strip shall be furnished pickled. The surfaces of the pickled material shall be commercially free of scale.

3.2.3 Cold-rolled sheet: Cold-rolled sheet shall be furnished with a No. 1, dull finish. Steel finishes are defined in ASTM A 480/A 480M and AS 4194.

3.3 Properties:

3.3.1 Cold bending: When specified, the product shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to three times the nominal thickness of the product with the axis of bend parallel to the direction of rolling, and through an angle of 180 degrees around a diameter equal to four times the nominal thickness of the product with the axis of bend transverse to the direction of rolling.

3.3.2 Spheroidization and Decarburization:

3.3.2.1 Cold Rolled Spheroidize Annealed Microstructure: Unless otherwise specified, cold rolled steel sheet and strip, specified spheroidized annealed, shall be free of lamellar pearlite.

3.3.2.2 Hot Rolled Sheet and Strip Spheroidize Annealed Microstructure: If specified, shall be as agreed upon by purchaser and vendor.

3.3.2.3 Decarburization limits if specified shall be agreed upon between purchaser and vendor.

3.4 Quality:

The product, as received by purchaser, shall be uniform in quality and condition, sound and free from foreign materials and from imperfections detrimental to the usage of the product.

3.5 Size and Dimensional Tolerances:

Shall conform to applicable requirements of AMS 2232 or MAM 2232.

3.5.1 Edges:

3.5.1.1 Hot-rolled sheet and strip: Unless a particular edge is specified, hot rolled sheet and strip shall be furnished with either mill edges, or cut or slit edges, at the option of the supplier.

3.5.1.2 Cold-rolled sheet: Unless otherwise specified cold-rolled sheet shall be furnished with sheared edges.

4. QUALITY ASSURANCE PROVISIONS:

4.1 The vendor of the product shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

4.2 Classification of Tests: All requirements are acceptance tests and shall be done on each heat or lot as applicable.