The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE RECOMMENDED PRACTICE

SAE ARP1917

Issued 1992-01

Submitted for recognition as an American National Standard

CLARIFICATION OF TERMS USED IN AEROSPACE METALS SPECIFICATIONS

1. SCOPE:

This Aerospace Recommended Practice (ARP) clarified the terms for metallic materials used in Aerospace materials and process specifications. The terms defined in this ARP are not intended to supersede those terms already defined in the referenced existing specifications.

2. REFERENCES:

2.1 SAE Publications:

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

AMS 2300 Premium Aircraft-Quality Steel Cleanliness, Magnetic Particle Inspection Procedure
MAM 2300 Premium Aircraft-Quality Steel Cleanliness, Magnetic Particle Inspaction Procedure, Metric (SI) Measurement
AMS 2301 Aircraft Quality Steel Cleanliness, Magnetic Particle Inspection Procedure
AMS 2303 Aircraft-Quality Steel Cleanliness, Martensitic Corrosion-Resistant Steels, Magnetic Particle Inspection Procedure
MAM 2303 Aircraft Quality Steel Cleanliness, Martensitic Corrosion-Resistant Steels, Magnetic Particle Inspection Procedure, Metric (SI) Measurement

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM E 45 Determining the Inclusion Content of Steel

3. *TERMS:*

AGITATION: Movement of parts or material, or circulation of the liquid media around parts or material.

AIRCRAFT QUALITY STEEL: (see definitions under Steel Quality)

ALUMINUM CASTING, PREMIUM GRADE: Aluminum castings which have guaranteed mechanical properties at drawing designated areas. Representative castings are destructively tested periodically to verify the Engineering drawing property requirements.

BAR, ROD, AND WIRE: A solid square, rectangular (other than sheet, strip, or plate), round, regular hexagon, or octagon shaped material whose length is greater than its cross section with diameter of distance between parallel surfaces falling into Table 1 below:

TABLE 1

MATERIAL	BAR	ROD	WIRE
Al & Al Alloys	0.375 in (9.52 mm) or larger between parallel surfaces with square, rectangular, hexagon, or octagon cross section.	0.375 in (9.52 mm) diameter and larger	Under 0.375 in (9.52 mm) diameter or distance between parallel surfaces
Cu & Cu Alloys	Flat products (square or rectangular over 0.188 in (4.78 mm) thick and up to and including 12 in (305 mm) wide	Round, hexagonal or octagonal products of any size furnished in straight lengths	Any size furnished in coils. Flat wire is any shape in straight lengths up to 0.188 in (4.78 mm) thick inclusive and 1 1/4 in (31.8 mm) wide inclusive
Ti & Ti Alloys	1/2 in (12.7 mm) and over in diameter or distance between parallel surfaces	1/2 in (12.7 mm) and over in diameter or distance between parallel surfaces	Under 1/2 in (12.7 mm) in diameter or distance between parallel surfaces

BEST COMMERCIAL PRACTICE: A term used to describe the workmanship of metal products which meet the commonly recognized industry quality standard for a particular alloy, surface condition, product form, heat treat condition, and, most importantly, the method of fabrication. This term is not recommended to be used in specifications since the standard can vary from mill to mill and product to product and is subject to interpretation.

BILLET (REFORGING STOCK): A solid metal product that is intended for subsequent hot working into finished or semi-finished products.

3. (Continued):

CAPABLE OF: A term applied to certain requirements which need not be verified by the producer. If subsequent testing by the purchaser or its designee establish that the material does not meet the requirement, the material may be rejected. Use of this term in AMS specifications is not recommended. The recommended practice is to require periodic testing at the frequency determined by the producer.

CAST NUMBER (APPLICABLE TO ALUMINUM WROUGHT PRODUCT): Sequential identification of aluminum ingots of the same alloy which are melted and poured in one or more drops without change in the processing parameters.

CERTIFICATION: A formal written document attesting to a specific operation or product which meets standards and/or requirements specified within the applicable documents.

CERTIFIED (QUALIFIED) OPERATOR: A person who is authorized to perform a specific operation after having fulfilled the pre-established requirements.

CLEANLINESS (INTERNAL CLEANLINESS OF STEEL): Term used to describe type and amount of nonmetallic inclusions in steel. The following documents define material cleanliness:

ASTM E 45
AMS 2300
MAM 2300
AMS 2301
AMS 2303
MAM 2303

COGNIZANT ENGINEERING ORGANIZATION: The engineering organization responsible for the design of the part, or the designee of this engineering organization.

COLD FINISHING: Process by which final dimension and surface characteristics are produced below the recrystallization temperature.

COLD WORKING: Working of metals below the recrystallization temperature resulting in strain hardening of metals.

COMMERCIAL PACKAGING: Packaging meeting common carrier rules and regulations in order to provide safe delivery to destination.

CONTRACTOR: All partied involved in a contract except when it is referenced in government specifications (see Government Contractor). Use of this term in AMS specifications is not recommended.

COUPON: A piece of material from which a test specimen is prepared.

DROP NUMBER (APPLICABLE TO ALUMINUM WROUGHT PRODUCT): Sequential identification number of aluminum ingots poured simultaneously from the same cast.

3. (Continued):

EXCESSIVE INTERGRANULAR CORROSION: The degree of intergranular corrosion which is greater than what is usually experienced from test samples of the same alloy, temper, thickness, heat treated to the applicable specification. There is no accepted standard. Use of this term in AMS specifications is not recommended.

FOIL: Flat rolled products thinner than those covered in Table 3, except for copper alloys which shall be flat rolled products thinner than 0.005 in (0.13 mm).

GOVERNMENT CONTRACTOR: When used in government specifications (Federal, Military, NASA, and DoD), it is defined as an organization or individual performing work or providing services to the government in accordance with a contract.

HEAT (MELT OR HEAT LOT): Material which, in the case of batch melting, was cast at the same time from the same furnace and was identified with the same heat number; or, in the case of continuous melting, was poured without interruption. (See definition of cast number and drop number used in aluminum industry).

HOT FINISHING: Final finishing of metal above the recrystallization temperature and resulting in no strain hardening.

MECHANICAL TUBING: Tubing intended primarily for structural application and is not normally used for the transmission of fluids.

NONMETALLIC INCLUSIONS: Insoluble impurities, such as oxides, aluminates, sulfides, and silicates, which are trapped mechanically, or are formed during solidification.

PIPE MATERIAL: A hollow product designated by "nominal pipe size" and "ANSI schedule number."

PREMIUM (AIRCRAFT) QUALITY: (see definition under Steel Quality)

PREPRODUCTION PARTS: Parts made for evaluation prior to production to ensure the production practice is capable of producing parts meeting design criteria.

PLATE: Flat rolled product having the nominal thickness shown in Table 2:

3. (Continued):

TABLE 2

Material	Nominal Thickness
Al & Al Alloys	0.250 in (6.35 mm) and over
Cu & Cu Alloys	Over 0.188 in (4.78 mm) (and greater than 12 in (3.05 mm) wide)
Ni & Ni Alloys	Over 0.187 in (4.75 mm)
Steel	3/16 in (4.8 mm) and over
Ti & Ti Alloys	0.1875 in (7.762 mm) and over

QUALIFICATION: Demonstration of ability to meet established criteria prior to production or delivery.

ROUGH MACHINED: Metal part surfaces which have been machined to a semifinished configuration requiring further machining.

SHALL: To express a mandatory requirement.

SHEET, STRIP: A flat rolled product within the thickness and width range as shown in Table 3:

TABLE 3

Material	Nominal Thickness	Width Sheet	Width Strip
Al & Al Alloys	0.006 - 0.250 in, excl (0.15 - 6.35 mm)		
Cu & Cu Alloys	0.005 - 0.188 in, incl (0.13 - 4.78 mm)	20 in (508 mm) and over	Under 20 in (508 mm)
Ni & Ni Alloys	0.006 - 0.187 in, incl (0.15 - 4.75 mm)	24 in (610 mm) and over	Under 24 in (610 mm)
Steel	0.006 - 0.1875 in, excl (0.15 - 4.762 mm)	24 in (610 mm) and over	Under 24 in (610 mm)
Ti & Ti Alloys	0.006 - 0.1875 in, excl (0.15 - (7.762 mm)		

SHOULD: To express a recommendation which is desirable but not mandatory.

SPECIMEN: A piece of material which is taken from a sample or coupon for evaluation of one or more characteristics or properties.