

MIL-S-18729C
AMENDMENT -1
28 APRIL 1966

MILITARY SPECIFICATION

STEEL PLATE, SHEET, AND STRIP, ALLOY 4130 AIRCRAFT QUALITY

This amendment forms a part of Military Specification MIL-S-18729C, 5 March 1965, and is mandatory for use by all Departments and Agencies of the Department of Defense.

Page 1:

(a) Paragraph 2.2: Add Aerospace Material Specification "AMS2259 Chemical Check Analysis Limits, Wrought Low Alloy and Carbon Steel".

(b) Paragraph 3.2: Delete.

Page 2: (a) Table I: Delete, and substitute:

"TABLE I. Chemical composition

| Element | Analysis (percent) | Tolerances ^{1/} (percent) |
|------------|-----------------------|---------------------------------------|
| Carbon | 0.28 - 0.33 | ±0.02 |
| Manganese | .40 - 0.60 | ± .03 |
| Phosphorus | .025 max. | + .005 |
| Sulfur | .025 max. | + .005 |
| Silicon | .20 - 0.35 | ± .02 |
| Chromium | .80 - 1.10 | ± .05 |
| Molybdenum | .15 - 0.25 | ± .02 |
| Nickel | .25 max. | + .03 |

^{1/} Check analysis tolerances shall conform to the latest issue of AMS2259, paragraph titled "Low alloy steels".

(b) Paragraph 3.6: In first line, insert "austenitic" between "The" and "grain".

(c) Paragraph 3.9: Delete, and substitute:

"3.9 Decarburization.— Material .250 inch and under shall be free from any zone of complete decarburization as determined microscopically on prepared sections and from partial decarburization to such an extent that the average hardness at the surface of a hardened specimen as determined by Rockwell A hardness tests shall be within two Rockwell A hardness numbers of the average subsurface hardness of the same specimen. This test is not applicable to materials less than .025 inch in thickness.

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"3.9.1 Material over 0.250 inch in thickness shall be free of decarburization to such an extent that the difference in average hardness readings between the surface of the test specimen, prepared in accordance with table VI, and a depression ground to a depth of at least 0.080 inch is not greater than two Rockwell C points. (See 4.10.2.)"

(d) Paragraph 3.10: In fourth line, insert "and length" between "width" and "tolerances".

(e) Table II: Delete, and substitute:

"TABLE II. Transverse mechanical properties

| | Tensile strength (minimum) | Yield strength at 0.2 percent offset or at extension indicated (minimum) | | Elongation in 2 inches (minimum) |
|---|-------------------------------|---|--|-------------------------------------|
| | psi | psi | Extension under load, inch in 2 inches | (N) (percent) |
| (A) | 85,000 max. | | | |
| (MA) | 95,000 max. | | | |
| (N) | | | | |
| Thickness less than 0.062, incl. | 95,000 | 75,000 | 0.0091 | 8.0 |
| Thickness over 0.062 to 0.125 inch, incl. | 95,000 | 75,000 | .0091 | 10.0 |
| Thickness over 0.125 to 0.187 inch, incl. | 95,000 | 75,000 | .0091 | 12.0 |
| Thickness over 0.187 to 0.249 inch, incl. | 90,000 | 70,000 | .0087 | 15.0 |
| Thickness over 0.249 to 0.749 inch, incl. | 90,000 | 70,000 | .0087 | 16.0 |
| Thickness over 0.749 to 1.500 inch, incl. | 90,000 | 70,000 | .0087 | 18.0 |

Page 3:

(a) Paragraph 4.3: Delete.

(b) Paragraph 4.5.1: Delete, and substitute:

"4.5.1 Sampling.- One sample for check chemical analysis shall be selected in accordance with Method 111 or 112 of Fed. Test Method Std. No. 151, to represent each heat in each shipment."

(c) Table IV: Under column titled "Nominal thickness range", in first line delete "0.373" and substitute "0.375".

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Pages 3 and 4: Paragraph 4.5.1.2: Delete, and substitute:

"4.5.1.2 The method of selecting samples as specified above is based on the assumption that the material is produced from ingots from the same heat and is essentially homogeneous in all respects. If the material is taken from stock and is not identifiable as to heat and method of manufacture, or if the identity of any portion of the shipment is obscure in any respect, additional samples shall be selected in accordance with table VI."

Page 4: (a) Paragraph 4.6.1: Delete, and substitute:

"4.6.1 Sampling.- Two tensile test samples shall be selected to represent each 200 sheets or 100 plates or each 10 coils, or less, of product of the same thickness and condition, and submitted for acceptance at one time."

(b) Paragraph 4.10.1: Delete, and substitute:

"4.10.1 Sampling.- Two specimens for decarburization tests shall be selected from approximately each 200 plates, sheets, strips, or from each 10 coils of material from the same heat, thickness, and condition and submitted for acceptance at one time."

(c) Paragraph 4.10.2. Delete, and substitute:

"4.10.2 Preparation.- Specimens shall be austenitized for a sufficient time and water quenched from 1,600° \pm 10° F.

"4.10.2.1 The surface of specimens from material over 0.250 inch in thickness shall be ground to remove the amount shown in the following table:

Surface removal

| | |
|---------------------------|--------------|
| Over 0.250 to 0.375 incl. | - 0.020 inch |
| Over .375 to .500 incl. | - .025 inch |
| Over .500 to .750 incl. | - .030 inch |
| Over .750 to 1.000 incl. | - .035 inch |
| Over 1.000 to 2.000 incl. | - .040 inch" |

(d) Paragraph 4.10.3: In the first line, between "Hardness" and "shall" insert "of sheet and strip".

Page 5, paragraph 4.10.3: Add as last sentence: "Micro-examination of prepared sections will not normally be required."

Page 6, paragraph 6.2: Delete "(b) Data requirements (see 3.2 and 4.3)".

Custodians:

Army - MR

Navy - WP

Air Force - (11)

Reviewer activities:

Army - MI, MR

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User activities:

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