AERONAUTICAL
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 6423

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Revised

STEEL
0.9Cr - 0.75Ni - 0.52Mo - B (0.40 - 0.46C)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. FORM: Bars, forgings, forging stock, and mechanical tubing.

3. APPLICATION: Primarily aircraft component parts heat treated to high strengths.

4. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.40 - 0.46	0.02	0.02
Manganese	0.75 - 1.00	0.03	0.03
Silicon	0.50 - 0.80	0.02	0.02
Phosphorus	0.025 max	--	0.005
Sulfur	0.025 max	--	0.005
Chromium	0.80 - 1.05	0.03	0.03
Nickel	0.60 - 0.90	0.03	0.03
Molybdenum	0.45 - 0.60	0.03	0.03
Boron	Present, but not exceeding 0.007	--	--
Vanadium	0.01 - 0.06	0.00	0.01

4.1 If size is over 100 sq in. in cross sectional area, the chemical composition shall be as agreed upon by purchaser and vendor.

5. CONDITION:

5.1 Bars: In a machinable condition having hardness not higher than Brinell 241 or equivalent, except that, if ordered cold finished, hardness may be as high as Brinell 248 or equivalent.

5.2 Tubing: In a machinable condition with hardness not higher than Rockwell C 25 or equivalent.

5.2.2 If hot finished tubing is specified, it shall be furnished in a machinable condition with hardness not higher than Rockwell B 99 or equivalent.

5.3 Forgings: In a machinable condition with hardness not higher than Brinell 269 or equivalent.

5.4 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Hardenability: The hardenability shall be J55=20 min and J53=32 min when determined by the standard end-quench test specimen in accordance with the SAE method of Determining Hardenability published in the latest issue of the SAE Handbook, except that the steel shall be normalized at 1600 F ± 10 and the test specimen austenitized at 1550 F ± 10. The hardenability test is not required on a product that will not yield a suitable specimen but the steel from which the product is made shall conform to the hardenability specified in this paragraph.

6.2 Grain Size: Five or finer, ASTM E19-46, method a. Material predominantly 5 or finer with grains as large as 3 is permissible.

6.3 Decarburization:

6.3.1 Bars or tubing ordered ground, turned, or polished shall be free from decarburization on such ground, turned, or polished surfaces. Inside decarburization of such tubing shall not exceed the maximum depth specified in 6.3.3.2.

6.3.2 Allowable decarburization of bars or tubing ordered for redrawing or forging, or to specified microstructural requirements, shall be as agreed upon by purchaser and vendor.

6.3.3 Decarburization of bars to which 6.3.1 or 6.3.2 is not applicable shall be not greater than the following:

6.3.3.1 Bars:

Nominal Diameter or Distance Between Parallel Sides Inches	Depth of Decarburization Inch
0.375 and under	0.010
Over 0.375 to 0.500, incl	0.012
Over 0.500 to 0.625, incl	0.014
Over 0.625 to 1.000, incl	0.017
Over 1.000 to 1.500, incl	0.020
Over 1.500 to 2.000, incl	0.025
Over 2.000 to 2.500, incl	0.030
Over 2.500 to 3.000, incl	0.035
Over 3.000	0.040

6.3.3.2 Tubing:

Nominal Wall Thickness Inches	Depth of Decarburization, Inch	
	Inside	Outside
0.109 and under	0.008	0.015
Over 0.109 to 0.203, incl	0.010	0.020
Over 0.203 to 0.400, incl	0.012	0.025
Over 0.400 to 0.600, incl	0.015	0.030
Over 0.600 to 1.000, incl	0.017	0.035
Over 1.000	0.020	0.040