

# AMS 5659 (15/5 PH VAR/ESR)

## Technical Datasheet



### Precipitation Hardening Stainless Steel Bar

Service. Quality. Value.

#### Typical Applications

15/5 PH is very suitable for intricate parts requiring machining and welding and/or where distortion in conventional heat treatment is a problem. It is employed where high strength and good corrosion resistance are required. This alloy finds extensive use in aircraft and missile construction ranging from parts for instrumentation to landing gear components. 15/5 PH is also employed for valve parts, fittings, fasteners, shafts and gears and chemical process equipment and nuclear reactor components.

#### Product Description

15/5 PH VAR is a martensitic, precipitation hardening stainless steel containing 4% copper. It possesses all the advantages of 17/4 PH, including single low-temperature thermal treatment. It also offers excellent transverse notch toughness and ductility and very good uniformity of properties. The mechanical properties in larger sections and forgability are superior to that of 17/4 PH. 15/5 PH VAR is produced by the consumable electrode, vacuum arc re-melted route which enhances ductility and toughness and gives an essentially ferrite-free microstructure. This alloy has a typical density of 7.8 kg/dm<sup>3</sup> and magnetic permeability of 95.

#### Machinability

The forming characteristics are good. Average cutting speed – annealed, 80ft/min with a machinability rates of 50% of B-1112 rated at 100%. H1150, 125ft/min. The alloy is similar to 17/4 PH.

#### Corrosion Resistance

Superior to straight chromium grades like 410, approaching corrosion resistance of the chromium nickel grades. In many corrosive media it is equal to such grades as 302 (and even 304). Corrosion resisting properties will be affected by surface finish and aging heat treatment. Heat treatment increases the resistance to stress corrosion cracking.

#### Weldability

Excellent and is readily weldable by all commercial processes.

#### Production Tolerances

Manufacturing limits are as stated in the Table AMS 2241. For further assistance please contact our Sales Dept. / Laboratory.

#### Related Specifications

- ASTM SA-564 Type XM - 12
- UNS S15500

#### Chemical Composition (weight %)

Weight (%)	C	Mn	P	S	Si	Cr	Ni	Mo	Cu
Min						14.00	3.50		2.50
Max	0.07	1.00	0.030	0.015	1.00	15.50	5.5	0.50	4.50

#### Typical Mechanical Properties

Condition	Tensile Strength (MPa)	0.2% Proof Stress(MPa)	Elongation on 4D G.L. (%)	Hardness (HB)
H900	1,310	1,172	10	388 / 444
H925	1,172	1,069	10	375 / 429
H1025	1,069	1,000	12	331 / 401
H1075	1,000	862	13	311 / 375
H1100	965	793	14	302 / 363
H1150	931	724	16	277 / 352

#### Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

##### UK Service Centres:

Smiths Belfast 02895 908 897  
Smiths Biggleswade 01767 604 704  
Smiths Birmingham 0121 728 4940  
Smiths Bristol 0117 971 2800  
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##### Quality & Testing:



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