

## BRODER METALS GROUP 13-8PH (Mo)

AMS 5629 Equivalents/ Common Names / Standards		
UNS	S13800	
<b>Standard</b>		Steel Bars, Forgings, Tubing, and Rings, Corrosion Resistant
	<b>AMS 5629</b>	13Cr – 8Ni – 2.3Mo – 1.1Al Vacuum Induction Plus Consumable Electrode Melted
	<b>SAE AMS5629 (H)</b>	Steel corrosion-resistant bars
	<b>ASTM A564</b>	Standard specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless-Steel Bars and Shapes
<b>Werkstoffe</b>	<b>1.4534</b>	
<b>Conditions</b>		Annealed
		H950
		H1000
		H1025
		H1050
		H1100
		H1150

13-8 Mo VIM-VAR steel is a precipitation hardening martensitic stainless steel/ It offers excellent strength, fracture toughness and transverse mechanical properties. The material is resistant to stress, corrosion cracking and has the high strength characteristics common to the family of precipitation hardening steels.

The alloy is double vacuum remelted (VIM-VAR) which assures low gas content, improved homogeneity and superior cleanliness.



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The material can be sold as solution heat treated or in the aged condition after being precipitation hardened. Our 13-8PH material is held in the solution treated condition, with capability tests to H1000 precipitation hardened condition. However, we can subject to customer consent age material to any of the condition types required.

Main properties required: the type and class of material required should be specified at time of enquiry, where they are not the defaults specified apply:

Melting Practice involves multiple melted using VM plus the following according to the type required:

<b>Type 1</b>	Multiple melted using Vacuum-arc consumable electrode process in final heat treat cycle
<b>Type 2</b>	Multiple melted using Vacuum-slag consumable electrode process in final heat treat cycle

Maximum Delta Ferrite Content:

<b>Class A</b>	0.5% max. free ferrite
<b>Class B</b>	1.0% max. free ferrite
<b>Class C</b>	2.0% max. free ferrite

Where no class is specified, any class may be supplied.

### Chemistry

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Al	N
Min	-	-	-	-	-	12.25	7.5	2	0.5	-
Max	0.05	0.1	0.1	0.01	0.08	13.25	8.5	2.5	1.35	0.01



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#### Heat Treatment Condition

Material can be sold as Solution Treated, with or without capability tests for an ageing treatment.

13-8PH can also be supplied in the following aged conditions:

Solution	1750 F (+/- 25 F) - 927 C (+/- 14 C), time subject to section thickness, cool to F. Pyrometry in acc with AMS
H950	950 F (+/-10 F) – 510 C (+/- 6 C), 4 hours (+30/-0 min), Air
H1000	1000 F (+/-10 F) – 538 C (+/- 6 C), 4 hours (+30/-0 min), Air
H1025	1025 F (+/-10 F) – 552 C (+/- 6 C), 4 hours (+30/-0 min), Air
H1050	1050 F (+/-10 F) – 566 C (+/- 6 C), 4 hours (+30/-0 min), Air
H1110	1100 F (+/-10 F) – 593 C (+/- 6 C), 4 hours (+30/-0 min), Air
H1150	1150 F (+/-10 F) – 621 C (+/- 6 C), 4 hours (+30/-0 min), Air

#### Mechanical Properties

##### Microstructure

Class	Condition	Severity
1	Freckles	A
2	White Spots	A
3	Radial Segmentation	A
4	Ring Pattern	B

##### Grain Size

<76.2 mm	ASTM No. 5 or
>76.2 mm	ASTM No. 4 or



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### Mechanical Properties

	Test Direction	UTS	0.2% YS Elongation % in 4D	Elongation In Area	Reduction in Area	Hardness
<b>Solution Treated</b>	Longitudinal	-	-	-	-	<363
<b>H950</b>	Longitudinal	220	205	10	45	<363
	Transverse	220	205	10	35	<363
<b>H1000</b>	Longitudinal	205	190	10	50	<363
	Transverse	205	190	10	40	<363
<b>H1025</b>	Longitudinal	185	175	11	50	<363
	Transverse	185	175	11	45	<363
<b>H1050</b>	Longitudinal	175	165	12	45	<363
	Transverse	175	165	12	50	<363
<b>H1110</b>	Longitudinal	150	135	14	50	<363
	Transverse	150	135	14	50	<363
<b>H1150</b>	Longitudinal	135	90	14	50	<363
	Transverse	135	90	14	50	<363

### Typical Uses

13-8PH is very versatile and can be used in aerospace for structural parts and landing gear components, as well as in Marine, Motorsports, Nuclear and Oil & Gas applications for shafts, valve components, and fittings and fasteners.

Material for aerospace use should be premium aircraft-quality conforming to AMS 2300.



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