VDM Metals

VDM Metals USA, LLC
14255 Mt. Bismark St.
Reno NV 89506
(775)-386-1200

VDM Metals USA, LLC
306 Columbia Turnpike
Florham Park NJ 07932
(973)-437-1664

Material Certification Date: 1/16/2019

Heat No: 195553

Customer: 0000678
VDM Metals Japan K.K.
DAIDO SEIMEI KASUMIGASEKI BLDG
7TH FL
1-4-2 KASUMIGASEKI
CHIYODA-KU, TOKYO
100-0013 JAPAN
Country: JP

Material Certification

Alloy: Alloy X **UNS:** N06002 **Werkstoff:** 2.4665

Quantity: 33 PCS **Size / Drawing:** 1.181" RD X 157.480" C/L **Weight:** 1,724 Lbs

Quantity: 33 PCS **Size / Drawing:** 30mm RD X 4000mm C/L **Weight:** 782 Kg

Order Information

Date: 8/10/2018 **Cust Order:** VDMJ-6848 **Shop Order:** P98299-01 **Heat No:** 195553

Product Specs:

Material
AMS 5754M [SHT] * ASME SB-572 2015 EDITION * ASTM B 572-06 (2016) *

Quality
S-400 REV 6/03/16, S-SPEC-1(S-1000) REV 03/2/18 *

Certified Chemistry

Chemical Analysis: Remelt Ingot
Melt Method: VIM/ESR
Raw Material Source: Melted/Remelted at VDM Metals USA/FP
Chemistry Source: VDM Metals USA T5985, 306 Columbia Turnpike, Florham Park, NJ 07932-1217

C	Mn	Si	P	S	Cr	Ni	Co	Mo	Ti
0.060	0.54	0.32	0.014	0.001	22.13	47.15	1.32	8.52	0.014

Al	Cu	B	Fe	W
0.08	0.06	0.004	18.56	0.65

Condition M - Mill Thermal Treatment (As Shipped Condition)

2150F, 30 minutes, water quenched
Material Condition: Hot Rolled, Solution Heat Treated, Centerless Ground

Grain Size

Grain size determined in accordance with ASTM-E-112-13.

Location	Orientation	Structure	Condition	ASTM No
Cross-Sectional	Transverse	Duplex	ALA	2.0

ASTM No	Etchant No	Micro No	Magnification	Performed By
ALA -2.0	23	UU2425U	100x	VDM Reno

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Alloy: Alloy X UNS: N06002 Werkstoff: 2.4665

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Hardness

Hardness	Conversion	Performed By
HRBW 82	HBW per ASTM E140 155	VDM Reno

Tensile - Room

Temp	Orientation	Ultimate Tensile Strength	Yield Strength (.2%)	Elongation 4D
		ksi	ksi	%
Room	Longitudinal	107.0	46.3	59.0

Reduction of Area	Machined & Tested By
%	
76.0	Element

Smooth Stress Rupture

Temp	Orientation	Stress	Life	Elongation 4D
		ksi	Hrs	%
1500F	Longitudinal	25.0	34.8	111.5

Specimen Type	Specimen Diameter	Machined & Tested By
	Inch	
Smooth Bar	0.2505	Element

Stress rupture specimen was steploaded at 5 ksi at 24.0 and 32.0 hours.

Macrostructure

Conforms	Performed By
Yes	VDM Reno

Ultrasonic Inspection

Ultrasonic Conforms	Ultrasonic Spec	Ultrasonic Spec	Method	Performed By
Yes	AMS 2630C Class A	AMS-STD-2154C Class A	Immersion	VDM Reno

Material is free of mercury, radium, and alpha source material contamination.
Mill certification in accordance with EN 10204: 2004 Type 3.1.

VDM Metals USA, LLC has complied with all producer requirements of AS6279.

No weld or weld repair was performed on material.

Testing Source:

Element - Element Materials Technology T4707, 15062 Bolsa Chica, Huntington Beach, CA, 92649-1023
VDM Reno - VDM Metals USA T5978, 14255 Mt.Bismark St, Reno, NV, 89506

Material Certification

Alloy: Alloy X | **UNS:** N06002 | **Werkstoff:** 2.4665

Order Information

Date: 8/10/2018 | **Cust Order:** VDMJ-6848 | **Shop Order:** P98299-01 | **Heat No:** 195553

1/14/19

Donald Artieri / Senior Quality Supervisor