



**PRECISION MARSHALL STEEL COMPANY**  
**One Northpoint Court, Bolingbrook IL 60440**  
**Toll Free: 1-800-258-2558 - www.pmsteel.com**

**DRILL ROD TYPICAL MATERIAL CERTIFICATE**

**STANDARD INFORMATION**

**STANDARD CHEMICAL COMPOSITION**

AISI	Carbon	Manganese	Silicon	Sulfur	Chromium	Vanadium	Tungsten	Molybdenum	Phosphorous	Nickel
W1	.90/1.05	.30/.40	.10/.25	.025 Max	.30 Max	.10 Max	.15 Max	.10 Max	.025 Max	-
O1	.85/1.00	1.00/1.40	.10/.50	0.030 Max	.40/.70	.30 Max	.40/.60	--	.030 Max	-
A2	.95/1.05	.40/1.00	.50 Max	0.030 Max	4.75/5.50	.15/.50	--	.90/1.40	.030 Max	-
S7	.45/.55	.20/.90	.20/1.00	0.030 Max	3.00/3.50	.35 Max	--	.10 Max	.030 Max	-
D2	1.40/1.60	.10/.60	.10/.60	0.030 Max	11.00/13.00	.50/1.10	--	.70/1.20	.030 Max	-
M2	.78/1.05	.15/.40	.03/.02	.03 Max	3.75/4.50	1.75/2.20	5.50/6.75	4.50/5.50	.40 Max	-
H13	.40	--	1.00	.100	5.25	1.00	-	1.35	--	-
304L	.03 Max	2 Max	1 Max	.03 Max	18/20	--	-	-	.045 Max	8/12

**SPECIFICATIONS**

**MACHINEABILITY**

**SURFACE / STRUCTURE**

AISI	SAE	ASTM	FEDERAL	UNS	Rating	Size	Finish (Max)	Quality (Max Defect)
W1	J-437	A686-92(2010) (1)	QQ-T-580 Rev.C	T72301	100	.000-.1250	10 RMS	0.000
O1	J-437	A681-08 (2)	QQ-T-570 Rev.C	T31501	90	.1251-.2500	15 RMS	0.000
A2	J-437	A681-08 (2)	QQ-T-570 Rev.C	T30102	65	.2501-.8750	20 RMS	0.000
S7	J-437	A681-08 (2)	QQ-T-570 Rev.C	T41907	95	.8751-2.000	30 RMS	0.000
D2	J-437	A681-08 (2)	QQ-T-570 Rev.C	T30402	50	All CD Flats	50 RMS	.008/side
M2	J438-B	A600-92a(2016)	QQT-570 Rev. C	T11302	65			
H13	J-437	A681-08 (2)	QQ-T-570 Rev.C	--	75			
304L	S30403	A276	QQ-S-766	S30403	70			

1 Certain heats may not meet the ASTM specification for Manganese  
 2 Certain sizes may not meet the ASTM specification for hardness.

\* Grain Size: 5-8 (McQuade-Ehn)  
 \* Microstructure: 85% min. spheroidization

**HARDNESS**

Size	W1	O1	A2	S7	D2	H13	M2	304L
.0000-.1250	166,000 psi	116,000 psi	128,000 psi	123,000 psi	131,000 psi	40-48 HRC	248 HRB	215 HRB
.1251-.2500	28 HRC	100 HRB	27 HRC	25 HRC	28 HRC	40-48 HRC	248 HRB	215 HRB
.2501-.5000	23 HRC	100 HRB	27 HRC	25 HRC	28 HRC	40-48 HRC	248 HRB	215 HRB
.5001-2.000	96 HRB	100 HRB	27 HRC	25 HRC	28 HRC	40-48 HRC	248 HRB	215 HRB

\* For sizes under 5/32" diameter, a tensile strength is obtained.

SIZE	LENGTH		
Diameter	Tolerance	Length	Tolerance
.0000-.1249	+/- .0003	3'	36" +1/8,-0
.1250-.499	+/- .0005	6'	72" +1,-0
.500-3.00	+/- .001	12'	144" +2,-0

Precision Marshall Steel Company hereby attests that drill rod items as supplied have been tested and certified to meet all of the standards and limitations as set forth above.

Material is RoHs, REACH, and Conflict Mineral compliant. The letter confirming compliance can be found on our website or distributor portal.

Certified: Adam Helphenstine  
 Manager of Materials

Date: 2/9/2023