



4330 V-Mod

Round Bar

Chemical Composition* – % Weight

C	Mn	P	S	Si	Ni	Cr	Mo	V
.34	.95	.012	.005	.35	3.00	1.10	.60	.15

Physical Properties – Typical Values at 68°F

BHN Hardness	Tensile Strength	Yield Strength	Elongation in 2"	Reduction of Area %	Charpy Test Toughness Index
321 – 375	160 ksi	150 ksi	15%	50	45 ft. lbs. Longitudinal @ RT 40 ft. lbs. Transverse @ RT 30 ft. lbs. Longitudinal @ -50°F

- * Nickel alloy round bar.
- * Normalized, quenched and tempered, stress relieved round bar with excellent toughness.
- * Minimum: 150 ksi yield.
- * Hardness: 321 – 375 BHN.
- * Mechanical properties at 1" below surface.

SCOPE

Rolled alloy steel bars, 2½" to 10" diameter, used for petroleum products after quench and temper for a high level of tensile properties with excellent toughness.

METALLURGICAL CONDITIONS

Grain Size: The austenitic grain size shall be 5 or finer as defined in ASTM E-112.

Micro cleanliness: According to ASTM E-45 method A:

Thin Series	Heavy Series
A ≤ 1.5	A ≤ 1.0
B ≤ 1.5	B ≤ 0.5
C ≤ 0.5	C ≤ 0.5
D ≤ 1.5	D ≤ 0.5

SURFACE DEFECT

Internal defect: The internal defects shall be checked by ultrasonic testing in following "DGS" method (flat bottom hole reference).

Guaranties are: Through all the section, out of a central core hole, no defect greater than equivalent Flat Bottom Hole of 1/8".

In central core area :

Bar Diameter	≤ 9"	FBH 1/8" max level
9" < bar diameter	≤ 10"	FBH 3/16" max level
10" < bar diameter	≤ 11"	FBH 1/4" max level
11" < bar diameter	≤ 11¾"	no guarantee

Surface defect: Bars shall be checked by eddy current or MPI method to eliminate all defects having more than 3 mm maximum depth.

Note: The data contained in this document is accurate at time of printing, and intended for use as a general guide.
* Typical maximum values. Mill certifications are available upon request.