

RAW MATERIALS / FERROUS

FNHA-2-A-452.00

ALLOY STEEL 4140 HOT-ROLLED ROUND AND FORGING QUALITY MATERIAL**1. SCOPE**

This specification defines the requirements for Hot-Rolled Steel Bar conforming to AISI chemistry specifications and ASTM A29 dimensional tolerances.

2. APPLICATION

This specification includes material requirements, ordering information and quality requirements to be used by Engineering, Purchasing and Manufacturing.

3. DRAWING SPECIFICATIONS

3.1 H.R. Round AISI 4140

4. RELATED SPECIFICATIONS**4.1 REFERENCE STANDARDS**

ASTM A29 - Standard Specifications for Steel Bar, Carbon and Alloy, Hot Wrought and Cold Finished, General Requirements.

ASTM A322 - Standard Specification for Steel Bars, Alloy, Standard Grades

86050124(FNHA-2-A-027.00).- General Requirements for Carbon and Alloy Steel Bars, Hot Rolled and Cold Finished.

4.2 This standard replaces the following company standards:

Versatile	MS - 623.
Versatile	MS - 629.

5. ORDERING INFORMATION

5.1 AISI 4140 / 4142 Steel

5.2 Hot Rolled Bar, Standard Quality.

5.3 Dimensions (size, bar length, and whether cut length or random length).

5.4 Condition: Specify hot-rolled or annealed.

5.5 Grain size, if required.

6. CHEMICAL COMPOSITION FOR AISI 4140 and 4142 STEEL

Chemistry:	4140-4142
Carbon, %	0.38 to 0.45
Manganese, %	0.75 to 1.00
Phosphorus, %	0.035 max.
Sulfur, %	0.040 max.
Silicon, %	0.15 to 0.35
Nickel, %	---
Chromium, %	0.80 to 1.10
Molybdenum, %	0.15 to 0.25

7. DIMENSIONAL TOLERANCES

7.1 Size tolerances for Hot-Rolled Rounds - see Table 1.

7.2 Length tolerance for cut lengths + 2" / - 0, unless otherwise specified by part number drawing.

7.3 Straightness tolerances for Hot-Rolled Rounds - see Table 2.

					NAME	STD 4140 HR RD		
					 NEW HOLLAND		ENGINEERING SPECIFICATION	
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8. MECHANICAL PROPERTIES

Elongation in 2", typical % 26
 Reduction in Area, typical % 58
 Rockwell B Hardness, typical 91
 Brinnell Hardness, typical 187

Hot-Rolled Properties: 4140

Tensile Strength, psi, typical 89 000

Yield Strength, psi, typical 62 000

TABLE 1. Size Tolerance for Alloy H.R. Rounds

Size, inches	Permissible Variation in Cross Section, Over and Under, inches	
	Over	Under
To 5/16, incl.	0.005	0.005
Over 5/16 to 7/16, incl.	0.006	0.006
Over 7/16 to 5/8, incl.	0.007	0.007
Over 5/8 to 7/8, incl.	0.008	0.008
Over 7/8 to 1, incl.	0.009	0.009
Over 1 to 1 1/8, incl.	0.010	0.010
Over 1 1/8 to 1 1/4, incl.	0.011	0.011
Over 1 1/4 to 1 3/8, incl.	0.012	0.012
Over 1 3/8 to 1 1/2, incl.	0.014	0.014
Over 1 1/2 to 2, incl.	1/64	1/64
Over 2 to 2 1/2, incl.	1/32	0
Over 2 1/2 to 3 1/2, incl.	3/64	0
Over 3 1/2 to 4 1/2, incl.	1/16	0
Over 4 1/2 to 5 1/2, incl.	5/64	0
Over 5 1/2 to 6 1/2, incl.	1/8	0
Over 6 1/2 to 8 1/4, incl.	5/32	0
Over 8 1/4 to 9 1/2, incl.	3/16	0
Over 9 1/2 to 10, incl.	1/4	0

TABLE 2. Straightness Tolerance for Hot-Rolled Alloy Bars

Standard Tolerance	1/4 inch in any 5 foot length
Special Tolerance	1/8 inch in any 5 foot length



NAME

STD 4140 HR RD

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