

RAW MATERIALS / FERROUS

FNHA-2-A-411.00

AISI 4140, COLD DRAWN ROUND, ANNEALED**1. SCOPE**

This specification defines the requirements for Cold Drawn 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 C.D. Round AISI 4140 Annealed

3.2 C.D. Round AISI 4140 Annealed, Ground and Polished

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 A331 - Standard Specification for Steel Bar, Alloy, Cold Finished, Standard Quality.

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

86599840(FNHA-2-A-411.01) Matl List 86050116 WS 50.03 material 42CrMoS4

4.2 This standard replaces the following company standard.

Versatile

MS - 629.

5. ORDERING INFORMATION

5.1 AISI 4140 Steel.

5.2 Cold Drawn Bar, Standard Quality.

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

5.4 Condition: Cold Drawn and Annealed, or CD Annealed - Ground and Polished.

5.5 Grain size, if required.

6. CHEMICAL COMPOSITION

Carbon,%	0.38 to 0.43
Manganese,%	0.75 to 1.00
Phosphorus,%	0.035 maximum
Sulfur,%	0.040 maximum
Silicon,%	0.15 to 0.35
Chromium,%	0.80 to 1.10
Molybdenum,%	0.15 to 0.25

7. DIMENSIONAL TOLERANCES

7.1 Size tolerances for Cold Drawn Rounds - see Tables 1 and 2.

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

7.3 Straightness tolerances for Cold Drawn Rounds - see Table 3.

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

Cold Drawn and Annealed Properties:

Tensile Strength, psi, typical	98 000
Yield Strength, psi, typical	87 000
Elongation in 2", typical %	21
Reduction in Area, typical %	52
Rockwell B Hardness, typical	94
Brinnell Hardness, typical	201

TABLE 1. Size Tolerance for 4140 C.D. Annealed Ground and Polished Rounds

Size, inches	CD Ground and Polished Tolerance from Specified Size, Minus only, inches
To 1 1/2, incl.	0.001
Over 1 1/2 to 2 1/2, incl.	0.0015
Over 2 1/2 to 3, incl.	0.002
Over 3 to 4, incl.	0.003

TABLE 2. Size Tolerance for 4140 C.D. Rounds

Size, inches	Cold Drawn Tolerance from Specified Size, Minus only, inches
To 1 1/2, incl.	0.005
Over 1 1/2 to 2 1/2, incl.	0.006
Over 2 1/2 to 4, incl.	0.007
Over 4 to 6, incl.	0.008
Over 6 to 8, incl.	0.009
Over 8 to 9, incl.	0.010

TABLE 3. Straightness Tolerance for 4140 C.D. Rounds

Size, inches	Length, feet	Straightness Tolerance, inches, Maximum Deviation from Straightness in any 10 ft. Portion of Bar
Less than 5/8	Less than 15	3/16
Less than 5/8	15 and over	5/16
5/8 and over	Less than 15	1/8
5/8 and over	15 and over	3/16

	NAME				PART NUMBER	
	STD 4140 AN CD RD				86050116	
ENGINEERING SPECIFICATION			REV. D	FRAME 2	OF 2	