

CARBON STEEL 1015 HOT-ROLLED ROUND

1. SCOPE

This specification defines the requirements for Hot-Rolled Steel Bar conforming to AISI chemistry specifications and ASTM A27 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 1015
- 3.2 H.R. Round AISI 1012 - 1020

4. RELATED SPECIFICATIONS

4.1 REFERENCE STANDARDS

ASTM A27 - Standard Specifications for Steel Bar, Carbon and Alloy, Hot Wrought and Cold Finished, General Requirements.
ASTM A36 - Hot-rolled Steel
ASTM A510 - Basic Bright Wire
86050124(FNHA-2-A-027.00) - General Requirements for Carbon and Alloy Steel Bars, Hot Rolled and Cold Finished.

5. ORDERING INFORMATION

- 5.1 AISI 1015 Steel or AISI 1012 through 1020 Steel.
- 5.2 ASTM A36 may be used provided the application does not involve severe forming.

- 5.3 ASTM A510 basic bright wire may be used for diameters 0.25 inch (6.35 mm) or less.
- 5.4 Hot Rolled Bar, Standard Quality.
- 5.5 Dimensions (size, bar length, and whether cut length or random length).
- 5.6 Condition: Specify hot-rolled or annealed.
- 5.7 Grain size, if required.

6. CHEMICAL COMPOSITION FOR AISI 1012 to 1020 STEEL

Chemistry:	1012 - 1020
Carbon,%	0.10 to 0.23
Manganese,%	0.30 to 0.90
Phosphorus,%	0.040 max.
Sulfur,%	0.050 max.

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 1015 HR RD	
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							FRAME 1 OF 2 PART NUMBER
ALL	G	TH	113477	5-99			9842927
FRAME NO.	REV	BY	ECN NO.	DATE			
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8. MECHANICAL PROPERTIES

Elongation in 2", typical % 28
 Reduction in Area, typical % 50
 Rockwell B Hardness, typical 65
 Brinell Hardness, typical 116

Hot-Rolled Properties: 4140
 Tensile Strength, psi, typical 50 000
 Yield Strength, psi, typical 27 500

TABLE 1. Size Tolerance for 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 Bars

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

NAME				PART NUMBER	
STD 1015 HR RD					
ENGINEERING SPECIFICATION		REV. G	FRAME 2	OF 2	9842927