GENERAL DESCRIPTION C1215 C1213

This is the fastest screw machine stock available except C12L14 Leaded. It combines exceptional free cutting qualities with a good, smooth finish. It is especially suited to screw machine operations since it is machinable at surface speeds up to 225 feet per minute, and even higher, in some applications. Similar in analyses to C1215 except for a higher sulphur content, it is comparable in tensile strength, elastic limit and other physical properties. It is not recommended for parts which will be subjected to fatigue stresses, nor is it recommended for forming, bending or upsetting.

GENERAL DESCRIPTION C12L14 Leaded

C12L14 Leaded has a chemistry designed to provide the ideal free cutting steel. It has the excellent qualities of sounder cross-section, higher ductility, higher impact values, and improved carburization. It is unusually free from surface imperfections, such as seams, laps and slivers. The fine and uniform dispersal of lead particles throughout lowers the coefficient of friction, and increases tool life as much as 200%. Machinability is increased as much as 45% over B1113.

The fine satin machined surface finish often eliminates extra finishing operations and provides a better base for plating. Lowered friction allows for higher machining speeds, resulting in more parts per hour and more parts between tool grinds. Screw machine shops and other manufacturers know that Ledloy offers greater value, higher quality, and greater cost cutting potential than any other free cutting steel on the market today.

GENERAL DESCRIPTION C1018 C1020 C1040

C1018 is a medium low carbon grade steel without the "brittleness" to forming or bending common to other screw steels. It is used where cold forming stresses are not too severe. It is extensively used for case hardened parts where a hard, wear-resistant case with a soft, ductile core is required. Machinable at surface speeds up to 130 feet per minute, and even higher, in some applications. Heat treatment after carburizing for maximum core strength—1600°F., and quench in oil or water. For maximum case hardness and minimum distortion—1425°F., and quench in water or brine. The former followed by the latter treatment develops the best combination of case and core strength. Draw 300°F. after final quench to relieve strains.

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Turned and Polished Bars of C1018 cost more than Cold Drawn Bars of the same size, but less than Turned and Ground Shafting. For most shafting applications, the Turned and Polished quality is adequate.

Turned, Ground and Polished Bars of C1018 and C1020 are well known to all users of precision shafting. The shafts are first tool turned, then ground and reground to close accuracies. This produces shafting of the most uniform finish and concentricity. Wear on parts and machines is reduced. They are so true, round and straight, that they are especially adapted for fans, centrifugal pumps, textile machines, looms, printing presses, and all types of automatic and high speed machines. These shafts can be furnished on special order where better than standard tolerances are required.

Turned, Ground and Polished Bars of C1040 result in approximately 30% higher tensile strength over C1018 due to the increase of carbon. They are preferred where greater strength and higher physicals are required.

GENERAL DESCRIPTION C1045

C1045 is a basic oxygen process steel in the higher carbon range. Its natural physical property advantages over the lower carbon steels are valuable for parts requiring moderate strength and similar applications. Good heat treatment response makes these grades useful for studs and special bolts. C1035—C1045 will machine to a much smoother finish than C1018. The high carbon results in one of the strongest steels of the carbon grades excluding alloy steels. Can be heat treated at 1500°F., and water quenched, to increase mechanical properties.

GENERAL DESCRIPTION C1117

C1117 basic oxygen process screw steel combines much of the machinability of Bessemer screw steel with the advantages of B.O.P. Shop physical properties. Machinable at surface speeds up to 150 feet per minute, and even higher, in some applications. Suitable for cutting, threading and automatic screw machine operations at moderate speeds and feeds. May be bent or formed where such cold working operations are not too severe. Excellent for case hardening—produces accurate, long-wearing machine parts with excellent finish. Heat treatment after carburizing for maximum core strength—1600°F., and quench in water. For maximum case hardness and minimum distortion—1425°F., and quench in water. The former followed by the latter treatment develops the best combination of case and core strength. Draw 300°F. after final quench to relieve strains.

The foregoing properties are also applicable to C1115.

GENERAL DESCRIPTION C1137

A comparatively free machining medium carbon basic oxygen process steel. Suitable for automatic or hand screw machine parts and other applications where fairly high strength and fast, clean machining are required. This steel responds to heat treatment with more uniform results than steels of lower manganese content. Greater resistance to wear is an additional feature.

Standard Manufacturing Tolerances for Cold Finished Bars

All tolerances are minus.

Tolerances on Flats apply to thickness as well as width.

There are no standard tolerances for straightness of Cold Finished Bars, although they are customarily furnished machine straightened to be suitable for the majority of industrial uses.

Size in Inches	Undersize Variation in Inches: Max. of Carbon Range .28% or less	Max. of Carbon Range .28% to .55%, Incl.	Max. of Carbon Range to .55%, Incl., Stress Relieved After Cold Finishing	Max. of Carbon Range Over .55%, or All Grades Quenched and Tempered Before Cold Finishing
ROUNDS—COLD DRAWN OR TURNED AND POLISHED				
To 1½, Incl.	.002	.003	.004	.005
Over 1½ to 2½, Incl.	.003	.004	.005	.006
Over 2½ to 4, Incl.	.004	.005	.006	.007
Over 4 to 6, Incl.	.005	.006	.007	.008
Over 6 to 8, Incl.	.006	.007	.008	.009
Over 8 to 9, Incl.	.007	.008	.009	.010
Over 9	.008	.009	.010	.011
Rounds over 4" are normally furnished Turned and Polished only.				
HEXAGONS—COLD DRAWN				
To ¾, Incl.	.002	.003	.004	.006
Over ¾ to 1½, Incl.	.003	.004	.005	.007
Over 1½ to 2½, Incl.	.004	.005	.006	.008
Over 2½ to 3⅛, Incl.	.005	.006	.007	.009
SQUARES—COLD DRAWN				
To ¾, Incl.	.002	.004	.005	.007
Over ¾ to 1½, Incl.	.003	.005	.006	.008
Over 1½ to 2½, Incl.	.004	.006	.007	.009
Over 2½ to 4, Incl.	.006	.008	.009	.011
FLATS—COLD DRAWN				
Width in Inches				
To ¾, Incl.	.003	.004	.006	.008
Over ¾ to 1½, Incl.	.004	.005	.008	.010
Over 1½ to 3, Incl.	.005	.006	.010	.012
Over 3 to 4, Incl.	.006	.008	.011	.016
Over 4 to 6, Incl.	.008	.010	.012	.020
Over 6	.013	.015	—	—

ROUNDS—TURNED GROUND AND POLISHED OR COLD DRAWN GROUND AND POLISHED

Size in Inches	Size Variations in Inches: Resulphurized steels-sulphur .08% minimum not Furnace Treated	Non-resulphurized steels-sulphur under .08%, or Furnace Treated Steels
To 1½, Incl.	.001	.001
Over 1½ to 2½, Excl.	.0015	.0015
2½ to 3, Incl.	.002	.002
Over 3 to 4, Incl.	.003	.003
Over 4 to 6, Incl.	.004	.005
Over 6	.005	.006

Sizes over 4" are normally furnished Turned, Ground and Polished only.