

SHEFFIELD™ #20 “TG&P” Heat Treated Alloy - Precision Shafting

Benefits and Advantages

TURNED, GROUND AND POLISHED – close tolerance, precision shafting, “near” bearing fit with a typical finish of 15 RMS.

HIGH PHYSICAL STRENGTH – excellent properties (156,000 PSI typical tensile strength) especially for applications where torque is a concern.

FINE GRAIN STRUCTURE – obtained by careful manufacturing control and alloy selection, makes this product ideal for applications where maximum core toughness is required.

HIGH FATIGUE STRENGTH – provides maximum life in high torsion applications such as crane shafts, armature shafts, etc., where fatigue is most often the cause of failure.

STRESS RELIEVED – to minimize deformation and failures caused by stress. Reduces the likelihood of material “walking” during machining.

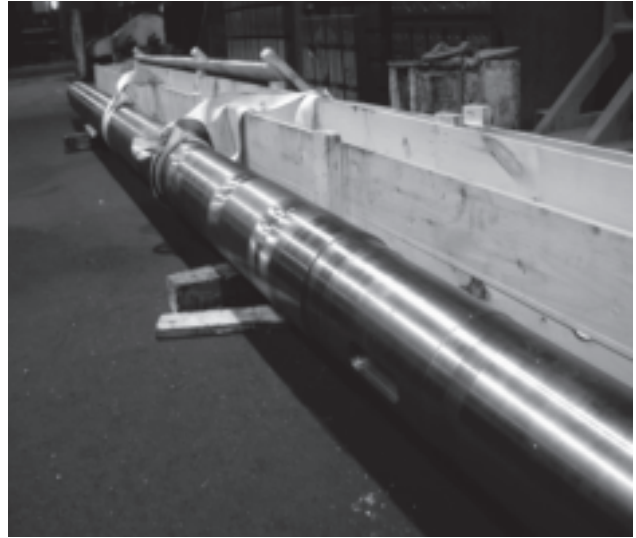
DEEP UNIFORM HARDNESS – free from hard and soft spots. Will maintain its hardness and strength even where dramatic steps are present such as with multi-diameter shafts.

MACHINE STRAIGHTENED – 1/8” in any 5 feet – half the industry standard.

Sheffield #20 eliminates the need to inventory multiple grades of steel for general maintenance-purpose shafting applications.

The number one cause of shaft failure in heavy industry is **FATIGUE**. The most effective means to combat fatigue is **TOUGHNESS**. Cleanliness and “Core-Integrity” build **TOUGHNESS**.

Sheffield #20 offers **TOUGHNESS** and **FATIGUE RESISTANCE** through Clean Steel Production Technology.



Typical Applications

Arbors	Journals	Stub Shafts
Bolts	Line Shafts	Tool Shanks
Crank Shafts	Mine Car Axles	Tie Rods
Drive Shafts	Pinions	Textile Parts
Wrist Pins	Piston Rods	Valve Stems
Feed Screws	Rings	Worm Gears
Gears	Spindles	
Hubs	Studs	

Stock Lengths

10 / 12 Ft Random Lengths
20 / 24 Ft Random Lengths
Custom Cut Lengths

SHEFFIELD™ #20 “TG&P” Heat Treated Alloy - Precision Shafting

Typical Physical Properties*

Hardness.....	269/321 BHN
Tensile Strength.....	156,000 P.S.I.
Yield Strength.....	125,000 P.S.I.
Grain Size.....	8
Elongation in 2".....	16%
Reduction of Area.....	55%
Machinability.....	50%
*Based on 1/2" Diameter Specimen	

Available Sizes

1/4"	1-3/16"	2-1/4"	3-5/16"	4-1/2"
5/16"	1-1/4"	2-5/16"	3-3/8"	4-3/4"
3/8"	1-5/16"	2-3/8"	3-7/16"	4-15/16"
7/16"	1-3/8"	2-7/16"	3-1/2"	5"
1/2"	1-7/16"	2-1/2"	3-9/16"	5-1/4"
9/16"	1-1/2"	2-9/16"	3-5/8"	5-7/16"
5/8"	1-9/16"	2-5/8"	3-11/16"	5-1/2"
11/16"	1-5/8"	2-11/16"	3-3/4"	5-15/16"
3/4"	1-11/16"	2-3/4"	3-7/8"	6"
7/8"	1-3/4"	2-7/8"	3-15/16"	6-1/2"
15/16"	1-7/8"	2-15/16"	4"	7"
1"	1-15/16"	3"	4-1/4"	8"
1-1/16"	2"	3-1/16"	4-3/8"	
1-1/8"	2-1/16"	3-1/4"	4-7/16"	

Boxing recommended.

Diameter Tolerances

1/4" Round to 1-1/2" Round	(+.000"/-.001")
Over 1-1/2" Round to 3 Round	(+.000"/-.002")
Over 3" Round to 4" Round	(+.000"/-.003")
Over 4" Round to 7" Round	(+.000"/-.004")
Over 7" Round and Above	Call for details

Above tolerances are typical. If special tolerances are required, please contact our office.

Typical micro finish of **Sheffield #20** is 15 RMS.

INQUIRE ON OUR METRIC SHAFTING

Sheffield #20 TG&P should be considered when applications call for the following types of steels; 4340, 4130, 4140, 4150, and 6150.

Sheffield #20 TG&P provides extended service life in maintenance applications where commercial grades of steel are specified. In many cases those grades only offer minimum standards of performance, not optimum levels.

Machining Data

Note: Caution should be exercised when cold working any hardened alloy material. Use equipment of sufficient capacity that is in good condition. Utilize machine operators that are experienced in working with hardened alloys and insure appropriate safety gear is worn.

High Speed

Depth of Cut	.150"
Speed	70fpm
Feed	.015 inch/revolution
Tooling	T15, M33, M41, M47

Carbide

Depth of Cut	.150"
Speed	260 brazed, 330 throw-away
Feed	.015 inch/revolution
Tooling	C6

(Cutting Fluid: Soluble Oil 1:20)

Drilling

Point Angle	118°, relief 12°
Helix Angle	29 degree, point: plane
Feed	.005 inch/revolution

Additional welding information is available. Please see page 7.

SMALL DIAMETER SPECIALISTS

Sheffield #20 is also available as a hot roll, quench and tempered bar called **Sheffield #10**, please see pages 4 and 5.

Past Protected Trade Name Of Pyramid Steel Company – Silvaloy™