

APPLICATION DATA SHEET

COPPER BRASS BRONZE

FREE-CUTTING BRASS FOR LOWER SCREW MACHINE PRODUCT COST

APPLICATION	Automotive Parts
SPECIAL FEATURES	Internal Threads, Knurling
PART WEIGHT	0.033 lb. (Brass)
BRASS RAW MATERIAL PREMIUM	17% (Including Turnings Allowance)
CYCLETIME (C360 BRASS)	4.75 sec (606 pieces per hour @ 80% Efficiency)
CYCLETIME (12L14 STEEL)	8.4 sec (300 pieces per hour @ 70% Efficiency)
PRODUCTIVITY GAIN USING BRASS	102%
NET COST SAVINGS (BRASS VS. BARE STEEL)	23% = \$58.76 per 1000
NET COST SAVINGS (BRASS VS. PLATED STEEL)	26% = \$71.05 per 1000



INSERTS FOR MOLDED PLASTIC

PRODUCTIVITY AND PLATING SAVINGS SWITCH PART FROM STEEL TO BRASS

These inserts for molded plastic parts must be strong and corrosion resistant to work in automotive applications; it's a fairly typical screw machine product. The inserts are now made from Free-Cutting Brass, Copper Alloy 360, (UNS C36000); they used to be made from 12L14 leaded steel, but they cost about 26% less in brass than in steel. Many designers think that because brass costs more than steel, machined brass parts must cost more too. That's not true for typical screw machine jobs. Only brass rod's off-the-shelf material cost is significantly higher; these inserts produce more than four times as much turnings weight as they do product and after discounting for the turnings' high value, the net material cost difference is only 17%.

HIGH MACHINABILITY MEANS LOWER PRODUCTION COSTS

When you buy machine parts you are paying for machine time. The faster the cut, the lower the cost, and free cutting brass machines faster than leaded steel. The productivity gained by switching from steel to brass for these inserts was a very significant 102%.

ELIMINATE PLATING COSTS

Steel rusts, brass tarnishes; an important difference. Exposed steel screw machine parts must be zinc/ chromate plated. Brass parts are ready to use without protective platings. The savings are between 11 and 16 cents per pound of product. If your part has deep holes, threads, or sharp corners, it can be difficult to insure uniform plating on all surfaces. Make the part in brass in you eliminate that concern. The natural corrosion resistance of brass uniformly protects the entire surface. If decorative plating is desired, brass plates more easily and is better looking than plated steel.

BRASS IS AS STRONG AS STEEL

Many designers don't realize that the strength of half-hard Free-Cutting Brass and cold-reduced 12L14 leaded steel (the most common conditions for screw machine parts) overlap the same range. Here are the published nominal values:

MATERIAL	TENSILE PROPERTIES	
	YIELD STRENGTH	ULTIMATE STRENGTH
C36000	45 ksi	58 ksi
Hot Rolled 12L14	34 ksi	57 ksi
Cold Drawn 12L14	60 ksi	78 ksi

That means that for almost one-half of all screw machine products, brass can be substituted for leaded steel without any sacrifice in strength or safety.

