Cast Bronze
BEARINGS

oilite®

ENGINEERING DATA

ALLOY

Cast Bronze stock bearings and bronze bars are produced in a general purpose bearing bronze alloy, selected for the optimum combination of strength, hardness, ductility, anti-friction characteristics and excellent machinability. The specifications is SAE 660, with these equivalents—C93200, ASTM B505, QQ-C-390B.

CHEMICAL

Copper	83%	Lead	7%
Tin	7%	Zinc	3%

MINIMUM PHYSICALS

Tensile Strength	35,000 lbs./sq. in. (min.)
Yield Strength	20,000 lbs./sq. in. (min.)
Compressive Strength	20,000 lbs./sq. in.
Elongation—% in 2 inches	10 min.
Brinell Hardness	55–65

STANDARD STOCK BEARINGS

Selection of stock bearings from our standard list assures greatest economy together with off-the-shelf delivery. Alteration of the nearest suitable standard size is frequently the most economical and fastest solution to your non-standard requirements. We have a large modern shop equipped with precision machinery of the latest design and devoted exclusively to the manufacture of special bronze bearings. We can hold precision tolerances, as well as perform the usual boring, turning, grooving and cut-off operations.

SPECIAL BEARINGS

We are also prepared to quote on production quantities of bearings to blueprint specifications. Your inquires calling for other alloys, sizes or shapes will be quoted promptly. Competent engineering help on these sleeve bearing requirements awaits your call.

DESIGN AND INSTALLATION

Design and installation of porous bronze bearings have been covered adequately on pages ?????. Most of this data applies to cast bronze also, but cast bronze requires provision for lubrication — considered here under the heading of "GROOVING". Some variance, due to this inherent difference in material, is also recognized under "INSTALLATION", where charts are shown as a guide for press fits and clearances.

STANDARD TOLERANCES

Inside Diameter

3" or less	Plus or minus .001"
Over 3"	Plus or minus .0015"

Outside Diameter

3" or less	Plus .002" to .003"
Over 3"	Plus .003" to .005"

Length

Plus or minus .005"

Concentricity

.003 Total Indicator Reading

45° chamfers, I.D. & O.D., proportional to wall thickness

Oilite Bearing Division • 230 New York Drive, P.O. Box 3080 • Fort Washington, PA 19034 • Phone: 215.646.8440 • Fax: 215.283.3397

ENGINEERING DATA

GROOVING

OVAL
Used when oil reservoir is at end of bearing.

FIGURE 8
Used when oil inlet is at center of bearing.

ONE STRAIGHT AND ONE CIRCULAR
Used with unidirectional load, either pressure or non-pressure fed.

DOUBLE OVAL
Used with grease only. High load, low speed.

DOUBLE FIGURE 8
used with grease only. Low load, higher speed.

R.H. AND L.H. SPIRAL
Used with alternating rotation.

STRAIGHT
Used with load in one direction.

CIRCULAR
Used with pressure lubrication or where load direction is variable.

The primary purpose of grooving within a sleeve bearing is to distribute and maintain a film of lubricant between moving surfaces of journal and bearing, but some grooves also act as channels for cooling oil and flushing out foreign particles. Small diameter and relatively short-length bearings do not require grooving for oil distribution. An oil hole in the unloaded area should provide access for the lubricant. Since conditions, applications, etc., vary so widely, only general considerations will be touched upon here.

1) A minimum amount of grooving should be employed since load carrying surfaces are reduced by the grooved area involved.

2) Oil should be introduced at a point in the unloaded area.

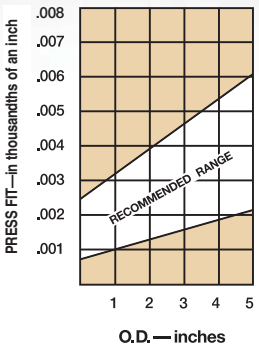
3) A straight groove will distribute oil axially in the longer bearings where the shaft may then carry it radially.

4) Circular or annular grooving is generally employed for pressure-fed applications or where load may be applied in any direction. Usual applications of various groove designs are illustrated to the left.

INSTALLATION

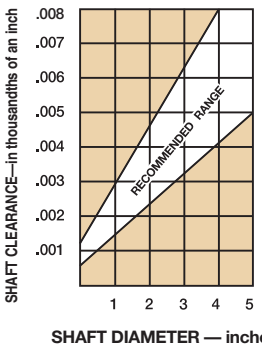
Interference or press fit is a common method of retaining sleeve bearings. Assembly may be accomplished by shrinking the bearing in dry ice or by using a shouldered arbor or mandrel in an arbor press. Note that the mandrel diameter should provide for bore close-in and should be lubricated for easy withdrawal after assembly. The charts shown below should be helpful as a guide for general press fit and shaft clearance recommendations. As a result of press fit, a diameter decrease or close-in may be expected, approximately 70% to 100% of the interference fit. However, any attempt to accurately predict amount of close-in to avoid final sizing should be avoided. Reaming the bearing for finish sizing is the usual method employed.

PRESS FIT CHART



Minimum press fits are recommended for thin section housings or where long bearings are used.

SHAFT CLEARANCE CHART



Maximum clearance should be allowed when speeds, loads or ambient temperatures are high.