materials
and elastomer selection

Tobar oil seals are available in a complete offering of metal case materials, spring materials, and elastomeric compounds. Selection of the elastomeric compound is critical to the performance and life of the seal. Within each compound family there are custom formulations that address temperature requirements, abrasive applications, pressure requirements, and low friction applications. Over 100 different elastomeric compounds are available. Seal design must address temperature, fluid compatibility, shaft speed, shaft finish, application requirements, and of course cost effectiveness. Materials are organized in cost impact order. The most economical options are listed first.

Nitrile (Buna-N), Lip Code 2
Tobar's Nitrile Code 2 is 70 durometer and is the most commonly used seal element we produce. It has excellent chemical compatibilities with a wide range of petroleum based products, water, and gases. It is recommended for automatic transmission fluid Type A, engine oils, greases, both fresh and salt water, fuel oil, kerosene, Methane, and petroleum based hydraulic oils.

Nitrile is not recommended for brake fluids, Ketones, Phosphate Esters, and Trichlorethylene. The recommend-ed operating temperature range for this material is -40º to +225º F. Extended temperature range of 250°F for short term only.

Nitrile (Buna-N), Lip Code 3
This Nitrile is a 80 durometer material used where running friction and pressure may be a consideration. This compound has the same basic chemical compatibility as that of lip code 2, and an operating temperature of -40º to +225ºF. Extended temperature range of 250°F for short term only.

Nitrile (Buna-N), Lip Code 4
This Nitrile is a 90 durometer, high abrasion resistant elastomer used primarily for hydraulic cylinder wiper applications. This compound has the same basic chemical compatibilities as that of Lip Code 2, and has an operating temperature range of -40º to +225º F. Extended temperature range of 250°F for short term only.

Polyacrylate, Lip Code PA
Polyacrylate has similar chemical compatibilities to Nitrile, with a higher temperature of -29º to +300º F. Polyacrylate is recommended for automatic transmission fluid Type A, engine oils, and many other petroleum based fluids. It has excellent compatibility with EP Lubes, and has higher resistance to oxidation and ozone than that of Nitriles. Polyacrylate is not recommended for gasoline, water, Phosphate Esters, and Methane.

Silicone, Lip Code S
Silicone seals are recommended for the widest temperature range and are able to function successfully from -50º to +325º F. Tobar Silicone seals are compounded for compat-ibility with petroleum based products and are recommend-ed for use in materials such as automatic transmission fluid Type A, engine oils, greases, water, Ethanol, Methanol, and petroleum based hydraulic fluids. Silicone is not recom-mended for EP Lubes, brake fluids, fuel oil and gasoline. Silicone has excellent low friction properties. It lacks the tear strength necessary for abrasive applications.

Fluoroelastomers (Viton*), Lip Code V
Fluoroelastomer seals have the widest range of chemical compatibility combined with temperature range of -40º to +400ºF. It is compatible with virtually all petroleum based fluids including automatic transmission fluids, fuel oil, gasolines, Freons, brake fluids, Phosphate Esters, Ketones, and Tricholorethylene. Additionally, Viton has excellent mechanical properties and provides a superior seal element in the face of abrasive environments. Viton is not recom-mended for ammonia gases and Methyl Chloride.
Viton is a trade name of the duPont Company.

Miscellaneous Elastomers
Tobar, Inc. has the capability of developing variations of our rubber compounds to meet your specific oil seal application requirements. Our specially developed compounds include HNBR's, high and low temperature Nitrile, and other variations, Fluorocarbon, Polyacrylate and Silicone compounds.

Metal Case Materials
Tobar's standard outer and inner metal cases are produced from formed cold-rolled steel. These cans may be treated and oiled to prevent corrosion during transportation and storage. Tobar will furnish cases in steel, stainless steel, or brass, depending on customer application.

Spring Materials
Tobar's standard spring material is hard drawn carbon steel wire. These springs are oiled and treated to protect them against corrosion during transportation and storage. If the seal's operating environment requires additional corrosion protection, Tobar will furnish oil seals with stainless steel springs.