



TECHNICAL BULLETIN

Rubber Product Sizes and Tolerances

Rubber products shrink after molding and during post molding processes. The rate at which they shrink varies, but is mostly determined by the compound. Operating parameters also affect shrinkage, but usually to a lesser extent. Rubber molds are cut to compensate for shrinkage, but shrink rates vary so that parts may be smaller or larger than parts ran in the compound the mold was designed for.

Variations in tolerance need to be considered as well as the product shrinkage. Due to a variety of reasons, the tolerances of molded items tend to be greater than those for machined products. The mold used to produce parts will be manufactured with some tolerances. The operating parameters and post molding operations required may have some affect. Finally, certain compounds are more prone to variances in size.

Design engineers need to consider both of these factors when designing seal glands. If standard tooling does not meet your needs, special shrink molds designed specifically to run one compound may be produced. In extreme cases, we take additional measures to control tooling and manufacturing parameters. Precision Associates can provide size and tolerance ranges for most of the compounds we run.

The table below indicates the ranges of shrinkage for each polymer family.

ASTM Designation	Common or Trade Names	Shrinkage Range
ACM	Acrylic	2.0-4.0%
AEM	Vamac®	2.0-4.0%
AU / EU	Urethane	1.6-3.3%
CR	Neoprene®	1.0-3.0%
CSM	Hypalon®	1.8-3.0%
ECO	Hydrin®	2.0-3.0%
EPDM	EPDM	1.9-3.5%
FEPM	Aflas®	3.0-4.5%
FKM	Viton®, Fluorel®	2.0-4.5%
FVMQ	Fluorosilicone	2.8-4.7%
HNBR	Highly Saturated Nitrile	2.0-3.0%
IIR / CIIR	Butyl	1.0-2.5%
NBR	Buna N, Nitrile	1.5-3.5%
NR / IIR	Natural	2.0-3.5%
PVMQ / VMQ	Silicone	2.0-5.0%
SBR	Buna S	2.0-3.0%

Please contact Precision Associates, Inc. for Size and Tolerance information on specific compounds.

Technical Bulletin 111b

Precision Associates, Inc.
3800 N. Washington Ave.
Minneapolis, MN 55412

Phone: (612) 333-7464
Fax: (612) 342-2417
Toll: (800) 394-6590

www.PrecisionAssoc.com



3800 North Washington Ave.
Minneapolis, MN 55412-2142

Toll Free: 1-800-394-6590

612-333-7464

Sales: 612-334-9190

FAX: 612-342-2417

info@PrecisionAssoc.com

Precision Associates' 1,000+ rubber compounds are available in these products:

- **Standard O-Rings**
- **Special Size O-Rings**
- **U-Cups**
- **V-Rings**
- **Rod Wipers**
- **X-Rings**
- **8-Rings**
- **Multiseal[®] Low Friction Seals**
- **Kurv-Bak[™] Hard Rubber Backup Rings**
- **Rubber Balls**
- **Medical Seals**
- **Custom Moldings**

After 56 years in the rubber business, we've learned to be flexible. We'll bend over backwards to design custom solutions that meet your needs *precisely*. PAI is the company you can trust for rubber seal solutions **YOUR WAY!**

- **Over 1,000 different compounds**
- **More than 2,300 O-Ring Sizes**
- **On-Site Mold Shop**
- **Custom Molding**
- **99% on-time delivery**
- **ISO 14644-1 Class 7 clean room**

D20TB111b

www.PrecisionAssoc.com