

O-RING SHELF LIFE

O-rings and other rubber products may undergo changes in physical properties as they age. As such, guidelines exist regarding the maximum recommended shelf life for various elastomer types. The shelf life limits in the table to the right are recommendations from Military Handbook 695 and are considered to be quite conservative.

O-ring shelf life can be maximized by maintaining proper storage conditions for the o-rings. The list below offers storage condition recommendations.

Temperature

The ideal temperature for o-ring storage is 40°F to 80°F (4°C to 27°C). The temperature should not be permitted to exceed 120°F (49°C). The o-rings should be a minimum of 4 feet away from any direct heat source (heater, radiator, vent, etc.).

Humidity

Relative humidity should be maintained at less than 65%. Excessively dry conditions (relative humidity less than ~25%) should also be avoided.

Light

Ultraviolet light can be harmful to certain elastomer types. Whenever possible, o-rings should be stored so that they are not directly exposed to sunlight or high-UV-content artificial light.

Oxygen or Ozone Exposure

Oxygen and ozone can lead to unwanted hardening or chemical attack. O-rings should be stored in airtight containers to limit exposure to these gasses. Electrical equipment that creates ozone should not be placed in areas where o-rings are stored.

Deformation

O-rings should be stored so that they are free from tension, compression or any other deforming force that could lead to permanent shape change.

ELASTOMER SHELF LIFE PER ARP 5316

Elastomer Type	ASTM Designation	Recommended Shelf Life
Polyester Urethane	AU	5 years
Chloropene	CR	15 years
Chlorosulfonated Polyethylene	CSM	Unlimited
Ethylene Propylene	EPDM	Unlimited
Polyether Urethane	EU	5 years
Tetrafluoroethylene Propylene	FEPM	Unlimited
Perfluorocarbon	FFKM	Unlimited
Fluorocarbon	FKM	Unlimited
Fluoro Methyl Vinyl Silicone	FVMQ	Unlimited
Isobutylene Isoprene	IIR	15 years
Butadiene Acrylonitrile	NBR	15 years
Methyl Vinyl Silicone	VMQ	Unlimited

ELASTOMER SHELF LIFE FOR ITEMS NOT COVERED BY ARP 5316 ARE RECOMMENDED PER MILITARY HANDBOOK 695 AS FOLLOWS:

Elastomer Type	ASTM Designation	Recommended Shelf Life
Polyacrylate	ACM	20 years
Ethylene Acrylate	AEM	10 years
Epichlorohydrin	ECO	10 years
Hydrogenated Nitrile	HNBR	15 years
Isoprene	IIR	5 years
Natural Rubber	NR	5 years
Styrene Butadiene	SBR	5 years