

## Storage of seals

### Storage conditions

Most polymeric items including vulcanized rubber and other elastomers tend to change their properties during storage and may become unserviceable. This may be due to hardening, softening, cracking, crazing or other degradation and may be the result of oxygen, ozone, light, heat and/or humidity.

The following recommendations indicate the most suitable conditions for storing elastomeric items, whether as a single item or composite product.

#### 1 Temperature

Storage temperatures should not exceed 50° C (120°F). Low temperatures are not permanently harmful provided the rubber items are handled carefully and not distorted. When taken from low temperatures items should be raised to approximately 30°C ( 70°F) before they are used.

#### 2 Humidity

Optimum humidity is about 65% in a draft-free atmosphere.

#### 3 Light

Protection from direct sunlight and strong artificial light with a high ultraviolet content is important. Unless packed in opaque containers, it is advisable to cover windows with red or orange screens or coatings.

#### 4 Oxygen and Ozone

Elastomeric items should be protected from circulating air wherever possible. As ozone is particularly harmful to rubber, storage rooms should be free from equipment that may give rise to electric sparks or discharge. Wrapping, storage in airtight containers or other suitable means should be used for vulcanised rubber items.

#### 5 Deformation

Where possible, rubber items should be stored in a relaxed position, free from tension or compression. Laying the item flat and avoiding suspension or crushing keeps it free from strain and minimises deformation.

#### 6 Contact with Liquid and Semi-Solid Material

Contact with liquids and semi-solid materials, particularly solvents, such as oils or greases should be avoided unless so packed by the manufacturer.

#### 7 Contact with Metals

Metals such as manganese, iron and copper, or copper alloys can have a harmful effect on rubber. A layer of paper, polyethylene or cellophane will keep these separated.

#### 8 Contact with Non-Metals

Contact with other rubbers or creosotes should be avoided.

#### 9 Stock Rotation

Elastomers should be stored for as short a period as possible, and strict stock rotation should be practiced.

#### 10 Cleaning

Organic solvents such as trichloroethylene, carbon tetrachloride and petroleum are the most harmful agents. Soap and water and methylated spirits are the least harmful, and all parts should be dried at room temperature before use.

#### 11 Shelf Life

The table shows the storage life of seal components made from the more common materials under ideal conditions. Storing under less than ideal conditions will reduce the life.

Careful inspection of the following should be made before installation after storage:

- a Mechanical damage
- b Permanent distortion
- c Cracks or surface crazing
- d Tackiness or surface softening/hardening

Thin components (less than 1.6mm {1/16in}) tend to be more critically affected.

The appearance of 'bloom' is relatively unimportant, except in certain non-toxic applications.

Base Polymer (ISO Designation)	Primary storage period (years)	Extension of storage period after re-inspection (years)
FLUOROCARBON (FKM) ETHYLENE PROPYLENE (EPDM)	10	5
NITRILE (NBR) HYTHANE (EU) THERMOPLASTIC POLYESTER ELASTOMER	7	3
POLYURETHANE (AU)	5	2
ENGINEERING THERMOPLASTICS: ACETAL (POM) POLYAMIDE (PA) GLASS FILLED NYLON (PA) PTFE POLYPHENYLENE SULPHIDE (PPS)	UNLIMITED	
ENGINEERING THERMOSETS: TYPE 506 BEARING STRIP	UNLIMITED	