

MALONEY TECHNICAL PRODUCTS

STORAGE AND SHELF LIFE OF SPHERES

Storage conditions can greatly impact the effective shelf life of molded rubber products.

General recommendations for all elastomeric goods are as follows:

- 1) Rubber goods should be stored out of direct sunlight.
- 2) Rubber goods should be stored under controlled environmental conditions, with temperatures between 40 and 120 degrees Fahrenheit, and relative humidity of 50% or less.
- 3) Rubber goods should be stored away from sources of Ozone, such as electric motors or other high voltage equipment.
- 4) Certain particularly heavy or oddly shaped items may require specialized storage or support fixtures.

Specific Recommendations for Spheres are:

- 1) As noted above in item 4 of the General Recommendations, because of its shape, a sphere may develop flat spots if stored improperly. Maloney therefore recommends the following:
 - a. Store sphere on the original shipping cradle,
 - b. In a sling,
 - c. On a bed of sand (rotate sphere on a regular basis),
 - d. In a fabricated trough of cylindrical cross section.
- 2) Before storage wash sphere with mild soap and a thorough rinse and dry cycle.
- 3) Do not store in contact with foreign materials (i.e. Water, acids, solvents or contaminated surfaces etc.)
- 4) Do not store in a sealed container (For example, a plastic bag without breathing holes.)
- 5) Avoid using sharp objects when handling the sphere.
- 6) Regular internal inspection of pipeline or prover recommended.
- 7) If possible do not leave sphere in prover or pipeline for extended periods of time when not in use. This will cause flat spots and possible sealing problems.
- 8) If possible do not leave Maloney U-53, U-58, U-66 or U-88 spheres in contact with water for long periods of time.
- 9) **Warning:** Do not force sphere into reducers in a prover or pipeline.
- 10) **Warning:** Do not use sphere in service that it was not originally intended (call factory).
- 11) **Warning:** Maloney Rubber Spheres should not be used in services over 600psi

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Shelf Life of Sphere Compounds

Elastomer	ASTM	Shelf Life
Chloroprene (Neoprene®)	CR	5 Years
Fluorocarbon (Viton®)	FKM	10 Years
Hydrogenated Nitrile, HNBR or HSN	HNBR	5 Years
Nitrile (Buna-N or NBR)	NBR	5 Years
Polyurethane (Polyester)	AU	5 Years
Maloney U-66 (Red)	AU	1 Year

Definition of Shelf Life:

The maximum period of time, starting from the time of manufacture, that an elastomeric seal element, appropriately packaged, may be stored under specific conditions, after which time it is regarded as unserviceable for the purposes for which it was originally manufactured. The time of manufacture is the time of cure for thermoset elastomers or the time of conversion into a finished product for thermoplastic elastomers.

Because storage conditions may vary widely, the shelf life recommendations are somewhat conservative. In addition, unlike food products, there is not an abrupt, incontrovertible change in state which immediately precludes the use of the product. Possible methods of re-evaluation of products at or near the end of their listed shelf life are discussed in the section below.

Evaluation of Products:

Because of the rugged and heavy wall construction of Maloney Spheres, the end user may wish to evaluate materials approaching the end of their useful shelf life, with a goal to the possibility of extending the storage life on a case by case basis.

In the event that such is desired, we recommend visual inspection of the product for discoloration, cracking or other indications of deterioration. A test of the surface hardness is also recommended, with variations either above or below the original hardness being an indication of unsuitability for use.

If the end user determines to extend the shelf life, Maloney recommends a limited period, such as 6 months to a year.