

Shelf Life of Rubber Components

The shelf life of vulcanised rubber components depends on the type of rubber and the storage conditions. Optimum storage conditions include:

- Shielded from light (complete darkness) and moisture (clean dry air below 75% humidity);
- Protected from oxygen/ozone (sealed in an airtight pack or container) and ionising radiation;
- Not exposed to elevated temperatures (preferably between 15-25°C);
- Not stored near chemicals, including oils, greases, acids, solvents, cleaning fluids, etc.
- Protected from rodents;
- Stored so that the rubber is not loaded or stressed, i.e., parts not stacked on top of one another.

There are a number of international standards that provide guidance on the shelf life of rubber products. The two primary standards are:

- **ISO 2230** : Rubber Products – Guidelines for Storage
- **MIL-HDBK-695** : Rubber Products – Recommended Shelf Life

It is important to understand that these standards provide guidance and quoted time limits are not mandatory. We consider these figures to be conservative when parts are stored in optimal conditions.

Polymer Type	Expected Shelf Life (years)		Vulcanite Recommended Shelf Life (years)
	MIL-HDBK-695	ISO 2230	
Natural Rubber (NR)	3	5-7	~5
Styrene Butadiene (SBR)	3	5-7	~5
Chloroprene (CR)	15	7-10	~10
Nitrile Rubber (NBR)	15	7-10	~10
Ethylene propylene diene monomer (EPDM)	20	10-15	~15
Polyester Urethane (EU)	5	5-7	~5

Most Vulcanite moulded parts have the date of manufacture (month and year) embossed or stamped on the part. This will assist you in monitoring shelf life and ensuring good stock rotation.

The mechanical properties of the component are expected to remain constant over the expected shelf life.

If parts are not stored under optimum conditions, the physical properties may change including surface cracking, softening or hardening leading to a change in stiffness, and bond degradation. All of these effects can reduce the service life of the part once it is finally installed.

Once the shelf life has passed, rubber parts should be carefully inspected and tested for specification compliance. Parts should not be discarded just because the shelf life has expired.