

Storage and Packaging of Rubber and Plastic products

Packaging

The requirements of packaging form an integral part of storage procedures as well as providing accurate identification. With the exception of Silicone Rubbers which may deteriorate if totally enclosed, all vulcanized rubbers should be sealed or wrapped to avoid the free access of air.

The packaging materials should preferably be opaque and free from such substances as copper naphthenates, creosote preservatives or any film containing plasticizer.

The product should be packaged in such a manner as to avoid distortion.

Some suitable materials are:-

Polyethylene coated Kraft paper, aluminium foil / paper / polyethylene laminate and opaque polyethylene film.

Storage

- 1) **Temperature.** The storage temperature should be maintained below 25°C, however below 15°C extra care should be taken to avoid distortion.
- 2) **Humidity.** The relative humidity shall be less than 65 % r.h and such that, given the variations in temperature, condensation is avoided.
- 3) **Light.** Protect from light sources, particularly direct sunlight and intense artificial light with high U.V
- 4) **Radiation.** Protect from all sources of ionizing radiation (refer to BS3664, BS4094 and BS4513)
- 5) **Ozone.** Protect from ozone and avoid organic vapour, combustion gases, mercury vapour lamps and any high voltage electrical equipment which may generate ozone in the storage area.
- 6) **Deformation.** Articles should be stored in strain-free conditions to avoid permanent deformation of the article or indentations on the sealing surfaces. Rings of large diameter, such as O-Rings may be stored by forming into three loops to avoid creasing or twisting.
- 7) **Contact with fluids.** Articles must be stored free from contaminants such as petrol, grease, acids and cleaning fluids or their vapours.

Correct packaging of the stored articles will avoid many of the problems associated with unavoidable environmental conditions and rotation of stocks will keep these harmful effects to a minimum.

Shelf Life Control

All articles with a limitation to their Shelf Life are marked by Claron with a cure date/batch date on the packaging. All Claron cure dates are traceable through the batch number for a minimum period of 10 years

All Claron materials with a restriction to their shelf life fall into three basic groups, A, B and C.

A fourth group, U, is designated as being of unlimited shelf life if stored in accordance with these packaging and storage requirements.

Each group has an initial period of safe storage followed by further storage periods after re-inspection and assessment.

PERIODIC INSPECTION CRITERIA

Before any component is stored for any extension period or further extension period, the following inspection criteria is mandatory

Visual inspection - Inspection of the items or components in a representative sample for

- a) Permanent distortion, mechanical damage, flats or other defects
- b) Tackiness or noticeable surface softening or hardening
- c) Cracks (Extend or flex the material and check with a 10x magnifier)

If any of the above are found, the product must be removed from stock and destroyed.

Testing - Providing that the representative items or components inspected are satisfactory then the products shall be tested to ascertain that their performance characteristics are maintained

All initial Shelf Life dates are calculated from the Cure Date / Batch Date and are categorised as follows for unassembled products:-

GROUP A Initial period 5 years , possible extension periods every 2 years

Natural (NR)
Polyisoprene (IR)
Polyurethane (AU)
Styrene-Butadiene (SBR)

GROUP B Initial period 7 years , possible extension periods every 3 years

Acrylonitrile-Butadiene (Nitrile) (NBR)
Blends of Acrylonitrile-Butadiene and Polyvinylchloride (PVC)
Epichlorohydrin (CO)
Polyacrylate (ACM)
Polychloroprene (Neoprene) (CR)
Polyisobutylene-Isoprene (Butyl) (IIR)

GROUP C Initial period 10 years , possible extension periods every 5 years

Chlorosulphonated Polyethylene (eg. Hypalon®) (CSM)
Ethylene Propylene (EPM)
Terpolymer of Ethylene Propylene (EPDM)
Fluoroelastomer (eg. Viton®) (FKM)
Silicone (SI)

GROUP U Unlimited Storage period if packaged and stored in accordance with these requirements and the further detail recorded in BS 3574 :1989

Polyoxymethylene or Polyacetal (POM)
Polyester Elastomer (eg.Hytrel®) (TEEE)
Polyamide (eg.Nylon) (PA 66)
Polytetrafluoroethylene (PTFE)
(Consult Claron for storage conditions relative to etched PTFE)
Polyetheretherketone (PEEK™)
Ultra-High Molecular Weight Polyethylene (UHMWPE)
Phenolic Resin (SRBF)

GENERAL NOTES

When stored under low temperature conditions, stiffening of the material must be expected, heat soaking at a temperature higher than ambient for several hours will return the material to a normal state. No materials should be inspected in the cold stiff state. Do not use ovens or hot water to achieve this condition. The appearance of a "Bloom" is unimportant and is no evidence of degradation. Records of Shelf Life Extensions should be kept in a register and a new Shelf Life Expiry Date recorded.