

Quality Requirement

Elastomers General Requirements

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TABLE OF CONTENTS

1 PURPOSE..... 4

2 RESPONSIBILITIES 4

2.1 Supplier..... 4

3 IDENTIFICATION..... 4

4 STORAGE; HANDLING AND PACKING 4

4.1 Packing..... 4

4.2 Packing materials 5

4.3 Handling..... 5

4.4 Storage..... 5

4.4.1 Storage criteria..... 6

5 SHIPPING AND ACCEPTANCE..... 6

1 PURPOSE

The purpose of this document is to define and clarify all requirements for the identification, handling, packaging, storage and shipping of elastomer's products to NOV.

2 RESPONSIBILITIES

NOV may specify any additional requirements in the PO if applicable.

2.1 Supplier

Supplier must comply with the requirements of this document unless otherwise agreed, in written, between the supplier and NOV. In case of conflict between this document and the PO, the PO information will prevail.

3 IDENTIFICATION

The supplier is responsible for the correct labeling of the elastomers. Marking or labeling of the elastomers shall be done in the storage "bag" or through a "tag" attached to the elastomers.

As minimum requirement, the marking shall contain the following fields:

- Supplier Part Number
- NOV part number (As specified in the PO)
- Batch and/or lot number
- Cure date
- Sell by date (***empty field*** in the label to be filled by NOV at receiving).
- Expiration date

All marking shall be clearly visible and made of durable material, resistant to general handling as well as be able to maintain all information clearly visible throughout the shelf life of the products.

4 STORAGE; HANDLING AND PACKING

The below requirements must be met by the supplier to all elastomers and incorporated in their daily practices and internal procedures.

4.1 Packing

Small elastomers (such as o-rings, small seals, etc.) must be stored and packed in sealed packets/bags in a relaxed manner where shape is preserved, free from superimposed tensions and compressive stresses or other causes of deformation.

Large size elastomers (large elements, lengthy hoses, etc.) may be formed into equal superimposed loops so as to avoid creasing or twisting.

Bonded seals must be individually packaged.

4.2 Packing materials

Packaging materials shall be free of copper naphthenates or creosote preservatives which can degrade rubber.

Suitable materials include, but not limited to, UV resistant Kraft bags and polyethylene bags.

Opaque packaging is preferred. Metal foil bags can be used provided they are salt free.

Seal assemblies' sets must be packaged in the same bags so that all elements of the assembly are present when the package is opened.

4.3 Handling

Elastomeric products should not be allowed to come in contact with gasoline, greases, acids or cleaning fluids or their vapors at any time during storage, unless these materials are an integral part of the component or manufacturer's packaging by design.

Bags used to store elastomers must not be left opened and should be re-sealed after pulling parts.

4.4 Storage

Certain metals, such as copper, manganese and iron, are known to have a deleterious effect on elastomers. Elastomers must not be stored in contact with such metals and shall be protected by individual packaging.

Dusting powder should only be used to prevent sticking and only the minimum amount should be used.

Contact between different polymeric elastomers and elastomers of different seals must be avoided. The metal part of bonded elastomers shall not come in contact with the elastomeric element of another seal.

4.4.1 Storage criteria

Criteria	Unacceptable	Accepted	Preferred
Temperature	Above 100 °F Above 38 °C	Below 100 °F Below 38 °C	40 °F to 80 °F 4 °C to 27 °C
Relative humidity	More than 75 %	Less than 75 %	Less than 65 %; dry environment; avoiding condensation
Light	Direct sun-light, bright shade (daylight), or intense artificial lighting with UV content	Indoors and away from windows	Boxed and/or packaged in the opaque containers, protected from direct sunlight and artificial light
Ozone	Proximity to electric motors, mercury vapor lamps, and/or combustion gases	Away from sparking electrical equipment	Use of special protective covering; stored in areas free of mercury vapors, combustion gases and high voltage electrical equipment
Deformation / stress	High stacks (> 8)	Short stacks (< 8)	Stored in separate compartments, free from any causes of deformation

5 SHIPPING AND ACCEPTANCE

Elastomeric products that arrive at NOV without a cure date or expiration date marked shall be returned to the supplier.

Discoloration, tearing, scratches, imperfections or splits in the rubber, hardening or cracked surfaces, bubbling / blisters, foreign material damage and rust (when elastomers are bonded to metal fittings) will not be accepted and it will be returned to the supplier.

NOV will not accept any elastomers with less than 18 months to the expiration date.