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## GENERAL SPECIFICATION

### 1.1. Viscose specification:

*Viskrings* are secondary seals applied over primary closures to improve security, prevent counterfeiting and provide decoration.

They are used in many industries, but mostly in food, drink, chemicals, pharmaceuticals and cosmetics.

### 1.2 Application method:

Viskrings are sold wet and are applied to the container in that condition. Drying is by natural or forced evaporation which shrinks the tubing to the shape of the container.

### 1.3 Size:

Viskrings can be used to fit over bottles, etc., with diameters from 12 to 119mm.

### 1.4 Physical properties:

#### 1.4.1 Strength

The rings have to have sufficient strength so that they can withstand the force required during application. Experience has shown that a transverse tensile strength across the crease (the weakest part of the ring) should be greater than 40 kg/cm<sup>2</sup>. The average value for viskrings is 4s-60 kg/cm<sup>2</sup>.

#### 1.4.2 Gauge & Cross-section

The gauge of Viskrings is 550 micron  $\pm$  50 micron (double thickness). Products for North America are 600 micron  $\pm$  50 micron.

#### 1.4.3 Shrinkage on drying

The closure over which the Viskrings is fitted is rarely even, therefore, certain shrinkage is necessary to allow the ring to fit uniformly. Viskrings have a total transverse shrinkage of between 35-43%, i.e. it can shrink to Go-thirds of its original size. The longitudinal shrinkage is between B-12%. NOTE: Maximum desirable shrinkage to avoid problems of splitting or wrinkling is 20%

### 1.5 Shelf life:

In view of the long life requirements for storage of bottles, Viskrings have a minimum life in use of one year from application to the customer's product.

This has been simulated in the laboratory by a shelf-life test which takes mounted Viskrings through humidity cycles on a regular basis.

### 1.6 Preservation:

Cellulose is a natural product subject to bacterial and fungal degradation when wet and must be protected from attack.

Viskrings are normally sold in the wet state and are always applied in this condition. They must be treated with a preservative to offer protection both during processing and for storage prior to application. The preservatives chosen are harmless to humans at the concentration used and do not interfere with the manufacturing processes involved. The preservatives used are "P.C.M-C." and "Hibitane". In addition to the biocides a plasticiser is added to protect the cellulose during the drying process and to avoid splitting of the band

The Preservative solution used is called "CH solution". The composition is:

P.C.M,C.	0.08 * 0.13 %
Hibitane	0.04 - 0.i %
Polyethylene glycol 200:	6.0 - 8.0 %
Water	> 91.8 %

A concentrated preservative solution is available for distributors of viskrings only.

## 1.7 Drying rate

Viskrings are applied to bottles in the wet state, normally by hand. For most applications, the Viskrings are allowed to dry naturally. The drying time depends upon air temperature, container temperature and shape, and relative humidity.

Shrinking usually starts within 10-15 minutes of application and within one hour most Viskrings will shrink to their final dimensions on a container, even though their moisture content is still higher than the surrounding atmosphere.

Some bottlers accelerate the drying time by using hot air blowers and the most efficient will shrink Viskrings within minutes.

## 1.8 STORAGE & HANDLING

Cut Bands are guaranteed for 12 months provided the tins or pails remain unopened.

- DO NOT ALLOW THE BANDS TO FREEZE. This weakens them. Store wet Viskrings between 0 and 35°C.
- UPEND THE TINS OR PAILS MONTHLY. This prevents the upper layers drying and prevents separation of the preservatives. Once opened the band must be handled carefully to prevent contamination with bacteria or fungus if they are not to be used immediately
- KEEP COVERED WITH PRESERVATIVE SOLUTION. This can be purchased from Viscose Closures.
- RE-SEAL THE PLASTIC BAG IF BANDS ARE TO BE UN-USED FOR ANY LENGTH OF TIME.
- DO NOT STORE IN WATER. This removes the plasticizer and the bands will split after application.