CLOSURE SYSTEMS INTERNATIONAL

CSI Europe

# PRODUCT SPECIFICATION

# AND

# TERMS OF DELIVERY

# FOR

# EURO-LOK M3
# (For glass-bottles)

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## 1. Description

Euro-lok M3 closure consists of two components: the shell or closure body and the liner. The shell is formed out of Polypropylene and has a thread area for screwing the closure onto the neck finish of the respective package/container. The closure has a mechanical tamper evidence band with a 240℃ horizontal cut and a vertical cut for returnable bottles, but also be manufactured with a 360° horizontal cut for non-returnable bottles.

Inside the closure is a liner made from a flexible material which seals the bottle. The liner materials are tested according to Food and Beverage regulations and are approved for the resp. countries specifications (e.g. FDA or EEC). The liner material has direct contact to the filled beverage.

## 2. Material Specifications

### 2.1 Closure Shell

Material: Polypropylene (PP), homopolymer, suitable for contact with food and beverages.

The material has been approved by FDA and EEC (Technical and Food Contact approval). The shell colors are approved for food and beverages and are free of heavy metals.

### 2.2 Liner

Material: All used liner materials are PVC- and softener-free. They are polymer blends on polyethylene basis (LDPE / LLDPE). They are all approved according to FDA and EEC food and beverage regulations

Colors: Gray

Liner Type: In-shell Compression Molding

### 2.3 Recycling

The closure is recyclable in whole as well as sorted after milling.

## 3. Dimensions

This closure is defined in detail in the enclosed drawing.

## 4. Decoration and Colors

The closure is available as standard transparent as well as in a wide variety of qualified colors. Special color requirements can be fulfilled after testing the suitability for use with food and beverages, as well as physical performance. The surface decoration is in accordance with the approved design.

## 5. Application Specifications

### 5.1 Closure

Euro-Lok M3 is suitable for all standard glass-bottles with MCA 1, MCA 2, MCA 7,5R and 7.5RF neck finishes in the returnable and one-way areas. The closure can be used for non-alcoholic beverages with (max. 8 g/l) or without CO2 and for alcoholic beverages (max. 15%), as well as for hot-fill with max. 85°C. The closure showed no taste & odor problems on the tested products.

For filling levels up to 4.9 volumes no safety issues like blow offs, closure cracking were observed. However for these conditions the performance criteria have to be checked individually.

Due to the large variety of products, an influence on taste and odor on the beverage cannot be excluded in general. Therefore, the bottler should test for taste & odor according to his quality guidelines.

### 5.2 Basic Machine Parameters for returnable glass bottles and non-returnable glass bottles.

**Magnetic Sealing Head**

Static Torque and Head Pressure depend on bottle quality, capping machine and speed, as well as on the capping head system. They have to be defined by a CSI Europe Service Technician at the bottler's.

| | |
|---|---|
| Chuck: | 60 teeth, 24 teeth, 12 teeth – between 5° and 7° |
| Turns/Sealing: | Minimum 3 turns per sealing process |
| Static Torque: | 11-13 in.lbs |

Reference results for this profile are:

| | |
|---|---|
| Removal torque: | 8 – 17 in.lbs immediately after application |
| Leakage: | not below 100 psi (7,0 kg/cm$^2$) |
| Release: | not below 150 psi (10,5 kg/cm$^2$) |

**NOTE:**
These basic results are guidelines for the application and are dependent on the used liner, the neck finish and the capping machine. They are not removal torques for the end-consumer. There the results with standard neck finishes are between 6 – 17 in.lbs.

## 6. Storage Specifications

### 6.1 Packaging

Euro-lok M3 closures can be delivered in all standard packaging kits available at CSI. For deliveries from CSI Hungry, CSI Spain and CSI Vostok standard cartons (580x380x325 mm$^3$) contain 3.600 closures and they are stacked 24 per pallet, which makes 86.400 closures per pallet in total.

This closure can also be delivered in octabin packaging format. One octabin contains 96.000 closures.

### 6.2 Storage and Handling

These closures have to be stored in a dry, dark, odor-free, not too warm or too cold place. The stacking height is maximum 2 pallets (maximum number of cartons boxes per pallet is 24). In case of octabin packaging, the stacking height is max 2 pallets.

The closures may not be stored longer than 1 year. After this time they may not be used anymore. The use should be on a “first in – first out” basis.

Closures, which are too cold, will result in bad application; consequences are broken bands or cracked closures. The storage temperature 24 hours before application should be min. 18°C and max. 30°C.

### 6.3 Storage of finished products (bottle – beverage – closure)

The finished product should be stored protected from UV-light and protected from temperatures higher than 30°C.

## 7. Change of Specification

Any changes to this specification require the written consent of CSI Europe.

The CSI Quality standards apply for all products and production areas. However, they do not free the customer from their own incoming inspection with regard to suitability of our products for their application and manufacturing. Special tests at customer site can be done when required. To support the incoming and quality inspection, CSI Europe offers special measuring devices and gauges for each closure system and bottle neck finish.

The closure contains lubricants, which may be cracked by the use of ozone. This may lead to an off-taste, if the ozone used reaches a certain limit. Therefore, the suitability needs to be tested for each process and for each product.

The characteristics of a closure system strongly depend on the requirements by the customer, e.g. color and design, as well as on application technology.

## 8 Attachments

### 8.1 Closure Drawing

Closure Drawing 220544, which is separate document, but will be delivered together with this specification.

### 8.2 Neck Drawings

For neck finish drawings please refer to the website of the ISBT (International Society of Beverage Technologists): http://www.threadspecs.com/