

Capsules

Key Points

The capsule is part of the Vinolok system. In addition to its tamper-proof function, it also helps keep the closure in the bottleneck during handling, transport and storage.



Introduction

Once the bottle is capped with Vinolok, the bottle has to be sealed with a capsule. The function of the capsule is not only tamper-proof or aesthetic, it helps to maintain the safe position of the closure as soon as it leaves the bottling line.

Transparent, PVC, aluminium or tin capsules are approved for Vinolok.

PVC



Transparent



Aluminium & Tin



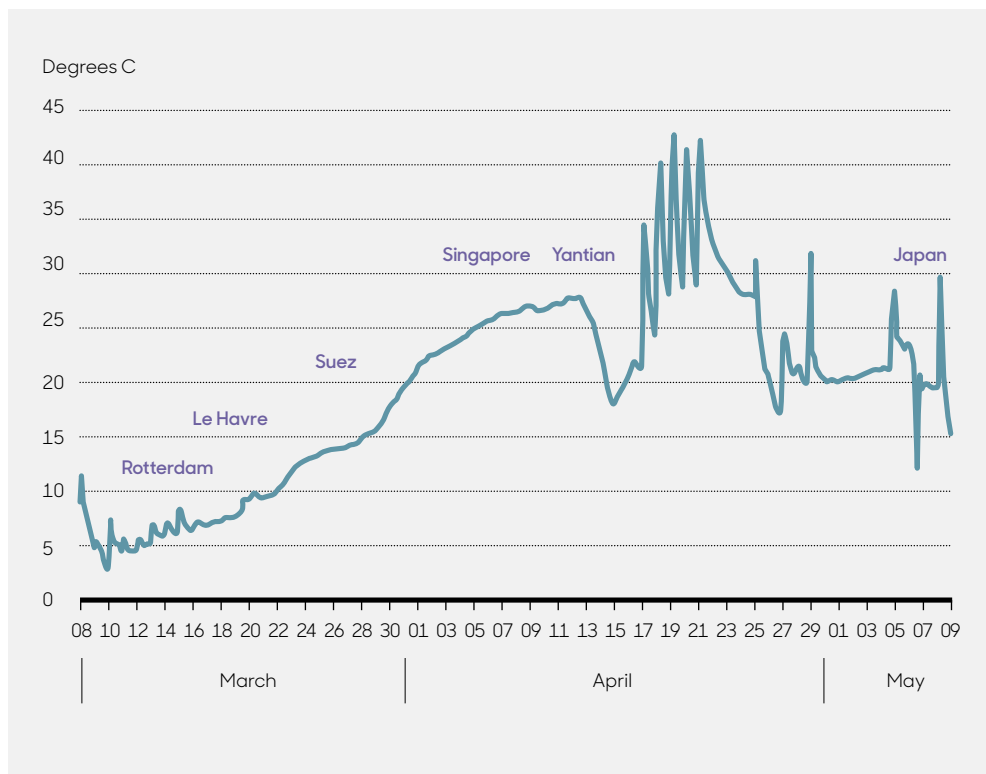
Manipulation

The closure seals perfectly once inserted into a Vinolok compatible bottle. However, its position needs to be fixed, as the closure can be easily released when lateral force is applied. This helps to open the bottle – “One click to open”, but it can also be opened unintentionally during handling. Therefore, we recommend applying the capsule right after bottling. If this is not possible, vertical storage is recommended. The top layer of bottles should be weight-loaded to prevent the closures from popping out in the event of a rise in temperature. *The bottle must never leave the warehouse without being sealed with a capsule.*

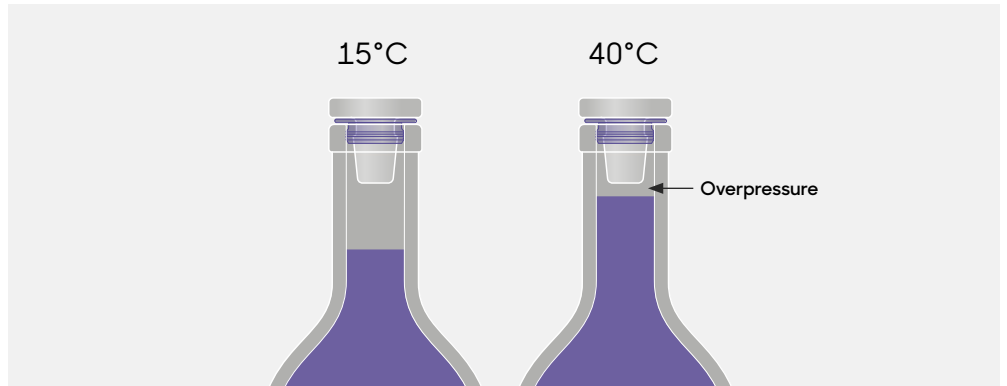
Transport and storage

During transport and subsequent storage, wines are exposed to various factors. The most important one being temperature fluctuations. All materials change size with temperature change.

The contents of the bottle increase in volume as the temperature rises, and decreases as it drops. These volume changes occur continuously during the bottle's shelf life. They usually reach their maximum during transport. The effect of temperature can be successfully reduced by using the right capsule.



Temperatures inside the container on the way from Europe to Japan. Source: Vinventions Deutschland



The main concern is the temperature increase as the liquid volume increases. The overpressure increases with temperature. Once it reaches the maximum force that the closure can hold, a closure pop-out will follow. Here is some info:

The larger the headspace (relative to the volume), the lower the overpressure.

The higher the percentage of alcohol, the higher the overpressure.

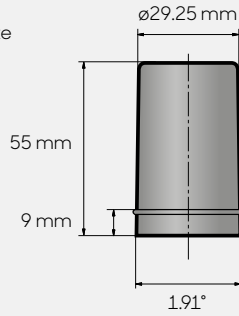
Vinolok without capsule can withstand approximately 0,5-0,8 bar overpressure (this represents an increase in wine temperature of 10°C on a 750ml bottle with 65mm headspace). To withstand the usual temperature changes to which products sealed with Vinolok will be exposed, a capsule application is needed.

Recommended capsules

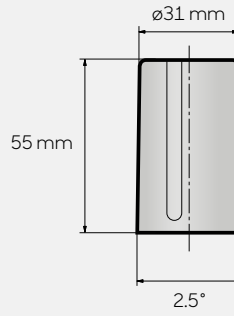
- AluCap - the original Vinolok concept
- Roll-on capsules: Poly laminate, Aluminium, Tin
- Shrink PVC and PET capsules (material thickness of 70 µm)
- Plastic/metallic strips which were approved by our technical laboratory



Capsule Dimensions:
Aluminium,
Tin, Poly-laminate
0.075-0.12 mm



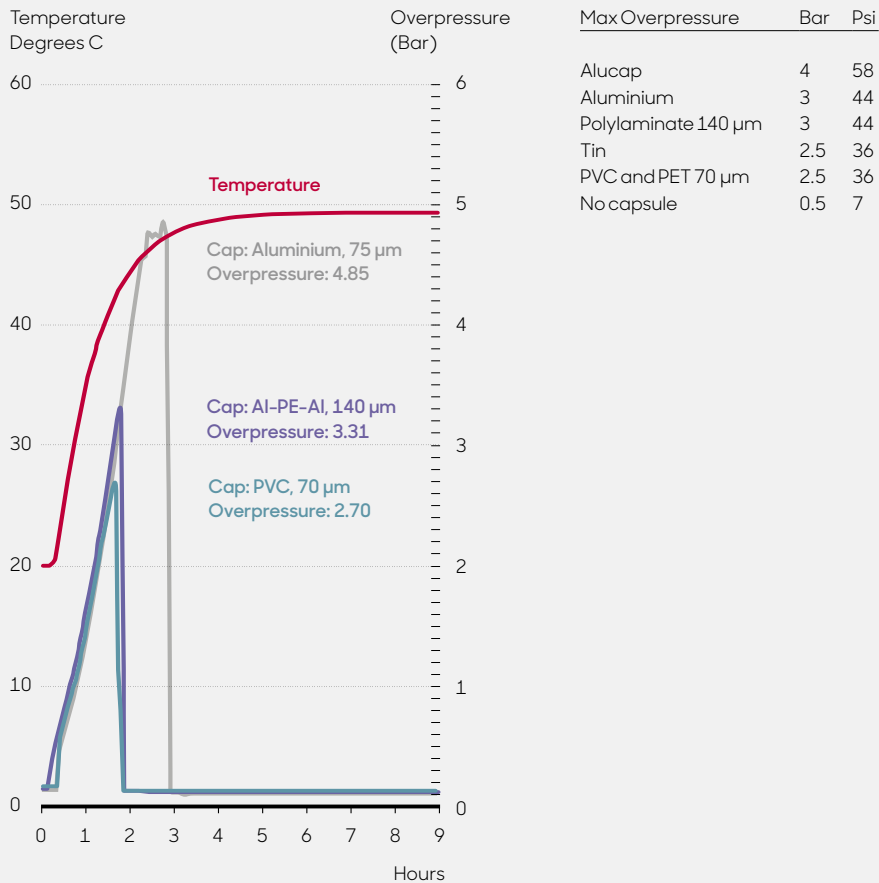
Capsule Dimensions:
Shrink
0.08 mm



An example of capsule drawing suitable for Vinolok 18.5 closure and typical Bordeaux shaped bottle

Overpressure performance for approved capsule types

Vinolok pressure resistance
Bottle: 18.5 Vinolok: 18.5



Which capsule should the customer use?

Since there is no conventional way how to measure the overpressure under the Vinolok closure, we have prepared a document that shows the maximum ambient temperature for each type of capsule and headspace. The document should help the customer to choose the right type of capsule /bottle for the product. It assumes a correct estimate of the maximum temperature to which the product will be exposed. Most customers do not expect long-term exposure to temperatures over 40°C. Please keep in mind that the headspace is determined by the bottle manufacturer for each bottle model.

Wine 750ml bottle, still wines, alc 15%

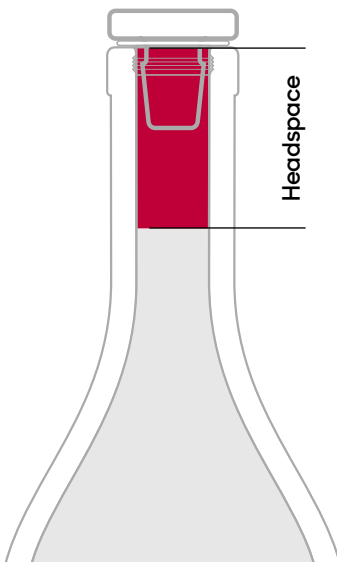
Capsule	Aluminium, Tin					Shrink, Poly-laminate					Alucap				
Headspace (mm)	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
30 °C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
35 °C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
40 °C	X	OK	OK	OK	OK	X	OK	OK	OK	OK	X	OK	OK	OK	OK
45 °C	X	OK	OK	OK	OK	X	X	OK	OK	OK	X	OK	OK	OK	OK

Spirit 750ml bottle, alc 40%

Capsule	Aluminium, Tin					Shrink, Poly-laminate					Alucap				
Headspace (mm)	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
30 °C	X	OK	OK	OK	OK	X	OK	OK	OK	OK	X	OK	OK	OK	OK
35 °C	X	X	OK	OK	OK	X	X	OK	OK	OK	X	X	OK	OK	OK
40 °C	X	X	X	OK	OK	X	X	X	X	OK	X	X	X	OK	OK
45 °C	X	X	X	X	OK	X	X	X	X	OK	X	X	X	X	OK

Water 750ml bottle, still water

Capsule	Aluminium, Tin					Shrink, Poly-laminate					Alucap				
Headspace (mm)	40	50	60	70	80	40	50	60	70	80	40	50	60	70	80
30 °C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
35 °C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
40 °C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
45 °C	X	OK	OK	OK	OK	X	X	OK	OK	OK	X	OK	OK	OK	OK



Unapproved fixing elements

The packaging sometimes requires a special type of fixing elements, such as strips, wax or wires. In this case, we can perform simulations in our laboratory, which can verify the functionality of individual elements and provide appropriate recommendations to our customers.



Laboratory simulations for testing the functionality of fixation elements



Example of overpressure test results