

## Why did we introduce “sensory grades”?

Currently, there is no effective process to remove **TriChlorAnisol** (TCA) from natural cork stoppers. The only way to guard against this problem is to test all cork lots and to select the best ones. An analysis of cork stoppers shows that nearly every cork has a slight but detectable TCA-concentration, though only those corks with a high concentration will negatively affect a wine. But how do you identify lots that contain many highly contaminated corks? In the past, this was only possible by performing subjective sniffing tests.

With the implementation of the GC/MS-technique (**Gas Chromatography/Mass Spec analysis**) in 2001, Korkindustrie Trier for the first time was able to measure objective values. The use of large random samples together with statistical analysis allow us to accurately predict the number of TCA contaminated corks in a batch.

Based on what we discovered, sensory grades became possible. This provides our customers the opportunity to restrict the remaining risk of sensory affection to only a few bottles. Depending on the wine quality one can opt for **TOP** or **SElect**.

## TOP and SElect

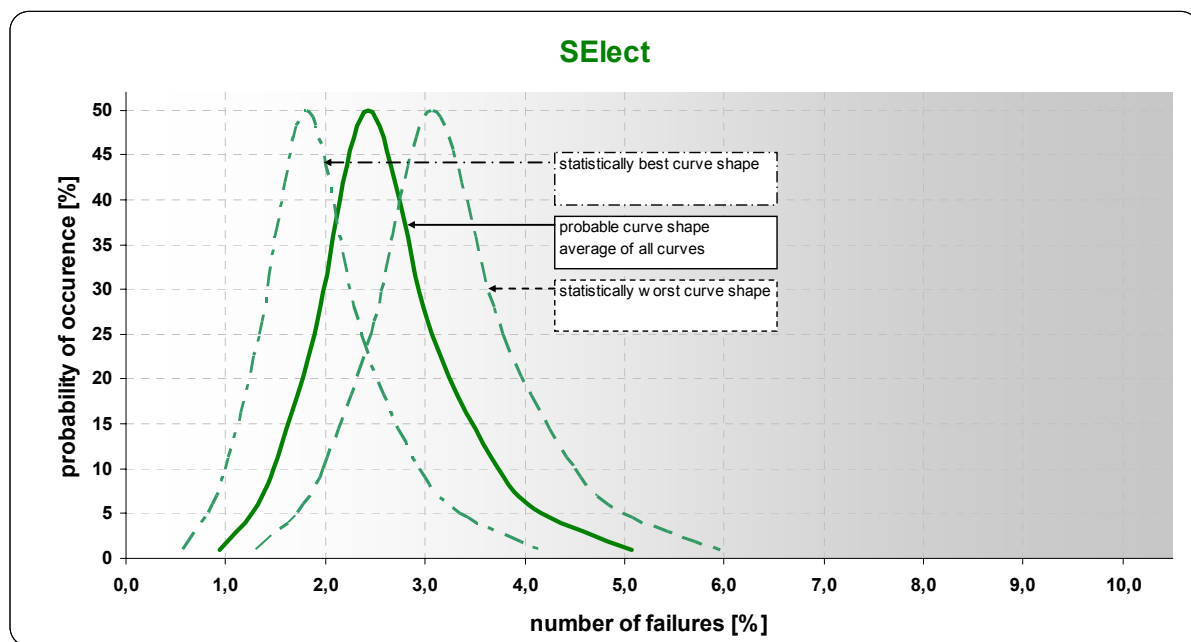
The sensory grades **TOP** and **SElect** are distinguished by the number of tolerated failures. For **SElect**, for instance, the specification is that out of 400 corks analysed (40 soaks at 10 corks per test), a maximum of 10 measured values above the sensory threshold is accepted.

For the **TOP** grade a maximum of 3 values above the sensory threshold are tolerated.

The sensory threshold value for a single cork is very strict. It is defined as difficult for an experienced and skilled taster to detect the negative influence caused by the cork stopper in a light white wine after a storage period of at least 2 years.

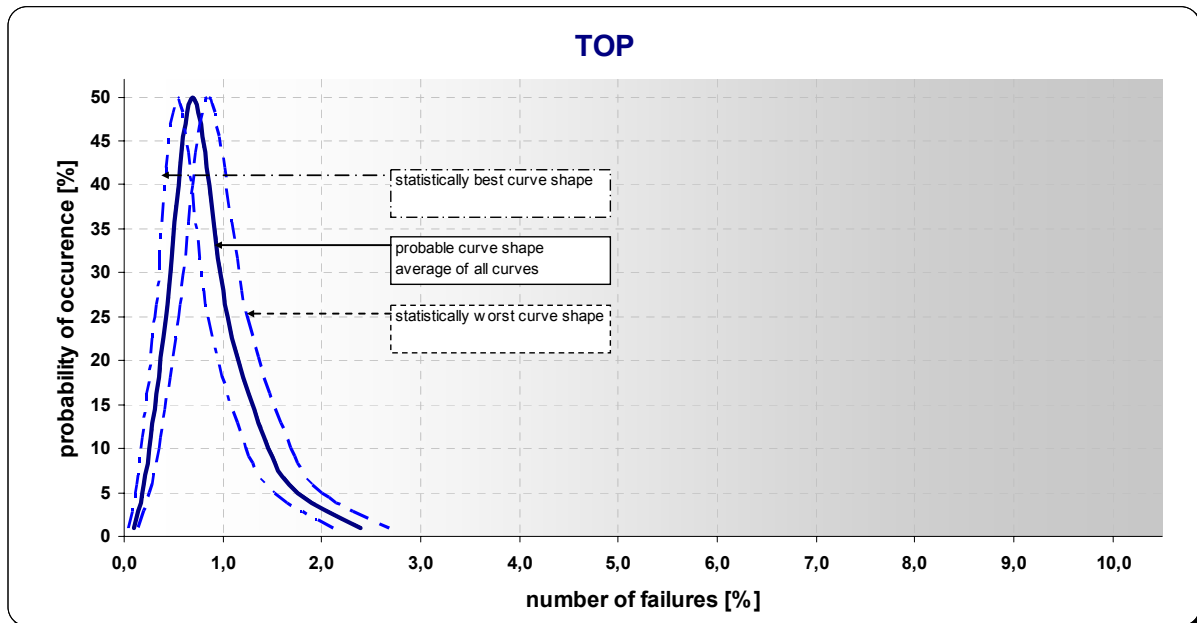
The diagrams below show the probability with which a failure may appear.

### SElect, selected safety



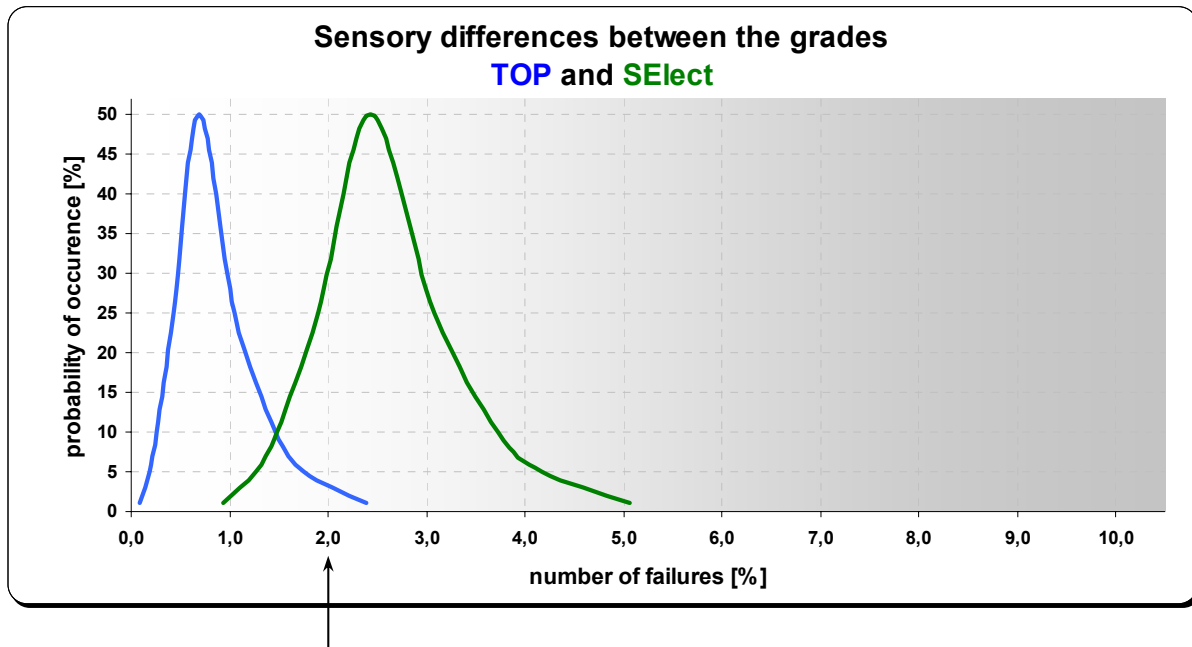
A wine closed with **SElect** – corks will as a rule remain free of detection. (Even in the worst case it is improbable that more than 6 of 100 bottles will be affected by TCA).

## TOP, the Top quality



Suitable for all wines, but in particular for those of high quality where the slightest risk should be avoided (with 99% probability less than 3 of 100 bottles are contaminated with TCA).

## TOP and SElect in Comparison



The diagram makes clear that the individual sensory qualities overlap. A quality evaluated as SElect can show a failure of only 2 % just as a quality graded as TOP. The difference is the probability with which the failure occurs. While the TOP provides a safety of approx. 97% that less than 2 of 100 bottles are contaminated with TCA, this safety decreases with a SElect grade to 30%.



## Remaining Risk

There is no protection of 100%.

Even a test of every single cork would not guarantee this safety, as no test can be absolutely perfect. For instance confusion, misinterpretation of test results or technical problems can occur.

Where it is not possible to test every item individually, the most important requirement for every analysis is to select a significant random sample from a homogeneous lot.

Testing of random samples can only determine the probability of failures to occur.

It is a fact, that:

- the larger the number of corks analysed, the more meaningful the test result will be.  
At Korkindustrie Trier, at least 400 corks out of each batch of 50,000 45mm (or 40,000 49mm) are analysed for TOP and SElect.
- the lower the number of failures, the more significant the test result.  
(compare the TOP curve versus the SElect curve)
- the more homogeneous the basic lot, the more significant the test results.  
At Korkindustrie Trier, the corks are taken from our washing machine ("drum process") and not from the bales.
- the smaller the basic lot, the more significant the test result.  
At Korkindustrie Trier, the random samples are taken from a maximum quantity of 50,000 corks of the dimensions 45 x 24 mm, independent of the size of the actual delivery which can comprise more than 400,000 corks of a particular quality.

**Avoid risks, opt for Safety!**