INK, HEART & SOUL

SIEGWERK

Customer Information

Statement of Composition (SoC) for “non finished inks/varnishes” that are combined by the converter to obtain a finished print ready ink/varnish

Many Siegwerk products for food packaging applications are ready for printing when delivered to the customer or just need to be diluted to achieve print viscosity. Such products can be considered as finished inks/varnishes.

However, Siegwerk also offers “non finished inks/varnishes”. The converter combines at least two of these non finished inks/varnishes in order to obtain a finished ink/varnish. This procedure allows “production” of a variety of finished inks/varnishes with only a few non finished inks.

Since the possible combinations of these products are manifold and under the control of the converter, Siegwerk can only provide Statements of Composition for the individual non finished inks as delivered.

Usually, Siegwerk supports the product safety evaluation of our customers by providing a Worst Case Calculation (WCC) indicating the max. potential migration for each migrant disclosed in our SoC. However, a WCC is reasonably based on the amount of the migrant in the dried ink film of the finished ink/varnish. Performing a WCC for non finished inks/varnishes significantly overestimates the potential migration risk and thus leads to a wrong product safety evaluation.

Consequently, Siegwerk provides a specific SoC for such non finished inks/varnishes that does not include a WCC result, but the solid content of the individual intermediate. Based on this information, the amount of the potential migrant given in the SoC and the mix ratio of the non finished inks/varnishes, a WCC for critical migrants can be performed. In the generic example below, we want to explain how this worst case calculation can be performed.

In addition, we offer a specific **„Worst-Case-Calculator non finished inks”** to our customers. It is available at https://www.siegwerk.com/en/our-responsibility/product-responsibility/safe-food-packaging.html and covers all the calculation steps shown below.

Performing a WCC for a migrant “X” based on the information given in the SoC of two non finished inks “A” and “B”:

The final liquid ink is obtained by addition of 10 parts of non finished ink A to 100 parts of non finished ink B.
Thus, the final liquid ink consists of 9.1% A and 90.9% B.

In addition, the following information is given in the individual SoCs of A and B:

SoC of A:
In the migrant table, migrant X with an SML of 18 mg/kg is disclosed.
The amount of migrant X in the solid film is given with 62%.
The solid content of **A** is given with 44%.

Since the amount of migrant X seems to be quite high compared to the SML, performing a detailed worst case calculation is reasonable.

SoC of B:
Migrant X is not contained.

The solid content of **B** is given with 33%.

Step 1: Calculating the amount of migrant X in the liquid non finished ink A:

„Amount of X in liquid A“ = „Amount of migrant X in SoC of A” * „Solid content of A” / 100%
= 62% * 44% / 100%
= 27.3%

Step 2: Calculating the amount of migrant X in the final liquid ink:

„Amount of X in final liquid ink“ = „Amount of X in liquid A“ * „Amount of A in final liquid ink“ / 100%
= 27.3% * 9.1% / 100%
= 2.5%

Step 3: Calculating the solid content of the final ink:

„Solid content of final ink “ = „Solid content of A“ * „Amount of A in final liquid ink “ / 100%
+ „Solid content of B“ * „Amount of B in final liquid ink “ / 100%
= 44% * 9.1% / 100% + 33% * 90.9% / 100 %
= 34%

Step 4: Calculating the amount of migrant X in the finally printed ink film:

“Amount of X in printed final ink film “ = „Amount of X in final liquid ink “ * 100% / „Solid content of final ink”
= 2.5% * 100% / 34%
= 7.4%

This value is a lot more realistic than the one given for migrant X in the SoC of A and thus it can be used for a reasonable worst case calculation.

Final Step: Worst Case Calculation for migrant X

Based on the result of step 4, our online Worst Case Calculator can be used to obtain a WCC result based on the specific printing conditions. It can be accessed in the Ink Safety Portal: https://ink-safety-portal.siegwerk.com/exposure-assessment/worst-case-calculation.

Alternatively, customers may just want to apply the Siegwerk standard worst case assumptions as this provides the WCC result, Siegwerk would give in our SoC if the “finished ink” would be delivered.
This WCC result is obtained by multiplying the “Amount of X in printed final ink film” with a factor of 1.8 [mg/kg]/[%].

⇨ **Final WCC result for X** = “Amount of X in printed final ink film“ * 1.8 [mg/kg]/[%]
= 7.4% * 1.8 [mg/kg]/[%]
= **13.3 mg/kg** (13.1 mg/kg without any rounding of intermediary results)

Comparing this result for the worst case migration of X with the SML of X (18 mg/kg), it can be concluded that even under the strict worst case assumptions of Siegwerk, the potential migration of X from the ink is below the SML and thus allows compliance with the Swiss Ordinance 817.023.21 as well as the Plastics Regulation (EU) No 10/2011.

A specific **“Worst Case Calculator for non finished inks”** as well as detailed information on the legal background, Siegwerk standard assumptions, risk evaluation and migration testing are available at https://www.siegwerk.com/en/our-responsibility/product-responsibility/safe-food-packaging.html.