

Worst Case Calculator[®]

Instructions: How to use the online worst-case calculator

With our Worst Case Calculator[®], the recipient of a Statement of Composition (SoC) is able to determine the maximum amount of a migratable substance that could, under worst case conditions, end up in the packed food. Here, the underlying principle is the assumption of 100% migration of the substance, which always leads to an over-estimation of the calculated result compared to real migration values.

Variables that can be modified in our worst case calculation tool are:

- migrant name and chemical identifier
(CAS No., information provided with SoC)
 - content of migrant in solid ink film
(information provided with SoC)
 - dry ink applied per square meter
 - area coverage of ink
 - surface-to-mass ratio
(EU-cube or FDA conditions or real surface/mass ratio).
- A higher amount of applied ink, as well as a higher surface coverage will always lead to increased migration values. Next to these parameters, the surface-to-mass ratio for the packaging material has to be considered as it is a crucial parameter. An increase in the surface-to-mass-ratio leads to increased migration results, thereby the chance of exceeding the specific migration limit (SML) is more likely.

How to use the online worst-case calculator:

- 1 **Specify Version:**
 - Select EU version for calculation according to EU measuring units
 - Select US version for calculation according to US measuring units (please note: use coma instead of dot for number entries)
- 2 **Ink:** Insert the name of the ink/lacquer as stated on your SoC
- 3 **Migrant:** Specify the migrant as given in your SoC
- 4 **CAS number:** Specify the CAS No. related to the mentioned migrant
- 5 **Maximum Amount in Dried Ink Film:** Specify the amount of the migrant in the solid ink film as given in your SoC (mandatory for calculation)
- 6 **Ink Applied per Square Meter, Solid:** Specify the dry ink deposit on your printed packaging structure (mandatory for calculation). As standard value a typical dry ink deposit of 3 g/m² is given. This value is related to the dry ink deposit used in our SoC for worst case calculation
- 7 **Area Coverage of Ink (mandatory for calculation):** Specify the area coverage of the ink on your printed packaging structure.
As a worst case assumption the standard value is set to 100 %

- 8 *Applicable surface / mass ratio (mandatory for calculation):* Specify if the EU cube (6 dm²/kg) or the FDA conditions (1 in²/10 g) shall be used as a model for the surface / mass ratio of the packaging structure or the real ratio.
If you choose the *real ratio* please enter the surface area of the packaging material as well as the mass of the packed food.
Please consider restrictions for the EU cube according to EU regulation
- 9 Click the *result button* for your individual worst case calculation. The result will be given in ppm and ppb.
- 10 *Compare the result with the specific migration limit* of the substance as given in your SoC.
- 11 *Repeat this process for all migrants.*
- 12 If all results are below the specific migration limit, no further actions are needed. If the result is above the migration limit, further investigations like migration modeling or migration testing should be performed in order to safeguard the application.