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Report: Training of packaging suppliers concerning contamination prevention

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Aims of the Report

- To explain the demands from the automotive industry and the resulting requirements from BASF for its packaging materials as a link in the crater prevention chain
- To increase understanding of the huge importance of preventing craters and illustrate what is done in-house by BASF Coatings to minimize the risk of cratering
- To raise awareness of and ensure the global use of preventive measures by suppliers

Background to the issue

- Coating defects, such as **craters**, play a very important role in the coatings industry. A crater is a local wetting problem caused by reduced surface tension.
- Paint manufacturers such as BASF Coatings are monitored extremely closely by the carmakers using what is known as the first-run-okay rate, i.e. the percentage of vehicle bodies which do not have to be refinished in the paint shop. Each repair job has a direct impact on the production output of an automotive plant.
- BASF Coatings has to take account of the fact that, in addition to silicones, other surface-active substances can also cause craters.

Results

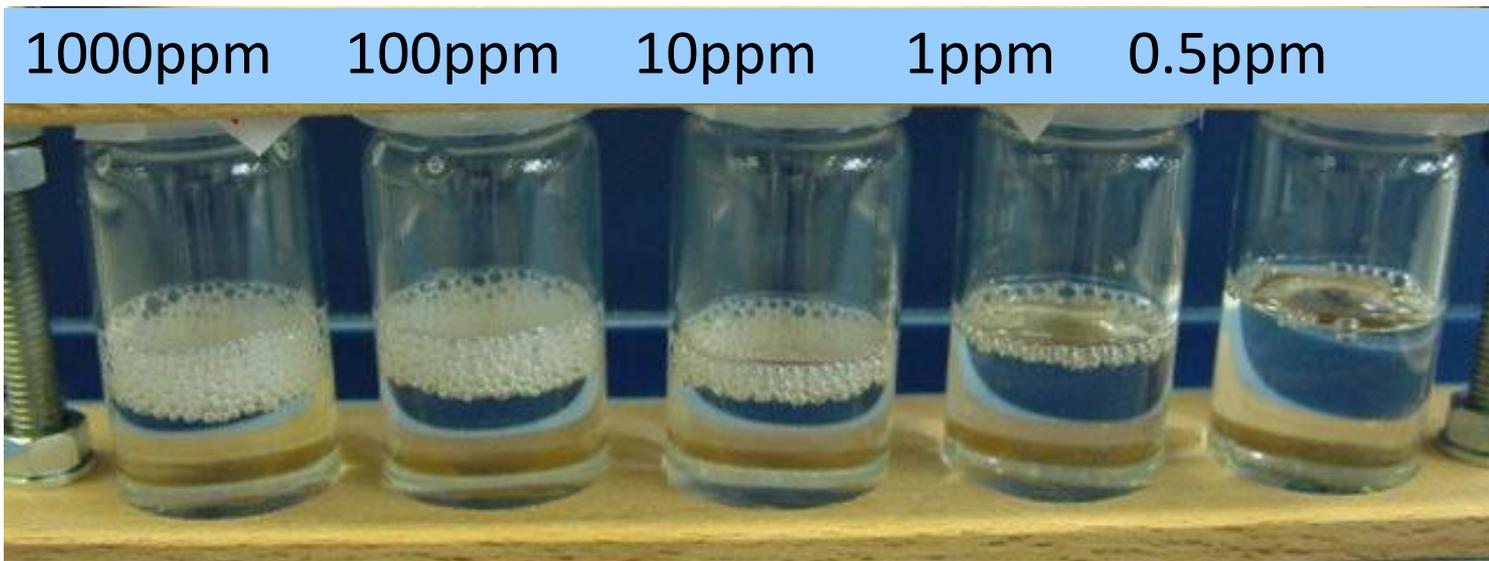
- Approx. **80%** of all cases of craters are caused by **silicone contamination**.
- Approx. **20%** of all cases of craters are caused by **other surface-active substances**.
- The substance classes named below are examples of surface-active substances and are provided as a **negative list** in this report, to be generally taken into account by the supplier.
- A contamination is usually first visible, only **after** craters have occurred. **Preventive measures** are all the more important in order to avoid contamination in the first place. The sooner contamination is found, the easier it is to identify and eliminate the cause.

Negative list of substance classes capable of causing craters

- Crater-causing substances (non-exhaustive)
 - **Silicones**
 - **Oils**
 - Include, but not limited to:
 - Synthetic oils, e.g. polyester oils
 - Mould release agents / flow agents / mould and drawing oils
 - Pump and hydraulic oils
 - Transmission oil (mineral oil + additive)
 - Corrosion protection oils
 - **Lubricants**
 - Include, but not limited to:
 - Fluorinated lubricants / spray
 - Forming lubricants
 - **Soaps, detergents, surfactants, cleaning materials**
 - **Waxes**
 - **Latex, Latex emulsions, Latex dispersions**
- **Ensure that these materials do not come in contact with any products / packages sent to BASF!**

Shake test

- The shake test on the supplier's premises is only to be used as an **indicative test** to enable a contaminant to be identified in and eliminated from the supply chain at the earliest possible stage. The test only works on silicone oil, not on other surface-active substances.
- BASF Coatings will be happy to provide further information on the shake test and on the correct procedure for the test. **Please contact BASF with any questions regarding the shake test.**



How can crater causing materials be introduced?

- Gaskets are commonly produced with silicone as a mould release agent. The gaskets used to seal openings on steel drums are one example.
 - WHAT TO DO? Avoid using gasket types that require silicon as a mould release agent
- During tank wagon and / or returnable tote maintenance, sometimes the replacement parts used within valves can contain silicone
 - WHAT TO DO? Make sure that the parts used in your totes / tank wagons are silicone free
- Tank wagons may become contaminated in the cleaning bay if a previously cleaned tank wagon held a “Negative List” material
 - WHAT TO DO? Please ensure that your haulers or cleaners are using dedicated “Negative List” free bays for tank wagons headed to BASF

BASF's expectations of its suppliers

- The overall impression is that the current position with the packaging manufacturers with regard to the avoidance of craters is fundamentally satisfactory. Building on this, the intention is to raise awareness among suppliers as part of their ongoing development so that **process changes** (e.g. in service materials) **both internally and at upstream suppliers in the chain are critically reviewed with reference to crater prevention.**
- **If a supplier makes changes in the raw materials used, the supplier is required to notify BASF of this and send in samples for testing by BASF.** Please refer to the [BASF Management of Change \(MOC\) procedures and form](#), also located on this web site.
- **New production lines and sites** are checked for measures to prevent craters as part of the delivery approval process. This also applies to **new packaging materials** from already approved suppliers. The initial point of contact at BASF is the responsible packaging consultant.
- **The results discussed must be notified and forwarded to all the relevant contacts within the company - at a global level.**

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