

# Efficient Long-Term Defoaming of Architectural Coatings

**TEGO® Foamex 883 – A new Defoamer not only for Formulations based on Vinyl Acetate Emulsions based on Vinyl Acetate Emulsions**

**TEGO® Foamex 883 is the new Tego mill-base defoamer for waterborne architectural coatings based on a new patented technology involving defoamer actives. It combines high efficiency with good compatibility. TEGO® Foamex 883 gives outstanding performance in formulations based on vinyl acetate copolymers as well as other architectural binder systems. Furthermore, TEGO® Foamex 883 has excellent long term stability, even under unfavorable storage conditions and changing temperatures.**

## Decoration and Protection

These are the main expectations from the end user of architectural coatings. A strong focus goes on the decorative effect of paints, which is mainly influenced by the color, surface quality and gloss. However, exterior coatings and interior coatings have a protective function as well. The substrate needs to be protected against influences like moisture, UV-light or mechanical and chemical attack.

For the painter, an additional aspect plays an important role. The painter expects a safe and easy handling of the paint during application by brushing, rolling or spraying. The applied paint needs to fulfill the customer's expectations with regard to decoration and protection. All these requirements depend on the formulation of the paint. Beside the main components of the paint like the binders, pigments and fillers; additives make a very important contribution to the paint performance. Defoamers are responsible for avoiding foam during manufacturing and application while providing a defect-free surface.



## Environmentally Friendly Systems Create Demand for New Defoamers

VOC regulations and end user awareness nourish the trend towards environmentally friendly waterborne paints. New polymer emulsions, which do not require solvents as coalescing agents, play an important role in the development of low VOC paints. These polymer emulsions are different with regard to the polymer and their emulsifier. This new polymer technology can be a very demanding task for the defoamer. Many defoamers are not capable of defoaming these low VOC systems while maintaining performance properties.



Good performance of TEGO® Foamex 883 vs. poor defoaming/compatibility

## Finding the Right Defoamer

Finding the best defoamer means finding the best balance between the defoaming efficiency and compatibility. To be effective, defoamers have to exhibit limited solubility in the paint system. To be able to destroy foam, the defoamer has to be insoluble enough to form small defoamer droplets in the bulk phase of the paint. If the droplets are too large, they create incompatibility and cause surface defects such as craters. If the defoamer is too compatible, the droplet size becomes too small or the droplets even disappear and the defoaming properties are lost (Figure 1). The right chemistry of the defoamer is essential to find the best balance between defoaming efficiency and compatibility.

Figure 1

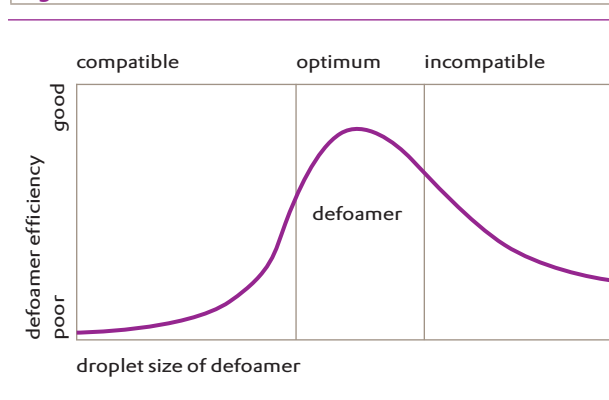


Figure 1: Effectiveness as a function of drop size

## Efficiency and Compatibility – Properly Balanced with TEGO® Foamex 883

With a new patented technology for defoamer actives, Evonik now offers a novel defoamer with outstanding properties: TEGO® Foamex 883. This is a defoamer concentrate with 100% active matter content and suitable for low VOC formulations. TEGO® Foamex 883 effectively eliminates macro- and micro-foam in waterborne architectural coatings. In formulations based on vinyl acetate copolymers, TEGO® Foamex 883 combines a very high efficiency with a good compatibility. In this case, TEGO® Foamex 883 closes the gap between highly effective defoamers with limited compatibility and weaker defoamers with good compatibility.

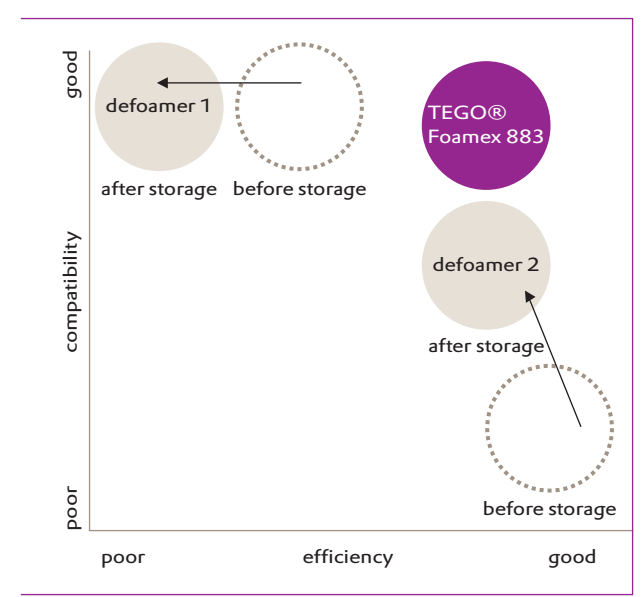


Figure 2: Defoamer efficiency and compatibility before and after storage

### **Aging – No Problem with TEGO® Foamex 883**

The finished coating as well as the liquid paint should keep their excellent performance properties over time. Exterior paints which are exposed to UV-light and rain should not lose their protective properties and appearance upon aging. Aging is not only an issue for the dried coating film, but also for the liquid paint. It is very important that the liquid material does not change its performance during storage. Typically, adverse storage conditions influence the efficiency of a defoamer in the paint system. When the coating material is exposed to changing temperatures, TEGO® Foamex 883 shows huge advantages over conventional defoamers. The defoaming efficiency of TEGO® Foamex 883 remains highly efficient in contrast to many other defoamers which lose their efficiency (Figure 2). Therefore, it is possible to formulate paints in a cost-effective manner. The formulator does not need to use an excess of defoamer to maintain the performance after storage.

### **Formulating with TEGO® Foamex 883**

TEGO® Foamex 883 is a defoamer concentrate which makes it the first choice as mill-base defoamer. TEGO® Foamex 883 requires high shear forces during incorporation to disperse the defoamer into an efficient droplet size in the paint system.

TEGO® Foamex 883 is highly recommended for the use in emulsion paints based on vinyl acetate copolymers. Over a wide PVC range (PVC: 20–80 %) it provides high defoaming efficiency, excellent compatibility and superior long-term performance. In emulsion paints based on pure acrylic binders and styrene acrylic binders, TEGO® Foamex 883 is more critical with regard to compatibility. For this reason, we recommend to use TEGO® Foamex 883 at higher PVC ranges only, styrene-acrylic (PVC > 40 %) and pure acrylics (PVC > 50 %). TEGO® Foamex 883 is also applicable for waterborne alkyd paints.

Its excellent effectiveness and the fact that TEGO® Foamex 883 maintains its performance during storage allow lower dosage than with conventional defoamers.

#### **TEGO® Foamex 883**

- 100 % active matter, solvent-free
- highly effective against micro- and macro-foam
- good long term effectiveness
- superior performance in vinyl acetate copolymer emulsion paints
- good efficiency in styrene acrylic and pure acrylic emulsion paints
- also suitable for waterborne alkyd paints
- ideal for the mill-base

#### **Technical Contact**

juergen.kirchner@evonik.com  
www.tego.de