EVOLUTION OF SILICONE SURFACTANTS FOR HIGH RESILIENCE (HR) FLEXIBLE POLYURETHANE FOAM

INTRODUCTION

Silicone surfactants are additives that influence the final properties of PU foam such as flexible foams, HR foams, rigid foams, among others. They are copolymers formed by a silicone base (apolar part) and polyethers (polar part), usually polyethylene oxide (OE) chains and polypropylene oxide (OP) chains. OE, OP and silicone content significantly affect the function of surfactants.

The surfactants:

- act as surface tension depressants by reducing the pressure differences between formed bubbles
- offer better stability of the bubbles
- condition the formation of fine cells
- influence the final properties of PU foam

Concentrol
Performance Materials

Concentrol surfactant range

Types of surfactants

Foam stabilizers	Cell regulators
- Surfactants used in critical PU formulations.	- Surfactants designed to regulate and unify the size and distribution of cells.
- A surfactant with stabilizing capacity is required, which helps in the foaming process in the expansion of the gases.	- Aimed at PU formulations that by themselves already have a high stability, able to grow with a solid and consistent structure without collapsing.
- Formulations where only TDI or TDI / MDI mixtures are used, but with a high percentage of TDI.	- Formulations where only MDI or TDI/MDI mixtures are used, but with a high percentage of MDI.

Flexible HR PU foam

STB PU-12XX range
- Driven by high resilience PU foam, HR.
- Systems are usually quite stable and a well-balanced foam opening is usually sought.
- Most common requirements is low compressive strength
- Minimum contribution to volatile component emissions is sought.

Evolution of Concentrol's range

In recent years it has been investigated how to reduce the VOCs of silicone surfactants with a new generation of products that allow the obtaining of PU foams with **emission values related to the stabilizer lower than 20ppm**.

STB PU-12XX PF

Second line designed, free of phthalates but high in aldehydes.

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STB PU-12XX PFJ

Third line designed, free of phthalates with low content of aldehydes and aromatics.

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