CONCENTROL STB PU®

SILICONE ADDITIVES FOR POLYURETHANE

Wide range of stabilizers to meet the particular needs of polyurethane system manufacturers.

Types of foam

- **Flexible HR foam** (high resilience, frequently used in the automotive and furniture sectors)
- **Conventional flexible foam**(a wide range of densities, continuous and discontinuous systems)
- **Rigid foam** (multiple applications)
- **Integral foam** (microcellular foam and shoe soles)
- **Monocomponent foam** (OCF)

Rrequirements in each application:

- **Conventional or flexible HR foams:** open cell structure.
- **Rigid foams:** fine, closed cell structure for the best results in thermal insulation.
- **Integral foams:** obtain perfect cell distribution and prevent shrinking of the foam.
- **Monocomponent foams:** the most suitable stabilizers are non – reactive and non-hydrolyzable.

STUDY ON STABILIZERS AND IDENTIFICATION OF THE MOST SUITABLE SURFACTANT

PROCEDURE:

- Preparation of the mixture of polyol, stabilizer and foaming agent with special agitator for 15 seconds at 2500 rpm.
- Addition of MDI and mixing for 8 seconds at 2500 rpm.
- Pouring the reaction mixture into a mold of dimensions 30x30x20 cm, where free foam growth takes place at room temperature.

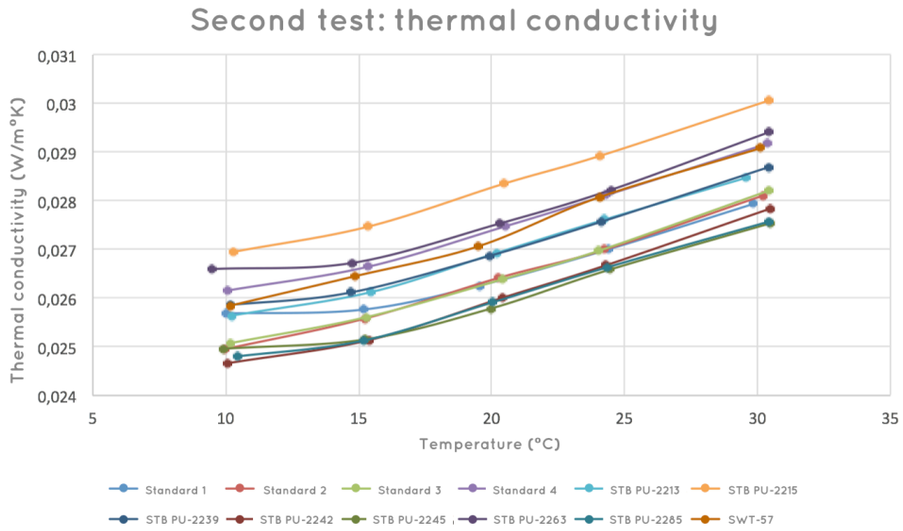
First test: density of the foam

Measurement of the density of the foam after the mixing and resting procedure.

Sample	Density (kg/m³)
Standard 1	22,0
Standard 2	23,1
Standard 3	22,4
Standard 4	20,9
STB PU-2213	22,4
STB PU-2215	21,9
STB PU-2239	22,7
STB PU-2242	23,2
STB PU-2245	23,7
STB PU-2263	20,7
STB PU-2285	23,3
SWT-57	22,7

Second test: thermal conductivity

Heat flow meter NETZSCH model HFM 436 Lambda.
Samples: 300 mm X 300 mm base length and 30 mm thickness.



Third Test: dimensional stability

Effect of compression of 10% of the foam, in vertical and horizontal cut.

Sample	σ10 V (Kpa)	σ10 H (Kpa)	Dimension stability coef.
Standard 1	135	49,7	2,716
Standard 2	130	48,8	2,664
Standard 3	129	40,6	3,177
Standard 4	127	46,8	2,714
STB PU-2213	120	36	3,333
STB PU-2215	146	49,6	2,944
STB PU-2239	137	38,8	3,531
STB PU-2242	111	45,3	2,450
STB PU-2245	128	41,6	3,007
STB PU-2263	120	42,2	2,844
STB PU-2285	134	46,4	2,888
SWT-57	149	38,3	3,890

Concentrol
Mould release agents

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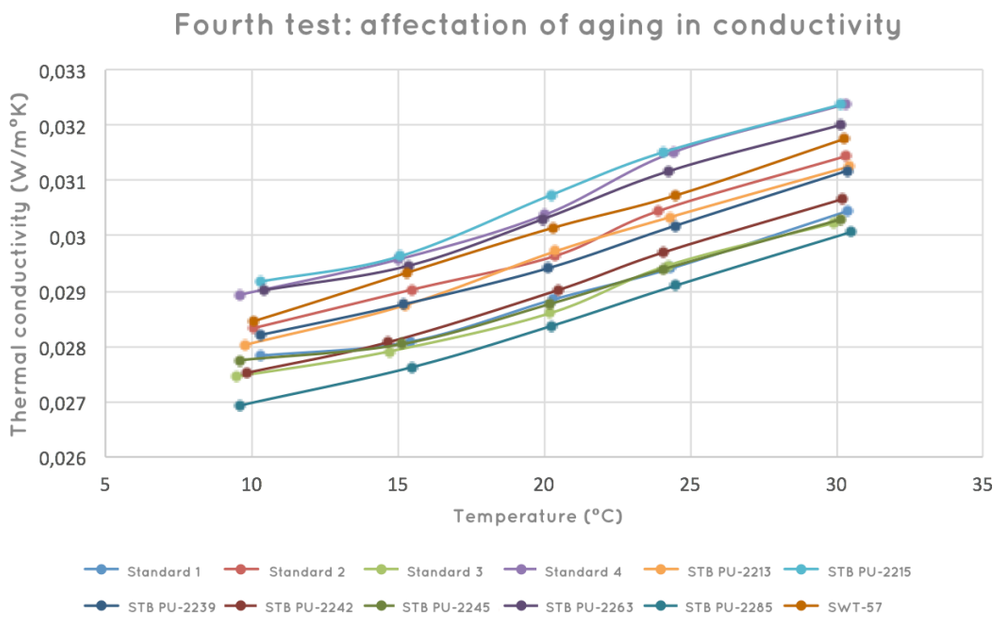
Fourth test: affectation of aging in conductivity



Fifth test: foam fluidity

The foams with the best results in thermal insulation have been evaluated in a fluency test consisting of the free growth of the foam inside a vertical tube (125 mm diameter). The height reached by the foam is directly related to the fluidity.

Sample	Height (cm)
Standard 1	77,5
Standard 3	73,0
STB PU-2239	78,0
STB PU-2242	76,0
STB PU-2245	77,0
STB PU-2285	78,0

CONCLUSIONS:

- In the first series of experiments we conclude that STB PU-2242, STB PU-2285 and STB PU-2245B offer the lowest lambda values of all the candidates.
- In terms of dimensional stability, all candidates are far from the ideal coefficient (1) due to the large differences between the vertical and horizontal compression forces.
- The latest test shows that lambda values get worse over time. Although the lambda values of STB PU-2285 increase, it is still the best candidate in the comparison.
- STB PU-2242, STB PU-2285 and STB PU-2245B are the best candidates.