Technical Information

ORTEGOL® 310

ORTEGOL® 310 is an additive which is used in the manufacturing process of polyurethane slabstock foams with reduced hardness.

At densities above 22 kg/m³, where physical blowing agents like methylene chloride are mainly used to reduce hardness, they can either be completely omitted or their amount considerably reduced thanks to the softening effect of ORTEGOL® 310. Depending on the type of the applied polyol the foams produced with ORTEGOL® 310 are up to 30 % softer than foams produced without ORTEGOL® 310. At densities below 22 g/m³, where physical blowing agents are also used to reduce the density, application of ORTEGOL® 310 permits to reduce the required amount of physical blowing agent, however, the upper temperature limit inside the foam must always be considered.

Physical properties

Viscosity (25 °C)	10 ± 2 mPas
Specific gravity (25 °C)	1.085 ± 0.010 g/cm³
Solubility in water	unlimited
ph value (pure)	8 ± 1

Safety instructions

In the design process for formulations it must always be considered that ORTEGOL® 310 contains 50 % water. This water content is necessary to keep the components of ORTEGOL® 310 as a clear solution.

When part of the water evaporates sedimentation may occur. We recommend to flush tanks and pipe work with water at regular intervals.

In addition to this the respective storage vessels at the machine should always be closed in order to guarantee a constant water content of ORTEGOL® 310 during processing.

Instructions for storage

Rooms where ORTEGOL® 310 is stored should be protected against extreme weather conditions, so that temperatures below 0 °C (32 °F) and above 50 °C (122 °F) will not occur. The containers must be closed carefully each time after material has been taken out.

For ORTEGOL® 310 we guarantee a shelf life of at least 6 months upon delivery under the condition, that it is stored in factory-sealed containers.

Application

ORTEGOL® 310 should preferably be fed in a separate stream.

If for some reason ORTEGOL® 310 must be fed as a premix together with a water/amine/stabilizer solution observe the following sequence when the mixture is prepared.

Start with the appropriate amount of water. First add ORTEGOL® 310 followed by the amine and finally the foam stabilizer. After having added one component stir the mixture until it is clear and homogeneous before adding the next component.

For activator solutions which contain less than 3 parts by weight of water per 100 parts by weight polyol we recommend to check with a minor laboratory test whether a clear solution can be obtained at all.

The resulting solution should remain clear for an hour otherwise ORTEGOL® 310 must be dosed separate

The preferred field of application for ORTEGOL® 310 is the production of conventional polyether slabstock foam, independent of the respective machine type. ORTEGOL® 310 should, however, not be used for the production of high resilience slabstock foam.

The used amount of ORTEGOL® 310 should not exceed 1.0 parts per 100 parts polyol. This will reduce rigidity by up to 30 %.

Application of ORTEGOL® 310 results in foams with an extremely favorable air permeability. In formulations with a higher content of water or ORTEGOL® 310 we recommend to increase the percentage of stabilizer by 20 to 50 % in order to achieve an optimum processing latitude. For detailed information please refer to the standard formulations and tables in this leaflet.

Formulations which contain more than 4.0 parts water per 100.0 parts polyol and a comparatively high amount of ORTEGOL® 310 benefit from the addition of small amounts (approx. 0.5 parts per 100 parts polyol) of phosphorous flame retardants.

Such flame retardants, just like phosphorous compounds used as antioxidizers, have a positive influence on the equal distribution of mechanical properties over the block cross section, in particular on the stability.

Packaging

450 kg pallet (9 x 50 kg plastic drums)
840 kg pallet (4 x 210 kg plastic drums)
1 075 kg plastic containers

For information

- on classification and labelling in accordance with shipping instructions and the Toxic Substances Control Act
- on protective measures during storage and handling
- on measures in case of accidents and fire
- on toxicology and ecological toxicity

please refer to our safety data sheets.

Polyol (OH-No. 47)	100	100	100	100	100	100	100	100	100	100
Water (total)	4.8	4.8	4.8	4.8	4.8	4.8	4.5	4.1	3.85	3.6
TEGOSTAB® B 4900	1.0	1.0	1.0	1.2	1.4	1.6	1.0	1.2	1.2	1.4
KOSMOS® 29	0.25	0.25	0.25	0.25	0.25	0.25	0.27	0.28	0.29	0.30
TEGOAMIN® PTA	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Methylene chloride	–	–	–	–	–	–	2	4	6	8
ORTEGOL® 310	–	0.2	0.4	0.6	0.8	1.0	–	–	–	–
Chlorinated phosphate ester	0.5	0.5	0.5	0.5	0.5	0.5	–	–	–	–
T 80	56.4	56.4	56.4	56.4	56.4	56.4	53.4	49.3	46.8	44.2
Rise time [s]	79	79	80	81	85	90	81	90	98	113
Density [kg/m³]	21.3	21.4	21.1	21.4	21.4	21.5	21.5	21.6	21.2	20.8
Air permeability*	14	11	12	12	14	13	14	14	15	14
CLD Hardness, 40 % compr. [kPa]	3.7	3.4	2.8	2.4	2.2	2.0	3.3	2.7	2.4	2.0
Tensile strength [kPa]	116	119	116	110	96	91	115	101	85	73
Elongation at break [%]	210	240	240	260	260	290	210	220	220	210
Compr. set, 50 %; 70 °C; 22 h [%]	4	4	5	5	7	7	4	4	4	3
Ball rebound [%]	45	46	46	47	46	47	47	48	49	51

Polyol (OH-No. 47)	100	100	100	100	100	100	100	100	100	100
Water (total)	3.0	3.0	3.0	3.0	3.0	3.0	2.8	2.55	2.3	2.1
TEGOSTAB® B 4900	0.8	0.8	0.8	0.8	0.9	1.0	0.8	0.8	1.0	1.0
KOSMOS® 29	0.22	0.22	0.22	0.22	0.22	0.22	0.24	0.26	0.28	0.30
TEGOAMIN® PTA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Methylene chloride	–	–	–	–	–	–	2	4	6	8
ORTEGOL® 310	–	0.2	0.4	0.6	0.8	1.0	–	–	–	–
T 80	38.1	38.1	38.1	38.1	38.1	38.1	36.1	34.1	32.1	30.0
Rise time [s]	113	117	121	124	127	132	128	136	145	158
Density [kg/m³]	31.3	31.5	31.2	31.0	31.2	31.4	31.2	31.6	31.6	31.5
Air permeability*	10	11	9	9	11	17	16	12	17	28
CLD hardness, 40 % compr. [kPa]	3.6	3.1	2.8	2.5	2.3	2.1	3.0	2.7	2.5	2.2
Tensile strength [kPa]	109	115	110	107	94	97	103	96	75	75
Elongation at break [%]	220	260	250	270	240	260	230	220	190	180
Compr. set, 50 %; 70 °C; 22 h [%]	3	3	3	3	3	5	2	3	3	2
Ball rebound [%]	55	54	54	53	54	51	56	58	59	60

*Air permeability is indicated as back pressure in millimeter of water column build up by an air stream passing a foam sample at constant speed. Please note that lower figures represent a more open-celled structure.

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