

POLYURETHANE ADDITIVES FOR FLEXIBLE POLYETHER FOAM

SILICONE SURFACTANTS
CATALYSTS
PERFORMANCE ADDITIVES

EUROPE



EVONIK – YOUR POLYURETHANE ADDITIVES PARTNER FOR ALL COMFORT FOAM APPLICATIONS

By working in close partnership with the comfort industry, we stay abreast of the latest trends and issues impacting the global market, helping us to meet changing market demands and provide optimized products with the lowest possible VOC emissions.

Over several decades, we have developed a large variety of different specialized products that generate 'value' for our customers, including emission optimized catalysts and low cyclic containing silicone surfactants.

FAST ONLINE SERVICES TO SUPPORT YOU WHEN YOU NEED IT MOST



EXPLORE PU takes our online service offering to the next level; a more personalized experience, with fast access to support from our polyurethane experts, wherever you are in the world.

OUR COMMITMENT

Evonik is committed to producing new additives that improve productivity, enhance performance and have a reduced impact on the environment and CO₂ footprint. We have strict quality management processes in place as well as many diversity initiatives.

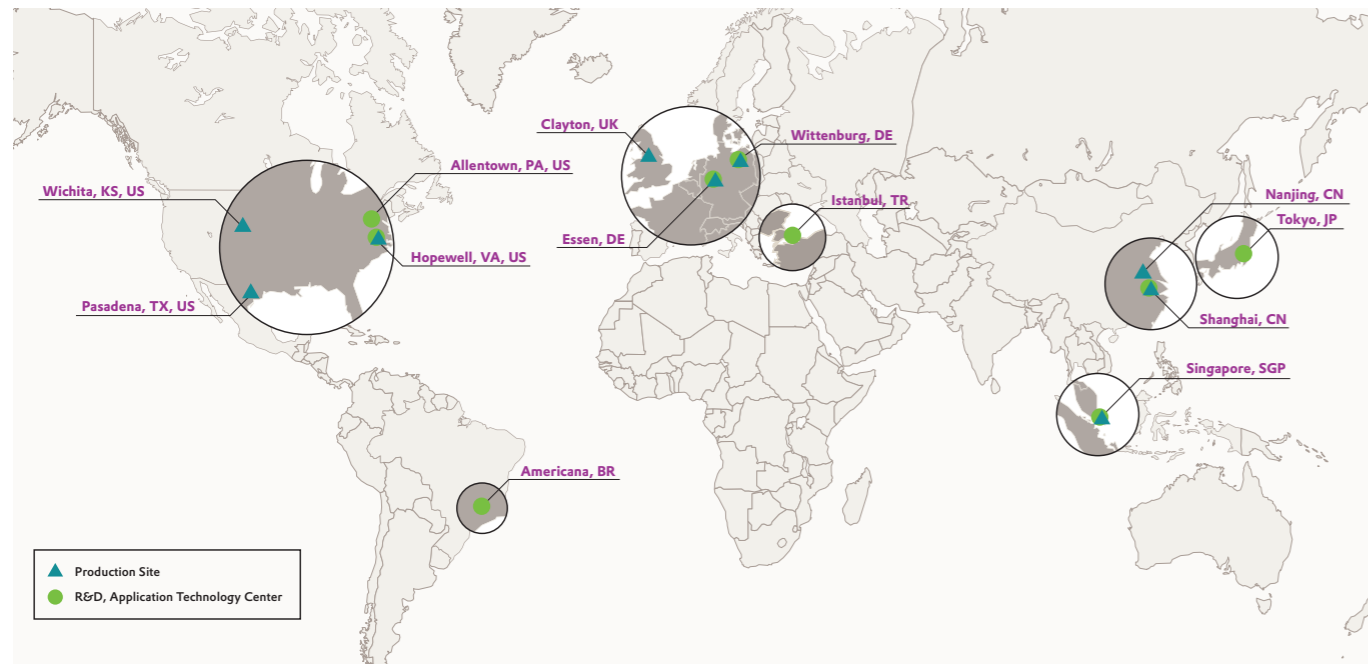
Our products are backed by a global network of support services:

- Local sales & technical service personnel, with in-depth industry knowledge and understanding of your needs.
- Dedicated R&D centers of excellence.
- Analytical labs
- Worldwide manufacturing and warehouse capabilities.

We are the global leader in polyurethane additives offering you the broadest choice of catalysts and surfactants for your flexible slabstock foam applications.

From our TEGOSTAB®, DABCO®, TEGOAMIN®, KOSMOS® and ORTEGOL® brands you will find the right additives for your foam formulation.

WE ARE WHERE YOU ARE



SAFETY IS PARAMOUNT AT EVONIK

- Evonik is one of the safest chemical manufacturers globally.
- An industry leader environmental, health and safety (EH&S) performance.
- Every employee is required to understand and adhere to our global EH&S policy. It is a condition of employment.

SILICONE SURFACTANTS FOR CONVENTIONAL POLYETHER BLOCK FOAM

All our surfactants are VOC optimized; as a result, the cyclic siloxane (D4, D5 and D6) content is <0.1 wt % in total. For many grades (marked as "ultra-low cyclics"), we have further improved our processes and reduced the total D4, D5 and D6 content down to <0.03 wt %, helping formulators meet stringent IKEA IOS Mat 0010 V 15 emission targets, whilst producing high quality foam.



CONVENTIONAL SILICONE SURFACTANTS

Conventional silicone surfactants are suitable for a broad range of different polyether foam grades. They are not recommended for FR foam grades because they require higher dosage of flame retardants, or the foam might not even pass FR test.

TEGOSTAB®	KEY FEATURES	STABILIZER POTENCY	DENSITY RANGE	NUCLEATION EFFICIENCY	PROCESSING LATITUDE	ULTRA-LOW CYCLICS ⁽¹⁾	CO ₂ PROCESSING	SENSITIVE TO HYDROLYSIS
B 4900	Very broad processing latitude	•	M	••	•••		✓	✓
B 8002	Very broad processing latitude for high density foams with low stabilization requirements	◦	H	•	•••			✓
B 8040	Medium potency stabilizer with wide processing latitude	••	M	••	•••		✓	✓
B 8052	Improving nucleation while keeping a good processing latitude for a broad range of formulations	•	M	••	•••		✓	✓
B 8266	Narrowing the density distribution within the block while keeping a broad processing latitude	••	M	•••	••	✓	✓	
B 8291	Wide processing latitude & medium to low potency for a broad range of formulations	•	M	••	•••	✓	✓	
BF 2370	Outstanding processing latitude to produce very open foam with fine cell structure. Can be used in an extensive variety of foams including Viscoelastic and Hypersoft foams.	••	L-H	•••	•••		✓	✓
BF 2470	Improved gas yield and excellent density distribution	••	L-M	••	••	✓		

L = Low M = Medium H = High
 ◦ = Low performance or narrow processing latitude • = Medium performance or medium processing latitude
 •• = High performance or wide processing latitude ••• = Very High performance or very wide processing latitude
⁽¹⁾ D4, D5 and D6 content < 0.03 wt % (in total)

UNIVERSAL SILICONE SURFACTANTS

Universal silicone surfactants combine high activity with medium FR properties. They are suitable to produce foams with FR requirements like Cal. TB 117 and MVSS 302. Generally foam manufacturers also use these silicone surfactants for their conventional foam grades.

TEGOSTAB®	KEY FEATURES	STABILIZING POTENCY	DENSITY RANGE	NUCLEATION EFFICIENCY	PROCESSING LATITUDE	ULTRA-LOW CYCLICS ⁽¹⁾	CO ₂ PROCESSING	SENSITIVE TO HYDROLYSIS
B 8110	High potency stabilizer for foams produced with physical blowing agents	•••	EL-M	••	•	✓		
B 8158	Broad processing latitude and fine cell structure, specifically for more hydrophobic polyols including Natural Oil-based Polyols	••	L-M	•••	•••	✓	✓	
B 8227	Best combination of wide processing latitude, very fine cell structure, block height, gas yield and surface finish	••	M-H	••	•••	✓	✓	
B 8228	High potency for medium density foams	•••	L-M	••	••	✓		
B 8244	Combination of high potency and good cell opening. Suitable for formulations with hydrophilic / EO-rich polyol	•••	L-M	••	•••	✓		✓
B 8255	Strong nucleation support, fine cell structure and high potency for CO ₂ foams	•••	L-M	•••	••	✓	✓	
B 8275	Broad processing latitude and good nucleation for medium density foams and foam grades containing NOP	••	M	•••	••	✓	✓	
B 8955	For sealant foams	N/A	M	••	••	✓	N/A	

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 ✓ = suitable N/A = not applicable ⁽¹⁾ D4, D5 and D6 content < 0.03 wt % (in total)

FLAME RETARDANT SILICONE SURFACTANTS

Flame retardant silicone surfactants are particularly well-suited for the production of flame retardant foam grades since they enhance the efficiency of the flame retardants by their minimized contribution to the flammability of the foam. They are essential in Crib 5 formulations.

TEGOSTAB®	KEY FEATURES	STABILIZING POTENCY	DENSITY RANGE	NUCLEATION EFFICIENCY	PROCESSING LATITUDE	ULTRA-LOW CYCLICS ⁽¹⁾	CO ₂ PROCESSING	SENSITIVE TO HYDROLYSIS	FR PERFORMANCE
B 8155	Excellent flammability test performance combined with broad processing latitude	••	L-H	••	•••	✓	✓		•••
B 8189	Very broad processing latitude	••	M-H	••	•••	✓	✓		•
B 8232	Medium potency combined with broad processing latitude for various FR formulations	•	M-H	••	•••	✓			••
B 8239	Excellent flammability test performance, fine and regular cell structure	•••	L-M	•••	••	✓	✓		•••
B 8239 F	Premium FR surfactant for automotive / flame lamination application	•••	L-M	•••	••	✓	✓		•••

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 ✓ = suitable ⁽¹⁾ D4, D5 and D6 content < 0.03 wt % (in total)





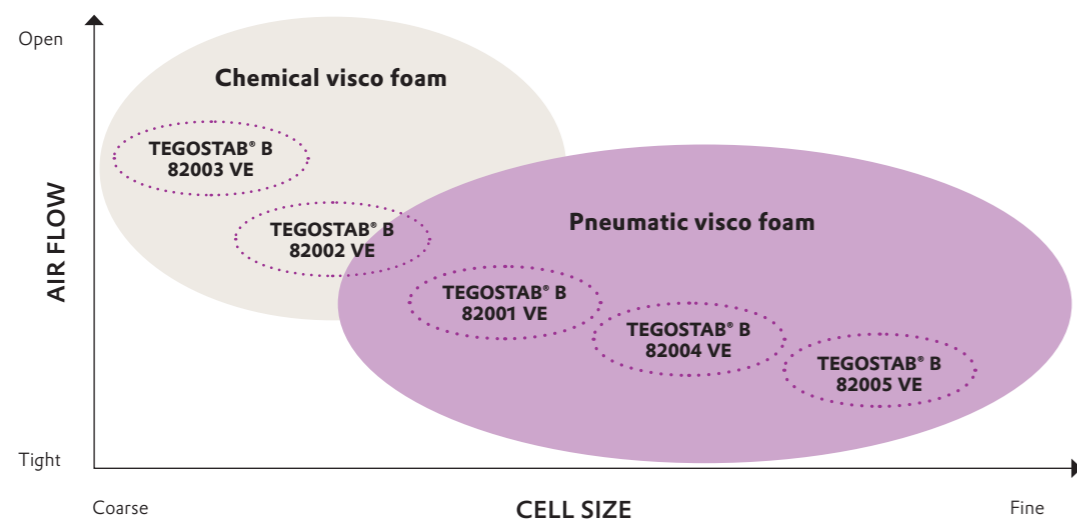
INTRODUCING OUR NEW RANGE OF MDI VISCOELASTIC SURFACTANTS TEGOSTAB® B 8200X VE

- An extensive range of surfactants designed to produce a wide variety of foams (from open/coarse to tight/fine)
- Ultra-low cyclic siloxane content, helps to meet the new IKEA IOS Mat 0010 V 15 specification
- Optimized to reduce impact on foam flammability
- Non hydrolysable; can be used in systems

SILICONE SURFACTANTS FOR HIGH RESILIENCE SLABSTOCK FOAM

All products listed below provide very open foam.

These surfactants are specifically designed to cover the need for the different cell regulating and stabilizing potencies required because of varying formulation ingredients, such as the polymer content in the polyol, the cross-linker level, or the portion of isocyanates other than TDI 80.



TEGOSTAB®	ACTIVITY	PROCESSING LATITUDE	MDI	TDI	LOW VOC
B 8707 LF2	SAN/PIPA
B 8773 LF2	SAN/PHD/PIPA
B 8783 LF2	SAN/PHD/PIPA

.. = High performance or wide processing latitude ... = Very High performance or very wide processing latitude

CATALYSTS

For several decades, Evonik has been the global leader in polyurethane additives, offering the broadest range of catalysts to the flexible foam industry.

TRADITIONAL CATALYSTS

	DESCRIPTION
DABCO® 33 LV	Standard gel catalyst based on triethylenediamine in DPG
DABCO® BL 11	Standard blowing catalyst based on bis(2-dimethylaminoethyl)ether
DABCO® BL 13	Blowing catalyst. Diluted version of DABCO® BL 11
DABCO® DMEA	Moderately active blowing catalyst with broad processing latitude
DABCO® BLV	Standard balanced catalyst
KOSMOS® T 9	Stannous octoate
KOSMOS® T 900 NEW	Alternative to stannous octoate, offering improved EH&S
KOSMOS® 54	Co-catalyst for cold flow prevention in HR and visco foams

INTRODUCING DABCO® NE 750

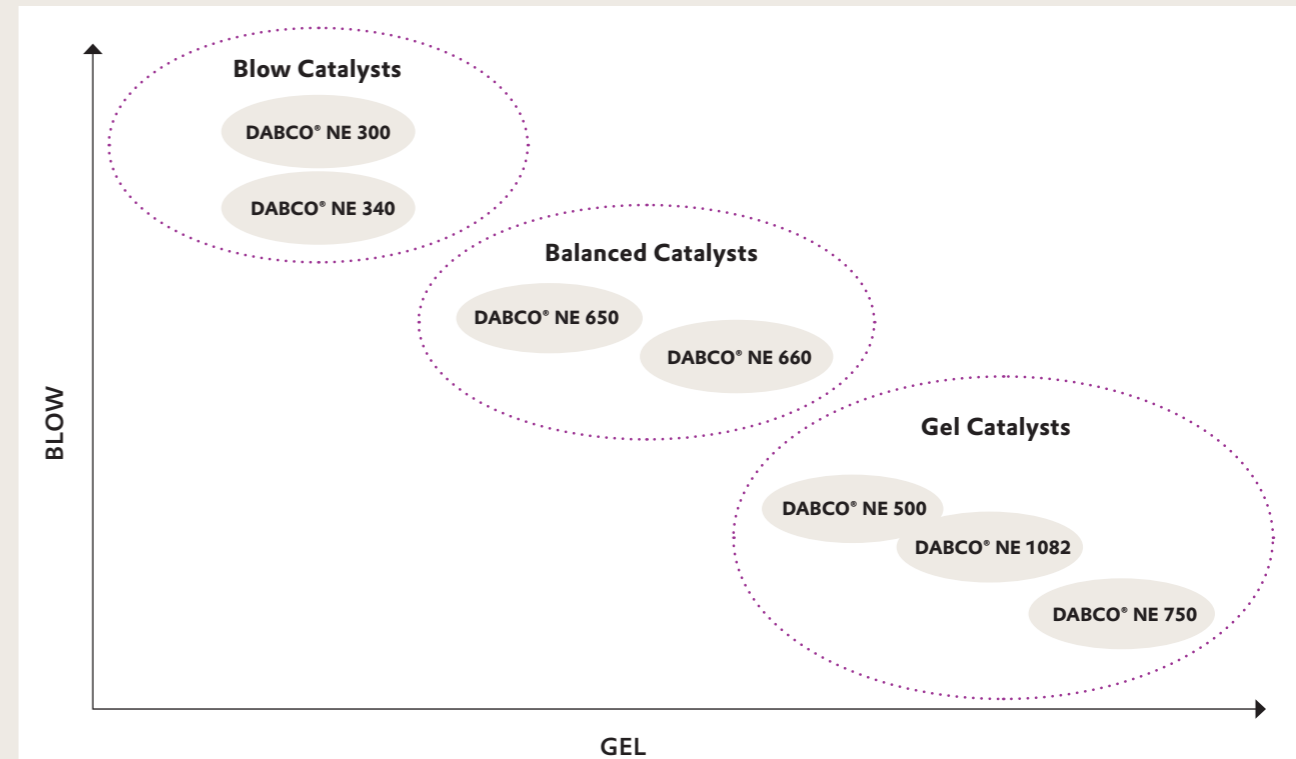
- Extra low emission amine catalyst, with outstanding gel selectivity and a similar rise profile to DABCO® 33 LV
- Helps to fulfill both comfort industry labels (including LGA, OEKOTEX) and automotive OEM specifications (including VDA 278)
- Produces foams that can meet PVC staining tests
- Reduced tack free time of the foam
- Reduced odor
- Recommended for viscoelastic, low index and soft foam



EMISSION OPTIMIZED CATALYSTS

Our latest Negligible Emissions (NE) grades offer reduced emissions compared to traditional amines, resulting in lower exposure to VOC's for both workers and consumers.

	DESCRIPTION
DABCO® NE 300	Low emission reactive blowing catalyst
DABCO® NE 340 NEW	Low emission reactive blowing catalyst allowing for precise dosage with all metering systems
DABCO® NE 500	Low emission reactive gel catalyst
DABCO® NE 1082	Low emission reactive gel catalyst
DABCO® NE 750 NEW	Low emission reactive gel catalyst with outstanding gel selectivity Recommended for viscoelastic and hyper soft foams
DABCO® NE 650	Low emission reactive balanced catalyst
DABCO® NE 660	Low emission reactive balanced catalyst
KOSMOS® EF	Emission optimized stannous catalyst



PERFORMANCE ADDITIVES

Evonik's portfolio of Performance Additives can help formulators to improve processing and foam physical properties.

ORTEGOL® CROSSLINKERS AND CHAIN EXTENDERS

PURPOSE

ORTEGOL® 204	Additive for cold flow prevention in HR and visco foams
ORTEGOL® G	Highly efficient crosslinker for flexible foams containing fillers
ORTEGOL® CXT	Additive to reduce splits in low index and filler formulations. Also enhances the elongation properties of the foam.

ORTEGOL® HARDENERS

ORTEGOL® 2035	Hardening additive
ORTEGOL® HA 1	Hardening additive with broad processing latitude

ORTEGOL® SOFTENERS

ORTEGOL® FS 2	Softening additive to prevent splits in low index formulations
ORTEGOL® 310	Softening additive

ORTEGOL® EMULSIFIERS

ORTEGOL® EM	Emulsifier for formulations with incompatible components
ORTEGOL® NOP	Emulsifier for blends of Natural Oil-based Polyols and standard polyols
ORTEGOL® PE 40	Additive to stabilize dispersions of solid powder particles in polyol and emulsifier for incompatible polyol blends

ORTEGOL® TO IMPROVE COMPRESSION SET

ORTEGOL® 700	Improving foam recovery after compression and reducing curing time before compression
ORTEGOL® 701	Improving foam recovery after compression. Suitable for automotive applications
ORTEGOL® 702	Improving foam recovery after compression and reducing curing time before compression. Provides excellent recovery in demanding applications

ORTEGOL® FOR ANTI-SCORCHING

ORTEGOL® AO 1	Antioxidant for scorch prevention
ORTEGOL® AO 7	Highly efficient antioxidant for scorch prevention, low VOC, also in high temperature automotive VOC tests

OTHER PROCESSING ADDITIVES

DABCO® BA 100	Acid-based blocking agent for delaying cream time to reduce or eliminate pinholes in foams
ORTEGOL® 500	Cell opening additive for technical flexible foams
ORTEGOL® AST	Antistatic additive
ORTEGOL® AST 2	Antistatic additive with reduced tendency for scorch
ORTEGOL® BS 1	Wetting agent for rebonded foam production to reduce binder level
ORTEGOL® CC 2	Cell coarsener for HR, visco and standard ether foams
ORTEGOL® FLA	Flame lamination additive for ether foam
ORTEGOL® FLA 2	Flame lamination additive for ether foams with improved bonding strength
ORTEGOL® HPH 1	
ORTEGOL® HPH 2	Additives to enhance the wetting of foam by liquids, especially water
ORTEGOL® LA 2	
ORTEGOL® LA 3	Aldehyde scavengers
ORTEGOL® VCO	Cell opener for viscoelastic foams
TEGOCOLOR® color pastes	Coloring additives



INTRODUCING OUR NEW RANGE OF ORTEGOL® ADDITIVES TO IMPROVE COMPRESSION SETS

- Improved foam recovery after long compression
- Enables formulators to reduce curing time before compressing
- Improved wet compression set
- Odor optimized
- Emission optimized, allowing formulators to pass room temperature chamber tests
- ORTEGOL®701 meets the requirements of VDA 278

NEW INVESTMENTS TO SUSTAINABLY DELIVER THE BEST SOLUTIONS AND SERVICES TO THE FLEXIBLE FOAM INDUSTRY

NEW TECHNICAL AND TRAINING CENTER IN ISTANBUL, TURKEY

- Lab and training center to work in collaboration with customers
- Small scale production, technical and digital services to support formulation development and optimization
- State of the art technical equipment to evaluate foam performance and run quality tests



TWO HIGH PRESSURE FOAMING MACHINES IN ESSEN, GERMANY

- One is dedicated to ester foam
- The second one is suitable for all other slab foam grades including conventional ether, CME, visco, HR, soft and CO₂ foam grades.
- Both machines are designed to help customers
 - develop new formulations
 - troubleshoot technical issues
 - transition smoothly to new materials or technologies from Evonik

FOAM CURING TIME / DABCO® T 9 USE LEVEL

ORTEGOL® 700 and ORTEGOL® 702 help improve foam recovery times, enabling foamers to notably reduce the curing time of compressed foams.

Compression Set (90%–70°C) in 25 kg/m³ standard ether foam at different KOSMOS® T 9 use levels.

5 DAYS CURING TIME

0.28 PPHP

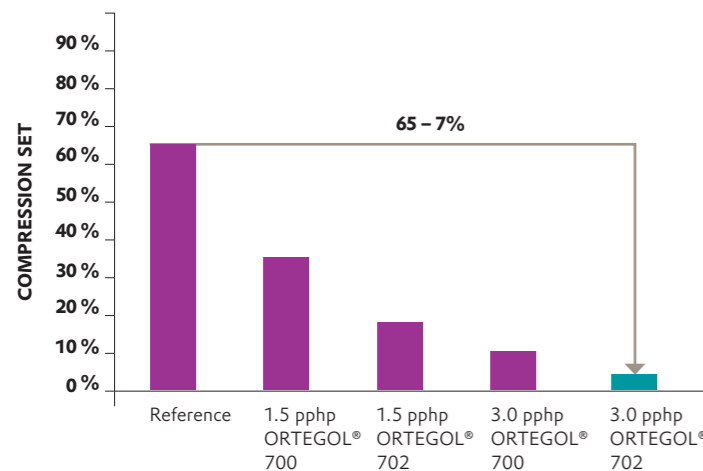
KOSMOS® T 9

1 DAY CURING TIME

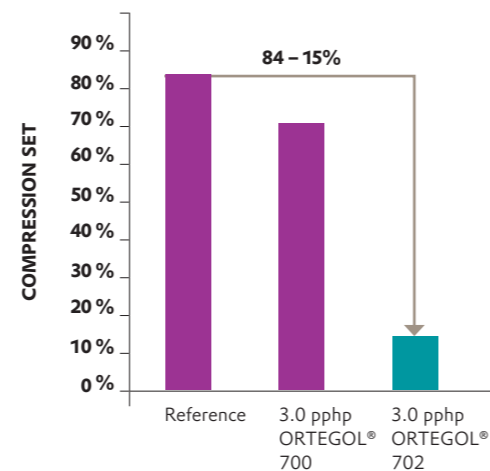
0.24 PPHP

KOSMOS® T 9

5 DAYS / 0.28 PPHP



1 DAY / 0.24 PPHP



To further discuss your requirements for polyurethane additives for the comfort foam industry, or to learn more about regional product availability.

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