

# Product Spotlight

## ORTEGOL® 204 and KOSMOS® 54

**ORTEGOL® 204 is a cross-linking agent and KOSMOS® 54 is a zinc catalyst. Both help prevent cold flow in flexible PU foam used in the production of HR slabstock.**

It is important to optimize the gelling and cross-linking reactions in the production of flexible polyurethane foam. Typically, a metal catalyst is used to control the reaction profile. In traditional HR slabstock, organotin catalysts like dibutyltin dilaurate have been employed. With this catalyst, cell structure and reaction time are optimized. Recently, concerns have increased around the use of hazardous materials, including organo-tin materials, consequently many consumers are looking to purchase foam materials that are considered more ecologically friendly. Due to this, foam manufacturers have begun to use tin salts to decrease the amount of reactive tin remaining in the final foam product. This more sustainable practice has led to the challenge of improving performance, particularly reducing cold flow.

Evonik is supporting this move toward more consumer-friendly products with development in the area of tin salt catalyst systems. Evonik has created the process additive KOSMOS® 54, a unique zinc salt used in the production of flexible foam. KOSMOS® 54 is best used in combination with other, more active tin salt catalysts like KOSMOS® EF, KOSMOS® 29 or KOSMOS® 27. Usually, KOSMOS® 54 is found in the production of HR or viscoelastic slabstock foam for mattresses. Furthermore, Evonik provides the cross linker ORTEGOL® 204 to help improve the final foam properties, meeting the consumer trends toward more ecologically friendly products.

By using ORTEGOL® 204 and KOSMOS® 54, the cold flow problem can be reduced. Cold flow problems normally arise when there is not sufficient cross-linking reactions during foam production. The problem is noticed after the foam leaves the process tunnel at a high temperature and begins to cool during storage. During the cooling, the foam loses height and begins to bulge outward. Once the foam is cured, it is cut and the curved sides are removed as waste. This can reduce foam yield by more than 5%. By adding ORTEGOL® 204 and KOSMOS® 54, the cold flow problem can be reduced.

The resultant waste at cutting can be minimized and the foam yield increased. Fully cured foam can again have a nice rectangular shape after post-production cure.

Besides the main advantage of cold flow prevention, both products have additional benefits for the customer.

KOSMOS® 54 can help maintain a uniform-density distribution of the final foam. The improvement in cross-linking reactions provides better post curing, helping to increase the quality of the foam throughout the entire foam bun. KOSMOS® 54 is also soluble in polyol, allowing the foam manufacturer to mix or premix these chemicals. Each of these characteristics results in more of the final foam reaching higher standards of quality and being able to be sold into higher demanding applications. KOSMOS® 54 is a VOC free catalyst and reacts into the polyurethane matrix. Common emission standards for foam can be fulfilled more easily with this special additive. KOSMOS® 54 is to be considered as a weak catalyst, resulting in delayed catalytic activity. Ultimately, this helps to stabilize the foam. It reacts after the highly active tin salt catalysts have ceased.

By using ORTEGOL® 204, up to 50% of the standard cross-linker, like diethanolamine, can be replaced without diminishing the wide processing latitude. The wide processing latitude is characterized by working with different polyol types. Improved compression set of the foam, even at increased humidity, can be seen by using ORTEGOL® 204. Thanks to a more equal density distribution, the final foam quality can be increased. Faster curing rate is also a key benefit. A positive influence on dimensional stability can be seen and trapezoid deformation is prevented. In addition, ORTEGOL® 204 can be dissolved in water and water-amine mixes to provide maximum flexibility for the production process. All of these factors help to save both time and money in the production process.

In all, cold flow prevention can be achieved by using ORTEGOL® 204 and KOSMOS® 54 as additives in the foam production. Our technical service team can help you choose the right optimization package for your system.



Are you interested in more information about our ORTEGOL® 204 and KOSMOS® 54? [Contact our sales representatives](#) or [download our MSDS and TDS](#). (ORTEGOL® 204 and KOSMOS® 54)

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