Evonik Solutions for Sustainable Artificial Leather

Innovating a green and sustainable manufacturing

EVONIK
Leading Beyond Chemistry

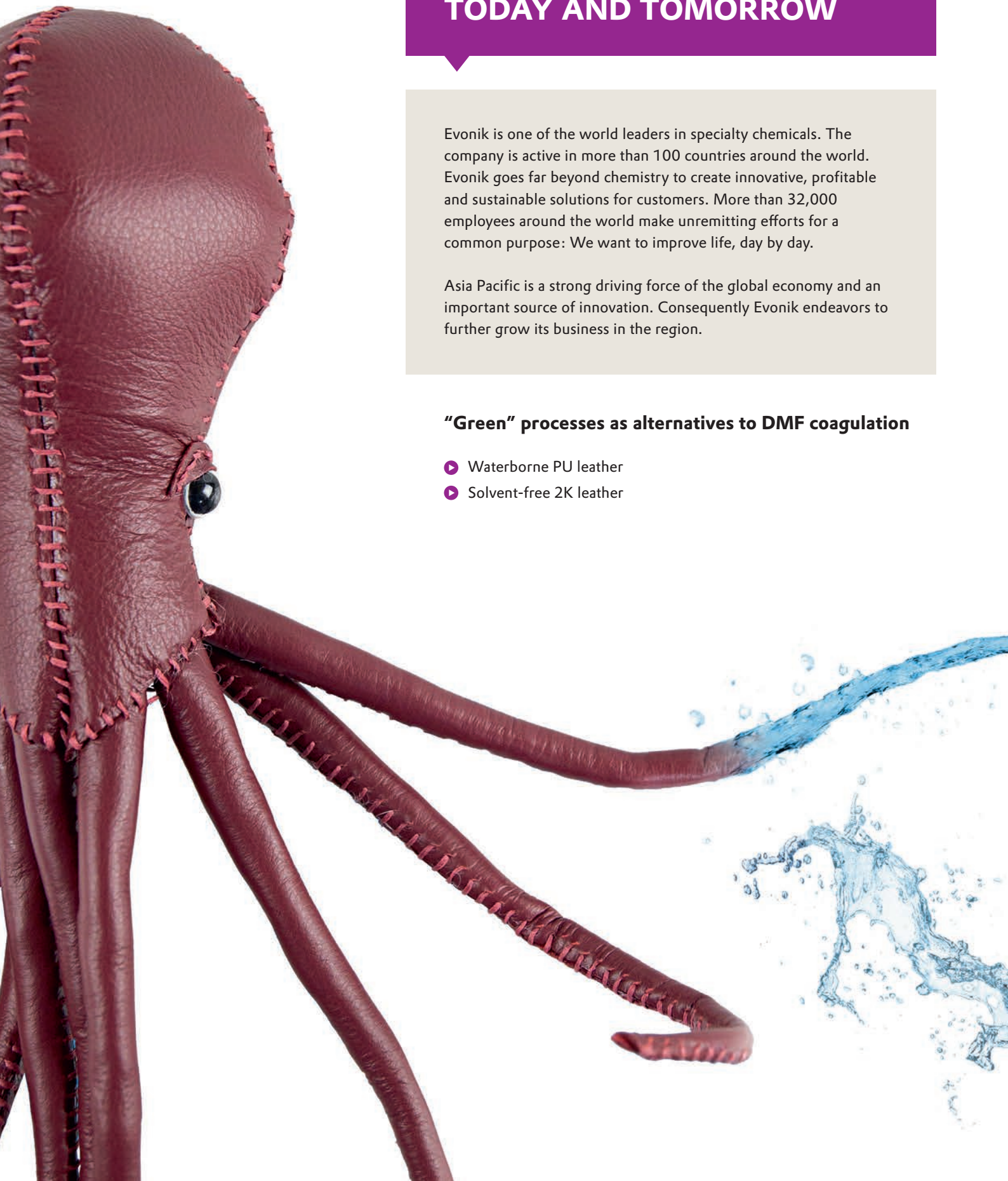
LEADING BEYOND CHEMISTRY TO IMPOVE LIFE, TODAY AND TOMORROW

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world. Evonik goes far beyond chemistry to create innovative, profitable and sustainable solutions for customers. More than 32,000 employees around the world make unremitting efforts for a common purpose: We want to improve life, day by day.

Asia Pacific is a strong driving force of the global economy and an important source of innovation. Consequently Evonik endeavors to further grow its business in the region.

"Green" processes as alternatives to DMF coagulation

- Waterborne PU leather
- Solvent-free 2K leather



Enabling the artificial leather industry more sustainable with our innovative solutions

As a sustainable substitute for genuine leather, the cruelty-free polyurethane-based (PU) artificial leather has a more eco-friendly manufacturing process. However its current solvent-based production technique still imposes a negative impact on the environment. Evonik is at the forefront in developing solutions for a sustainable artificial leather production. We provide a series of additive products suitable for "green" processes that can replace the traditional solvent-intensive ones, fulfilling our commitment to sustainability with practical actions.

A variety of our high-performance products comply with the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL).

Tailor-made solutions provided by Evonik

1. Coating additives enhance the overall performance of leather finishes, such as haptic characteristics, chemical resistance, physical and mechanical resistance
2. VESTANAT® IPDI / H12MDI and VESTAMIN® IPD waterborne PU for leather finishing chemicals (surface treatment agents) of natural and artificial leather: high performance PUD synthesis
3. TEGOTEX® RT 2033 for water-repellent topcoat preparation with excellent scratch resistance
   TEGOPREN® 7008 can be used for softening topcoat preparation with a dry and soft hand-feel
4. VESTANAT® IPDI / H12MDI and VESTAMIN® IPD for topcoat / 2K solvent-free and waterborne leather resin
5. 2K aliphatic PU for solvent-free artificial leather
6. VESTAMIN® A95 for high-solid PUD of waterborne artificial leather
7. ORTEGOL® P series PUD foam stabilizers for waterborne leather
   TEGOSTAB®, DABCO® and POLYCAT® for 2K foaming layer

PU additive solutions for waterborne and solvent-free artificial leather

Porous Layer

Evonik provides innovative PU additive solutions for a sustainable artificial leather industry.

Solutions for waterborne PU leather

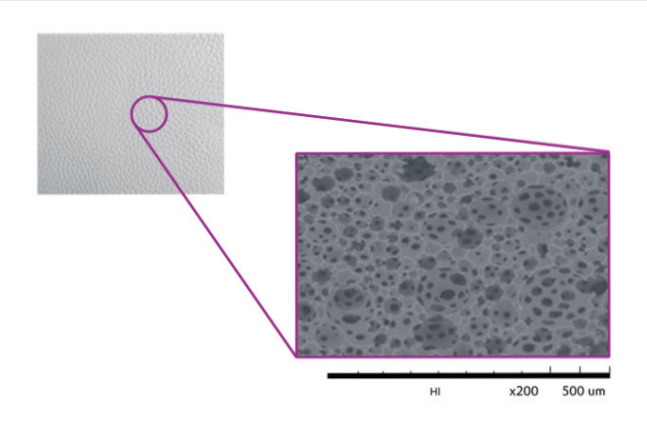
ORTEGOL® P foam stabilizers
The new ORTEGOL® P series includes innovative foam stabilizers that provide fast foam build-up, outstandingly fine foam structure and superior foam stability. Additionally, the product series is non-migrating, low-emissive and provides high system compatibility.

ORTEGOL® PD and PV additives
This series of dispersants and thickeners are tailor-made for PUD foaming applications to achieve optimal film performance.

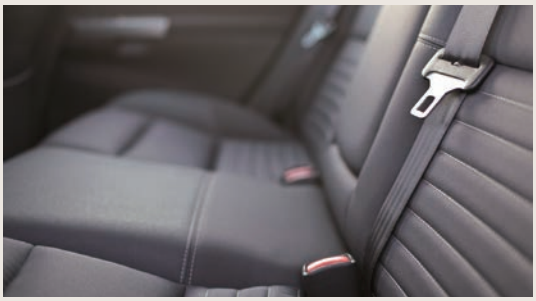
Solutions for 2K solvent-free leather

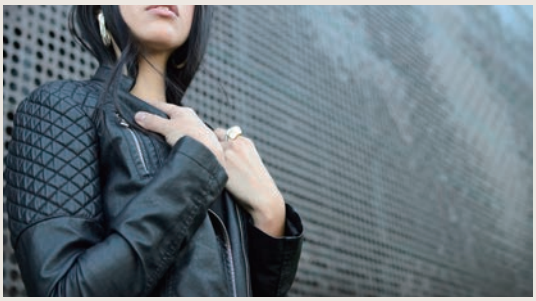
TEGOSTAB® surfactants
This series contains a broad variety of silicone surfactants, which helps to improve the system performance in all directions, including optimized cell structure, improved substrate wetting and levelling.

POLYCAT®, DABCO® and KOSMOS® catalysts
Evonik provides comprehensive catalyst solutions for 2K leather, including standard and delayed amine catalysts, as well as tin-free metal catalysts, which help you achieve full control of the system reactivity.



Microscopic analysis of the very fine cell structure enabled by Evonik additives





Contact:

Comfort & Insulation
Phone +86 21 6119-3653
Email zheng.zhu@evonik.com
www.pu-additives.com

For more product information, please contact us or scan the QR code

Crosslinkers - high performance starting materials for leather industry

PUR, PUD for Leather Refinish, PU Leather Resin

Evonik Crosslinkers has been the reliable partner and solution provider with high performance products from isophorone chemistry.

Products	Applications
VESTANAT® IPDI Isophorone diisocyanate	Synthesis of non yellowing PUR elastomers, PUR resins and PUD for sustainable artificial leather and leather refinish
VESTANAT® H12MDI Dicyclohexylmethane-4,4-diisocyanate	Synthesis of non yellowing PUR elastomers, PUR resins and PUD for sustainable artificial leather and leather refinish
VESTANAT® TMDI Trimethylhexamethylene diisocyanate	Providing excellent flexibility for high performance PU leather resin and leather refinish
VESTAMIN® IPD Isophorone diamine	Diamine chain extender for high performance PU leather resin and PUD
VESTAMIN® A95 Aminoalkyl sulfonate	Sulfonate chain extender for high-solid PUD

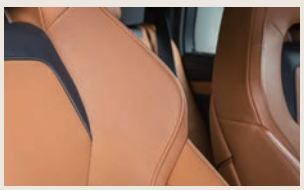
All the above products comply with ZDHC Manufacturing Restricted Substances List (MRSL).

Applications

- Water-based PU leather
- PUD for waterborne leather refinish
- High-solid/solvent-free TPU for leather
- PUR for 2K solvent-free leather

Solvent-free aliphatic 2K PU technology for artificial leather

- Light stability and weather resistance
- Solvent-free system with extreme low VOC
- Fast drying speed and lower baking temperature
- Good flexibility and mechanical performance
- 2K system can be optimized according to performance requirements
- Direct use of existing 2K equipment for production



Contact:

Crosslinkers
Phone +86 21 6119-1348 (Asia)
Email martin.lei@evonik.com
www.evonik.cn/crosslinkers

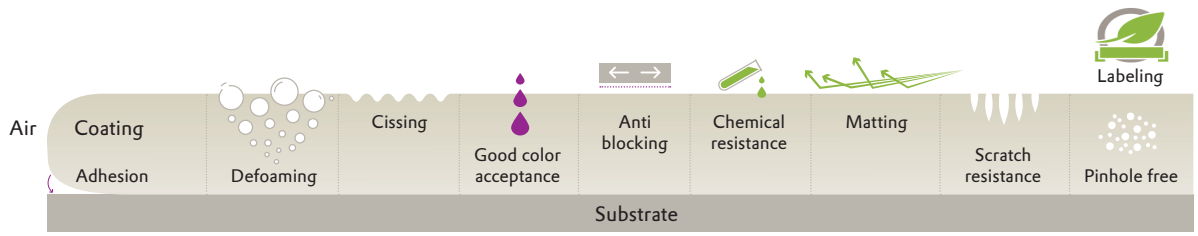
Phone +49 2365 49 6027 (EMEA)
Email georg.michels@evonik.com

For more product information, please contact us or scan the QR code

Coating additives better leather finishes

Leather Finish

A wide selection of Evonik coating additive products meet broad requirements of leather finish.

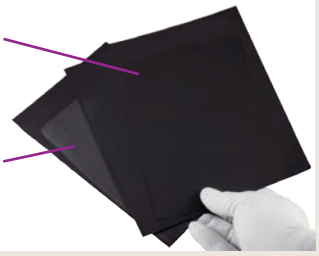


Applications	Products and features
Substrate wetting agents	TEGO® Wet and TEGO® Twin substrate wetting agents reduce surface tension of leather finishes, facilitate distension, improve anti-cratering and leveling, and increase adhesion. Recommended products: TEGO® Wet KL 245, TEGO® Twin 4100
Defoamers and deaerators	TEGO® Foamex and TEGO® Airex improve and facilitate processability when used in the leather finishes production phase, and may contribute to minimizing or eliminating defects generated by the presence of foam in the application phases. Recommended products: TEGO® Foamex 825, TEGO® Airex 902 W
Surface control agents	TEGO® Glide and TEGO® Flow improve the flow/leveling, slip, scratch resistance, and specific touch characteristics. Recommended product: TEGO® Glide 494
Matting agents	ACEMATT® silica matting agents deliver excellent matting efficiency and transparency. Recommended products: ACEMATT® TS 100, ACEMATT® 3300
Wetting and dispersing additives	TEGO® Dispers promote pigment wetting and stabilization and thus prevent floating, flooding, and settling of pigments, and provide low viscosity and maximum color strength. Recommended product: TEGO® Dispers 760 W

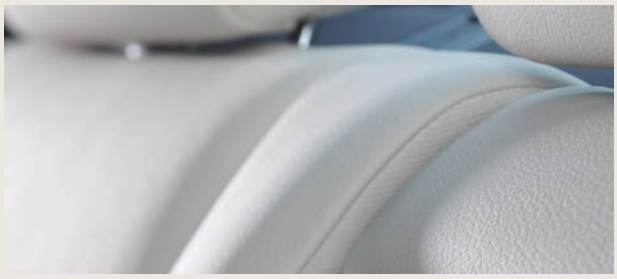
A combination of TEGO® Glide 494 with TEGO® Twin 4100 delivers significant improvement in jetness

Adding 3% TEGO® Twin 4100 to TEGO® Glide 494 can significantly increase jetness

High dosage of TEGO® Glide 494 would encounter whiteness because of less compatibility



ACEMATT® TS 100 silica matting agent: your best choice to achieve a matt finish with excellent anti-scratch properties



Contact:

Coating Additives
Phone +86 21 6119-1319
Email holly.liu@evonik.com
www.coating-additives.com

For more product information, please contact us or scan the QR code

Performance chemicals create additional value for artificial leather

Function Finishing

Thanks to our organo-modified silicone and oleo-chemical technology platforms, Evonik provides high performance solutions for artificial leather industry and create additional value for our customers.

Products	Applications	Features and benefits
TEGOTEX® RT 2033	Water repellent	Used for topcoat waterproof preparation; fluorine-free and environmental-friendly; soft hand-feel, scratch-resistant, highly wear-resistant, easy to remove stains
TEGO® Sorb PY 88	Odor absorber	Effective elimination of unpleasant odors generated by sulfur and nitrogen compounds
TEGOPREN® 7008	Softener	Can be added to resin to improve its hand-feel, or used in the finishing process to enable a dry and soft hand-feel
TEGOMER® H-Si 2315	Resin modifier	Dihydroxyl-terminated silicone which can react with isocyanate, improving the hand-feel of PU and release performance, enhancing wear and scratch resistance

Contact:

Interface & Performance
Phone +86 21 6119-1123 (Technology)
Email jasmine.chen@evonik.com
Phone +86 21 6119-3037 (Marketing)
Email raymond.gong@evonik.com
www.textile-auxiliaries.com

For more product information, please contact us or scan the QR code

Evonik Specialty Chemicals (Shanghai) Co., Ltd.

Chundong Road 55, Xinzhuang Industry Park

Shanghai, 201108

Phone +86 21 6119-1000

www.evonik.com

202007-V1-ENG

EVONIK
Leading Beyond Chemistry