

# BREAK-THRU®

Face-to-Face with Microbials





BREAK-THRU® additives are well known innovative solutions in the crop protection industry. They are used as tank mix adjuvants and as in-can additives for agrochemical formulations.

Our products enhance the performance of synthetic pesticides as spreaders, penetrants, antifoams, dispersants and emulsifiers.

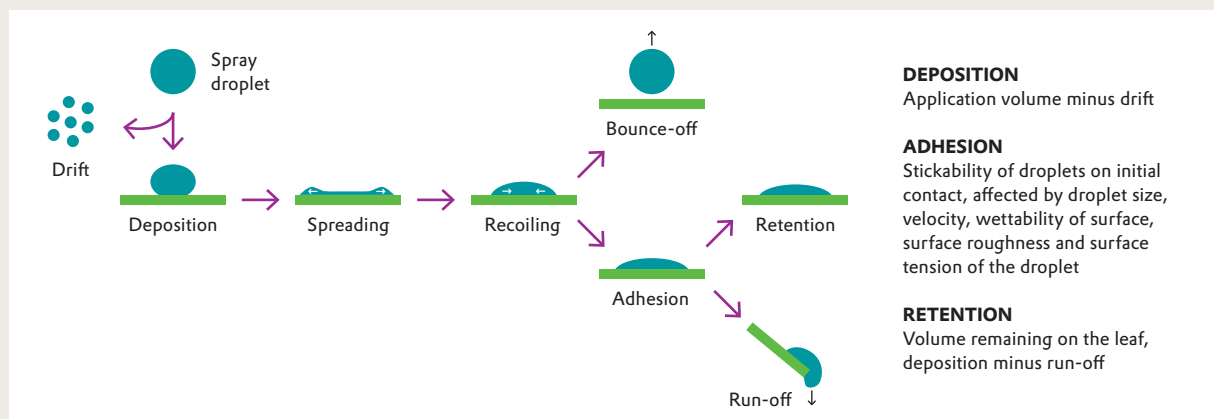
BREAK-THRU® additives can also increase the performance of biological active ingredients and are especially beneficial for products based on living microorganisms.

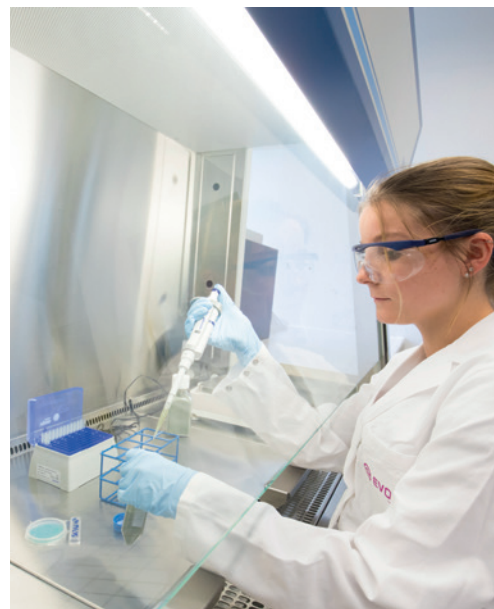
# IMPROVING THE PERFORMANCE OF MICROBIAL AGRO SOLUTIONS

## ENHANCED SHELF LIFE AND TARGETED DELIVERY

Biological alternatives to chemical crop protection products have become increasingly important as consumers look for food containing less chemical residues. Growers need alternative modes of action to control resistant pests or prevent resistance build-up. This demand and the regulatory phase-out of many chemical pesticides globally, provides an opportunity for biological solutions. However, growers often perceive biological products – especially products based on living microorganisms – as having a lower and/or inconsistent efficacy compared to chemical ones.

### TARGETED DELIVERY OF MICROBIAL SPRAY SOLUTIONS: BREAK-THRU® ADDITIVES ENHANCE DEPOSITION, ADHESION & RETENTION





Common causes of low or inconsistent efficacy of microbial biopesticides and biostimulants are limited stability of the product during storage prior to application, too little of the active material reaching the target site, and the rapid degradation of the active material on the target by environmental stress.

### **STABILIZATION**

Microorganisms should remain viable during storage and transport without compromising their efficacy or the desired formulation properties. The viability of microorganisms depends on several criteria. Besides suitable growth conditions during production and appropriate downstream processing the right formulation helps to reduce loss of viability of microbial active ingredients.

BREAK-THRU® carrier liquids and additives enhance the shelf life of bacterial and fungal microorganisms and allow for physically stable solid and liquid formulations.

### **TARGETED DELIVERY**

For a microbial product to be effective and economical, it is essential that the organism reaches the target site. Even though a biological active ingredient is applied to the site where the pathogen is found, e.g. by spraying, much of the product can be lost by drift, bounce-off and/or run-off. Many of the physico-chemical principles known for the delivery of chemical crop protection products also apply to microorganisms. However, the additives or surfactants used must be biocompatible, i.e. they must not affect the viability of the microorganism. Biocompatibility of surfactants is even more important in formulations than it is in tank mixtures where only low concentrations of adjuvants are used.

BREAK-THRU® additives are biocompatible and provide excellent wetting performance, deposition, adhesion and retention. In addition, BREAK-THRU® additives reduce the amount of droplets

prone to drift of foliar applied products and enable wetting of the leaf underside. They provide homogeneous spreading of actives in the soil with no leaching into deeper soil zones.

### **PROTECTION**

On the target, microbial active ingredients need protection from harmful environmental effects such as desiccation, UV radiation or wash-off by irrigation or rain. BREAK-THRU® additives provide humectant properties and improved rainfastness.

Our BREAK-THRU® product portfolio for microbial agro solutions enhances the often limited shelf life of microbial biocontrol agents and biostimulants as well as their delivery and efficacy. This leads to an increase in performance of microbial agricultural solutions and contributes to their acceptance in the market.

## Product range of biocompatible BREAK-THRU® Additives

Products	Application Properties/Mode of Action
BREAK-THRU® S 301	Carrier liquid for enhanced shelf life, e.g. for <i>Beauveria bassiana</i> ; Superspreader for excellent adhesion and retention for foliar applied biopesticides and soil wetting
BREAK-THRU® S 255	Carrier liquid for enhanced shelf life; Wetting agent for oil based formulations, wetting of top soil layer with humectant properties and dust control for seed treatment formulations
BREAK-THRU® SD 260	Superspreader for solid formulations with humectant properties; Excellent adhesion, retention for foliar applied biopesticides and soil wetting
BREAK-THRU® SP 133	Carrier liquid for enhanced shelf life; Wetting agent for excellent adhesion, retention, and drift reduction for foliar applied biopesticides, low foam tendency
TEGO® SML 20	Economical wetting agent for advanced adhesion, retention for foliar applied biopesticides and soil wetting
BREAK-THRU® EM V 20	Emulsifier for vegetable oil and naturally derived pesticidal oils
TEGO® STO 85 V	Emulsifier for paraffinic oil
BREAK-THRU® DA 646	Dispersing agent for OD formulations (oil/solvent based), emulsifier for methylated vegetable oil

Products	In-Can						WP/WDG	Tank mix	Biodegradable <sup>1)</sup>	Biobased	OMRI <sup>2)</sup>	FIBL <sup>3)</sup>	Registration Status EPA <sup>4)</sup> FIFRA <sup>5)</sup>	Chemistry
	DC	EC	SC	OD	SE	FS								
BREAK-THRU® S 301	●	●	●	●	●	●		●	●				● <sup>6)</sup>	Polyether trisiloxane
BREAK-THRU® S 255	●	●	●	●	●	●		●						Polyether siloxane
BREAK-THRU® SD 260							●	●	●				● <sup>6)</sup>	Solid water-soluble trisiloxane
BREAK-THRU® SP 133		●	●	●	●			●	●	●	●		● <sup>6)</sup>	Polyglycerol ester
TEGO® SML 20		●	●	●	●	●		●	●	●			● <sup>6)</sup>	Ethoxylated sorbitan monolaurate, HLB 16.7
BREAK-THRU® EM V 20		●		●	●				●	●			● <sup>6)</sup>	PEG <sup>1)</sup> (20) Glyceryl Oleicinate, HLB 8.3
TEGO® STO 85 V		●		●	●				●	●			● <sup>6)</sup>	PEG <sup>1)</sup> (20) sorbitan trioleate, HLB 10.5
BREAK-THRU® DA 646		●		●										Polyether

Please see explanatory notes on revers side.

**Europe | Middle East | Africa**

**Evonik Operations GmbH**  
Goldschmidtstraße 100  
45127 Essen  
Germany  
Phone +49 201 173-2665  
Fax +49 201 173-1990  
[www.evonik.com](http://www.evonik.com)

**Asia | Pacific**

**Evonik Specialty Chemicals Co., Ltd.**  
55, Chungong Road  
Xinzhuang Industry Park  
Shanghai, 201108  
PR China  
Phone +86 21 6119-1125  
Fax +86 21 6119-1406

**The Americas**

**Evonik Corporation**  
P.O. Box 34628  
Richmond, VA 23234  
USA  
Phone +1 804 727-0700  
Fax +1 804 727-0855

This information and any recommendations, technical or otherwise, are presented in good faith and believed to be correct as of the date prepared. Recipients of this information and recommendations must make their own determination as to its suitability for their purposes. In no event shall Evonik assume liability for damages or losses of any kind or nature that result from the use of or reliance upon this information and recommendations. EVONIK EXPRESSLY DISCLAIMS ANY REPRESENTATIONS AND WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, NON-INFRINGEMENT, MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE) WITH RESPECT TO ANY INFORMATION AND RECOMMENDATIONS PROVIDED. Reference to any trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used. Evonik reserves the right to make any changes to the information and/or recommendations at any time, without prior or subsequent notice.



[www.evonik.com/break-thru](http://www.evonik.com/break-thru)

Inv.-Nr.: 55-2020