

BREAK-THRU® S 240

100 % Polyether Modified Trisiloxane
Super Spreader & Super Penetrant
An innovative, yet well proven surfactant available
in more than 50 countries worldwide
www.evonik.com/break-thru



Features

BREAK-THRU® S 240 is a non-ionic surfactant and belongs to the chemical class of organomodified trisiloxanes. These are the only agricultural adjuvants that can produce a phenomenon known as “super spreading” i.e. the rapid coverage of hydrophobic surfaces such as leaves at concentrations of 0.1 % or less. Aqueous solutions containing BREAK-THRU® S 240 have zero contact angle (Figure 1) – in contrast to water treated with conventional surfactants such as nonylphenol ethoxylates (Figure 2).



Figure 1: Water alone and with BREAK-THRU® S 240 covering a much larger area.

Super spreading is a consequence of lowering surface tension dramatically i.e. below 25 mN/m. Hence, agricultural sprays containing BREAKTHRU® S 240 can deliver crop protection products and foliar fertilizer more effectively by:

- complete wetting of treated vegetation (wetting action),
- allowing the spray to reach locations that are conventionally not accessible (targeting effect),
- better uptake through the waxy layer of leaves (cuticular penetration), entering stomata pores (stomatal flooding).

Stomatal flooding

Stomata (Figure 2) are microscopic pores in the leaf's surface that exchange water vapour, oxygen and carbon dioxide with the atmosphere. If spray solutions enter these minute openings, direct access is gained to the plant's intercellular structure. Once inside the sub-stomatal cavity, the active ingredient is quickly absorbed by the spongy mesophyll and translocated throughout the plant, resulting in faster and more positive results.

Cuticular penetration

The function of waxy cuticle layer is to prevent water loss from the leaf surface. Its impervious nature also inhibits entry of pesticides into the leaf. Silicone surfactants can enhance the passage of pesticides through the cuticle without damaging it.

Benefits

The outstanding physical chemical properties of BREAK-THRU® S 240 result in unique modes of action which in turn provide benefits to the farmer because

- BREAK-THRU® S 240 allows a larger amount of active ingredient to enter the plant
 - the active works even under difficult conditions,
- BREAK-THRU® S 240 provides rainfastness to agricultural sprays
 - rain an hour after application can be tolerated with no need for re-spray,
- BREAK-THRU® S 240 permits the reduction of spray volumes by up to 30 %
 - Saving time, money, and environmental resources.

In many field trials on a wide range of crops on all continents, independent institutes and extension services have successfully tested BREAK-THRU® S 240

- with herbicides,
- with fungicides,
- with insecticides & acaricides,
- with plant growth regulators (PGR),
- with micronutrients,
- as soil wetting agent & dew control agent.

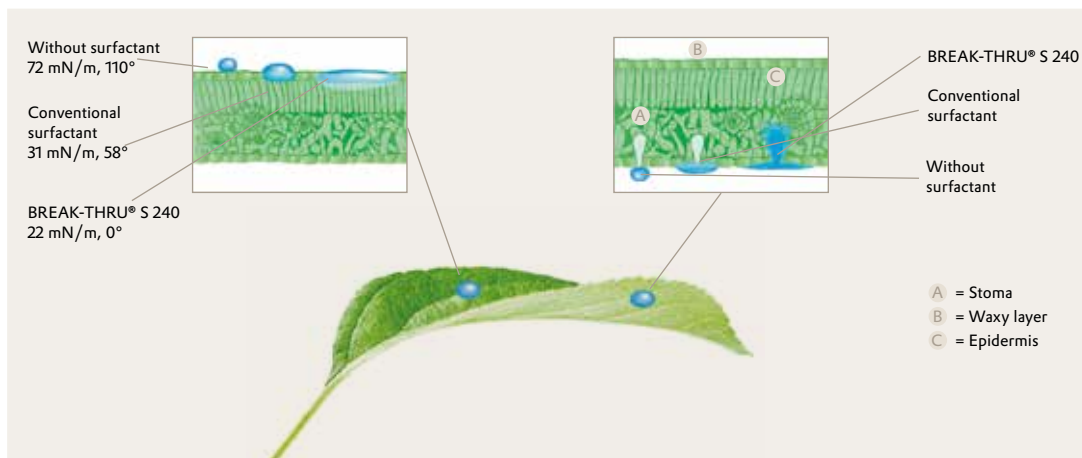


Figure 2: Droplets on leaf surface, their surface tension and contact angles.

Advantages

BREAK-THRU® S 240 safeguards the performance of pesticides and foliar fertilizers under unfavorable conditions:

- By delivering the active even under hot and dry conditions.
- When weeds species are mature and hardened.
- When crops are covered by dust from the field.
- After a cold period when the waxy layer of plants is thicker.
- When plants have a limited surface e.g. spikes.
- When complete coverage is necessary e.g. rose petals.
- It helps dissolving solid formulations e.g. WG and WP.

Therefore, BREAK-THRU® S 240 offers a broad application range. It has no significant influence on spray droplet sizes.

Use rates

For tank-mixtures, pesticides manufacturers may suggest a rate of a non-ionic surfactant to be used with their product. Follow the corresponding label recommendation. Otherwise, BREAK-THRU® S 240 should be applied at rates listed here.

Arable and Vegetable crops Pesticides with systemic action:

200 ml/ha to improve wetting, spreading and uptake.

Pesticides with contact action:
125 ml/ha to improve wetting and spreading.

Fruit and Nursery stock:
Depending on the growth stage 200 – 300 ml/ha.

These dosages account for various water volumes in order to minimize the risk of run off. To be in line with regulatory compliances, please observe the local label whether a maximum concentration must not be exceeded. Before the actual spray application with BREAKTHRU® S 240 with a pesticide or fertilizer, it is recommended to test the tank mix prepared on a small test spot to check for any undesired results.

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