

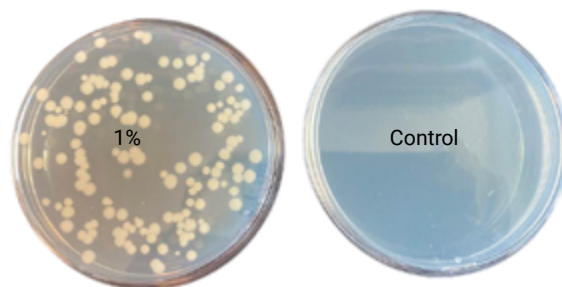
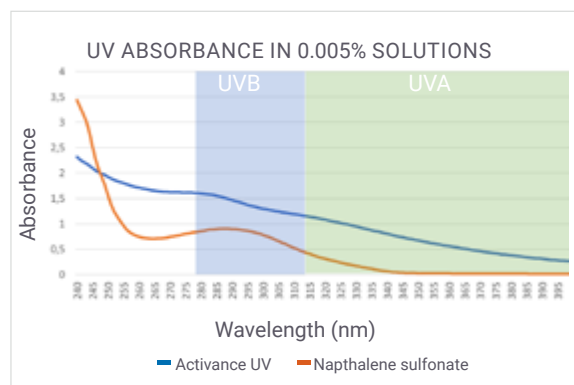


BORREGAARD'S SUSTAINABLE CO-FORMULANTS FOR MODERN AGRICULTURE

UV PROTECTION

Activance® UV is a bio-based co-formulant compatible with biological actives. Activance UV has shown no harm to biologicals. Its efficient UV absorbance can improve the UV protection of the actives, leading to longer shelf-life.

- Formulate your biologicals with Borregaard's dispersants and binders.
- Improve anti-settling, structure and rheology of suspensions with Borregaard's cellulose fibrils.
- Boost your UV protection.



The viability of bacteria is maintained after 4 hours of UV exposure with 1% Activance UV. No viability is observed in the control after UV exposure.

MICROBIOLOGICAL STABILITY

Exilva is compatible with biologicals and high ionic systems.

- Exilva maintains its suspending ability in the absence of biocide.
- Xanthan gum loses its suspending ability due to microbial degradation.



RAINFASTNESS

Exilva forms a film when it dries.

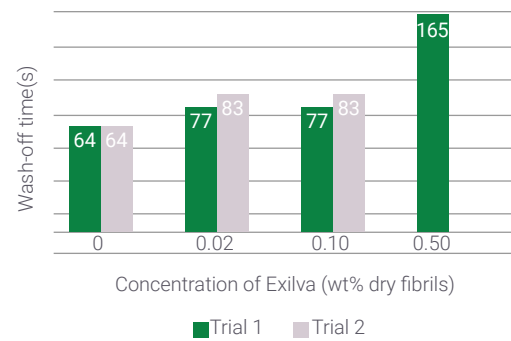
Test for fruit bait gel formulation containing:

- Insecticide/spinosad.
- Ingredients to attract flies (sugars, for example).

Test with 1 drop on Parafilm after 24 hours drying time at 20°C.

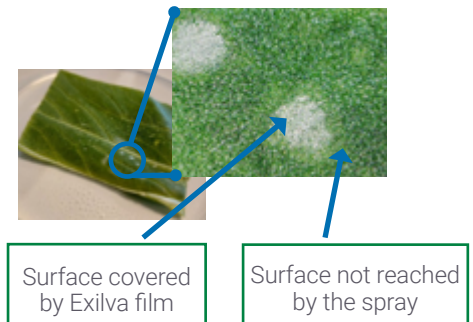
Dilution 1:1.5. 0.5% of Exilva fibrils more than doubled the amount of time required to wash off the insecticide from a Parafilm.

EXILVA FOR RAINFASTNESS ENHANCEMENT
WASH-OFF TIME VS EXILVA CONCENTRATION



FILM FORMING

- Exilva is an excellent film-forming product
- Liquid product remains easy to handle and sprayable
- Dries homogeneously and prolongs the residence time of active ingredients on the leaf.

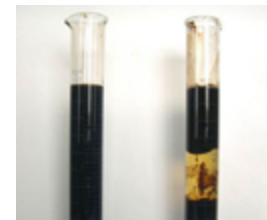


SOIL ENRICHMENT

Activance CK Max is Borregaard's solution, based on Leonardite with high levels of soluble organic carbon and potassium, enriches and increases soil organic matter.

- Superior solubility and mixing properties over the entire pH range.
- Compatible with acidic and high-salt fertilisers.
- Compatible with fertilisers with high phosphate content.

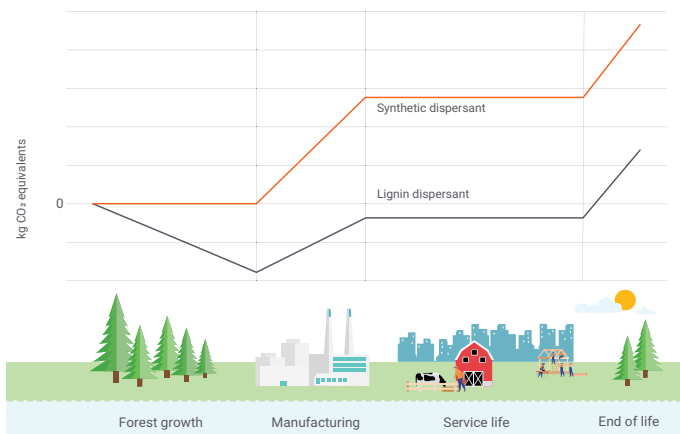
Activance CK Max Leonardite product



Mixing compatibility in acidic fertiliser. Activance CK Max (left) vs. Leonardite alternative (right).

SUSTAINABILITY OF LIGNIN-BASED BIOPOLYMERS

COMPARING CO₂ LIFECYCLE OF SYNTHETIC AND BIO-BASED DISPERSANTS



A life cycle assessment of Borregaard's biopolymers compared to polycarboxylate shows the considerable differences between the CO₂ footprint of the Borregaard bio-based product versus the synthetic polycarboxylate.

The Borregaard biopolymer has a 70% lower CO₂ footprint throughout the overall life cycle compared to a synthetic dispersant and has a negative CO₂ footprint during their service life.

The comparison is conducted by the Norwegian Institute for Sustainability Research using life cycle assessment methodology according to ISO/standards 14040/44.