Vantage®

Performance Solutions for Agriculture

Product Catalog: United States

ENABLING TOMORROW'S SOLUTIONS TODAY

Vantage is a differentiated, integrated solutions provider of high-quality, bio-based intermediates, surfactants, emulsifiers, performance additives, and specialty blends, synthesized using esterification and alkoxylation chemistries, with flexible feedstock capabilities and vertically integrated production from our manufacturing facilities in Illinois.

Our broad technical portfolio of vegetable and animal-based solutions contains sorbitan esters, polysorbates, polyethylene glycols (PEGs), glycerin, taurates, and other ingredients to support a wide variety of consumer and industrial applications.

Why should Vantage be your strategic partner?

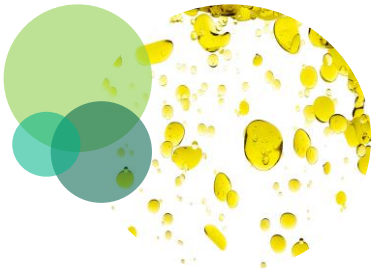
- **Trusted Innovation:** We are dedicated to collaborating with our customers to develop new products and applications. Our adaptable manufacturing processes enable us to produce batches tailored to specific customer needs, ensuring we can satisfy a wide range of requirements.
- **EO/PO Copolymers and PEGs:** Our flexible ethoxylation technologies allow us to produce multifunctional, nonionic emulsifiers that meet diverse industry standards.
- **Polysorbates and Sorbitan Esters:** With a strong commitment to the sorbitan esters market and extensive manufacturing experience, we are a leading supplier in this sector. We produce polysorbates that meet the strict certification and regulatory adherence that is demanded by the agriculture market. Vantage holds a wide variety of certifications, including Halal, Global Food Safety Initiative (GFSI), International Organization for Standardization (ISO), Roundtable on Sustainable Palm Oil (RSPO), and Kosher (Pareve) certification by the Orthodox Union, underscoring our dedication to quality and regulatory compliance. Our vertical integration ensures control over the entire production process, enhancing our ability to meet these standards.
- **Market Leadership and Recognition:** Vantage is recognized as a top U.S. domestic manufacturer of polysorbates with strong market presence and brand recognition. Our role as a major manufacturer of kosher esters and alkoxylates highlights our long-standing commitment to quality and market leadership.

By choosing Vantage, our customers benefit from our flexibility, innovative partnerships, and unwavering commitment to quality and regulatory standards. We strive to be more than just a manufacturer; we aim to be a trusted partner in your success.

Vantage Crop Protection Solutions

Our portfolio comprises a wide range of co-formulants & adjuvants suitable to support the formulation and performance enhancement of multiple agricultural crop protection products. In this catalog, you will find our portfolio classified by chemical names, delivery systems, and functions.

Emulsifiers



- EO/PO Block Copolymers
- Castor Oil Ethoxylates
- Ethoxylated Alcohols
- Tallow Amine Ethoxylates
- Fatty Acid Ethoxylates
- Polysorbates
- Polyethylene Glycol Esters
- Sorbitan Esters
- Vegetable Oil-based Emulsifiers

Wetting Agents

- Ethoxylated Alcohols
- Fatty Amine Ethoxylates
- EO/PO block copolymers
- Taurates
- Soybean Oil Ethoxylates
- Alkoxylated Alcohols

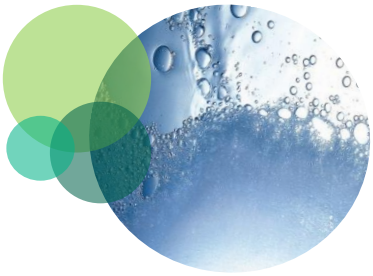
Adjuvants

- Vegetable oils
- Methyl Esters
- Fatty Amine Ethoxylates
- Polysorbates
- Soybean Oil Ethoxylates
- Alkoxylated Alcohols

Dispersants

- Taurates
- EO/PO block Copolymers
- Ethoxylated Alcohols
- PEG Methyl Esters (MPEGs)
- Glycerin Ethoxylates

Antifoam Agents



- Silicone Emulsions
- Non-silicone ingredients
- Fatty Acids
- Glycerin Ethoxylates

Solvents

- Methyl Esters
- Polyethylene Glycols
- PEG Methyl Esters (MPEGs)

AGRICULTURE PORTFOLIO

Vantage offers a diverse commercial line of products under the **ADJUCAL, LUMULSE™, LUMISOLVE™, LAMBENT, HODAG, OLEOCAL,** and **LEUNAPON®** brands, which include methyl esters, PEGs, PEG esters, polysorbates, sorbitan esters, taurates, vegetable oils, and ethoxylates, as well as EO/PO block copolymers. Providing the agricultural crop solutions you are looking for.

EO/PO Block Copolymers

EO/PO block copolymers are a family of non-ionic surfactants with varying ratios of EO and PO to tune water and oil solubility. Used in seed treatments and enhance seed coatings and germination. They improve the adhesion and uniformity of seed coatings, protecting seeds from pests and diseases while enhancing germination rates. Additionally, block copolymers create a favorable environment for seed germination by improving water uptake and reducing surface tension around the seeds.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE 1062-L	Poloxamer 181	9003-11-6	Liquid	3.0	● ●	● ●	● ●	● ●	● ●	●			
LUMULSE 1061-L	Poloxamer 182	9003-11-6	Liquid	8.0	● ●	● ●	● ●	● ●	● ●				
LUMULSE 2017-R	Meroxapol 172	9003-11-6	Liquid	4.0	● ●	● ●	● ●	● ●	● ●				
LUMULSE 2025-R	Meroxapol 252	9003-11-6	Liquid	3.0	● ●	● ●	● ●	● ●	● ●				
LUMULSE 4017-R	Meroxapol 174	9003-11-6	Liquid	7.0	● ●	● ●	● ●	● ●	● ●	●			
LUMULSE 10101-L	Poloxamer 331	9003-11-6	Liquid	2.8	●	●	●		●				
LUMULSE EST 500 LF	Propietary Surfactant	Proprietary	Liquid	5.7	●	●	●		●				
LUMULSE EST-6832	Alcohols, C16-18, ethoxylated propoxylated	68002-96-0	Liquid	1.0	● ● ●	● ● ●	●	● ●	●		●		
LUMULSE EST-530	Alcohols, C12-14, ethoxylated propoxylated	68439-51-0	Liquid	6.7	● ● ●	● ● ●	●	● ●	●		●		
LUMULSE EST-610	Polyether ester	67167-17-3	Liquid	1.0	● ● ●	● ● ●	●	● ●	●				
LUMULSE EST-2457	Alcohols, C12-14, ethoxylated propoxylated	68439-51-0	Liquid	5.3	● ● ●	● ● ●	●	● ●	●		●		

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Castor Oil Ethoxylates

Castor oil ethoxylates are nonionic emulsifiers that work effectively with anionic compounds to create emulsifiable concentrates. As wetting agents, castor oil ethoxylates lower the surface tension of water-based solutions, allowing for better coverage and penetration of agricultural sprays on plant surfaces.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE CO-5	POE (5) castor oil, oil soluble	61791-12-6	Liquid	4.0		●●●	●	●		●	●		
LUMULSE CO-10	POE (10) Castor Oil, oil soluble	61791-12-6	Liquid	12.4		●●●	●	●		●	●		
LUMULSE CO-25	POE (25) castor oil, water soluble	61791-12-6	Liquid	10.5	●●●	●	●	●●●		●	●		
LUMULSE CO-30	POE (30) castor oil, water soluble	61791-12-6	Liquid	11.8	●●●	●	●	●●●		●	●		
LUMULSE CO-36	POE (36) Castor Oil, water soluble	61791-12-6	Liquid	12.6	●●●	●	●	●●●		●	●		
LUMULSE CO-40	POE (40) castor oil, water soluble	61791-12-6	Liquid	13.1	●●●	●	●	●●●		●	●		
LUMULSE CO-60	POE (60) castor oil, water soluble	61791-12-6	Liquid	16.3	●●●	●	●	●●●		●	●		
LUMULSE CO-200	POE (200) castor oil, water soluble	61791-12-6	Liquid	18.0	●●●	●	●	●●●		●	●		
LUMULSE HCO-16T	POE (16) hydrogenated castor oil	61788-85-0	Liquid	8.3		●●							
LUMULSE HCO-22	POE (22) hydrogenated castor oil	61788-85-0	Liquid	10.0		●●				●	●		
LUMULSE HCO-25	POE (25) hydrogenated castor oil	61788-85-0	Liquid	10.3		●●		●		●	●		
LUMULSE HCO-40	POE (40) hydrogenated castor oil	61788-85-0	Liquid	12.6		●●		●		●	●		
LUMULSE HCO-50	POE (50) hydrogenated castor oil	61788-85-0	Liquid	13.0		●●		●		●	●		
LUMULSE HCO-60	POE (60) hydrogenated castor oil	61788-85-0	Liquid	14.6		●●		●		●	●		
LUMULSE EST-126	Castor oil, ethoxylated, propoxylated	72986-44-8	Liquid	16.5		●●		●		●	●		

Emulsifiers ● *Wetting Agents* ● *Dispersants* ● *Adjuvants* ● *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Soybean Oil Ethoxylates

Soybean oil ethoxylates enhance agricultural formulations by acting as emulsifiers, wetting agents, adjuvants, dispersants, and solvents, improving the efficacy and performance of agrochemicals for better crop protection and yield. they enhance the efficacy of agrochemicals like herbicides, insecticides, and fungicides by improving their absorption, uptake, and activity on target pests and weeds.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
ADJUCAL SBO-10	POE (10) Soybean Oil	61791-23-9	Liquid	12.4	● ●	●			● ●	● ●			
ADJUCAL SBO-15	POE (15) Soybean Oil	61791-23-9	Liquid	7.0	● ●	●			● ●	● ●			
ADJUCAL SBO-40	POE (40) Soybean Oil	61791-23-9	Liquid	7.0	● ●	●			● ●	● ●			
ADJUCAL SBO-45	POE (45) Soybean Oil	61791-23-9	Liquid	7.0	● ●	●			● ●	● ●			
ADJUCAL SBO-55	POE (55) Soybean Oil	61791-23-9	Liquid	7.0	● ●	●			● ●	● ●			

Alkoxylated Alcohols

Alkoxylated alcohols in agricultural formulations act as adjuvants and dispersants. As adjuvants, they enhance the absorption and efficacy of active ingredients, improving plant uptake and overall performance of herbicides, insecticides, and fungicides. As dispersants, they ensure the even distribution of active ingredients, preventing clumping and ensuring uniform application.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
POLYCAL PGS-660	Polyalkylene Glycol Monobutyl Ether	9038-95-3	Liquid	9.1		● ● ●		● ● ●	● ●	● ●	● ●		
LUMULSE EST-520 LM	Ethoxylated/Propxylated Lauryl Alcohol	68238-81-3	Liquid	8.7		● ● ●		● ● ●	● ●	● ●	● ●		
LUMULSE EST-520	Ethoxylated/Propxylated Lauryl Alcohol	68238-81-3	Liquid	8.7		● ● ●		● ● ●	● ●	● ●	● ●		
LUMULSE EST-740	Alkoxylated tridecyl alcohol	65150-81-4	Liquid	8.2		● ● ●		● ● ●	● ●	● ●	● ●		
LUMULSE EST-240	Alkoxylated coconut glyceride	72245-11-5	Liquid	5.7		● ● ●		● ● ●	● ●	● ●	● ●		

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Ethoxylated Alcohols

By forming stable emulsions, fatty alcohol ethoxylates as nonionic emulsifiers ensure that the active ingredients are uniformly distributed in the spray solution. This leads to more consistent application on crops, improving the effectiveness of pesticides or fertilizers. They are known for their stability in various environmental conditions, such as temperature fluctuations.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE CS-20	POE (20) cetyl/stearyl ether	68439-49-6	Solid	15.0		●	●	●	●●		●	●	●
LUMULSE EST-430	Polyethylene glycol monolaurate	9006-27-3	Liquid	12.8		●		●	●●	●	●		
LUMULSE EST-440	Polyethylene glycol methyl ether oleate	34397-99-4 1	Liquid	11.8		●		●	●●	●	●		
LUMULSE EST-9300	Alkylphenol ethoxylate	26027-38-3	Liquid	13.8		●		●	●●	●	●		
LUMULSE EST-918	Alcohol ethoxylate, C9-11 alcohol ether	68439-45-3	Liquid	1.9		●		●	●●	●	●		
LUMULSE EST-257	Alcohol ethoxylate, C12-C15 Alcohol	68131-39-5	Liquid	12.0		●		●	●●	●	●		
LUMULSE L-7 SP	POE (7) Lauryl ether	9002-92-0	Liquid	11.9		●		●	●●	●	●		
LUMULSE TDA-3	POE (3) Isotridecyl ether	9043-30-5	Liquid	8.0		●		●	●●	●	●		
LUMULSE TDA-5	POE (5) Isotridecyl ether	9043-30-5	Liquid	10.7		●		●	●●	●	●		
LUMULSE TDA-6	POE (6) Isotridecyl ether	9043-30-5	Liquid	11.7		●		●	●●	●	●		
LUMULSE TDA-10	POE (10) Isotridecyl ether	9043-30-5	Liquid	13.7		●		●	●●	●	●		
LUMULSE TDA-12	POE (12) Isotridecyl ether	9043-30-5	Liquid	14.6		●		●	●●	●	●		

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
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AGRICULTURE PORTFOLIO

Tallow Amine Ethoxylates

Tallow amine ethoxylates serve as effective emulsifiers in agricultural formulations by stabilizing oil-in-water emulsions, ensuring even distribution of active ingredients.By improving the adhesion of the spray solution to plant surfaces, tallow amine ethoxylates can also enhance the rain fastness of the formulation, meaning the active ingredients are less likely to be washed away by rain shortly after application. Commonly used in Glyphosate.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LEUNAPON -P 1618/11	POE (11) Tallow Amine Ethoxylated	61791-26-2	Liquid	12.9	● ●	● ●		●					

Polysorbates

Polysorbates enhance seed treatments by improving coating adhesion and germination rates and serve as biodegradable lubricants for agricultural machinery. Polysorbates are versatile products that act like emulsifiers and adjuvants.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMISORB PSML-20 V	Polysorbate 20	9005-64-5	Liquid	16.7	●	● ●	●	●	● ●	●			
LUMISORB PSMS-20 K	Polysorbate 60	9005-67-8	Semi-solid	15.2	●	● ●	●	●	● ●	●			
LUMISORB PSTS-20	Polysorbate 65	9005-71-4	Solid	10.9	●	●			●	●			
LUMISORB PSMO-20 FGK	Polysorbate 80	9005-65-6	Liquid	15.0	●	● ●	●	●	● ●				
LUMISORB PSMO-5 K	Polysorbate 81	9005-65-6	Liquid	10.0	●	● ●	●	●	● ●	●			
LUMISORB PSTO-20 MO	Polysorbate 85	9005-70-3	Liquid	11.0	●	● ●	●	●	● ●	●			

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
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AGRICULTURE PORTFOLIO

Polyethylene Glycols Esters

PEG esters are used as surfactants, emulsifiers, and soil conditioners. They enhance the soil's ability to retain moisture and improve the soil structure by increasing porosity and aeration which aids in root development and nutrient uptake.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE 40-L	POE (8) Monolaurate	9004-81-3	Liquid	12.8		●	●	●		●			
LUMULSE 42-L	POE (8) Dilaurate	9005-02-1	Liquid	10.0		●	●	●		●			
LUMULSE 40-O	POE (8) Monooleate	9004-96-0	Liquid	11.7		●	●	●		●			
LUMULSE 42-O	POE (8) Dioleate	9005-07-6	Liquid	8.8		●	●	●		●			

Polyethylene Glycols

PEGs play a crucial role in agriculture as solvents and co-solvents by enhancing nutrient uptake, stabilizing soil aggregates, and managing environmental stresses. They improve the solubility and mobility of nutrients, stabilize soil structure to reduce erosion, and mitigate the effects of environmental stressors like salinity and heavy metal toxicity on plants. Our tightly controlled polymerization processes allow us to offer a range of molecular weights to suit specific formulation and application needs.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE PEG-200	Polyethylene Glycol 200	25322-68-3	Liquid	20	●	●							
LUMULSE PEG-300	Polyethylene Glycol 300	25322-68-3	Liquid	20	●	●							
LUMULSE PEG-400	Polyethylene Glycol 400	25322-68-3	Liquid	20	●	●							
LUMULSE PEG-600	Polyethylene Glycol 600	25322-68-3	Liquid	20	●	●							
LUMULSE PEG-1450	Polyethylene Glycol 1450	25322-68-3	Liquid	20	●	●						●	●
LUMULSE PEG-4000	Polyethylene Glycol 4000	25322-68-3	Liquid	20	●	●							
LUMULSE PEG-8000	Polyethylene Glycol 8000	25322-68-3	Liquid	20	●	●							

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

PEG Methyl Esters (MPEGs)

MPEGs enhance the stability and efficacy of herbicides, pesticides, and fertilizers. With their excellent compatibility and environmental benefits, MPEGs ensure optimal delivery and absorption of active ingredients, leading to improved crop protection and yield.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE MPEG-350	Polyethylene glycol 350 methyl ether	9004-74-4	Liquid	19.2	● ●	● ●	●	● ●					
LUMULSE MPEG-550	Polyethylene glycol 550 methyl ether	9004-74-4	Liquid	19.4	● ●	● ●	●	● ●					
LUMULSE MPEG-750	Polyethylene glycol 750 methyl ether	9004-74-4	Liquid	19.6	● ●	● ●	●	● ●					

Sorbitan Esters

Sorbitan esters are valuable emulsifiers and surfactants in agriculture. They enhance the effectiveness of pesticides and herbicides by improving their spread and adherence to plant surfaces. In foliar sprays, sorbitan esters facilitate nutrient absorption and promote healthier plant growth.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMISORB SML	Sorbitan Monolaurate	1338-39-2	Liquid	8.6		●	●	●		●			
LUMISORB SMO	Sorbitan Monooleate	1338-43-8	Liquid	4.3		●	●	●		●			
LUMISORB SMS	Sorbitan monostearate	1338-41-6	Liquid	4.7		●	●	●		●			
LUMISORB SSO	Sorbitan Sesquioleate	8007-43-0	Liquid	4.3		●	●	●		●			
LUMISORB STO MO	Sorbitan Trioleate	26266-58-0	Liquid	1.8		●	●	●		●			
LUMISORB STS	Sorbitan tristearate	26658-19-5	Liquid	2.1		●	●	●		●			

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Methyl Esters

Methyl esters are often used as solvents or carriers for active ingredients in pesticides and herbicides. They enhance the drift reduction, crop oil, spreading, waxy cuticle penetration, and effectiveness of these chemicals by ensuring better penetration and distribution on plant surfaces. They also act as surfactants, reducing surface tension and improving the spreadability and adhesion of pesticides and herbicides on leaves and stems.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	Delivery System								
				(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
OLEOCAL ME-112	Methyl Canolate	67762-38-3	Liquid	●	●	●	●			●		
OLEOCAL ME-130	Methyl Soyate	67784-80-9	Liquid	●	●	●	●			●		
OLEOCAL ME-70 V	Methyl Oleate	67762-26-9	Liquid		●	●	●			●		

Vegetable Oils-Based Emulsifiers

These high-performance canola oil emulsifiers, derived from sustainable vegetable oils, offer superior emulsification properties that ensure stable and uniform mixing of active ingredients.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE CN-35 K	POE (35) canola oil glyceride	68153-76-4	Liquid	13.5		●		●	●	●	●		
LUMULSE CN-40 K	POE (40) canola oil glyceride	68153-76-4	Liquid	14.8		●		●	●	●	●		

Glycerin Ethoxylates

Glycerin Ethoxylates enhance the performance of herbicides, insecticides, and fungicides by providing excellent emulsification, dispersion, and solubilization. Suitable for use in Soluble Liquid, Emulsifiable Concentrate, Microemulsion, and Emulsion in Water systems, these versatile additives ensure optimal delivery and absorption of active ingredients, leading to improved crop protection and yield.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE POE (7) GLYCERIN	POE (7) glycerin	31694-55-0	Liquid	15.4	● ● ●	● ●	●	● ● ●					
LUMULSE POE (12) GLYCERIN	POE (12) glycerin	31694-55-0	Liquid	17.0	● ● ●	● ●	●	● ● ●					
LUMULSE POE (26) GLYCERIN	POE (26) glycerin	31694-55-0	Liquid	18.5	● ● ●	● ●	●	● ● ●					

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Glycerol Esters & Ethoxylated Glycerol Esters

Glycerol Esters and Ethoxylated Glycerol Esters significantly improve the effectiveness of herbicides, insecticides, and fungicides by offering exceptional emulsification, dispersion, and solubilization properties. They ensure optimal delivery and absorption of active ingredients.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	HLB	Delivery System								
					(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMULSE GML	Glycerol monolaurate	27215-38-9	Liquid	3.8	●		●		●	●			
LUMULSE GMO	Glycerol monooleate	37220-82-9	Liquid	4.2	●		●		●	●			
LUMULSE GMO 60	Polysorbate - glycerin monooleate blend.	Blend	Liquid	7.7	●		●		●	●			
LUMULSE GMO-300	Polysorbate - glycerin monooleate blend.	Blend	Liquid	4.9	●		●		●	●			
LUMULSE GMR	Glycerol monoricinoleate	1323-38-2	Liquid	2.4	●		●		●	●			
LUMULSE GMS-A	Glycerol monostearate & PEG-100 stearate	31566-31-1	Liquid	11.1	●		●		●	●			
LUMULSE GMT	Glycerol monotallate	61789-12-6	Liquid	3.6	●		●		●	●			
LUMULSE GMT-40	Glycerol monotallate	61789-12-6	Liquid	6.2	●		●		●	●			
LUMULSE GDS	Glyceryl stearate	67701-33-1	Liquid	3.0	●		●		●	●			
LUMULSE PGO	Triglycerol monooleate	9007-48-1	Liquid	6.2	●		●		●	●			
LUMULSE POE (3) GMS	PEG-3 glyceryl stearate	68153-76-4	Liquid	4.6	●		●		●	●			
LUMULSE POE (5) GDL	Ethoxylated glycerol ester	68201-46-7	Liquid	6.5	●		●		●	●			
LUMULSE POE (7) GML	POE (7) glycerol monococoate	68201-46-7	Liquid	12.4	●		●		●	●			
LUMULSE POE (20) GMS	POE (20) glycerol monostearate	68153-76-4	Liquid	12.9	●		●		●	●			
LUMULSE EST-270	Glycerides, coco mono- and di-, ethoxylated propoxylated	72245-11-5	Liquid	5.3	●		●		●	●			

Emulsifiers ● *Wetting Agents* ● *Dispersants* ● *Adjuvants* ● *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Vegetable oils have two main applications in the agriculture market. Here are key areas where they are commonly used:

- **Pesticide Formulations:** Vegetable oils can act as adjuvants in pesticide formulations, enhancing the effectiveness of active ingredients by improving their spread and adherence to plant surfaces.
- **Fertilizer Additives:** Some vegetable oils are used as additives in fertilizers to improve nutrient delivery and soil health.

Vegetable Oils

Canola and soy oils are used in the agriculture industry for various applications due to their stability, emulsifying properties, and biodegradable nature. They act like carrier solvents, spray adjuvants, soil conditioners, and biodegradable lubricants. Used in Tank-mix formulations.

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	Delivery System								
				(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
OLEOCAL C-102	Canola Oil, RBD,FGK	120962-03-0	Liquid	●								
OLEOCAL C-104	Canola Oil, RBD,FGK HO	120962-03-0	Liquid	●								
OLEOCAL IVO-114 K	Soybean Oil, RBD	8001-22-7	Liquid	●								

Emulsifiers ● *Wetting Agents* ● *Dispersants* ● *Adjuvants* ● *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

The **LUMISOLVE™** product line, consists of taurates used as agricultural surfactants, due to their unique properties and benefits. These taurates are compatible with anionic, nonionic, and amphoteric surfactants.

Vantage offers this LUMISOLVE line with **RSPO** certification and the following benefits in your agricultural formulation:

- **Biopesticides and Bioherbicides:** LUMISOLVE products can be used in formulations of biopesticides and bioherbicides due to their ability to enhance the efficacy of active ingredients. They help the spreading and adhesion of pesticides on plant surfaces.
- **Plant Growth Promoters:** As adjuvants or in foliar sprays LUMISOLVE products act as growth promoters, enhancing the uptake of nutrients and promoting overall plant health. This leads to increased crop yields and better-quality produce.
- **Environmental Benefits:** LUMISOLVE products are biodegradable and less toxic than many surfactants traditionally used in adjuvant formulations. Their use in agriculture helps in reducing the environmental impact of farming practices.

Taurates

Product Trade Name	Chemical Name	CAS #	Physical Form (25° C)	Delivery System								
				(SL) Soluble Liquid	(EC) Emulsifiable Concentrate	(ME) Microemulsion	(EW) Emulsion in Water	(SC) Suspension Concentrate	(SE) Suspo-emulsion	(OD) Oil Dispersion	(WP) Wettable powder	(WDG) Water Dispersible Granules
LUMISOLVE O-75	Sodium Methyl Oleoyl Taurate	137-20-2	Powder					●	●			● ●
LUMISOLVE O-40	Sodium Methyl Oleoyl Taurate	137-20-2	Paste					●	●			● ●
LUMISOLVE C-30	Sodium Cocoyl Methyl Taurate	61791-42-2	Paste					●	●			● ●

Emulsifiers ● | *Wetting Agents* ● | *Dispersants* ● | *Adjuvants* ● | *Solvents* ●

HLB *(Hydrophilic-Lipophilic Balance)*:
<10 W/O emulsion >10 O/W emulsion

AGRICULTURE PORTFOLIO

Silicone-based antifoam agents are extensively utilized in agriculture to control foam in various applications, such as pesticide formulations and irrigation systems. These agents function by breaking down the foam structure. Once introduced into a foaming system, the silicone antifoam penetrates the bubble walls and spreads out, causing the walls to thin and eventually burst. This mechanism is referred to as "film bridging."

Foam control is essential in agriculture because excessive foam can disrupt the application of pesticides, herbicides, and fertilizers, potentially causing equipment failures and reducing the efficiency of irrigation systems. **Silicone antifoams** help ensure the consistency and effectiveness of liquid formulations, preventing problems like pump cavitation and uneven spray patterns.

Silicone Emulsions

Product	Description	CAS #	Physical Form (25° C)	Source
LAMBENT E-2140	60% Silicone Emulsion	Blend	Liquid	Synthetic
LAMBENT E-2140 35%	35% Silicone Emulsion	Blend	Liquid	Synthetic
HODAG FD-82 K	30% Silicone Emulsion	Blend	Liquid	Synthetic
LUMULSE 1740	Silicone Copolymer	Proprietary	Liquid	Synthetic

AGRICULTURE PORTFOLIO

VYCERIN™ Glycerin can act as an **adjuvant**, improving the efficacy of pesticides and herbicides. Here are some examples of how VYCERIN is used in Foliar sprays, soil conditioners, and seed treatment.

Glycerin

Product	Description	CAS #	Physical Form (25° C)	Source
VYCERIN GL91	Glycerin vegetable, 99.5% USP	56-81-5	Liquid	Veg
VYCERIN GL92	Glycerin vegetable, 99.5%	56-81-5	Liquid	Veg
VYCERIN GL93	Glycerin kosher vegetable, 99.7% USP	56-81-5	Liquid	Veg
VYCERIN GL80	Glycerin, 99.5%	56-81-5	Liquid	Tallow
VYCERIN GL90	Glycerin, 99.7%	56-81-5	Liquid	Tallow

VOLEIC™ Oleic acid and **VSTEARIN™** stearic acid are used as agricultural surfactants, emulsifiers, and carriers. Oleic acid helps improve the spread and penetration of active ingredients, while stearic acid stabilizes and thickens formulations, ensuring uniform distribution and effectiveness. They can also act as a raw material for potassium salts, usually included in herbicide formulations.

Oleic Acid

Product	Description	CAS #	Physical Form (25° C)	Source
VOLEIC OA05	Oleic Acid – Low Titre Point	112-80-1	Liquid	Tallow
VOLEIC OA33	Oleic Acid – High Titre Point	112-80-1	Liquid	Tallow

Stearic Acid

Product	Description	CAS #	Physical Form (25° C)	Source
VSTEARIN SV11	Vegetable Stearic Acid, Triple Pressed	57-11-4	Solid, Flake	Veg
VSTEARIN SA11	Stearic Acid, Triple Pressed	57-11-4	Solid	Tallow

Vantage is a differentiated, integrated solutions provider of high-quality, bio-based intermediates, surfactants, emulsifiers, performance additives and specialty blends synthesized using esterification and alkoxylation chemistries. With flexible vegetable- and animal-based feedstock capabilities and vertically-integrated production from our modern manufacturing facilities in Illinois, we offer agile service and reliable supply across the value chain for consumer and industrial applications

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