



**RENEWABLES**

**OLEOSOFT**

bio plasticizers production

## OLEOSOFT

Plasticizers play a critical role in the modern polymer industry, enhancing the flexibility and durability of materials. While traditional plasticizers such as phthalates dominate the market, their environmental and health concerns have driven innovation towards safer alternatives, particularly bio-based options.

### Bio-based Plasticizers

As regulations tighten and sustainability becomes a priority, bio-based plasticizers are expected to be increasingly used in various industries.

These alternatives are derived from renewable sources and aim to reduce the environmental impact of conventional plasticizers.

### Bio Plasticizers: The KVT Solutions

We are a pioneering technology company dedicated to developing innovative solutions for sustainable and environmentally friendly materials. Specializing in the production of bio-based plasticizers, our advanced technology enables the creation of high-performance, environmentally friendly alternatives to traditional petroleum-based plasticizers.

These bio-based plasticizers are tailored for a variety of applications. By using different bio-based fatty acids and alcohols in combination with carefully engineered processes, we deliver products with optimized performance characteristics, such as flexibility, durability, and compatibility, to meet the specific needs of industries such as packaging, automotive, construction, and consumer goods and more.

## Key Products Features:

- **Versatility:** The technology developed by KVT allows a broad product portfolio in a single continuous plant.
- **Customization:** Advanced chemical processes allow us to combine various alcohols with bio-based feedstocks, enabling precise customization for a wide range of applications.
- **Performance:** Designed to match or exceed the properties of conventional plasticizers, our plasticizers provide excellent thermal stability, low volatility, and enhanced material performance.
- **Efficiency:** Thanks to our plasticizers' high efficiency, amount of plasticizer can be reduced giving economic advantages in comparison to phthalate-based plasticizers.
- **Sustainability:** Our bio-based plasticizers are derived from renewable raw materials, reducing carbon footprint and supporting a circular economy.

We are committed to driving innovation in sustainable materials, contributing to global efforts to reduce environmental impact, and delivering superior solutions to our partners and customers.

The **OLEOSOFT TS** is one of our new plasticizers that shows high performance in various applications.



## Product Description

### General Information

<b>Chemical nature</b>	esterified and epoxidized vegetable oil fatty acids
<b>Bio-based carbon</b>	100 %
<b>Molecular weight</b>	ca. 370 g mol <sup>-1</sup>
<b>Miscibility</b>	organic solvents
<b>Physical form</b>	liquid
<b>Appearance</b>	faint yellow, transparent
<b>Odor</b>	characteristic

### Technical Specifications

Property	Typical Value <sup>1</sup>	Unit	Standard
<b>Colour</b>	≤ 50	APHA	—
<b>Density at 20 °C 20 °C</b>	0.996 ± 0.01	kg/L	—
<b>Viscosity at 25 °C 25 °C</b>	0.05	Pa*s	DIN 53019-1
<b>Acid value</b>	<2	mg KOH/ g sample	DIN EN 14104
<b>Oxirane value</b>	> 4.5	% oxirane oxygen	EN ISO 3001: 1999
<b>Water Content</b>	< 1000	ppm	DIN 51777-1: 1983-03
<b>Refractive Index at 20 °C</b>	1.4685	—	ASTM D-1218

<sup>1</sup> Preliminary values

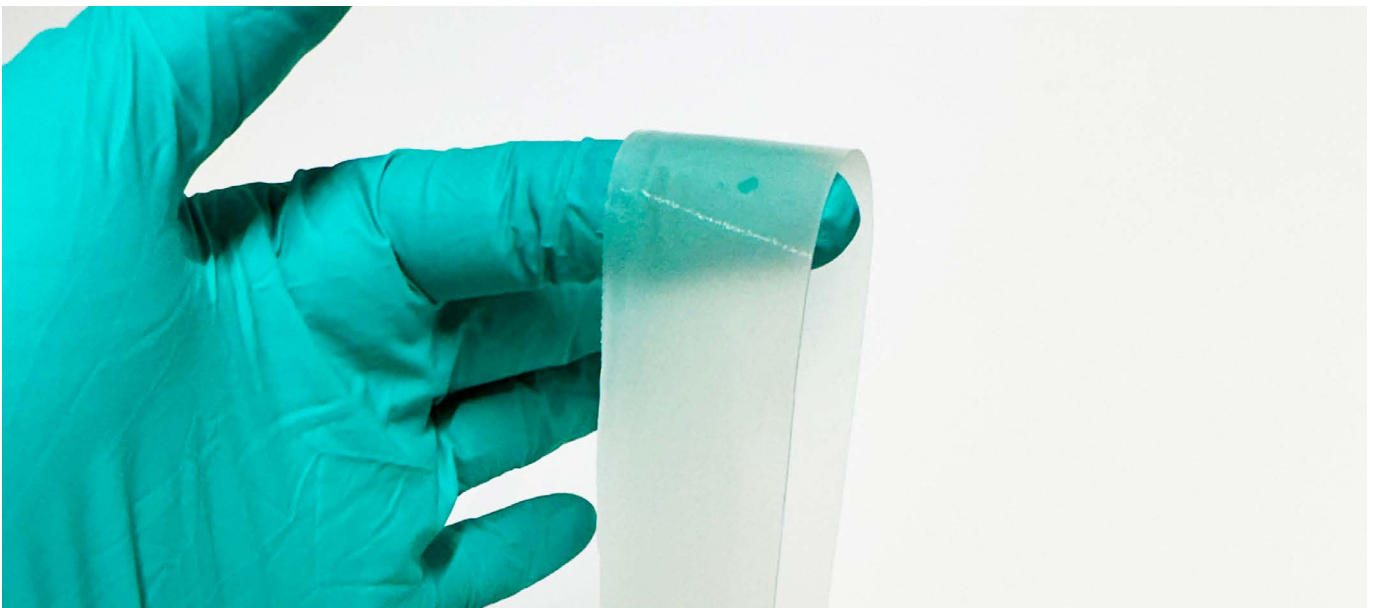


## Oleosoft TS Applications

By lowering the glass transition temperature and intermolecular forces in the polymer matrix, plasticizers improve the material's elasticity and processability of the material, enabling a wide range of applications. Our plasticizers have been successfully incorporated into the production of flexible PVC compounds using existing processing equipment, for established phthalate-based plasticizers such as DINP. In equivalent formulations our plasticizers increase the flexibility, processability, and bending fatigue strength of polymers compared to fossil and bio-based competitors.

Due to its high plasticisation efficiency, reducing the amount of plasticizer leads to economic and environmental benefits. Combined with its high plasticizer efficiency, PVC plasticization with **Oleosoft TS** also benefits from its fast-gelling properties allowing for lower processing temperatures. In addition, **Oleosoft TS** acts as thermal stabilizer protecting the material from heat degradation.

**Oleosoft TS**, our bio-based and phthalate-free plasticizer produced in our laboratory pilot plant, has been tested and compared with phthalate-based plasticizers and competing bio-based alternatives.



## Performance in PVC

Property	PVC + Oleosoft	PVC +DINP	PVC + bio-based competitor	Unit	Standard
Dissolution temperature	101	121	130	°C	—
Gelling temperature	53	62	64	°C	—
Plastisol mass loss	1.9	2.8	3.2	%	—
Emissions - VOC	1231	636	2431	µg/g	VDA 278 (2016-05)
Emissions - fog	3986	6330	7701	µg/g	VDA 278 (2016-05)
Thermal stability – stability time	175	11	10	min	ISO 182-3:2000
Glass transition temperature	-33	-40	-31	°C	—
Young's modulus	7	12	14	MPa	DIN EN ISO 527-2 (2012-06)
Folds without failure	> 100 000	< 100 000	< 30 000	—	DIN 53351 (2003-09)

Whereas the following formulations were used for the tests:

Compound	phr	wt%
PVC (PVC-E)	100	59.9
Plasticizer	65	38.9
Thermal stabilizer (Ca Zn)	2	1.2

Test on films using OLESOFT TS confirmed that:

- all films were nicely processable in the same equipment as for the conventional product.
- to achieve the same performance in term of flexibility and elasticity, smaller quantities of Oleosoft TS plasticiser are required than with competing products.
- films with OLEOSOFT TS are resistant to exudation. No oily surface haptics were observable.

## Applications where our plasticizers are recommended instead of conventional phthalate products:

- 1. technical textiles**  
truck tarpaulins  
cover foils
- 2. construction applications**  
roofing membranes, pool liners  
flexible pipe systems
- 3. outdoor equipment**  
garden tools  
hoses
- 4. gaskets and insulation**  
Seals  
thin films



Furthermore, the possible application as an alternative plasticizer in the field of biopolymer-based soft packaging and elastomers is currently being researched.

## Toxicity and Safety

**Oleosoft TS** is not classified as hazardous according to OECD 439 & EU method B.46 and OECD 492B and shows no skin or eye irritation. Furthermore, Oleosoft is neither flammable, oxidizing nor explosive.

For additional information on the safe handling and the toxicity of the product,

contact our KVT R&D Technology Center at [office@kvt.technology](mailto:office@kvt.technology).

## KVT R&D Technology Center



In Our **KVT R&D Technology Center** highly motivated, experienced, and skilled scientists and researchers across Europe work together on continuously optimizing our products and finding ways to incorporate them into your formulations and applications.

If you are interested in testing and implementing our products into your formulations, please contact our experts at [office@kvt.technology](mailto:office@kvt.technology).

We believe in a sustainable future for chemicals  
based on renewable feedstocks,  
closed loops, and clean emissions.



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