



RENEWABLES

OLEOSOFT

bio plasticizers production

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.

增塑剂在现代聚合物工业中发挥着关键作用，能够提高材料的柔韧性和耐久性。虽然传统的增塑剂如邻苯二甲酸酯类主导市场，但它们对环境和健康的影响促使人们创新，开发更安全的替代品，特别是生物基选项。

Bio-based Plasticizers 生物基增塑剂

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

随着法规收紧和可持续性成为优先事项，生物基增塑剂预计将越来越多地用于各个行业。

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

这些替代品来自可再生资源，可显著降低传统增塑剂对环境的影响。

Bio Plasticizers: The KVT Solutions 生物增塑剂：kvt解决方案

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.

我们是一家致力于开发可持续和环保材料创新解决方案的先锋技术公司。我们专注于生产生物基增塑剂，我们的先进技术能够创造出高性能、环保的替代品，取代传统的石油基增塑剂。

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.

这些生物基增塑剂适用于多种应用。通过将不同的生物基脂肪酸和醇类结合，并采用精心设计的工艺，我们可提供具有优化性能特性的产品，如柔韧性、耐用性和兼容性，以满足包装、汽车、建筑和消费品等行业的特定需求。

Key Technologies Features: 关键技术特点：

- 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.
- 定制：先进的化学工艺使我们能够将各种醇与生物基原料结合，从而实现针对广泛应用的精确定制。

## Key Products Features:

### 关键产品特点：

- **Performance:** Designed to match or exceed the properties of conventional plasticizers, our plasticizers provide excellent thermal stability, low volatility, and enhanced material performance.

**性能：**我们的增塑剂设计用于匹配或超过传统增塑剂的特性，提供优异的热稳定性、低挥发性和增强材料性能。

- **Efficiency:** Thanks to our plasticizers' high efficiency, amount of plasticizer can be reduced giving economic advantages in comparison to phthalate-based plasticizers.

**效率：**由于增塑剂的高效性，可以减少增塑剂用量，与邻苯二甲酸酯类增塑剂相比具有经济优势。

- **Sustainability:** Our bio-based plasticizers are derived from renewable raw materials, reducing carbon footprint and supporting a circular economy.

**可持续性：**我们的生物基增塑剂采用可再生原材料生产，不仅减少碳足迹，更助力循环经济发展。

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.

我们致力于推动可持续材料的创新，为全球减少环境影响的努力做出贡献，并为我们的合作伙伴和客户提供卓越的解决方案。

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

**OLEOSOFT TS** 是我们新开发的增塑剂之一，在各种应用中都表现出优异的性能。



Product Description 产品描述

General Information 基本信息

Chemical nature 化学品特点	esterified and epoxidized vegetable oil fatty acids 酯化和环氧化植物油脂肪酸
Bio-based carbon 生物基碳	100 %
Molecular weight 分子量	ca. 370 g mol <sup>-1</sup> 大约 370 克每摩尔 有机溶剂
Miscibility 溶混性	organic solvents 有机溶剂
Physical form 物理形态	Liquid 液态
Appearance 外观	faint yellow, transparent 淡黄色、透明
Odor 气味	Characteristic 典型

Technical Specifications 技术参数

Property 性质	Typical Value <sup>1</sup> 典型值	Unit	Standard
Colour 颜色	≤ 50	APHA	—
Density at 20 °C 20 °C时密度	0.996 ± 0.01	kg/L	—
Viscosity at 25 °C 25 °C时粘度	0.05	Pa*s	DIN 53019-1
Acid value 酸值	<2	mg KOH/ g sample 毫克氢氧化钾/克样品	DIN EN 14104
Oxirane value 环氧值	> 4.5	% oxirane oxygen 环氧数百分比	EN ISO 3001: 1999
Water Content 含水量	< 1000	ppm	DIN 51777-1: 1983-03
Refractive Index at 20 °C	1.4685	—	ASTM D-1218

<sup>1</sup> Preliminary values



## Oleosoft TS Applications

### Oleosoft TS 应用

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.

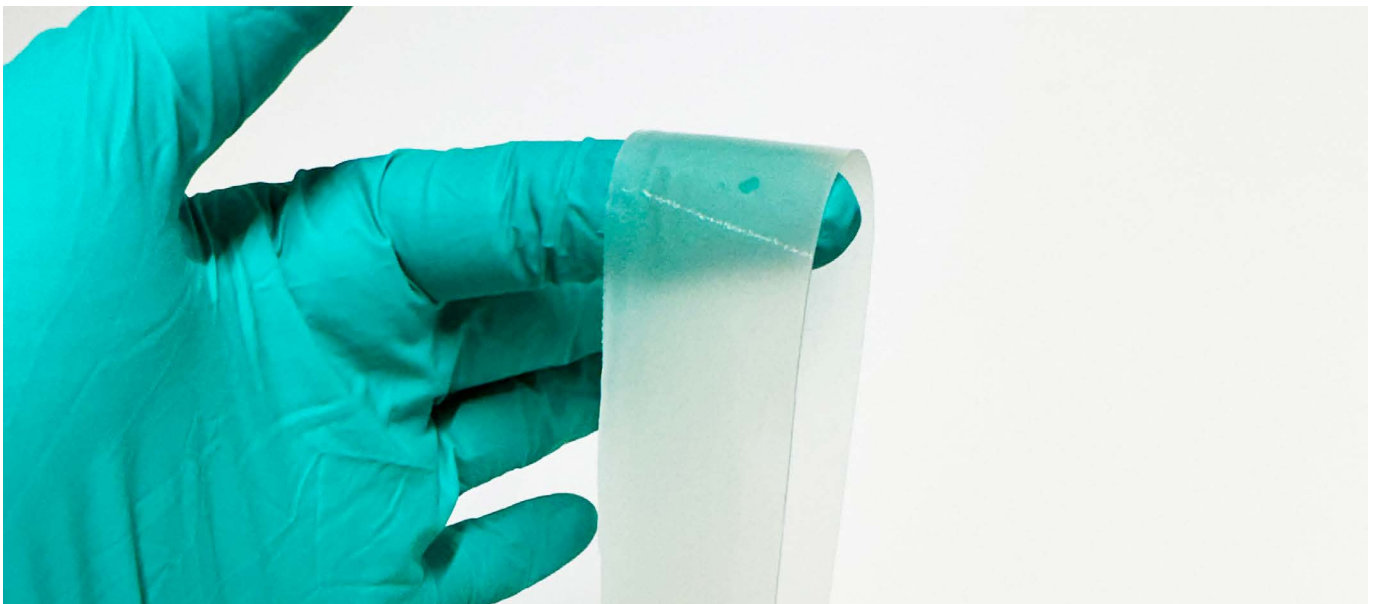
通过降低聚合物基体的玻璃化转变温度和分子间作用力，增塑剂提高了材料的弹性和加工性能，使其能够广泛应用于各种领域。我们的增塑剂已成功应用于柔性聚氯乙烯化合物的生产中，使用现有的加工设备，适用于已建立的邻苯二甲酸酯基增塑剂，如邻苯二甲酸二异壬酯（DINP）。在等效配方中，与矿物和生物基竞争产品相比，我们的增塑剂能够提高聚合物的柔韧性、加工性和弯曲疲劳强度。

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.

凭借其高塑化能力，**Oleosoft TS**可减少塑化剂用量，同时兼顾经济效益和环境效益。凭借其高增塑效率，**Oleosoft TS**在聚氯乙烯塑化过程中还具备快速凝胶化特性，可降低加工温度要求。此外，**Oleosoft TS**兼具热稳定剂的功能，能有效防止材料发生热降解。

**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.

**Oleosoft TS**是我们实验室中试装置中开发的生物基和无邻苯二甲酸酯类增塑剂，已经过测试并与基于邻苯二甲酸酯类的增塑剂和竞争性的生物基替代品进行了比较。



Performance in PVC 在聚氯乙烯应用中的性能					
Property  性质	PVC + Oleosoft	PVC +DINP PVC+邻苯二甲酸二 异壬酯	PVC + bio-based competitor PVC+生物基竞争品	Unit 单位	Standard 标准
Dissolution temperature 溶解温度	101	121	130	°C	—
Gelling temperature 胶凝温度	53	62	64	°C	—
Plastisol mass loss 塑性溶胶质量损失率	1.9	2.8	3.2	%	—
Emissions - VOC 挥发性有机化合物 (VOC) 排放	1231	636	2431	µg/g	VDA 278 (2016-05)
Emissions - fog 雾排放	3986	6330	7701	µg/g	VDA 278 (2016-05)
Thermal stability – stability time 热稳定性- 稳定时间	175	11	10	min	ISO 182-3:2000
Glass transition temperature 玻璃化转变温度	-33	-40	-31	°C	—
Young's modulus 杨氏模量	7	12	14	MPa	DIN EN ISO 527-2 (2012-06)
Folds without failure 无破损折叠	> 100 000	< 100 000	< 30 000	—	DIN 53351 (2003-09)

Whereas the following formulations were used for the tests:

试验测试中使用了下列配方：

Compound 化合物	phr	wt% 质量比
PVC (PVC-E) 聚氯乙烯	100	59.9
Plasticizer 增塑剂	65	38.9
Thermal stabilizer (Ca Zn) 热稳定剂（钙锌）	2	1.2

Test on films using OLESOFT TS confirmed that:

使用OLESOFT TS对薄膜进行的测试证实：

- all films were nicely processable in the same equipment as for the conventional product.  
所有薄膜都可以在与传统产品相同的设备中进行良好的处理。
- to achieve the same performance in term of flexibility and elasticity, smaller quantities of Oleosoft TS plasticiser are required than with competing products.  
为了在柔韧性和弹性方面达到相同的性能，与竞争产品相比，需要更少的Oleosoft TS增塑剂。
- films with OLEOSOFT TS are resistant to exudation. No oily surface haptics were observable.  
采用OLEOSOFT TS的薄膜能够有效抑制渗出问题，且表面无油性触感。

**Applications where our plasticizers are recommended instead of conventional phthalate products:**  
推荐使用我们的增塑剂代替传统邻苯二甲酸酯类产品的应用领域包括：

1. **technical textiles** 工业纺织品  
truck tarpaulins 卡车篷布  
cover foils 覆盖箔
2. **construction applications** 建筑应用  
roofing membranes, pool liners • 屋顶膜、泳池衬  
flexible pipe systems 柔性管道系统
3. **outdoor equipment** 户外工具  
garden tools 园艺工具  
hoses 软管
4. **gaskets and insulation** 垫片与隔热  
Seals 密封  
thin films 薄膜



Furthermore, the possible application as an alternative plasticizer in the field of biopolymer-based soft packaging and elastomers is currently being researched.  
此外，作为生物聚合物软包装和弹性体领域的替代增塑剂的可能应用目前正在进行研究。

## Toxicity and Safety

### 毒性与安全性

**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.  
根据OECD 439和EU方法B.46以及OECD 492B，**Oleosoft TS**未被归类为危险物质，并且没有皮肤或眼睛刺激。此外，**Oleosoft**既不可燃、不易氧化也不爆炸。

For additional information on the safe handling and the toxicity of the product,  
关于产品安全处理和毒性的其他信息，  
contact our KVT R&D Technology Center at [office@kvt.technology](mailto:office@kvt.technology).  
通过邮箱位于[office@kvt.technology](mailto:office@kvt.technology)联系我们KVT的研发技术中心。

**KVT R&D Technology Center**  
**KVT公司研发技术中心**



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.

在我们的KVT研发技术中心，欧洲各地充满激情、经验丰富且技术娴熟的科学家和研究人员共同致力于不断优化我们的产品，并寻找将它们纳入您的配方和应用的方法。

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).

如果您有兴趣将我们的产品测试并应用到您的配方中，请通过邮箱[office@kvt.technology](mailto:office@kvt.technology)联系专家。

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



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