

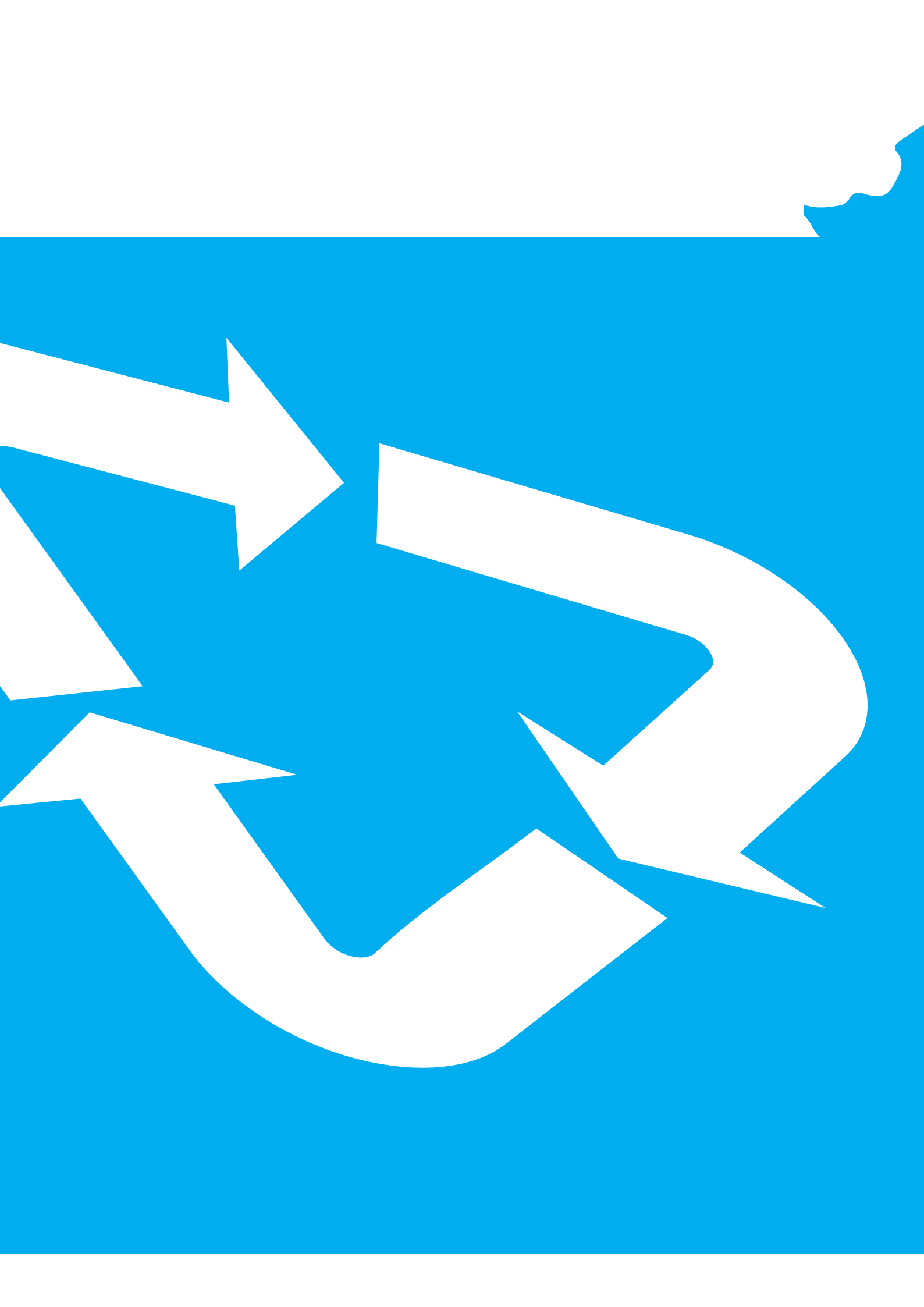
RFX  CARE®



Soy Vegetable Plantbased

**SUSTAINABLE**

Ink solution





# Benefits of vegetable ink

## Environmental protection

Vegetable inks, such as soybean inks containing edible oils, are renewable, non-hazardous, promote good recycling practices, and are resistant to abrasion, light, and heat. Mineral inks are non-renewable, lack abrasion resistance, and often emit irritating odors

## Carcinogenicity

Soy ink has no VOCs, which are volatile organic compounds found in petroleum and include aromatic polycyclic hydrocarbons, one of the most potent carcinogens.

## Recycling utilization

Soy ink is easier to deink than traditional ink when recycling waste prints. This results in less damage to the paper, and the waste residue after deinking is more easily degraded. This facilitates sewage treatment and helps control the quality of the discharged water.



# 1. Low VOC content

The vegetable oil itself contains minimal volatile organic compounds (VOCs). When vegetable oil-based polymerization materials are produced, only a small number of low-boiling point compounds are generated through high-temperature cracking. By controlling the reaction conditions, further reduction in cracking can be achieved. According to statistics from the National Printing Ink Manufacturers Association (NPIM), the use of soybean oil-based ink led to a reduction of 15.75 million kg of VOC volatility in 1992 and a reduction of 10.35 million kg in VOC volatility in 1997.

# 2. Biodegradability

Effective degradation in soil. Data indicates that at 25°C, with the action of *Aspergillus* and *Penicillium*, 100% soybean oil-based polymerization materials experienced a degradation of 60% after 5 days, 68% after 12 days, and 80% after 25 days. In contrast, mineral oil-based polymerization materials only degraded by 22.8% after 25 days, and mineral-based inks degraded by only 16% under the same conditions.



# 3. Quality

High-quality color inks can be produced using soybean oil-based ink, primarily due to its lighter color. This property contributes to enhancing color purity and vibrancy, improving color reproduction effects. Additionally, soybean oil-based ink offers favorable ink rheology and a high ink-water balance, thereby enhancing ink transferability. This ink formulation effectively reduces dot gain, a common occurrence during printing. Moreover, it helps minimize print-through faults, rubbing-related imperfections, and deinking issues.

This advantage is particularly prominent when regenerating weak fiber paper. Soybean oil-based ink significantly reduces the occurrence of hair-pulling phenomena, ensuring clear image outcomes. This characteristic proves instrumental in lowering waste paper rates and achieving cost savings.

# Mineral oil hazard ban regulations



**EU 2017/84:** On January 17, 2017, the European Commission published Recommendation (EU) 2017/84 concerning MOH in food and food contact materials and products. This recommendation stipulates that all concerned parties should actively engage in monitoring the presence of MOH in food and food contact materials during 2017 and 2018. If MOH is detected in these materials, its source should be investigated. The outcome of this monitoring initiative aims to instate mineral oil legislation within the EU food contact regulatory framework, mitigating the risks associated with mineral oil migration and contamination from food contact materials.

**French AGECE:** On February 10, 2020, France issued Decree No. 2020-105 (AGECE Regulation) focused on waste reduction and the circular economy. According to this regulation, starting January 1, 2022, the use of MOH in packaging materials is prohibited. From January 1, 2023, the use of MOH-containing inks for printing advertisement brochures and commercial promotional materials is banned. By January 1, 2025, the use of MOH-containing inks for public printing is also prohibited. The utilization of inks containing MOH for public printing is strictly forbidden.

**Appendix 10 of the New Swiss Food Law:** On May 1, 2017, Appendix 10 (Substances permitted for use in printing inks and requirements) of the new Swiss food law became effective. This regulation mandates that the migration of MOH in printing inks for food-contact materials and products should not exceed 0.01 mg/kg.

**Germany G/SPS/N/DEU/12:** Published on March 22, 2021, the World Trade Organization (WTO) released the German draft (G/SPS/N/DEU/12) under document number 21-2349. This draft targets the limitation of MOAH in food contact recycled paper products. The requirement stipulates that three years after the regulation's issuance, the migration of MOAH should not surpass 0.5 mg/kg (sum of MOAH in food) or 0.15 mg/kg (sum of MOAH in food simulants).

**Summary:** Primarily, the European Union, Switzerland, and Germany impose restrictions on the utilization of mineral oils in food contact paper and printing inks. Meanwhile, the French AGECE regulation encompasses a broader scope, restricting the use of mineral oils in various types of packaging materials.

# What does RFX+CARE do?

Since August 2022, RFX+CARE has adopted the use of vegetable inks for printing on cardboard packaging materials. Additionally, we have established partnerships with our suppliers and signed the "Declaration of Mineral Oil-Free" for arrangements that necessitate the absence of mineral oils as per customer demands.

**关于不含矿物油的声明**

**Statement On Mineral Oil-free**

我们在此声明,在制造以下绍兴瑞凯防护用品有限公司的产品时,根据采购订单的要求,使用无矿物油的植物油墨,确认其中不含有以下物质:

We hereby declare that, when manufacturing the following products of RFX+CARE Manufacturing Co., Ltd., according to the requirements of the purchase order, mineral oil-free printing ink is used to confirm that the following substances are not contained:

- 芳香烃矿物油 MOAH (mineral oil aromatic hydrocarbons)
- 饱和烃矿物油 MOSH (mineral oil saturated hydrocarbons)

客户品牌 (包括但不限于)
Brand (including but not limited to)
JUVA
URGO
KAPA

随附植物油墨的 MSDS 和送货单作为凭证。

MSDS and delivery note of mineral oil-free ink are attached as evidence.

绍兴市绿箭彩印有限公司  
Shaoxing Green Arrow Color Printing Co., Ltd.  
地址:绍兴市越城区皋埠镇 104 国道义安桥  
Add:Yianqiao, 104 National Road, Gaobu Town, Yuecheng District, Shaoxing,Zhejiang, China

签名:   
Signature  
日期:   
Date  
盖章:   
Stamp

**RFX+CARE®**

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绍兴市奇名印刷有限公司  
Shaoxing Qiming Printing Co.,Ltd  
地址:绍兴市东浦镇小皋埠村  
Add:Yianqiao, Gaobu Town, Yuecheng District, Shaoxing,Zhejiang, China

签名:   
Signature  
日期: 2022.9.16  
Date  
盖章:   
Stamp

# The pursuit of a safer world

At RFX+CARE, we view the pursuit of a safer world as both our responsibility and our mission. With an unwavering dedication, we continue to develop innovative solutions that not only safeguard our environment but also prioritize the well-being of people. Our journey is one of continuous improvement, as we strive to provide effective measures that protect the planet and its inhabitants.





RFX  CARE®

