



EXAMPLES OF SUSTAINABLE PRODUCT INNOVATION

INTEGRATED OXIDES AND DERIVATIVES (IOD) BUSINESS

OXIMULSION® 9000

APE-FREE SURFACTANTS SOLUTION FOR WATERBORNE COATINGS



The OXIMULSION® 9000 line facilitates the formulation of a stable alkyd emulsion, providing the opportunity to completely substitute solvents with water, leading to the development of water-based enamels used in architectural paints and coatings.

This product offers an excellent level of gloss and general properties in the final application, comparable to traditional solvent-borne enamels. At a great cost-benefit, water-based enamels eliminate VOC (volatile organic compound) emissions and the strong odors associated with solvent-based alternatives.

[For more information](#)

ALKEST LV 1400

NATURAL, ECO-FRIENDLY CLEANING SOLVENT



ALKEST LV 1400 is a readily biodegradable solvent derived from 100% natural raw materials. Its lipophilic properties enable improved interaction with oily soil, resulting in exceptional performance in cleaning and degreasing, particularly for I&I and household hard cleaning applications.

In addition to its non-flammable profile, ALKEST LV 1400 can be classified as a VOC exempt solvent according to the California Air Resources Board (CARB) and the United States Environmental Protection Agency (EPA) Safer Choice program.

[For more information](#)

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INTEGRATED OXIDES AND DERIVATIVES (IOD) BUSINESS

ULTRASOLVE® H line

FLEXOGRAPHIC PRINTING INKS



Ultrasolve® H was developed by IVL for application in flexographic printing inks, and was endorsed by several customers in Brazil, Peru, Colombia, Mexico, Argentina, South Africa, India, and Australia. Ultrasolve® H offers high efficiency as a solvent retardant during application in printing inks where less solvent is required compared to traditional solvent retardants. It is a solvent with both low toxicity and odor, promotes low retention in the application of flexible plastic packaging, and is also in accordance with the main regulations of the food packaging market. In 2022, sales revenues for printing inks reached US\$1.75 million, with a total volume of 642 tons.

[For more information](#)

SURFOM ULV 8

INNOVATIVE ADJUVANT FOR DRONE-BASED CROP PROTECTION
PRODUCT APPLICATIONS



SURFOM ULV 8 is a non-ionic surfactant blend to optimize drone-based crop protection product applications, primarily to enhance the deposition of active ingredients and droplet coverage. This application method reduces water usage and waste from packaging and raw materials, making it an eco-friendly choice for farmers.

[For more information](#)

EXAMPLES OF SUSTAINABLE PRODUCT INNOVATION

COMBINED PET (CPET) BUSINESS

Polyclear® Preserve PET 2222

MODIFIED PET RESIN WITH A HIGHER GLASS
TRANSITION TEMPERATURE

This new product, launched in 2022, can provide a higher heat deflection temperature to containers compared to standard PET. Target application: Thermoformed trays for sterilized medical packaging.

Containers made from Polyclear® Preserve PET 2222:

- are lightweight and shatterproof
- can be recycled with standard PET
- exhibit excellent clarity in combination with superior dimensional stability preventing shrinkage and expansion at higher application temperatures
- provide an additional UV-light barrier over standard PET
- comply with the Federal Food, Drug, and Cosmetic Act for certain food contact applications

[For more information](#)

DEJA™ CARBON NEUTRAL

LOW-CARBON FOOD-GRADE PELLET

Recognized as the 'Best Sustainable Product' at the Chemical Week Sustainability Awards, Deja™ Carbon Neutral Pellet is made from locally sourced feedstocks. Deja™ supports the UN Sustainable Development Goals (SDGs) promoting a sustainable, greener, and circular economy.



DEJA™ proudly collaborates with South Pole on carbon offset projects such as the Safe Water Project Rwanda, which provides 50 million liters of safe drinking water annually to communities.

[For more information](#)

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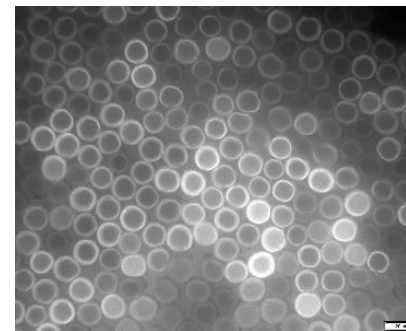
FIBERS BUSINESS

Bicomponent fibers



A new family of bicomponent fibers for bonding natural materials was introduced. These binder fibers are blended with natural materials such as wood fiber to create thermal and sound insulating panels through the application of heat and pressure. The binder fibers have a polyethylene outer layer with a recycled polymer core of polypropylene or polyester. Worth noting is that this product allows the use of PP and PET recycle streams (which are otherwise difficult to find applications for due to varying trace components), along with waste wood byproducts, to be combined into high value products for the construction market.

Polypropylene monocomponent fiber



Improvements in sustainability extend beyond the composition of the product to include the manufacturing processes employed by our customers. An intriguing development in fiber engineering at Indorama Ventures yielded a new polypropylene monocomponent fiber that provides carded nonwovens with a high degree of cushioning (combination of loft and resilience). This fiber is used in calendar-based thermal bonding processes to create a material that exhibits very similar characteristics to those produced by more energy intensive through-air oven-based processes.

EXAMPLES OF SUSTAINABLE PRODUCT INNOVATION

FIBERS BUSINESS

BREATHAIR®

COMFORTABLE AND DURABLE 3D CUSHION MATERIAL



BREATHAIR® is a highly innovative 3D spring structure, commonly used for the manufacturing of cushions, furniture, and bed sheets. Known for its superior elasticity and durability, this material provides users with long-lasting comfort.

In addition to being washable and recyclable, BREATHAIR® has been commended for meeting the stringent hygiene standards of the Japan Textile Evaluation Technology Council (JTETC). The product's high breathability minimizes the risk of mold and bacterial growth, further enhancing its appeal to those who value cleanliness and hygiene.

[For more information](#)

iCARE™

HEAVY METAL-FREE PET FIBERS



iCare™ is IVL's leading sustainable fiber brand, used in a variety of personal care products, such as baby strollers, baby diapers, car seat interiors, and food packaging.

To ensure that the products are safe to use, especially for infants and young children, iCare™ is manufactured without heavy metals, and strictly complies with the food additive provision of the US Federal Food, Drug, and Cosmetic Act (FFDCA).

[For more information](#)

EXAMPLES OF SUSTAINABLE PRODUCT INNOVATION

FIBERS BUSINESS

TREVIRA CS®

METAL-FREE FLAME RETARDANT POLYESTER FIBERS



Trevira CS® is the world's leading flame-retardant polyester fiber, and is widely used in public spaces, such as hotels, hospitals, and offices, where fire safety is of the greatest importance.

Commonly utilized in the production of textiles such as curtains and upholstery, Trevira CS® is antimony-free, thus preventing incidents of skin and eye irritation among our consumers.

[For more information](#)

Bio-based PLA

INSECT-PROOF AND COMPOSTABLE NETS FOR FARMING



Being sustainable in many ways, Texinov has developed insect-proof and compostable nets for farming. The fine knitted net called FILBIO®, produced by the French based company, not only protects crops without using pesticides which may be harmful to mankind or the environment, but also protects against hail, wind, and climate stress. Made with IVL's bio-based PLA, it is re-usable for up to three seasons.

Our IVL's German sites in Bobingen and Guben produce PLA staple fibers and filaments, which are made from 100% renewable materials. PLA gives off significantly lower CO₂ emissions and has a much lower energy consumption during the production of the raw material.

[For more information](#)



EXAMPLES OF PROCESS INNOVATION AND TECHNOLOGY

CiCLO

BIODEGRADABLE TEXTILE TECHNOLOGY



CiCLO®, a textile technology which allows polyester and other synthetic materials to biodegrade like natural materials do in wastewater treatment plant sludge, sea water and landfill conditions. Reducing synthetic microfiber pollution generated during washing and minimizing plastic accumulation in landfills caused by discarded textiles.

CiCLO® textile technology, provide valuable alternative solutions when recycling may not be possible. Developments have focused on PET and rPET staple fiber and filament sustainable solutions for applications where recycling is particularly challenging, such as Hygiene, Home Textiles and Automotive applications.

[For more information](#)

EXAMPLES OF PROCESS INNOVATION AND TECHNOLOGY

SPS

SINGLE PELLET SOLUTION

SPS at StarPET Inc. – Commercialization of a new approach to incorporating recycled content into necessities packaging resins which uses 25-30% less energy than conventional extrusion recycling technologies deployed at other incumbent IVL Sites.



EXAMPLES OF PROCESS INNOVATION AND TECHNOLOGY

Biotransformation Technology

This technology was further extended into three specific applications for nonwoven components, each removing the potential for persistent microplastics during their biodegradation pathway.

The first to be released was a monocomponent polypropylene fiber, offering an essentially drop-in biodegradable alternative across a broad range of applications and uses.

Following the release of monoPP, a polyethylene/polypropylene bicomponent staple fiber was made available for specific applications. This fiber type allows for processes, such as carded, through air bond technology to now produce nonwoven materials that have a defined biodegradability behavior, including acquisition/distribution layers in absorbent hygiene products.

In conjunction with the above fibers, the spunlaid nonwoven fabric portfolio was expanded to include meltblown materials, either standalone as a filter layer in applications, such as facemasks, or in multiple beam spunbond/meltblown/spunbond fabrics to gain higher barrier attributes.



EXAMPLES OF ENVIRONMENTAL PROCESS INNOVATION



Heat-recovery project (China)

Performance Fibers (Kaiping), one of IVL's facilities in Guangdong Province, China, has implemented a successful pilot heat-recovery project for one of its dipping lines, demonstrating a 25% lower consumption of natural gas during the two consecutive months of trial operations. Following this success, the site plans to expand the installation of the heat exchanger system for all four dipping lines. This innovative solution is the first of its kind in the tire cord fabrication industry. This expansion is expected to result in significant annual savings of approximately US\$1.8 million and reduce 5,000 tCO₂ of GHG emissions annually. Not only a great financial and environmental success, but the project also promotes creativity and innovation amongst IVL's employees and could be extended to other lines in the Fibers Mobility vertical.

EXAMPLES OF ENVIRONMENTAL PROCESS INNOVATION



Liquefied Natural Gas-Based Heating System (Thailand)

Indorama Polyester Industries in Nakhon Pathom, Thailand achieved a significant milestone in their sustainability journey by commissioning a Liquefied Natural Gas (LNG)-based thermic fluid heating system to replace the original coal-fired system. This marks their first step towards phasing out coal at their site, resulting in an annual reduction of 5,212 tCO₂e in GHG emissions and an expected overall 6% carbon savings this year.

EXAMPLES OF ENVIRONMENTAL PROCESS INNOVATION



Zero Liquid Discharge (Thailand)

Indorama PetroChem Limited (IRPL-PET) in Thailand has successfully achieved Zero Liquid Discharge by implementing the SCALEBAN equipment, thereby addressing escalating water costs and risks of droughts. This move has resulted in a 50% reduction in water consumption rate, with the rate falling to 0.33 m³ of water/ton of product, the lowest amongst all IVL-PET sites.

The technology future-proofs the site from water shortages and eliminates odors , improving community reputation. The success of this project supports IRPL-PET's plan to sustainably double production capacity, hence aligning with IVL's commitment to being a responsible and sustainable chemical company.

EXAMPLES OF ENVIRONMENTAL PROCESS INNOVATION



Automation to Reduce Effluent Wastage (India)

Indorama Synthetics (India) has implemented an automatic chemical dosing system for two of their cooling towers. This marks a significant step towards automation and digitization, and also offers several advantages over manual dosing. With automated dosing, the desired level of chemicals is consistently maintained in the system, preventing both corrosion and scaling due to underfeeding, and wastage of chemicals due to overfeeding.