Sustainable Solution Steering
Accelerator Example Collection
Status 2020/2021
Sustainability

We are successful in the long term if our products, solutions and technologies add value to the environment, society and the economy.
BASF’s segments – We create value for our customers

Chemicals
Petrochemicals
Intermediates

Materials
Performance Materials
Monomers

Industrial Solutions
Dispersions & Pigments
Performance Chemicals

Surface Technologies
Catalysts
Coatings

Nutrition & Care
Care Chemicals
Nutrition & Health

Agricultural Solutions
We apply our systematic Sustainable Solution Steering approach to our portfolio.

It’s a three-step process:

**Step 1**
Analysis of **sustainability needs** and trends in the value chains.

**Step 2**
**Evaluation and categorization** of product sustainability performance in the market application.

**Step 3**
**Definition of strategic measures** to steer our portfolio towards a better sustainability performance.
Based on our corporate strategy, we have set ourselves a global target

We aim to make sustainability an even greater part of our innovation power and achieve €22 billion in Accelerator sales by 2025. In 2021, we generated sales of €24.1 billion with Accelerator products (2020: €16.7 billion) – already reaching our target for 2025.

In the future, we want to align our product portfolio even more strongly with climate protection, carbon neutrality and circularity in order to meet the growing sustainability demands in our markets with innovative solutions. Consequently, we will update our product portfolio steering methodology and our target over the course of 2022/2023.
98.7% of relevant portfolio assessed

~3,000 experts involved
e.g. R&D, Product Safety, Sales, Marketing, Sustainability

~16,000 Accelerator solutions

100% of Challenged solutions covered with an action plan

€24.1 bn sales in 2021
Sustainable Solution Steering
€22 billion in Accelerator sales already achieved in 2021

- More than 56,000 product applications analyzed by 2021\(^1\) (€71 billion in sales, 98.7% of relevant portfolio)
- 16,000 solutions for enhanced quality of life
- Goal: €22 billion of Sales with Accelerator products by 2025 already met in 2021 (2020: €16.7 billion)
- Stronger integration in R&D pipeline, business strategies and mergers and acquisition projects.
- We will phase out all Challenged products within five years of initial classification as such at the latest.

\(^1\) The relevant portfolio is defined in the Sustainable Solution Steering Manual at basf.com/en/sustainable-solution-steering
Sustainable Solution Steering
BASF’s Accelerators contribute to the UN Sustainable Development Goals

Absolute sales 2021
24.1 billion €

Sales shares of contributing Accelerators (%)

- Cost savings downstream
- Biodiversity and renewables
- Climate change and energy
- Emission reduction
- Resource efficiency
- Water
- Health and safety
- Hunger and poverty

Primarily addressed SDGs

(including double nominations)
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
Accelerator Deoxo® Catalysts

Process information

Application: Ozone removal
Customer Industry: Aviation
Market: Global

Sustainability performance

- Addresses aircraft cabin air purification: health, safety, comfort of passengers and crew are improved by mitigating exposure to ozone in aircraft cabin air
- Since 1980, BASF has been the leading supplier of ozone removal systems for Boeing, Airbus, Gulfstream, Dassault and many other aircrafts

→ Designed to maintain a healthy cabin environment in airplanes

Differentiation potential

- Emissions reduction
- Health and safety
# Accelerator

## Recycling of PGMs (Platinum Group Metals)

### Process information

<table>
<thead>
<tr>
<th><strong>Application:</strong></th>
<th>Spent catalyst recycling, precious metals recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Industry:</strong></td>
<td>Catalysts</td>
</tr>
<tr>
<td><strong>Market:</strong></td>
<td>Europe, North America</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Extracting PGMs through the process of smelting and refining spent automotive and chemical catalysts; results in energy and resource savings
- Provides a sustainable and economically viable secondary source of the world’s limited natural resources
- Recycling of end-of-life catalysts for use in new generation catalysts that provide clean air, increased energy efficiency and production yields

→ Recycling and recovery of precious metals for cost effective, sustainable use in a new generation of chemicals and autocatalysts

### Differentiation potential

- Resource efficiency
- Cost savings downstream
- Emissions reduction (as applied to new generation autocatalysts)
Internal Accelerator PremAir®

Process information

Application: Emissions control catalysts
Customer Industry: Automotive
Market: North America, Korea

Sustainability performance

- Enables automakers to generate exhaust emission credits that derive value in terms of cost reduction of the entire emission control system.
- Both, the Air Resources Board of California and U.S. EPA have approved PremAir as a proven ozone reduction catalyst for use in current and future emission control strategies.
- Is a base metal catalyst which provides a sustainable and stable raw material supply chain.

Differentiation potential

- Emissions reduction
- Cost savings downstream

→ A patented catalyst coating that transforms ground level ozone, the main component of smog, into oxygen by simply driving down the road
Accelerator SCR (Selective Catalytic Reduction)

Process information

Application: Emissions control catalysts
Customer Industry: Automotive
Market: Global

Sustainability performance

- Diesel engine emissions are of increasing concern to governments worldwide. Euro VI, China NS VI and India BS VI regulations enforce a stricter control of $\text{NO}_x$ (Nitrogen Oxides) emissions from Diesel-engine powered vehicles.
- Stricter emission standards drive the requirement for active filter systems in conjunction with $\text{NO}_x$ reduction technologies; BASF’s patented zeolite SCR catalysts exhibit high temperature stability and meet challenging catalyst durability requirements.

Differentiation potential

- Emissions reduction
- Cost savings downstream
- Resource efficiency

→ Patented zeolite SCR catalysts offer very high temperature stability and operating temperature flexibility to remove $\text{NO}_x$ to meet stringent emission regulations around the globe
## Accelerator
### Diesel Oxidation Catalysts (DOC)

### Process information
- **Application:** Emissions control catalysts
- **Customer Industry:** Automotive
- **Market:** Global

### Sustainability performance
- Stringent Diesel emission regulations warrant state-of-the-art multifunctional products. Euro VI, China Stage VI and India BS VI regulations enforce strict control of Hydrocarbons (HC) and Carbon Monoxide (CO) emissions from Diesel-engine powered vehicles.
- Additionally, DOC oxidizes Nitrogen oxide (NO) to Nitrogen dioxide (NO\(_2\)), enabling proper function of the downstream Selective Catalytic Reduction (SCR) catalyst.

→ Innovative multifunctional oxidation technology that enables regulation of stringent Diesel emission standards

### Differentiation potential
- Emissions reduction
- Resource efficiency
Accelerator
Three-Way-Catalysts (TWC)

Process information

Application: Emissions control catalysts
Customer Industry: Automotive
Market: Global

Sustainability performance

- Arguably one of the most meaningful pollution abatement devices. Today, the catalytic converter is a key component of most modern cars around the world.
- Since its inception, TWC technology has prevented over 1 billion tons of Hydrocarbons (HC), Carbon Monoxide (CO) and Nitrogen Oxide (NO\textsubscript{x}) before they reached the atmosphere.

Differentiation potential

Customer:
- Emissions reduction
- Cost savings downstream
- Resource efficiency

→ Leading-edge emissions abatement technology that helps auto manufacturers meet increasingly stringent environmental regulations around the world.
Accelerator
FWC™ Four-way Conversion Catalysts

Process information

Application: Emissions control catalysts
Customer Industry: Automotive
Market: Global

Sustainability performance
- Euro 6, and China Stage 6 regulations enforce, in addition to HC (Hydrocarbons), CO (Carbon Monoxide), and NOx (Nitrogen Oxides), tighter control of PM (Particulate Matter) emissions from gasoline engine powered vehicles.
- FWC™ catalyst combines the functionality of a Three-Way Catalyst (TWC) with a filter to remove all four pollutants with just one component.
- Lowers backpressure, saves space, ensures particulate emission below tight regulation limits.

→ Innovative single-component four-way conversion catalyst that removes multiple pollutants from gasoline engine exhaust

Differentiation potential
Customer:
- Emissions reduction
- Cost savings downstream
- Resource efficiency
Accelerator
Catalytic Soot Filter (CSF)

Process information

**Application:** Emissions control catalysts

**Customer Industry:** Automotive

**Market:** Global

Sustainability performance

- Stage V, Euro VI, China NS VI, India BS VI regulations enforce, in addition to HC (Hydrocarbons), CO (Carbon Monoxide), and NOx (Nitrogen Oxides), tighter control of PM (Particulate Matter) emissions from Diesel engine powered vehicles

- CSF catalyst filters particulates, converts Hydrocarbons (HC) and Carbon monoxide (CO), oxidizes NO to NO₂, and burns off particulates during filter regeneration process

→ Single-component multifunctional catalyst that removes multiple pollutants from Diesel engine exhaust

Differentiation potential

- Emissions reduction
- Resource efficiency
Accelerator Formic Acid

Process information

Application: Runway and road de-icing
Customer Industry: Transportation
Market: Global

Sustainability performance

- Better biodegradability than urea and acetate, therefore reduced chemical oxygen demand
- Reduced water treatment demand and costs

Differentiation potential

- Cost savings downstream
- Water scarcity and pollution

→ Enabling eco-efficient de-icing
Accelerator Neopentyl Glycol

Process information

Application: Powder Coatings Resins
Customer Industry: Automotive, Construction
Market: Global

Sustainability performance

- Biomass balanced Neopentyl Glycol
- Using a biomass balance approach, BASF is replacing a certain amount of fossil raw materials with renewable feedstock
- The method is subject to third party certification (REDcert²)

Differentiation potential

- Biodiversity & Renewables
- Climate Change and Energy
- Resource efficiency

→ Contributing to use renewable feedstocks in the mass balance approach
Accelerator AdBlue® by BASF

Process information

Application: Diesel Exhaust Treatment
Customer Industry: Automotive, Non-road Mobile Machinery, Marine, Energy
Market: Global with European Focus

Sustainability performance
- Reduction of NOx emissions: Enhanced air quality; Compliance with legal requirements
- Engines can be run at better efficiency: Enables reduction of fuel consumption; Reduced CO2 footprint of the engine

Differentiation potential
Customer:
- Local source: Reduced road transport; Reduced CO2 footprint

→ Enabling product innovation for SCR catalysts and spread of clean technologies for internal combustion engine
Accelerator
CathoGuard® 800

Process information

Application: Cathodic electrocoats for corrosion protection
Customer Industry: Automotive
Market: Global

Sustainability performance

- Clear competitive advantage due to high surface quality, best edge protection and excellent throwing power.
- CathoGuard® 800 is optimally suited for both application types, primer and integrated processes. This ED-coat offers an alternative to tin-containing formulations and already contributes to the durability of millions of cars.
- With an efficient material consumption during the application process, it supports safeguarding resources.

→ An innovative solution for the highest eco-efficiency

Differentiation potential

Customer:
- Cost savings downstream
- Resource efficiency
- Improvement of CO2 footprint
- Reduction of volatile organic compounds (VOC) emissions
- Health and safety
Accelerator Integrated Process

Process information

**Application:** OEM Coatings, providing color and effect

**Customer Industry:** Automotive

**Market:** Global

Sustainability performance

- With the integrated process, the primer functionality gets integrated in the basecoat layer without compromising functionality and aesthetics of the finish.
- A dedicated waterborne basecoat reduces the number of applied layers, leading to shorter coatings processes.
- IP processes have become a global trend, feasible for existing and new car manufacturer paint shop installations.

Differentiation potential

**Customer:**
- Cost savings
- Improvement of CO₂ footprint
- Reduction of volatile organic compounds (VOC) emissions
- Resource efficiency

→ Enabling BASF customers to reduce energy, material and investment cost
Internal Accelerator PrimeCube®

Process information

**Application:** Coatings for commercial vehicles

**Customer Industry:** Automotive

**Market:** Global

Sustainability performance

- PrimeCube® is a new BASF Verbund process for coating truck cabins. The enabling material concept with dedicated technologies has been developed by the BASF Coatings division.

- The topcoat ColorPrime is applied directly on the PrimeBloc, generating the first short process for trucks. This allows for a completely new coating process with energy savings up to 40 percent.

- These innovative 2-component PU materials even match volatile organic compounds (VOC) emission values of waterborne products.

→ Sustainable paint system for commercial vehicle coatings

Differentiation potential

**Customer:**

- Cost savings via investment and process (one hit application, no primer oven, lower temperatures)

- Reduced CO₂ emission and volatile organic compounds (VOC)

- Resource efficiency increased due to reduced material consumption, less facility space, less robots

PrimeCube® – BASF Verbund Process for highly efficient performance coatings
Accelerator
R-M® Directfiller Black, White and Grey

Process information

Application: Filler system
Customer Industry: Automotive refinish coatings
Market: EMEA, Asia Pacific

Sustainability performance

- DIRECTFILLER (Black, White, Grey) has superb adhesion properties and excellent corrosion protection, enabling it to be applied to bare steel, galvanized steel and aluminum. By using FLEXPRO, an application on plastic is also possible.
- Extensive reduction of process time by using DIRECTFILLER as a wet on wet process, sparing the need to sand.
- In this way, body shops not only save material for separate priming, they can also skip an entire application step.

→ New filler system – directly on metal

Differentiation potential

Customer:
- Cost savings downstream
- Resource efficiency
- Climate change and energy
- Health and safety
Accelerator
Glasurit® 151-170E ECO BALANCE UV PRIME FILLER, GREY

Process information

<table>
<thead>
<tr>
<th>Application:</th>
<th>Rapidly drying primer filler, ideally suited for minor and moderate repair jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry:</td>
<td>Automotive refinish coatings</td>
</tr>
<tr>
<td>Market:</td>
<td>EMEA</td>
</tr>
</tbody>
</table>

Sustainability performance

- Repairs of minor to moderate damages to car parts are now among body shops’ most common repair jobs. They have to work profitably in this segment.
- UV-A technology ensures quicker drying than any other heat source, commonly used in body shops. It therefore enables them to save energy costs and drying time.
- Saves further process times because it eliminates the cooling phase.
- UV-A radiation is the least harmful part of ultraviolet light. This makes the technology safe and easy to use.
- Biomass balanced product: 100 percent of fossil resources are mathematically replaced by renewable resources; the method is certified by REDcert².

→ Boost efficiency at the speed of light

Differentiation potential

Customer:

- Cost savings downstream
- Resource efficiency
- Climate change and energy
**Accelerator**
**R-M® Rapidclear C 2570 eSense**

### Process information

**Application:** Quick-drying clearcoat with no loss of quality

**Customer Industry:** Automotive refinish coatings

**Market:** EMEA

### Sustainability performance

- Needs no flash-off time and provides an excellent finish after a short drying time in the oven at 60 °C panel temperature. It also boasts outstanding drying properties at 40 °C and at room temperature.
- Wide range of applications: excellent polishing characteristics, can be applied to both vertical and horizontal panels.
- Biomass balanced product: 100 percent of fossil resources are mathematically replaced by renewable resources, method certified by REDcert².

→ Fast-dry and easy use for a wide range of applications

### Differentiation potential

**Customer:**
- Cost savings downstream
- Resource efficiency
- Climate change and energy
Accelerator Oxsilan®

Process information

- **Application:** Multi-metal pretreatment
- **Customer Industry:** Automotive, Appliance, Construction
- **Market:** Global

Sustainability performance

- Oxsilan® is an eco-friendly and multi-metal pretreatment process. The innovative thin-film technology is used likewise for the pretreatment of car bodies and for the automotive component industry as well as for the appliance and construction industries.
- High level of corrosion protection and optimal coating pre-treatment.
- Lower process costs, higher productivity.
- State-of-the-art alternative to conventional zinc-phosphating process.
- Almost sludge-free, no need for acidic cleaning.

→ More than 8 million Oxsilan® cars on the road since May 2009

Differentiation potential

**Customer:**

- Shortened pre-treatment lines, reduced maintenance costs
- Resource efficient, easy bath control
- Health and safety
# Accelerator

Glasurit® 100 Line / R-M® AGILIS

## Process information

<table>
<thead>
<tr>
<th>Application</th>
<th>Automotive Refinish Coatings Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry</td>
<td>Automotive</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
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</table>

## Sustainability performance

- The coating is a waterborne technology
- Its volatile organic compound (VOC) value is consistently below 250g/l which allows customers to exceed global VOC regulations for the foreseeable future
- The new process allows a faster application and shorter flash-off times

## Differentiation potential

**Customer:**
- Optimized processes through fast and efficient application
- Saving of time, product and energy
- Excellent color stability
- Set of signature solutions

→ More
Accelerator
CIP

Process information

- **Application:** Inductors for computers and electronics
- **Customer Industry:** Electronics, ICT, Automotive, etc.
- **Market:** Global

Sustainability performance

- As core material in inductors, CIP saves energy due to lowest losses compared to other materials.
- Unique solution for computer and electronics inductors being resistant to corrosion.
- Eliminates wet chemical coating process, less emissions at customer production sites.

→ Unique market position

Differentiation potential

**Customer:**

- Climate change & energy
- Resource efficiency
- Cost savings downstream
- Pollution (air, soil, noise)
Accelerator MIM

Process information

- **Application:** Small metal parts
- **Customer Industry:** Various, Engine parts, Automotive, etc.
- **Market:** Global

Sustainability performance

- Trade Name Catamold™
- Saves energy and material downstream compared to investment casting for small metal parts
- Trainings as a service for customers

Differentiation potential

- Resource efficiency
- Cost savings downstream
Accelerator Acrodur®

Process information

**Application:** Binding agent for natural, synthetic and glass fibers

**Customer Industry:** Automotive, Furniture, Construction

**Market:** Global

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**Sustainability performance**

- Water-based
- Low-emission
- No added formaldehyde
- No organic substances are released during cross-linking
- Safe working atmosphere

**Differentiation potential**

- Light-weight solutions
- Thermo-mechanical stability: up to 220 °C
- High share of renewables: up to 75 percent of natural fibers
- Flexibility in design

→ Acrodur® enables the production of lightweight and sustainable composites
Accelerator
GLYSANTIN® G64®, GLYSANTIN® G65®

Process information

Application: Coolant
Customer Industry: Automotive, transportation, industrial applications (e.g., stationary engines)
Market: Global

Sustainability performance

- Protection against corrosion, overheating, frost and cavitation
- Excellent heat transfer in the engine cooling system
- Excellent tolerance towards flux residues
- Minimized build-up of engine deposits
- Freedom to operate, full regulatory compliance (e.g., REACH)
- Available as net-zero GLYSANTIN® ECO BMB products

→ Next generation engine coolants holding multiple product approvals

Differentiation potential

Customer:

- Reduced engine maintenance and extended lifetime
- Downstream cost savings and increased resource efficiency
- Suitable for electric vehicles

→ Also suitable for electric vehicles
Accelerator
GLYSANTIN® ECO G30® BMB / G34® BMB / G40® BMB / G64® BMB / G65® BMB

Process information

<table>
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<tr>
<th>Application:</th>
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<td>Customer Industry:</td>
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</tr>
<tr>
<td>Market:</td>
<td>Global</td>
</tr>
</tbody>
</table>

Sustainability performance

- Delivering renown protection against corrosion, overheating, frost and cavitation
- Excellent heat transfer and tolerance towards flux residues, minimized build-up of engine deposits
- Freedom to operate, full regulatory compliance (e.g., REACH)
- Saving fossil resources, reducing CO₂ emissions
- Net-zero products when using 100% renewable feedstock

→ Next generation premium engine coolants delivering customized CO₂ emission savings

Differentiation potential

Customer:

- Net-zero product using 100% renewable feedstock
- Available in various substitution grades, delivering customized CO₂ emission savings
- Unchanged, excellent product quality and performance compared to fossil product
- Suitable for electric vehicles
Accelerator
GLYSANTIN® G22® ELECTRIFIED®

Process information

Application: Battery coolant
Customer Industry: Automotive, transportation
Market: Global

Sustainability performance

- Protects battery cooling system, electric engine and power electronics against corrosion, overheating and frost
- Specifically designed for effective prevention of corrosion in broad temperature range, providing good passivation in low and high temperature coolant circuits
- Enhanced safety performance: Maintains low and stable electrical conductivity which translates into low fluid decomposition and low generation of hydrogen

→ Battery coolant supporting sustainable transportation

Differentiation potential

Customer:

- Safety optimized product while ensuring optimal corrosion protection
- Downstream cost savings, increased resource efficiency
- Dedicated for battery electric vehicles

→ Battery coolant supporting sustainable transportation
Accelerator Irgalube® FE 1

Process information

- **Application:** Lubricant additive
- **Customer Industry:** Automotive
- **Market:** Global

Sustainability performance

- Ashless oil additive to keep exhaust and particulate catalyst system in cleaner condition
- Synergistic effects with ZDDP (zinc dialkyldithiophosphate), the standard antiwear additive, to keep the engine protection provided by ZDDP fully functional
- Improved combustion engine performance
- More than twice as effective as GMO (glycerol mono oleate) even at half the treat rates

→ Additive component for high performance engine oils

Differentiation potential

- Enables cost saving downstream
- Improved fuel economy
- Enables reduced emission (CO2)
- Based on renewable raw materials
Accelerator
Jounce Bumper MHKG, MH24, MH24C, SM72

Process information

Application: Car suspension
Customer Industry: Automotive & Transportation
Market: Global

Sustainability performance

- Advanced weight reduction of -25% due to PU properties (lighter, enables more compact design)
- Reduces noise and vibration
- Further potential for replacing rubber parts in new car models
- Ready for E-Mobility due to high performance of Cellasto®
- Less installation space required compared to rubber

Differentiation potential

- Cost Savings Downstream
- Resource Efficiency
- Noise Reduction
- Health and Safety

→ Jounce Bumper replacing rubber in new cars
Accelerator
Top Mounts MH24, MHKG and MHLS

Process information

Application: Car suspension
Customer Industry: Automotive & Transportation
Market: Global

Sustainability performance
- Production process enables smaller systems
- Efficient products for increased comfort and handling
- High durability and performance

Differentiation potential
- Cost Savings Downstream
- Resource Efficiency
- Noise Reduction
- Health and Safety

→ Top Mounts enable high comfort and safety for automotive
Accelerator
NEOPOLEN®

Process information

**Application:** Serial automotive parts

**Customer Industry:** Transportation Industry

**Market:** Europe

Sustainability performance

- Recyclable
- Minimal consumption of resources in production and processing
- Light weight supports emission reduction
- Manufactured without the use of halogenated hydrocarbons or compounds containing heavy metals

Differentiation potential

**Customer:**

- Light weight of the parts contributes to less CO₂ emission
- Closed PP-loop - recycling possible
- Improved fuel economy
- Enables resource savings
- Structural components made of metal can be replaced by lightweight EPP parts
Accelerator
Ultrason® E KR 4113

Process information

**Application:** Oil Pumps
**Customer Industry:** Automotive & Transportation
**Market:** Global

Sustainability performance
- Energy & Cost Saving downstream through fuel efficiency
- BPA-free and prolonged life span

→ Creating high quality materials for everyday applications

Differentiation potential
**Customer:**
- Resource efficiency
- Climate Change & Energy
Accelerator
Ultramid® B3EG6/ A3EG6/ A3EG7 EQ BK23189

Process information

Application: Electronic control unit
Customer Industry: Electro & Electronics
Market: Transportation

Sustainability performance

- Contains very low concentration of halogens compared to other polyamides
- Higher safety standards and lifetime
- Specified purity
- Prevents damage to circuits by electric corrosion
- No formation of toxic halogenic compounds by incineration

→ Ultramid® EQ for low halogen content in electronic control units

Differentiation potential

- Health and safety
- Resource efficiency, durability
**Accelerator Ultramid® A3WG7 HP Black 20560**

**Process information**

- **Application:** Structural stiffener
- **Customer Industry:** Powertrain
- **Market:** Transportation

**Sustainability performance**

- Reduced cycle time
- High productivity
- Processing requires lower temperature compared to other polyamides

→ Ultramid® A3WG7 HP saves energy during production

**Differentiation potential**

- Resource Efficiency
- Climate Change and Energy
Accelerator
Ultramid® S3WG6 Balance Black 00564

Process information

Application: Quick connectors for fluid lines
Customer Industry: Automotive
Market: Transportation

Sustainability performance
- Renewable feedstock (sebacic acid)
- High strength and rigidity
- Resistance to chemicals
- Low tendency to creep

Differentiation potential
- Biodiversity and Renewables
- Resource Efficiency
- Climate Change and Energy

→ Ultramid® S as alternative to Ultramid® A and Ultramid® B
Accelerator
Ultramid® B3ZG7 CR Black 23282

Process information

Application: Car Bumper
Customer Industry: Chassis and Structure
Market: Transportation

Sustainability performance

- Improved bumper system
- Increased safety for pedestrians
- Ultrasim® for optimizing part structure

→ Ultramid® B3ZG7 CR for driving safer cars

Differentiation potential

- Health and Safety
- Resource Efficiency
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
Neopor® insulating materials offer improved insulating performance and lower use of materials than conventional EPS.

**Process information**

- **Application:** Insulation
- **Customer Industry:** Construction (new buildings and renovation)
- **Market:** Europe, North America, South Korea, China

**Sustainability performance**

- Neopor provides high insulation performance with a small amount of material; this leads to improved resource efficiency compared to white EPS
- Neopor contributes to cost savings downstream
- Insulation with Neopor positively contributes to climate protection and energy efficiency

Note: Neopor is produced with a new polymeric flame retardant, substituting former HBCD (substance facing EU-regulatory ban process)

**Differentiation potential**

- Has improved insulation performance compared to the standard white EPS
- Provides high insulation with less material consumption (up to 50%), which allows material cost savings for end customers
- Enables end customers to save more energy with a high-performance insulation

→ Neopor® insulating materials offer improved insulating performance and lower use of materials than conventional EPS
Accelerator Neopor® BMB

Process information

- **Application:** Insulation
- **Customer Industry:** Construction (new buildings and renovation)
- **Market:** Global

Sustainability performance

- Provides high insulation performance with less material consumption (up to 50%), which allows material cost savings for end customers

Differentiation potential

- Insulations with Neopor® BMB are using feedstock based on renewable raw materials (biogas or bio-naphtha) without changing the properties of the product
- By using insulation boards with Neopor® BMB, the carbon footprint can be reduced by up to 42% in comparison to the fossil based Neopor®

→ Insulation with Neopor® BMB is produced by using renewable feedstock which contributes to additional greenhouse gas savings in comparison to the fossil-based product
Accelerator
Styrodur®

Process information

Application: Perimeter and inverted roof insulation
Customer Industry: Construction (renovation)
Market: Europe

Sustainability performance

- Insulation with Styrodur reduces CO₂ emissions
- Styrodur applied in the perimeter insulation improves energy efficiency of buildings

Differentiation potential

Customer:

- Cost efficient solution for perimeter and inverted roof insulation of houses
- Enables end customers to save energy

→ Styrodur® allows reduction of CO₂ emissions and energy savings due to excellent insulating performance
Accelerator
Palatinol® 10-P Biomass Balanced

Process information

Application: Flexible PVC applications
Customer Industry: Automotive, construction, wire & cable, roofing membranes
Market: Europe

Sustainability performance

- Palatinol® 10-P is a versatile plasticizer with high durability, that offers excellent weathering and low fogging properties and an enhanced processing performance
- Palatinol® 10-P is the ideal choice for flexible PVC products that require resistance to high temperatures and weathering
- The Biomass Balanced version helps to save fossil resources and to reduce the CO₂ emissions in production

Differentiation potential

- Resource efficiency (saving of fossil resources)
- Use of renewables feedstock
- Positive impact on climate change (reduced carbon footprint)
Accelerator Flamestab® NOR® 116 FF

Process information

Application: Flame retardant
Customer Industry: Building and construction
Market: Global

Sustainability performance

- Non-halogenated flame retardant
- Unique chemistry combines flame retardant and light stabilizing properties into one molecule
- Excellent thermal stability supports longer product lifetimes and reduces overall waste
- Easily incorporated without additional processing due to the low dosing concentrations

→ Exceptional sustainable performance for thin section applications

Differentiation potential

- Resource efficiency
- Health and safety
- Waste reduction
- Durability
- Cost savings
Accelerator Mattex® PRO

Process information

- **Application:** High performance extender
- **Customer Industry:** Paints and coatings
- **Market:** Global

Sustainability performance

- Replace Diatomaceous Earth (DE) in architectural coatings formulations or as TiO$_2$ extender
- Crystalline silica free
- Simplify paint formulation by eliminating the use of flatting agents
- Help to achieve high scrub resistance by 30% in low volatile organic compounds (VOC) films

→ Simpler formulations and same high-performance results with less TiO$_2$

Differentiation potential

- Cost saving downstream
- Resource efficiency
- Health and safety
- Climate change and energy
Accelerator
Ultradur® B 4040 G11 HMG HP GN 75074

Process information

Application: Stiffens PVC windows
Customer Industry: Construction
Market: Global

Sustainability performance
- Insulation: Replaces the stiffening functions of a steel reinforcement, however significantly reducing heat transfer through the profile
- PCF: Ultradur has lower PCF than the steel it replaces
- Recycling: Can be recycled on sorting-machines typically used in this industry: Windows are cut into small pieces. Ultradur can be easily sorted for reuse by colour - without spoiling the other sorting-fractions

Differentiation potential
- Simplifies production
- Cost saving: during use (insulation); in production (compared to classical steel solution)
- Provides more design-freedom
- Can be recycled/ reused

→ Ultradur® B 4040 G11 HMG HP GN 75074 provides a more ecologic and economic solution than the established reinforcement by steel
Accelerator Elastollan® 1158 D 10

Process information

Application: Elevator Cables
Customer Industry: Construction
Market: Global

Sustainability performance
- Saves parts (gear)
- Only solution for skyscrapers
- Cables require less maintenance due to high durability

Differentiation potential
- Resource Efficiency
- Climate Change and Energy
- Cost Savings downstream
- Health & Safety
Accelerator
Elastollan® 1185 A 10 FHF

Process information

Application: Cables
Customer Industry: Electronics
Market: Global

Sustainability performance
- Halogen-free product which is a pre-requisite for E-mobility
- Increase durability of cables
- Excellent efficiency compared with other materials in the market

Differentiation potential
- Resource Efficiency
- Health & Safety
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
Accelerator
HySorb® Biomass Balanced

Process information

Application: Superabsorbent polymers for disposable diapers, feminine hygiene and incontinence products

Customer Industry: Hygiene Industry

Market: Global

Sustainability performance

- BASF’s biomass balance approach drives the replacement of fossil with renewable resources in the value chain of this or other BASF products
- Renewable feedstock with sustainability certificate is used at the beginning of the production chain and then allocated to this biomass balanced product*, based on third-party standard by REDcert®
- LCA results (3rd party reviewed BASF assessment): saves fossil resources and reduces carbon footprint compared to non biomass balanced HySorb®
- High performance superabsorbent: drop-in solution

→ High performance superabsorbent driving the use of biomass

Differentiation potential

- Renewable feedstock
- Climate change
- Additional resource efficiency through preferred use of waste vegetable oil & fat, organic waste biogas
- Added value proposition, for consideration by customers in developing their claims
Accelerator
HySorb® Advanced Odor Control

Process information

Application: Superabsorbent polymers for disposable diapers, feminine hygiene and incontinence products

Customer Industry: Hygiene Industry

Market: Global

Sustainability performance

- High performance superabsorbent improving quality of life (e.g., keeps skin dry)
- Odor solution ensuring dignity and comfort of people with incontinence
- Enabling active seniors to participate in social life and though contributing to social responsibility
- Reduction of carbon footprint & waste possible due to fewer diaper changes

→ High performance superabsorbent with odor control functionality

Differentiation potential

Customer:
- Differentiation through claims

Consumer:
- Comfort
- Quality of life
- Discreetness
Accelerator HySorb® permeable products

Process information

Application: Superabsorbent polymers for disposable diapers, feminine hygiene and incontinence products
Customer Industry: Hygiene Industry
Market: Global

Sustainability performance
- Allows significant raw material savings of cellulose in the diaper due to special functionality (high permeability), absorption capacity and efficiency
- Results in thinner diapers and increased consumer comfort
- Allows waste reduction through lower raw material use, thus contributing to resource savings (e.g., water use and chemicals in pulp production).

Differentiation potential
- Cellulose savings through permeability, efficiency and absorption capacity
- Thinner diapers with increased comfort

→ Permeable superabsorbents that improve the distribution and absorption of urine in the diaper
Accelerator SAVIVA®

Process information

- **Application:** Superabsorbent polymers for disposable diapers, feminine hygiene and incontinence products
- **Customer Industry:** Hygiene Industry
- **Market:** Global

Sustainability performance

- Thinner diapers and improved haptic with increased comfort for end user
- Through high capacity and efficiency significant raw material savings (superabsorber and fluff reduction)
- Increased dosing accuracy for waste reduction
- Benefits in terms of logistic like transportation and storage

→ New generation of highly efficient superabsorbent polymers

Differentiation potential

**Customer:**
- Innovation of diaper design and efficiency
- Excellent processability
- Logistic benefits

**Consumer:**
- Thinner diapers with increased comfort and haptic
Accelerator
Hexamoll® DINCH

Process information

Application: Flexible PVC applications like medical devices, toys, food packaging, flooring, wall covering, sport and leisure products

Customer Industry: Flooring, consumer goods, household, medical, toys

Market: Global

Sustainability performance

- Non-phthalate plasticizer, established since 2002 for sensitive applications
- Unique performance comes along with an excellent toxicological profile and low migration rate
- Suitable for a wide range of applications
- Approved for toys, food packaging and specific medical applications by manufacturers and competent authorities worldwide

Differentiation potential

- Alternative non-phthalate plasticizer
- Excellent toxicological profile
- Trusted by leading brand owners and retailers
- Health & safety

Hexamoll® DINCH - the trusted non-phthalate plasticizer
Accelerator Hexamoll® DINCH Ccycled™

Process information

**Application:** Flexible PVC applications like medical devices, toys, food packaging, flooring, wall covering, sport and leisure products

**Customer Industry:** Flooring, consumer goods, household, medical, toys

**Market:** Europe

Sustainability performance

- Non-phthalate plasticizer, established since 2002 for sensitive applications
- Unique performance comes along with an excellent toxicological profile and low migration rate
- Suitable for a wide range of applications
- Approved for toys, food packaging and specific medical applications by manufacturers and competent authorities worldwide
- The Ccycled™ version helps to save fossil resources and contributes to waste reduction

→ Hexamoll® DINCH - the trusted non-phthalate plasticizer

Differentiation potential

- Alternative non-phthalate plasticizer
- Excellent toxicological profile
- Trusted by leading brand owners and retailers
- Health & safety
- Resource efficiency (waste reduction, recycled content)
- Positive impact on climate change (reduced carbon footprint)
Accelerator
Hexamoll® DINCH Biomass Balanced

Process information

**Application:** Flexible PVC applications like medical devices, toys, food packaging, flooring, wall covering, sport and leisure products

**Customer Industry:** Flooring, consumer goods, household, medical, toys

**Market:** Europe

Sustainability performance

- Non-phthalate plasticizer, established since 2002 for sensitive applications
- Unique performance comes along with an excellent toxicological profile and low migration rate
- Suitable for a wide range of applications
- Approved for toys, food packaging and specific medical applications by manufacturers and competent authorities worldwide
- The Biomass Balanced version helps to save fossil resources and to reduce the CO₂ emissions in production

→ Hexamoll® DINCH - the trusted non-phthalate plasticizer

Differentiation potential

- Alternative non-phthalate plasticizer
- Excellent toxicological profile
- Trusted by leading brand owners and retailers
- Health & safety
- Resource efficiency (saving of fossil resources)
- Use of renewables feedstock
- Positive impact on climate change (reduced carbon footprint)
Accelerator
Plastomoll® DOA Biomass Balanced

Process information

**Application:** Flexible PVC applications

**Customer Industry:** Consumer goods, food packaging, printing inks

**Market:** Europe

Sustainability performance

- Plastomoll® DOA is a non-phthalate plasticizer that is especially suitable for flexible PVC films that require good low-temperature properties
- It meets food packaging requirements and offers high efficiency in plasticizing
- The Biomass Balanced version helps to save fossil resources and to reduce the CO₂ emissions in production

Differentiation potential

- Resource efficiency, saving of fossil resources
- Use of renewables feedstock
- Positive impact on climate change (reduced carbon footprint)
Accelerator
Irganox® 565

Process information

Application: Antioxidant
Customer Industry: Elastomers
Market: Global

Sustainability performance

- Highly effective in preventing gel formation and discoloration in unsaturated elastomers leading to longer product lifetimes
- Replaces the widely-used TNPP, which ECHA has listed as a candidate for SVHC and BHT
- Approved for use in food contact applications in many countries
- Smaller losses during processing (due to low volatility) leads to both cost and resource savings

→ Safe solution to increase product durability while saving cost and resources

Differentiation potential

- Cost savings
- Resource efficiency
- Health and safety
- Durability

ECHA: European Chemicals Agency
TNPP: Tris (nonylphenyl)phosphite
BHT: Butylated hydroxytoluene
SVHC: Substance of Very High Concern
Accelerator
Epotal® FLX, Epotal® CF

Process information

- **Application:** Lamination adhesives for flexible packaging
- **Customer Industry:** Packaging
- **Market:** Global

Sustainability performance

- Water-based alternative to traditional solvent-based and solventless adhesives
- Helps to keep food clean: no formation of primary aromatic amines (PAA), no aromatic isocyanates
- Helps to make workplaces healthier and safer
- Very low residual odor and taste
- Enabling recycling alternatives (e.g. Epotal ECO)

→ Water-based lamination adhesives for more sustainable flexible packaging

Differentiation potential

- Time saving
- Increased flexibility
- Improved safety
- Cost reduction possible
Accelerator acResin®

Process information

**Application:** Adhesives raw material for pressure-sensitive adhesives (PSA) in the tape and labeling industries

**Customer Industry:** Automotive, Construction, Medical, Food, Beverages, Cosmetics

**Market:** Global

Sustainability performance

- Minimal volatile organic compounds (VOC) emissions (no added solvents)
- Skin-friendly and low allergenic
- Suitable for sensitive applications like food
- Superior eco-efficiency performance compared to solvent based alternatives for PSA

Differentiation potential

- Suited for extremely transparent adhesive films
- Outstanding resistance to aging; resistance to water whitening
- Conformance with food safety regulations
- Dedicated technical service and coating center for optimizing tailor-made products

→ acResin® for high-performance adhesives with significant sustainability benefits
Accelerator Joncryl® FLX product line

**Process information**

**Application:** Flexible packaging inks

**Customer Industry:** Consumer goods, Resins, Printing, Packaging

**Market:** Global

---

**Sustainability performance**

- Conversion to water-based printing technology, replacing solvent
- Reduction of carbon footprint compared to solvent based technology
- No use of volatile organic components (VOC)
- No solvent incineration needed

→ This water-based technology will increase your sustainability and creates a safer production environment

**Differentiation potential**

- Cost savings downstream
- Climate change and energy
- Pollution
- Resource efficiency
- Health and safety
Accelerator
Behenyl Methacrylate

Process information

**Application:** Water repellent coatings  
**Customer Industry:** Industrial and textile coatings  
**Market:** Global

Sustainability performance

- Hydrophobic alternative to polyfluorinated chemicals in water-repellent coatings  
- Biobased (C\(^{14}\) content 83%), not palm oil derived  
- Provides highest hydrophobicity in the class of fatty monomers

Differentiation potential

- Health and safety  
- Biodiversity and renewables  
- Water scarcity and pollution
Accelerator
Cegesoft® Peel

Process information

**Application:** Wax-based peeling particles for properties for rinse-off and leave-on exfoliants in face and body care products

**Customer Industry:** Personal Care

**Market:** Global

Sustainability performance

- 95% based on renewable feedstock
- Readily biodegradable peeling particles
- Cold processable
- Unpreserved
- Suitable for rinse-off concepts acc. To EU Ecolabel, Nordic Ecolabel

→ The eco-friendly and gentle exfoliant

Differentiation potential

**Customer:**

- Renewable based
- Biodegradable alternative for “plastic” or sharp microparticles

**Consumer:**

- No “microplastic discussion”
- Gentle exfoliation
Accelerator Gluadin® Kera P-LM

Process information

**Application:** Microprotein for deep penetration, protection, hair strengthening, rejuvenation in hair care products

**Customer Industry:** Personal Care

**Market:** Global

Sustainability performance

- 98% derived from renewable feedstock
- Enzymatic process (non-GMO)
- Due to benzoic acid preservation and non-GMO enzymes, suitable for all natural and organic cosmetic standards and for vegan concepts
- COSMOS and NATRUE approved

→ Microprotein with significant performance and sustainability impact

Differentiation potential

**Customer:**
- Climate change & energy
- Alternative to natural keratin

**Consumer:**
- Health
- Improved hair condition
Accelerator
Uvinul® A Plus and Uvinul® A plus Granular

Process information

Application: 
Customer Industry: Personal Care
Market: Global

Sustainability performance

- High efficiency at low concentration
- Does not contain preservative
- Consumer Health Protection
- Photostable organic UVA-I absorber that covers the long wavelengths of the UVA spectrum.
- Efficient shielding against UVA radiation for prevention of skin damage

Differentiation potential

- Prevention of premature skin aging and skin damage
- Reliable and long – lasting protection
- Excellent formulation flexibility
- Excellent protection against free radicals
Accelerator
Z-Cote® HP1 and LSA

Process information

- **Application:** 
- **Customer Industry:** Personal Care
- **Market:** Global

Sustainability performance

- Does not contain preservative
- Consumer Health Protection
- Reduced water during manufacturing
- Extremely low waste generated during production

Differentiation potential

- Lower transmission over broad range
- Free radical protection
- Best protection against photo skin aging
- Outstanding photo stability
- Synergetic with Organic UV filters
Accelerator Cetiol® Ultimate

**Process information**

**Application:** Ultra-fast spreading emollient for Face / Body / Sun Care and Color Cosmetics

**Customer Industry:** Personal Care

**Market:** Global

**Sustainability performance**
- 100% renewable-based and volatile emollient
- Replacement of volatile silicones possible
- Easier to use than volatile hydrocarbons
- Readily biodegradable
- Gives more flexibility in the development of natural cosmetic concepts for improved skin feel
- Cosmos and NATRUE approved, suitable for other labels

 REGARDED AS BREAKTHROUGH INNOVATION AND WAS AWARDED WITH MARKET PRIZES

**Differentiation potential**

**Customer:**
- Plant based chemistry for possible cyclomethicone substitution
- New formulation textures and claims possible

**Consumer:**
- New natural cosmetic concepts
Accelerator
Tinosorb® S Lite Aqua

Process information

**Application:** UV Filter for sun care and skin care
**Customer Industry:** Personal Care
**Market:** Global (except USA)

Sustainability performance

- Encapsulation technology for optimal film formation on the skin leading to higher SPF
- Partition of total UV filter amount to oil AND water phase
- Absorption spectrum as broad as Tinosorb® M
- Cold processable
- Perfectly suited for formulations acc. Ecosunpass

→ Received the BSB Innovation Prize 2018

Differentiation potential

Customer:

- Reduction of oil phase for more formulation flexibility
- High efficiency at low active concentration
- High sun protection performance due to UV filter balance in water and oil phase

Consumer:

- Health & safety
Accelerator Lipofructyl® Argan LS 9779

Process information

Application: Moisturization / Hair care  
Customer Industry: Personal Care  
Market: Global

Sustainability performance

- Organic and fair trade certified argan oil
- Sourced in partnership with an agricultural women’s cooperative in Morocco
- Enabling socio-economic development
- By-product upcycling of different parts of the tree to foster a better local impact

→ Responsible sourcing of argan based materials

Differentiation potential

Customer:
- UN Millennium Development Goals
- Biodiversity & renewables

Consumer:
- Contribution to sustainability
# Accelerator Texapon® SFA

## Process information
- **Application:** Natural, innovative, very mild anionic surfactant suitable for tear-free rinse-off formulations
- **Customer Industry:** Personal Care
- **Market:** Global

## Sustainability performance
- 99% derived from renewable RSPO certified Mass Balance feedstocks
- Readily biodegradable
- Suitable for solutions not containing EO, no impurities (e.g. 1,4-Dioxane)

→ Breakthrough innovation and was awarded with BSB Innovation Award 2020

## Differentiation potential
- **Customer:**
  - Rich & creamy foam sensory, ultra-mild to skin, eyes and mucous membrane
  - Long-term stable in broad temperature & pH ranges
  - Conditioning booster
  - Micellar viscosity build-up without thickeners
Accelerator
Dehyton® SFA

Process information

**Application:** ultra-mild, cold-processable & easy-to-handle surfactant blend for versatile rinse-off applications

**Customer Industry:** Personal Care

**Market:** Global

Sustainability performance

- 77% derived from renewable feedstocks
- RSPO Mass Balance certified
- Readily biodegradable
- Suitable for solutions not containing EO, no impurities (e.g. 1,4-Dioxane)

Differentiation potential

**Customer:**

- Cold processable: easy dissolvable in cold water giving clear solutions
- Excellent wet and dry combability results; good combability without polymers
- Rich & creamy foam sensory, ultra-mild to skin, eyes
- Ideal for low pH (4.5-5.5) formulations

→ Cold processable and easy to handle ultra-mild blend innovation
Accelerator Eumulgin® VL 75

Process information
- **Application:** Cold Processed Emulsifier for low-viscous emulsions
- **Customer Industry:** Personal Care
- **Market:** Global

Sustainability performance
- 100% derived from renewable feedstocks
- Palm Based raw materials certified sustainable acc. RSPO Mass Balance scheme
- Approved by COSMOS, recommended for natural/organic formulation concepts
- Cold processable
- Suitable for EO-Free solutions
- Does not contain preservatives

Differentiation potential
- Nonionic emulsifier for low viscous systems
- Good sensorial behavior, comfort, balanced skin feel.
- Excellent skin compatibility
- Very good make up remover capacity
- High versatility regarding oil phase
**Accelerators**

**Trilon® M types in I&I**

<table>
<thead>
<tr>
<th>Product information</th>
<th>Differentiation potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td>- Various I&amp;I applications, f.e. as scale inhibitor or for water hardness control</td>
</tr>
<tr>
<td><strong>Customer industry</strong></td>
<td>- Alternative to STPP, NTA, GLDA, TSC…</td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td>- Enables solid format (significant contribution to save energy, cost, packaging, space)</td>
</tr>
<tr>
<td></td>
<td>- Sustainable positioning</td>
</tr>
<tr>
<td><strong>Sustainability performance</strong></td>
<td>- Excellent performance and material protection</td>
</tr>
<tr>
<td>▪ High performance as strong chelating agents</td>
<td>▪ Bio-grades available:</td>
</tr>
<tr>
<td>▪ Readily biodegradable</td>
<td>✓ Trilon® M Max BioBased with a measurable bio-content of up to 43%</td>
</tr>
<tr>
<td>▪ Meet requirements of EU Ecolabel, Blue Angel and Nordic Swan</td>
<td>✓ Trilon® M Max EcoBalanced, 100% bio-certified via mass balance and with reduced Product Carbon Footprint</td>
</tr>
<tr>
<td>▪ Good eco-tox profile compared to other strong chelating agent</td>
<td></td>
</tr>
<tr>
<td>▪ Ultimate types with glass protection</td>
<td></td>
</tr>
</tbody>
</table>

Phosphate free and biodegradable chelating agents that enable solid formats in I&I

- Alternative to STPP, NTA, GLDA, TSC…
- Enables solid format (significant contribution to save energy, cost, packaging, space)
- Sustainable positioning
- Excellent performance and material protection
# Accelerators

## Trilon® M types / Trilon® Ultimate types

### Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Chelating agent mainly for Automatic Dishwashing Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

### Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Strong alternative to Citrate, Phosphonate, GLDA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Material protection claims: Prevention of scale formation, Ultimate 2 G w/ glass protection</td>
</tr>
<tr>
<td></td>
<td>Sustainable positioning</td>
</tr>
<tr>
<td>Consumer</td>
<td>Combines superior cleaning performance with sustainability</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Readily biodegradable strong chelating agents
- Meet requirements of EU Ecolabel, Blue Angel (except Ultimate types) and Nordic Swan
- Good eco-tox profile compared to other strong chelating agents
- Phosphate alternative in automatic dish wash
- Eco-efficiency analysis available

- Bio-grades available:
  - Trilon® M Max BioBased with a measurable bio-content of up to 43%
  - Trilon® M Max EcoBalanced, 100% bio-certified via mass balance and with reduced Product Carbon Footprint

The technically best builder system for modern and sustainable dish wash formulations
# Accelerator

**Polyquart® S Granules**

## Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Performance Booster for Automatic Dishwashing Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

## Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Supports state-of-the-art sustainable All-in-1 products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improved build-up performance</td>
</tr>
<tr>
<td></td>
<td>Supports rinse efficiency (reduced filming &amp; spotting)</td>
</tr>
<tr>
<td></td>
<td>Easy-to-use for tablets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer</th>
<th>Sustainable ADW detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfect shine</td>
</tr>
</tbody>
</table>

## Sustainability performance

- Excellent eco-tox profile acc. to EU CLP
- Starch based
- Majority bio-based*
- Readily biodegradable
- Meets requirements of EU Ecolabel and Blue Angel

---

*Renewable Carbon Index: 95% > X > 50%*
### Accelerator Polyquart® Ecoclean

#### Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Surface Care Ingredient in Hard Surface Cleaners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

#### Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Combines sustainability with performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supports modern claims like “easy-to-clean again”, “streak-free” or “quick drying”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer</th>
<th>Enables sustainable cleaners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Makes cleaning more convenient and saves time</td>
</tr>
</tbody>
</table>

#### Sustainability performance

- Excellent eco-tox profile acc. to EU CLP
- Aerobic and anaerobic biodegradable
- Amphoteric modified starch
- Majority bio-based*
- Meets requirements of EU Ecolabel and Blue Angel

*Renewable Carbon Index: 95% > X > 50%*

Bio-based Performance Booster for sustainable HSC formulations
# Accelerators

## Dehypon® types

<table>
<thead>
<tr>
<th>Product information</th>
<th>Differentiation potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td><strong>Customer</strong></td>
</tr>
<tr>
<td>Rinse surfactants in Automatic Dishwashing Detergents</td>
<td>E 126, E 127, WET, and Shine: Reduced spotting claims</td>
</tr>
<tr>
<td><strong>Customer industry</strong></td>
<td>GRA: Spotting performance booster; PEG alternative / tableting aid</td>
</tr>
<tr>
<td>Home Care</td>
<td>Shine: Reduced use level at equal performance</td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td><strong>Consumer</strong></td>
</tr>
<tr>
<td>Global</td>
<td>Improved plastic drying and great shine on glass</td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td>Energy savings</td>
</tr>
<tr>
<td>Dehypon® E 126, E 127, WET and Shine</td>
<td></td>
</tr>
</tbody>
</table>

### Sustainability performance

- Meet requirements of EU Ecolabel, Blue Angel and Nordic Swan
- Enable energy savings due to improved rinse performance
- Readily biodegradable

Multi-functional ingredients for sustainable ADW tablets
Accelerators
Sokalan® HP 56 types

Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Dye Transfer Inhibitors in Laundry detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>▪ Color Care claim, “no sort” claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>▪ Convenience: “no sort” as light and dark colored textiles can be washed together</td>
</tr>
<tr>
<td></td>
<td>▪ Prolonging the lifetime of textiles</td>
</tr>
</tbody>
</table>

Sustainability performance

- Prevent discoloration caused by fugitive direct and reactive dyes
- Prolong the lifetime of textiles
- Meet requirements of EU Ecolabel, Blue Angel and Nordic Swan
- Easy to formulate also in super concentrated detergents (liquid mono doses)
- Sokalan® HP 56 A EcoBalanced up to 100% bio-certified via mass balance and with reduced Product Carbon Footprint

Ingredients that support consumer needs for color care in laundry detergents
# Accelerator
## Lutropur® MSA

### Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Organic acid for Hard Surface Cleaners and CIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

### Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Easy-to-handle and non-oxidizing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sustainable, high performing acid</td>
</tr>
<tr>
<td>Consumer</td>
<td>Faster scale removal</td>
</tr>
<tr>
<td></td>
<td>Material protection (low corrosiveness)</td>
</tr>
<tr>
<td></td>
<td>Odorless</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Strong and odorless organic acid for CIP, bathroom and toilet cleaners
- Readily biodegradable
- Meets requirements of EU Ecolabel, Blue Angel and Nordic Swan
- Eco-efficiency analysis available
- More efficient and safer production process than competition (e.g., no co-product, air oxidation instead of chlorine oxidation)
- Excellent cleaning and descaling properties

Sustainable choice for strong acidic hard surface cleaners
## Accelerators

### Glucopon® types

<table>
<thead>
<tr>
<th>Product information</th>
<th>Differentiation potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td><strong>Customer</strong></td>
</tr>
<tr>
<td>Hard Surface Cleaners, Hand Dishwashing Detergents, Laundry Detergents</td>
<td>Support formulations based on renewable resources</td>
</tr>
<tr>
<td><strong>Customer industry</strong></td>
<td>Enable good foaming properties</td>
</tr>
<tr>
<td>Home Care and I&amp;I</td>
<td>Material protection (mild and safe for surfaces)</td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td><strong>Consumer</strong></td>
</tr>
<tr>
<td>Global</td>
<td>Perfect shine</td>
</tr>
<tr>
<td></td>
<td>Sensitive skin solution for laundry (dermatologically tested)</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Up to 100% renewable based
- Readily biodegradable
- Meet requirements of EU Ecolabel and Blue Angel (except 425 N/HH)
- Most types optionally available with RSPO certification
- Cleaning performance boost

Balanced surfactants that combine efficiency with an excellent eco-tox profile
## Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Performance Booster in Laundry and Hand Dishwashing Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

### Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Boosts performance in surfactant optimized formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables anti-graying claim</td>
</tr>
<tr>
<td></td>
<td>Improves cleaning and foam stability in HDW formulations</td>
</tr>
<tr>
<td></td>
<td>Compatible w/ liquid formulas</td>
</tr>
</tbody>
</table>

| Consumer                           | Excellent primary cleaning                               |
|                                     | Prolonged lifetime of textiles                          |
|                                     | Convenience & energy savings                             |

### Sustainability performance

- Meets requirements of EU Ecolabel, Blue Angel and Nordic Swan
- No CLP label
- Enables low temperature washing
- Enhances removal of bleachable and particulate stains and therefore prolongs lifetime of textiles
- Supports sustainable convenience claims, e.g. “compaction”, “energy-saving”, “easy-to-use”
- High compatibility in liquid detergents that enables compact mono-doses / concentrates
- Sokalan® HP 20 EcoBalanced up to 100% bio-certified via mass balance and with reduced Product Carbon Footprint

**Unique and universal multi-benefit Performance Booster for liquid detergents**
Accelerator
Sokalan® HP 96

Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Performance Booster in Laundry Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports anti-graying, stain removal and low temperature washing claims</td>
</tr>
<tr>
<td>Delivers superior performance</td>
</tr>
<tr>
<td>Easy to formulate into liquid concentrates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good primary cleaning and anti-graying prolongs life of textiles</td>
</tr>
<tr>
<td>Energy savings</td>
</tr>
</tbody>
</table>

Sustainability performance

- Meets requirements of EU Ecolabel and Blue Angel
- No CLP label
- High performance at low temperature
- With Sokalan® HP 96 surfactant content can be reduced
- Prevents graying caused by particulate stains
- Boosts stain removal of particulate stains (e.g., clay, mud)

Unique and universal multi-benefit Performance Booster for Laundry Detergents
## Accelerator
### Lavergy® Pro 114 LS

### Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Laundry and Hand Dishwashing Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

### Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>Biological and renewable alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High compatibility in liquid formulations</td>
</tr>
<tr>
<td></td>
<td>Enables formula compaction and optimization</td>
</tr>
<tr>
<td>Consumer</td>
<td>Textiles looking new for longer</td>
</tr>
<tr>
<td></td>
<td>Energy savings (low temp.)</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Readily biodegradable liquid protease enzyme
- Enables energy savings with lower wash temperatures
- Enhances washing efficiency and water savings
- Enables concentrated formulations, therefore reduces CO₂
- Efficient non-boron stabilizing technology
- Meets requirements of EU Ecolabel, Blue Angel and Nordic Swan
- No preservation added
- Supports soaking process and direct application for removal of persistent stains in manual dish washing

Renewable non-boron stabilized ingredient for the removal of tough stains in sustainable laundry and hand dish formulations
Accelerator
Lavergy® C Bright 100 L

Product information

<table>
<thead>
<tr>
<th>Application</th>
<th>Laundry Detergents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer industry</td>
<td>Home Care and I&amp;I</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

Differentiation potential

<table>
<thead>
<tr>
<th>Customer</th>
<th>High compatibility in liquid formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables anti-graying claims</td>
</tr>
<tr>
<td></td>
<td>Biological and renewable alternative</td>
</tr>
<tr>
<td>Consumer</td>
<td>Anti-graying keeps textiles looking new for longer</td>
</tr>
<tr>
<td></td>
<td>Energy savings (low temp.)</td>
</tr>
</tbody>
</table>

Sustainability performance

- Readily biodegradable liquid cellulase with high compatibility in liquid detergents
- Delivers strong anti-graying performance at low temperatures on cotton
- Enables energy savings with lower wash temperatures
- Enhances washing efficiency and water savings
- Majority bio-based*
- Meets EU Ecolabel criteria
- Textiles look new for longer

Anti-graying Cellulase that enables cleaner results at lower temperatures

*Renewable Carbon Index: 95% > X > 50%
# Accelerator Pyranol

## Process information

<table>
<thead>
<tr>
<th>Application</th>
<th>Fragrance (Home and Personal Care)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry</td>
<td>Consumer Goods</td>
</tr>
<tr>
<td>Market</td>
<td>Global</td>
</tr>
</tbody>
</table>

## Sustainability performance

- Safe in use
- No CMR category
- No allergen

## Differentiation potential

- Alternative to other muguet scents
- Can be used in all applications with high concentrations (building block)
- Works well with other aroma ingredients
Accelerator Dihydrorosan

Process information

**Application:** Fragrance (Home and Personal Care)

**Customer Industry:** Consumer Goods

**Market:** Global

Sustainability performance

- Safe in use
- No CMR category
- No allergen
- Readily biodegradable

Differentiation potential

- Easy to use in any kind of creation
- Flexible in the development of new compositions
- Impactful and efficient new mild rosy-floral-herbal top note
Accelerator
Ultrason® E 6020 P

Process information

Application: Membranes
Customer Industry: Personal & Industrial Care
Market: Global

Sustainability performance

- Water treatment and drinking water purification
- Consistent quality
- Health improvement
- High productivity

Differentiation potential

Customer:
- Consistent quality
- Health and Safety
- Solutions to water scarcity

→ Membranes made of Ultrason for securing availability of drinking water
**Accelerator Infinergy®**

**Process information**

- **Application:** Shoe sole
- **Customer Industry:** Sports Footwear
- **Market:** Global

**Sustainability performance**

- Simplified design and production process
- Longer lifetime of shoes
- Shoe comfort and performance
- Durability compared to EPA

**Differentiation potential**

- Improved performance
- Saves resources
- Option for a recycling concept of shoes (one-material-shoe)
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
Accelerator
Vitamin A Food Fortification

Process information

Application: Food fortification
Customer Industry: Food additives, Human nutrition
Market: Global

Sustainability performance

- Fight vitamin A deficiency in developing countries: Prevention of blindness, weak immune system and child mortality as well as ensuring maternal health
- High stability during storage: Due to anti-oxidants, vitamin A remains maximally effective when added to food and is robust even under extreme climatic conditions

→ Improvement of human living conditions with an economical solution

Benefits

- Contribute to the UN millennium goals: By enriching cheap staple foods like sugar, flour, oil and milk with vitamin A, BASF is tackling malnutrition and improving public health and quality of life
- Encourage effective application and realization: Our semi-quantitative screening tool is a cost-effective and robust "mini laboratory kit" that allows food producers to easily check if they are adding the correct amount of Vitamin A into staple foods
Accelerator Omega-3 oils – e.g. PronovaPure®

Process information

Application: Pharma products
Customer Industry: Pharma
Market: Global

Sustainability performance

- Minimize bio-diversity impact:
  Sourcing directly from healthy stocks, e.g., sardines from Peru in line with seasonally adjusted quotas
- High concentration, highly efficient:
  Less material needed to gain effect

Benefits

- High purity standards:
  Exceeding quality and regulatory standards for food/pharma
- Less costs per serving:
  Highly concentrated products mean higher value creation

→ Combining purity with a good peace of mind
Accelerator Kollidon® Products

Process information

Application: Formulation of pharma products
Customer Industry: Pharma
Market: Global

Sustainability performance

- Increase resource efficiency and reduce waste: Aluminum free PeroXeal packaging and stable formulation
- Improved bioavailability: Enables lower dosages

Benefits

- Supporting dry binding process: Improved process: no solvent and drying, no reaction risk of active pharmaceutical ingredient (API)
- Supporting an efficient hot melt extrusion (HME) process: Better processing and formulation for shelf-life extension

More sustainable binding process – combining tradition with innovative solutions
Accelerator Kollicoat® Products

Process information

**Application:** Formulation of pharma products

**Customer Industry:** Pharma

**Market:** Global

Sustainability performance

- Increase resource efficiency and reduce waste:
  - No plasticizers needed

- Improved storability:
  - Storable in different humidity conditions and defect rate reduction (e.g., Kollicoat® protect)

Benefits

- Process efficiency:
  - Easier and faster to handle, reduced formulation complexity.

- Cost efficiency:
  - Flexible production and improved productivity, leading to up to 60 percent lower costs for tabled costing material of processing.

→ Designed to be safe – more sustainable coating process
Process information

**Application:** Feed additive

**Customer Industry:** Livestock production, Animal nutrition

**Market:** Global

Sustainability performance

- Improved nutrient digestion with impact on litter quality (water resorption): Natugrain® TS feed enzyme contains highly purified NSP-degrading enzymes for a better digestibility. This improves the use of feed components in poultry and swine and enables animals to metabolize more energy.

- Improved feed conversion rate with lower quality feed or by-products: A higher nutrient digestion of plant-derived feed components can result in higher financial benefits.

Benefits

- High efficacy: Adding Natugrain® TS to pig and poultry diets is a valuable and reliable improvement to animal diets with the potential to reduce costs.

- High product quality and stability: BASF’s enzymes are produced using the best quality management standard possible

→ Improvement of feed conversion
Accelerator Natuphos® E

Process information

- **Application:** Feed additive
- **Customer Industry:** Livestock production, Animal nutrition
- **Market:** Global

Sustainability performance

- Increase efficiency and minimize emissions: Up to 30% less phosphorus excretion and up to 60% less zinc excretion
- Improve feed conversion rate with lower quality feed or by-products: Less feed needed, lower resource consumption and higher efficiency

Benefits

- Efficiency gains: Adding Natuphos® to animal diets is an improvement for animal diets with the potential to lower resource consumption, emissions and costs
- High product quality and stability: BASF’s enzymes are produced with the highest quality management standard

→ The most proven Phytase for improved feed conversion
Accelerator Luprosil®, Amasil®

Process information

Application: Feed additive
Customer Industry: Livestock production, Animal nutrition
Market: Global

Sustainability performance

- Luprosil® in silage prevents the formation of molds and thereby reduces feed losses during storage.
- Amasil® reduces the pH-level in basic feed ingredients, compound feed and drinking water. This creates a less favorable environment for microorganisms (e.g., salmonella or other gram-negative bacteria).
- Stabilization of feed and raw material during storage enables users to buy higher quantities of feed more flexibly, e.g., when feed prices are low.

Benefits

- Protect feed quality effectively: BASF’s organic acids protect feedstuffs against microorganisms, reduce feed losses and preserve the high value of mixed-feed (worldwide rise in the price).
- Optimize production: Improved feedstuff hygiene can relieve the burden on animals’ immune systems, making it possible to achieve optimal production.

→ Reduction of spoilage and improved feed hygiene
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
**Accelerator**  
**Píngo Doce Watermelon**

**Process information**

- **Application:** Watermelon  
- **Customer Industry:** Consumer product  
- **Market:** Brazil

**Sustainability performance**
- Connecting retailers, growers and consumers:  
  - set price per kilo, safeguarding farmers’ return on investment  
- New best practices: efficient water management, fertilization, bee pollination, traceability  
- Reduction of discarded fruits  
- Promoting a healthy and diverse diet all year round

**Differentiation potential**
- Rich in flavor, compact, seedless watermelons  
- Contributing to the UN Millennium Development Goals (#12, 14, 15, 17)  
- Resource efficiency  
- Reduce water scarcity and pollution  
- Biodiversity and renewables  
- Health and safety

→ Píngo Doce Watermelon connects the value chain, from the seed over growers and retailers up to the people who want to enjoy healthy fruits, for sustainable farming and consumption
Accelerator
RAK® Pheromones

Process information

Application: Naturally disrupts insect mating behavior
Customer Industry: Agriculture
Market: Fruit and vegetable cultivation
Europe and South America

Sustainability performance

- RAK pheromone dispensers disrupt the mating behavior of certain moth species whose larvae damage grapes and fruit
- This helps growers to optimize yield while at the same time preserving biodiversity and the sensitive balance of the eco-system

Differentiation potential

- Alternative method to protect vineyards and orchards against pests
- Ecosystem remains balanced and conserves biodiversity
- Zero impact to beneficial arthropods and pollinators, including bees
- Reduces resistance to insecticides
- Zero-residue product

→ Zero residue/impact system allows wine and fruit growers to balance the ecosystem, while protecting their vineyards and orchards
Accelerator Serifel® Biological Fungicide

Process information

**Application:** Foliar and soil drench

**Customer industry:** Agriculture

**Market:** Fruit and vegetable cultivation
North and South America

Sustainability performance

- Serifel®, based on a beneficial bacterium, combines multiple modes of action to provide a shield of protection against crop diseases
- A favorable environmental profile gives growers flexibility in application timing and helps ensure a marketable crop that will meet even the most stringent retail or trade requirements
- Good fit with Integrated Pest Management programs

Differentiation potential

- Multiple novel modes of action
- Offers a viable formulation of pure spores, with low application rate and greater stability than competitor biological fungicide product
- Strawberries sprayed solely with Serifel® result in a 65 percent marketable yield increase

→ Empowering growers with smart choices to succeed in modern crop protection
Internal Accelerator

Priaxor® Fungicide

Process information

- **Application:** Foliar fungicide
- **Customer Industry:** Agriculture
- **Market:** Soybeans – USA and Brazil
- Cereals – Europe

Sustainability performance

- The dual mode of action is a powerful tool for integrated resistance management
- Priaxor®’s consistent performance improves crop quality and yield
- The broad-spectrum crop fit allows for use in minor crops

Differentiation potential

- Priaxor® fungicide delivers advanced disease control along with the proven benefits of AgCelence®/ Plant Health
- These benefits include larger and greener leaves, stronger stems and improved tolerance to crop stress – all leading to increased yield potential

→ Priaxor® is a key component of Integrated Resistance Management programs
Accelerator
Merivon® Fungicide

Process information

- **Application:** Foliar fungicide
- **Customer Industry:** Agriculture
- **Market:** Cereals – Europe
  China, Canada, USA, India

Sustainability performance

- The dual mode of action is a powerful tool for advance disease and QoI (Quinone outside Inhibitors) resistance management
- Merivon® consistent performance improves crop quality and yield
- China, Canada, USA, India

Differentiation potential

- Merivon® fungicide delivers advanced disease control along with the proven AgCelence® benefits and plant health
- For instance, in grapes, the product improves marketable quality by reducing the cracking and shattering of the berries and increasing the bunch weight

→ Merivon® is a key component of Integrated Resistance Management programs
Accelerator
Sharpen® Herbicide

Process information

Application: Burndown herbicide in row crops
Customer Industry: Agriculture
Market: Corn and soybeans – USA

Sustainability performance

- Improved weed control increases yield potential and resource efficiency
- Lower use-rates than competing offers, reducing the use of fuel required to transport larger amounts of product
- Very effective at controlling glyphosate-resistant weeds such as horseweed, giant ragweed and Palmer Amaranth which reduces the need for resprays

→ Resource efficiency thanks to low use rate and very effective control of resistant weeds

Differentiation potential

- Low use-rate
- Faster, more complete burndown of hard-to-control and/or glyphosate-resistant weeds
- Allows an earlier planting window, cleaner fields and improved operational efficiency
Accelerator Heat® Herbicide

**Process information**

- **Application:** Burndown herbicide in row crops
- **Customer Industry:** Agriculture
- **Market:** Soybeans – Brazil

**Sustainability performance**

- Improved weed control increases yield potential and resource efficiency
- A high-load formulation, combined with lower use-rates than competing offers, reducing the use of fuel required to transport larger amounts of product
- Very effective at controlling glyphosate-resistant weeds such as horseweed (Coneza canadensis), which reduces the need for resprays

→ Resource efficiency thanks to low use rate and very effective control of resistant weeds

**Differentiation potential**

- Low use-rate
- Faster, more complete burndown of hard-to-control and/or glyphosate-resistant weeds
## Accelerator Propionic Acid

### Process information

- **Application:** Feed preservation
- **Customer Industry:** Agriculture
- **Market:** Global

### Sustainability performance

- Reducing energy consumption and green house gas emissions for feed preservation
- Substitutes conventional heat drying

→ Enabling environmentally friendly feed preservation

### Differentiation potential

- Cost savings downstream
- Climate change and energy
- Resource efficiency
Accelerator Agnique® AMD 3 L

Process information

Application: Solvent
Customer Industry: Agriculture
Market: Global

Sustainability performance

- Label-free according to CLP*
- Based on renewable resources
- Readily biodegradable
- Strong solvency power
- Versatile alternative to conventional, hazardous solvents (e.g., NMP)
- Very selective on plants

Differentiation potential

- Health and safety
- Resource efficiency
- Biological efficacy

→ Label-free alternative to conventional solvents
Accelerator
Agnique® AE 3-2EH

Process information

Application: Solvent
Customer Industry: Agriculture
Market: Global

Sustainability performance
- Based on renewable resources
- Readily biodegradable
- Low hazardous solvent
- Low odor
- Enhances uptake of active ingredients

Differentiation potential
- Health and safety
- Resource efficiency
- Biological efficacy

→ Low hazardous alternative to conventional solvents
Accelerator Agnique® ME 18 SD-F and Agnique® ME 18 RD-F

Process information

Application: Base oil
Customer Industry: Agriculture
Market: Global

Sustainability performance
- Label-free according to CLP
- Based on renewable resources
- Readily biodegradable
- Enhances penetration of active ingredients into the leaf
- Improves biological efficacy

Differentiation potential
- Health and safety
- Resource efficiency
- Based on renewable resources
- Biological efficacy

→ Non-hazardous, multi-performance additive
Accelerator Agnique® ME 1218

Process information

- **Application**: Solvent, adjuvant
- **Customer Industry**: Agriculture
- **Market**: Global

Sustainability performance

- Label-free according to CLP
- Based on renewable resources
- Readily biodegradable
- Acts as solvent and adjuvant
- Improves biological efficacy due to uptake increase

Differentiation potential

- Health and safety
- Resource efficiency
- Based on renewable resources
- Biological efficacy

→ Non-hazardous alternative to conventional solvents
Accelerator
Agnique® AMD 810, Agnique® AMD 10 and Agnique® AMD 12

Process information

- **Application:** Solvent
- **Customer Industry:** Agriculture
- **Market:** Global

Sustainability performance

- Based on renewable resources
- Readily biodegradable
- Strong solvency power
- Versatile alternative to conventional, hazardous solvents
- Improves active ingredient uptake through the plant leaf

Differentiation potential

- Health and safety
- Resource efficiency
- Biological efficacy

→ Low-hazardous alternative to conventional solvents
# Accelerator Agnique® PG 8105-G and Agnique® PG-8107-G

## Process information

<table>
<thead>
<tr>
<th>Application:</th>
<th>Adjuvant and Compatibilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry:</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Market:</td>
<td>Global</td>
</tr>
</tbody>
</table>

## Sustainability performance

- Based on renewable resources
- Readily biodegradable
- Excellent ecotoxicity profile
- Can replace TAM EO in Glyphosate formulations
- Highly salt tolerant adjuvant

→ Alternative to tallow amine ethoxylates

## Differentiation potential

- Reduces water scarcity and pollution
- Environment, health and safety
- Resource efficiency
Accelerator Agnique® PG 8107 BL

Process information

- **Application:** Low Foam Adjuvant
- **Customer Industry:** Agriculture
- **Market:** Global

Sustainability performance

- Readily biodegradable
- Based on renewable resources
- Low ecotoxicity
- Formulated for low foam → easier handling in process and application
- Can replace TAM EO in Glyphosate formulations
- Highly salt tolerant adjuvant

→ Alternative to tallow amine ethoxylates

Differentiation potential

- Reduces water scarcity and pollution
- Environment, health and safety
- Resource efficiency
Accelerator Agnique® SBO 10

Process information

- **Application:** Adjuvant
- **Customer Industry:** Agriculture
- **Market:** Global

Sustainability performance

- Label-free according to CLP
- Based on renewable raw materials
- Readily biodegradable
- Boosts systemic active ingredient performance

Differentiation potential

- Reduces water scarcity and pollution
- Environment, health and safety
- Biological efficacy

→ More efficient usage of active ingredient
Accelerator Agnique® BL 3095

Process information

**Application:** Tank Mix Adjuvant  
**Customer Industry:** Agriculture  
**Market:** Global

Sustainability performance

- Label-free according to CLP  
- Based on renewable raw materials  
- Fully formulated tank mix  
- Tank mix adjuvant to boost systemic actives  
- Can replace mineral oil-based tank mix adjuvants

→ More efficient usage of active ingredient

| Optionale Zusatzinformationen

- Differentiation potential
- Reduces water scarcity and pollution
- Environment, health and safety
Internal Process information

**Application:** Light stabilization  
**Customer Industry:** Agricultural films  
**Market:** Global

**Sustainability performance**
- Exceptional light stabilization extends the lifetime of agricultural films up to 60% (reducing cost downstream)
- Protects films against very high levels of UV radiation, heat, and agrochemicals (including sulfur)
- Designed to be compatible with organic farming and integrated pest management

→ Enhanced film protection and light transmission increases productivity, improves crop quality and reduces plastic waste

**Differentiation potential**
- Cost savings
- Resource efficiency
- Waste reduction
- Durability
- Biodiversity
Accelerator
Tinuvin® NOR 371

Process information

Application: Hindered amine light stabilizer (HALS)
Customer Industry: Agriculture
Market: Global

Sustainability performance

- Outstanding light stabilization of agricultural films increases durability and leads to more seasons of use
- Resistance to agrochemical exposure, including soil disinfectants, leads to fewer replacements and less plastic waste
- Additional film durability due to long-term thermal stability

Differentiation potential

- Cost savings
- Resource efficiency
- Durability
- Waste reduction

→ Highly effective stabilizer of agricultural films
Accelerator
M-99-SP 1

Process information

- **Application:** Crop protection
- **Customer Industry:** Agriculture
- **Market:** US, Europe

Sustainability performance

- Chemically and toxicologically inert
- Protects fruit from yield-robbing sunburn, reducing sun damage by up to 50%
- Cool canopy, increasing photosynthesis to maximize yield
- Repel some insects, certified for organic use in the US and Europe

→ Improve overall plant health and therefore productivity

Differentiation potential

- Safer handling and use
- Lower emissions
- Improves yield
- Biodiversity
# Accelerator
**ecovio® M2351 (mulch film)**

## Process information

<table>
<thead>
<tr>
<th>Application:</th>
<th>Mulch film</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry:</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Market:</td>
<td>Global</td>
</tr>
</tbody>
</table>

## Sustainability performance

- Biodegradability
- Resource efficiency and water savings over time (higher yields by avoiding the white pollution)
- Avoiding emissions of toxic substances from open burning of PE mulch film
- Waste reduction, avoiding soil displacement

→ Over time, ecovio® biodegradable mulch film helps to avoid adverse consequences of the white pollution in agriculture such as crop yield decrease and water savings

## Differentiation potential

- Cost Savings Downstream
- Pollution (air, soil)
- Resource Efficiency
- Climate Change & Energy
- Biodiversity & Renewables
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
Accelarator
Baxxodur® EC 301 (Polyetheramine D 230)

Process information

Application: Wind blades
Customer Industry: Renewable energy
Market: Global

Sustainability performance

- Wind energy as important renewable energy source
- Epoxy systems essential for cost-competitive large wind blades manufacturing

Differentiation potential

- Climate change and energy

→ Enabling wind energy for low carbon electricity production
# Accelerator

## Sodium Nitrate for Concentrated Solar Power

### Process information

<table>
<thead>
<tr>
<th><strong>Application:</strong></th>
<th>Thermal storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Industry:</strong></td>
<td>Concentrated Solar Power (CSP)</td>
</tr>
<tr>
<td><strong>Market:</strong></td>
<td>Global</td>
</tr>
</tbody>
</table>

### Sustainability performance

- Environmental-friendly mix of sodium and potassium nitrate used as energy storage medium in concentrated solar power plants
- In even more effective high temperatures CSP plants (> 550 °C), it is used in addition as heat transfer fluid (HTF)
- Enables supply of green solar electricity also during the night and under storm or cloudy weather
- Highest product quality allows maintenance-free operation in a closed loop production process without residues
- Materials are easy to use

### Differentiation potential

- Highest product purity
- Nitrates as energy storage media give CSP the option to be dispatchable
- Enables to supply energy on demand whenever the solar energy is needed
- Cost effective power generation
Accelerator
OASE®

Process information

- **Application:** Gas treatment
- **Customer Industry:** Oil and gas
- **Market:** Global

### Sustainability performance

- OASE® purple removes carbon dioxide and hydrogen sulfide in natural-gas applications
- OASE® white enables the treatment of gases containing hydrogen and/or carbon monoxide for applications such as ammonia, iron-ore and many more
- OASE® yellow selectively removes sulfur components from natural gas as well as acid-gas enrichment (AGE) or tail-gas treatment (TGT) units
- OASE® green enables the treatment of fermentation-based gas and reduces the consumption of chemistry by 3-4 times
- OASE® blue is used for carbon capture and storage

→ Enabling innovative gas treatment

### Differentiation potential

- Emission reduction
- Cost saving downstream
- Climate change and energy
- Resource efficiency
Accelerator
Keropur® / Keropur® DP – Fuel Performance Packages

Process information

Application: Fuel additive
Customer Industry: Mineral oil industry
Market: Global

Sustainability performance
- Keep engine cleaner and more efficiently
- Ensures optimum fuel economy
- Maintain harmful emissions at minimum levels
- Protects sensitive parts of the fuel system against corrosion
- Extending engine durability

Differentiation potential

Customer:
- Combines optimum driving experience with positive environmental impact
- Fuel Additive Packages are classified as Performer if they represent the market standard. In every country where fuel additivation is not a market standard, the product can be considered as an accelerator
Internal Accelerator BasoMSA

Process information

- **Application:** Scale removal and acid matrix applications
- **Customer Industry:** Production and stimulation, Oilfield
- **Market:** Global

Sustainability performance

- Odorless and creates no dangerous volatiles
- Lower vapor pressure than traditional strong acids
- Readily biodegradable in OECD 301, 306 and 311 tests
- CEFAS (Centre for Environment, Fisheries and Aquaculture Science) registered for the use in Offshore Oil & Gas industry
- BASF manufacturing process safer than the conventional route (chlorine oxidation)

→ Combines superior performance with excellent environmental and safety profile

Differentiation potential

- Health and safety
- Biodegradability
- Extended lifetime of equipment due to its better corrosion profile
Accelerator Rheomax® ETD

Process information

- **Application:** Tailings management
- **Customer Industry:** Mining
- **Market:** Global

Sustainability performance

- Rapid reclamation of process water for reuse
- Drying time of tailings accelerated, resulting in a smaller land footprint
- Quicker rehabilitation time due to faster trafficable surface
- Dry surface leads to improved dust suppression

→ Reduces the environmental footprint of mining operation

Differentiation potential

- Cost savings associated with improved water recovery and quicker rehabilitation time
- Reduces fresh water consumption
- Faster rehabilitation of land
- Lower air pollution
Accelerator Rheomax® DR

Process information

Application: Thickener applications
Customer Industry: Mining
Market: Global

Sustainability performance

- Improved water recovery at the thickener to be reused in the process
- Volume of wastewater, and as consequence the residue footprint, are reduced
- CCD (Counter Current Decanter) washing efficiency is increased, and recovery of leached metal is improved
- Energy can be saved due to reduced pumping pressure

→ Maximizes recovery of water and valuables

Differentiation potential

- Savings in the cost of recovery or replenishment of process water can be achieved
- Reduces freshwater consumption
- Enables waste reduction
- Improved resource efficiency
- Decreases energy consumption
Accelerator Lupromin® FP 18 AS

Process information

- **Application:** Flotation collector
- **Customer Industry:** Mining
- **Market:** Global

Sustainability performance

- Improved biodegradability
- Higher selectivity (lower losses of valuable materials)
- Faster flotation kinetics (lower energy consumption)

Differentiation potential

- Biodegradable
- Reduction of emissions into water
- Enables resource savings
- Allows lower energy consumption

→ Combines higher selectivity with excellent biodegradability
**Accelerator LixTRA™**

**Process information**

- **Application:** Copper Leaching
- **Customer Industry:** Mining
- **Market:** Global

**Sustainability performance**

- Improved metal extraction process meaning higher metal recovery from the ore, offers customers the option to increase their extraction efficiency or mine less ore to achieve the same production level.
- Mining less ore minimizes the impact of mining on the environment: reducing energy consumption, air and noise pollution.
- Lowers lixiviant (chemical) usage having positive health and safety implications, lowering pumping (energy) costs and hence offers significant cost savings.
- Higher recovery and recycling of water and improving tailings handleability.
- Extend life of mine.

→ Leaching aid providing a more sustainable extraction process for copper.

**Differentiation potential**

- Cost savings associated with higher productivity and lower energy consumption.
- Contributes to resource savings.
- Enables safer handling and use of chemicals.
- Reduces freshwater consumption.
- Decreases energy consumption.
Accelerator
Alcotac® CS-A

Process information

Application: Iron Ore Pelletization
Customer Industry: Mining
Market: Global

Sustainability performance

- For Iron ore pelletization: Substantial replacement of bentonite (by up to 60%) with small amount of Alcotac® CS without compromising on the mechanical properties of the pellets
- Lower sulphur dioxide emission in the induration process (by up to 25%)
- Improved metallurgical properties improve productivity and lower energy consumption in iron making process
- Higher throughput / increased efficiency of the pellet plant (5-10%)
- Significant increase in BREX metal content
- Reduced fuel consumption and associated CO₂ emissions
- Minimize slag volumes to be sent to land fills and its associated costs

→ Binder to provide a more sustainable iron ore pelletization

Differentiation potential

- Cost savings associated with higher productivity and lower energy consumption
- Contributes to resource savings
- Decreases energy consumption
- Reduced Emissions to the air
- Supports Recycling
Accelerator
Fuelzyme® 650 alpha-amylase

Process information

Application: Grain processing
Customer Industry: Bioethanol-production
Market: NA, EU

Sustainability performance
- Increases yield and production efficiency to lower CO₂ emissions from production and improves cost savings
- Uses renewable resources as production raw materials

Differentiation potential
- Works synergistically with advanced yeast by reducing osmotic stress.
- Reduces glucoamylase usage and enables a low pH in production process.
- Effective liquefaction at a wide pH range increasing operational flexibility

→ Improving resource efficiency in fuel ethanol production with biobased solutions
Accelerator
Deltazym® GA L-E5

Process information

**Application:** Grain processing
**Customer Industry:** Bioethanol-production
**Market:** NA

Sustainability performance

- Increases yield and production efficiency to lower CO₂ emissions from production and improves cost savings
- Uses renewable resources as production raw materials

Differentiation potential

- Operates over a broad pH and temperature
- Offers demonstrated high ethanol yields at industrial scale
- Improves fermentation performance through enzyme side activities

→ Improving resource efficiency in fuel ethanol production with biobased solutions
Accelerator Fueltase® Phytase

Process information

Application: Grain processing
Customer Industry: Bioethanol-production
Market: NA

Sustainability performance
- Increases yield and production efficiency to lower CO₂ emissions from production and improves cost savings
- Uses renewable resources as production raw materials

Differentiation potential
- Increases ethanol yields by liberating starch bound to phytic acid
- Improves yeast health by increasing free phosphorus
- Improves DDGS quality by decreasing phytic acid

→ Improving resource efficiency in fuel ethanol production with biobased solutions
Accelerator Lutropur® MSA

Process information

- **Application:** Grain processing
- **Customer Industry:** Bioethanol-production
- **Market:** NA

Sustainability performance

- Superior to other acids improving resource efficiency to support cost savings and CO₂ emission reductions
- BASF with a unique production process to be more efficient and safer than those of competitors

Differentiation potential

- Readily biodegradable, making it an environmentally friendly acid
- Generally regarded as safe (GRAS)
- Free of nitrogen, phosphorus and halogens

→ A safe and effective solution for cleaning processes in fuel ethanol production
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
7. Industrial Solutions
# Accelerator Ultramid® Flex F

## Process information

<table>
<thead>
<tr>
<th><strong>Application:</strong></th>
<th>Diverse film application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Industry:</strong></td>
<td>Packaging and technical films</td>
</tr>
<tr>
<td><strong>Market:</strong></td>
<td>Global</td>
</tr>
</tbody>
</table>

## Sustainability performance

- 1/3rd of the product is bio-based, derived from local rapeseed oil
- Reduced carbon footprint vs. fossil-based polyamide (-28%)
- Food protection from damaged packaging

## Differentiation potential

**Customer:**

- Bio-based product
- Reduced emission (CO₂)
- Based on renewable raw materials
- Higher tear and puncture resistance
Adlite® is the first reductive additive that offers a degree of brightness comparable to oxidative bleaching while maintaining the strength of the wood fibers intact.

**Process information**

**Application:** Reduction additive for paper industry  
**Customer Industry:** Paper, packaging and paper board  
**Market:** Global

**Sustainability performance**

- Sustainable additive for the paper industry reduces energy consumption in fiber production by up to 20%  
- Improved fiber yield enables low consumption of raw materials  
- Less anionic waste (e.g., COD)  
- Improved mechanical properties with comparable brightness to peroxide bleaching

**Differentiation potential**

**Customer:**  
- Reduction of chemicals and raw materials used  
- Cost reduction  
- Enables entry into new markets  
- Improved pulp properties (e.g., tensile, T.E.A. and burst)
Accelerator Styropor® BMB

Process information

Application: Protection and insulation
Customer Industry: Packaging
Market: Europe

Sustainability performance

- EPS (expandable polystyrene) produced using BASF’s biomass balance approach
- The fossil resources needed to manufacture Styropor® are replaced entirely with renewable resources at the very beginning of the production value chain
- Each biomass balance product helps to conserve fossil resources and reduce greenhouse gas emissions. The quality of Styropor® BMB is unchanged compared to its fossil counterpart

Differentiation potential

- Helps packaging manufacturers meet the industry’s high sustainability requirements. Their products are delivered in excellent thermal insulation packaging

→ Styropor® BMB contributes to resource conservation while keeping its technical properties intact
Accelerator tert-Butyl Acrylate

Process information

Application: PSA (Polymeric Sizing Agent) for packaging paper
Customer Industry: Dispersion producers
Market: Europe, Asia

Sustainability performance

- Provides cost performance benefit in PSA emulsions
- Energy savings due to faster film formation and fast drying
- Water savings due to low dosage
- Customers can use lower dosage of PSA polymer compared to standard benchmarks, paper machines can run faster due to fast film formation

Differentiation potential

- Cost savings
- Pollution (air, noise) by energy savings
- Water savings
- Positive climate contribution
Accelerator Behenyl Acrylate

Process information

**Application:** Hydrophobic films and coatings, flow control for oil and lubricants, printing toners

**Customer Industry:** Polymer manufacturing for additives and coatings

**Market:** Global

Sustainability performance

- Replacement of non-sustainable polyfluorinated additives in coatings
- Energy and chemical savings in oil and lube applications
- Biobased (C₁₄ content 87%), not palm oil derived
- Highest hydrophobicity in the class of fatty acrylates
- Exceptionally high melting point/crystallinity in the class of all acrylates, unprecedented for coatings and printing applications

Differentiation potential

- Health and safety
- Biodiversity and renewables
- Water scarcity and pollution
- Energy savings
Accelerator
Trilon® M types

Process information

Application: I&I general
Industrial Formulators

Customer Industry: Industrial & Institutional Cleaning,
Leather & Textile, Pulp & Paper

Market: Global

Sustainability performance

- Readily biodegradable
- Meets EU eco-label requirements
- Good eco-tox profile compared to other strong chelating agent (phosphate free)
- Ultimate types with glass protection to prolong lifetime

Differentiation potential

Customer:
- High performance as strong chelating agent
- Alternative to STPP, NTA, GLDA, TSC, etc.
- Enables solid formats which have a significant contribution to save energy, cost, packaging, space, increase safety

Consumer:
- Great performance and material protection

→ Phosphate free and biodegradable chelating agent
Accelerator Disponil® APG 425

Process information

Application: Emulsion polymerization
Customer Industry: Paints and coatings, adhesives and sealants
Market: Europe

Sustainability performance
- Alkylpolyglycoside (fatty alcohol and sugar), Readily biodegradable
- EO free emulsifier, avoids formation of toxic formaldehyde in emulsion polymerization process
- Supports meeting eco-label requirements

Differentiation potential
Customer:
- Biodiversity and renewables
- Emission reduction
- Health and Safety

→ Renewable based emulsifier with superior environmental profile
Accelerator
Lupasol® G 20 range, Lupasol® G 100, Lupasol® FG, Lupasol® PR 8515

Process information

- **Application:** Adhesion promoter
- **Customer industry:** Paints and coatings, adhesives and sealants
- **Market:** Europe

Sustainability performance

- High charge density makes these products ductile adhesion promoters, suitable for a broad range of different materials
- Low application rate 50 – 150 mg/m²
- Wet-Adhesion enhancer for emulsion paints, making unnecessary the usage of special monomers (Lupasol® G 20 (waterfree))
- Compatible with cationic and non-ionic systems

→ Highly ductile adhesion promoters

Differentiation potential

- **Customer:**
  - Cost savings downstream
  - Resource efficiency
Accelerator Disponil® APG 215

Process information

**Application:** Thermo-mechanical pulp (TMP)

**Customer Industry:** Pulp and Paper

**Market:** Europe

Sustainability performance

- Alkylpolyglycoside (fatty alcohol and sugar), fully based on renewable resources
- Readily biodegradable
- Energy usage reduction

Differentiation potential

- Biodiversity and renewables
- Emission reduction
- Cost savings downstream
- Resource efficiency

→ Sustainable and energy saving solution without changing fiber properties
Accelerator
Lutropur® MSA range

Process information

**Application:** Various, e.g., Metal Surface Treatment, Cleaning, Chemical Processing, Biofuels, Mining, Drilling

**Customer Industry:** Chemicals industry

**Market:** Europe, N. America, Asia/Pacific

Sustainability performance

- Strong and odorless organic acid with superior efficiency
- Part of the natural sulfur cycle, readily biodegradable
- Unique, more efficient and safer production process than competition (e.g., no co-product, air oxidation instead of chlorine oxidation)
- Replacement of acids with low environmental and health profile (HCl, HF, PSA, HBF₄, HNO₃, etc.)
- Highly efficient catalyst with low side product formation
- Enabler for second generation biofuel technologies (biofuel from waste streams)

→ Strong organic acid with high efficiency and low environmental impact

Differentiation potential

- Cost savings downstream
- Biodegradability
- Pollution (air, soil, noise)
- Resource efficiency
- Water scarcity and pollution
- Health and safety
# Accelerator

**NucleSil® 10, NucleSil® 70 and NucleSil® 80**

## Process information

<table>
<thead>
<tr>
<th>Application:</th>
<th>Binder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Industry:</strong></td>
<td>Steel industry, Foundry industry</td>
</tr>
<tr>
<td><strong>Market:</strong></td>
<td>Europe</td>
</tr>
</tbody>
</table>

## Sustainability performance

- Aqueous sodium silicate solutions as base for emission-free (non-VOC) foundry binders
- Alternative to organic binders to fulfill statutory provision
- Alternative for Phenol-, Furan-, Isocyanate-, Amine-based binders

→ Best available technology for foundry binders

## Differentiation potential

- Pollution (air, soil)
- Health and safety
Accelerator Pluriol® C 1651

Process information

**Application:** Plasticizer  
**Customer industry:** Rubber industry, Plastics industry  
**Market:** Europe

Sustainability performance

- Highly compatible plasticizer to improve the low-temperature flexibility of polar elastomers
- Label-free according to CLP
- Used as a cold temperature softener

Differentiation potential

**Customer:**
- Health and safety

→ Label-free plasticizer for Rubber and Plastics industry
Accelerator
Irgatec® CR 76 IC

Process information

Application: Modifier for non-woven polymer
Customer Industry: Nonwoven
Market: Global

Sustainability performance

- Enhances the mechanical properties of non-woven fabrics allowing potential downgauging in addition to better airflow and thermal durability
- Broader thermo-bonding window leads to improved process stability and less energy consumption
- On-site melt blown polypropylene generation provides higher flexibility in raw material selection (including in-house scrap), increases cost efficiency, and reduces transportation between sites
- Safer to handle than peroxide-containing alternatives

Differentiation potential

- Cost savings
- Resource efficiency
- Health and safety
- Energy
- Waste reduction
- Durability

→ Safe solution to reduce plastic waste and increase efficiency
Accelerator
Breox® B and Plurasafe® WI series

Process information

**Application:** Water insoluble PAG base stocks

**Customer Industry:** Lubricants for industrial gear, air compressors, refrigeration and chains

**Market:** Global

Sustainability performance

- Products available that are readily biodegradable (>60% OECD 301B)
- LUSC (Lubricant Substance Classification) listed suitable for environmental acceptable lubricants
- Resource Efficiency
- Low temperature properties; excellent heat transfer

Differentiation potential

- Water insolubility for water-free environment as they can demulsify from water
- Inherent sludge solubility and water tolerance for clean operations
- High viscosity index (VI)
- Energy Saving: Low Friction Coefficient
- Durability: Low Wear Scar

→ Water insoluble Polyalkylene Glycol base stocks with excellent sustainability profile
Accelerator
Breox® 50 A and Breox® 60 D series

Process information

Application: Water soluble PAG base stocks
Customer Industry: Lubricants for industrial gear and compressor, textile, food grade and marine applications
Market: Global

Sustainability performance
- Products available that are readily biodegradable (>60% OECD 301B)
- No toxicity, therefore label-free also at very high viscosities
- LUSIC listed and therefore suitable for environmental acceptable lubricants in the marine industry (VGP regulation)
- Suitable for indirect food contact (NSF registered)

Differentiation potential
- Best in class coefficient of friction for energy savings
- Readily biodegradable
- High viscosity index (VI)
- Durability: Low Wear Scar
- Very good film strength and load-carrying capacity
- Excellent for LNG gas compressors

LUSIC: Lubricant Substance Classification
VGP: Vessel General Permit
NSF: National Science Foundation
→ Water Soluble Polyalkylene Glycol base stocks with excellent sustainability profile
Accelerator
Breox® 60 D 220 BMBCert™

Process information

Application: Water soluble PAG base stocks with reduced carbon footprint

Customer Industry: Lubricants for industrial gear and compressor, textile, food grade and marine applications

Market: Global

Sustainability performance

- Products available that are readily biodegradable (>60% OECD 301B)
- No toxicity, therefore label-free also at very high viscosities
- LUSC listed and therefore suitable for environmental acceptable lubricants in the marine industry (VGP regulation)
- Suitable for indirect food contact (NSF registered)

Differentiation potential

- Best in class coefficient of friction for energy savings
- Readily biodegradable
- High viscosity index (VI)
- Durability: Low Wear Scar
- Very good film strength and load-carrying capacity
- Excellent for LNG gas compressors

→ Water Soluble Polyalkylene Glycol base stocks with excellent sustainability profile
Accelerator Synative® ES 1200

Process information

Application: High viscosity biodegradable ester base stock
Customer Industry: Industrial gear oils, chain lubricants, greases and metal working fluids
Market: Global

Sustainability performance

- High renewable content (86%)
- Readily biodegradable according to OECD 2013B
- Globally registered
- Improved energy efficiency
- Good low-temperature performance
- Reduces impact on the aquatic environment

Differentiation potential

- Lower friction for potential energy efficiency
- Excellent equipment protection
- Lubricity enhancer
- Shear stability
- Good oxidative, thermal and hydraulic stability
- Good solvation power for additives
- Compatible with mineral oils and low viscosity PAOs (Polyalphaolefin)

→ High viscosity biodegradable base stocks providing superior performance
Accelerator
Synative® EEB 45 and EEB 130

Process information

Application: Energy Efficient Base Stock (EEB)
Customer Industry: Novel high viscosity base oil technology for automotive and industrial applications
Market: Global

Sustainability performance
- Low friction can lead to energy savings and reduced GHG emission (LCA data available)
- Enable more cost-efficient lubricant formulations at equal performance compared to PAO-based formulation
- Unique solution on the market combining compatibility with mineral oil and exceptional friction performance (proprietary technology)
- Synative® EEB 130 is suitable for use in biolubricants

Differentiation potential
- Higher energy efficiency enabled by lower coefficient of friction
- Lower wear scar leading to longer lifetime of equipment
- Higher viscosity index
- Good additive solubility
- Compatible with mineral oils, esters and PAOs

GHG: Greenhouse Gas
LCA: Life Cycle Assessment
PAO: Polyalphaolefin

→ Innovative energy efficient base stock technology
**Accelerator Synative® ES TMP Oleates**

**Process information**

- **Application:** Marine lubricant
- **Customer Industry:** Marine
- **Market:** Global

**Sustainability performance**
- Superior lubrication performance
- Excellent resistance to oxidation
- Good hydrolytic stability
- Good low-temperature performance
- Broad range of available viscosities

**Differentiation potential**
- Reduce impact on the aquatic environment
- Excellent biodegradability
- High renewable content of >80%
- Enable OSPAR listing

→ Enables the formulation of environmentally acceptable lubricants for marine
Accelerator
Synative® ES TMTC

Process information

**Application:** Synthetic basestock for lubricant formulations
**Customer Industry:** Transportation, Production
**Market:** Global

Sustainability performance
- Superior lubrication performance
- Excellent resistance to oxidation
- Good hydrolytic stability
- Good low-temperature performance

Differentiation potential
- Excellent solvency
- Good low temperature properties
- Excellent hydrolytic and oxidative stability

→ Enables the formulation of environmentally acceptable, biodegradable and renewable lubricants
Accelera\nder Synative® ES DPHA

Process information

**Application:** Synthetic basestock for lubricant formulations

**Customer Industry:** Marine, Transportation, Production

**Market:** Global

Sustainability performance
- Durability: superior friction properties
- Biodegradability: >90% biodegradable (OECD 301B)
- Overall reduced costs due to premium cost performance ratio

Differentiation potential
- Best in class low temperature fluidity
- Excellent thermal and oxidative stability
- Very good hydrolytic stability
- Excellent additive solubility
- Fully compatible with mineral oils and PAOs
- OSPAR registered

→ A novel low viscosity and high-performance ester base stock for various applications, automotive, industrial and marine
Accelerator
Synative® ES 2938

Process information

Application: Synthetic base stock for lubricant formulations
Customer Industry: Industrial applications
Market: Global

Sustainability performance

- High performance ester for harsh working conditions

Differentiation potential

- High thermal and oxidative stability
- Excellent low-temperature fluidity
- In combination with other base oils, i.e., PAO, Synative® ES 2938 can improve the fluidity of the base oil after long standing at -40°C

→ A new ester base stock combining high thermal stability and excellent low-temperature properties
Accelerator
Ultramid® Vision

Process information

Application: Covers for lighting elements
Customer Industry: Illumination
Market: Electro & Electronics

Sustainability performance
- Translucent Polyamide
- Replacement of coated polycarbonate
- High chemical stability and durability
- Diffuse light scattering possible

Differentiation potential
- Pollution (air)
- Resource efficiency

→ Ultramid® Vision enables new applications in electro and electronics
Accelerator
Ultramid® A3X (A3X2G5/ A3X2G7/A3XZG5 BK23187, A3X2G5 UN)

Process information

Application: Switchgears, connectors
Customer Industry: Power supplies
Market: Electro & Electronics

Sustainability performance
- Halogen free flame retardant
- Fire protection for various electric equipment including photovoltaic systems
- Low smoke density
- Low toxicity

Differentiation potential
- Health and safety
- Pollution (air)

→ Ultramid® A3X enables renewable solar power generation
We create chemistry