



We create chemistry

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

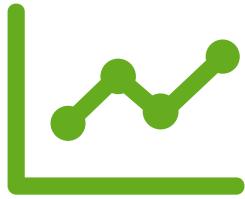
Based on our corporate strategy, we have set ourselves a global target

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**.



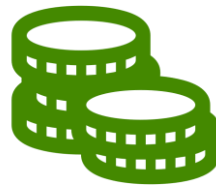
98.7%

of relevant portfolio assessed



100%

of Challenged solutions
covered with an action plan



€24.1 bn

sales in 2021



~16,000

Accelerator solutions

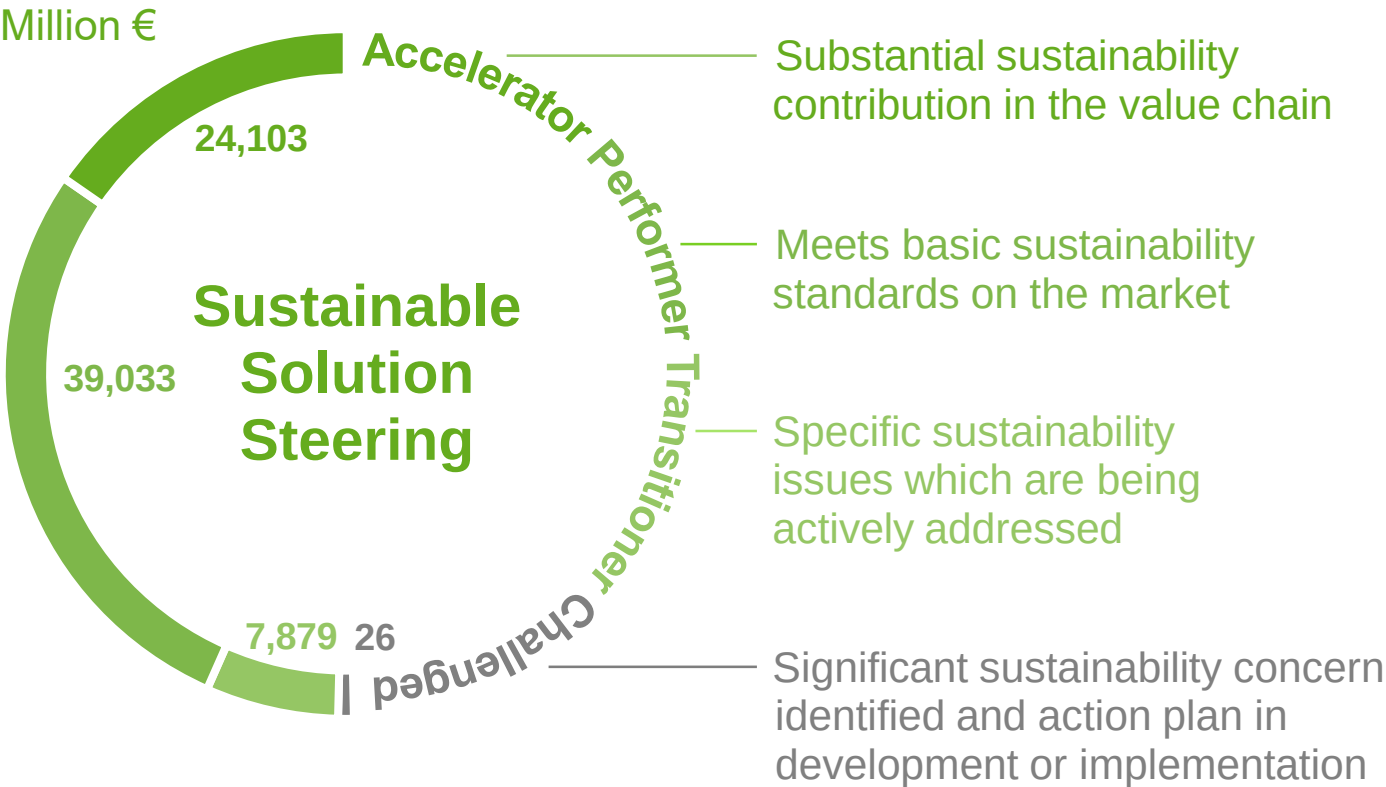


~3,000

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

Sustainable Solution Steering

€22 billion in Accelerator sales already achieved in 2021

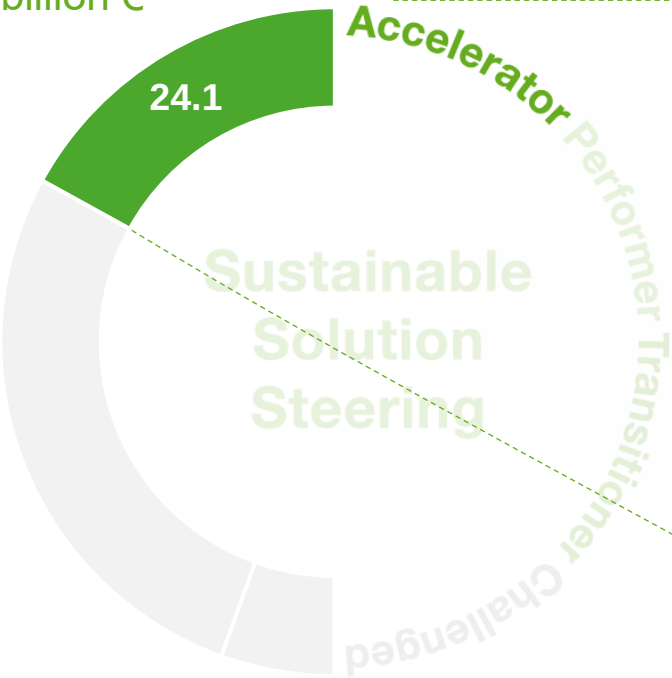


- More than 56,000 product applications analyzed by 2021¹ (€71 billion in sales, 98.7% of relevant portfolio)
- 16,000 solutions for enhanced quality of life
- Goal: €22 billion of Sales with Accelerator products by 2025 already met in 2021 (2020: €16.7 billion)
- Stronger integration in R&D pipeline, 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.

Sustainable Solution Steering

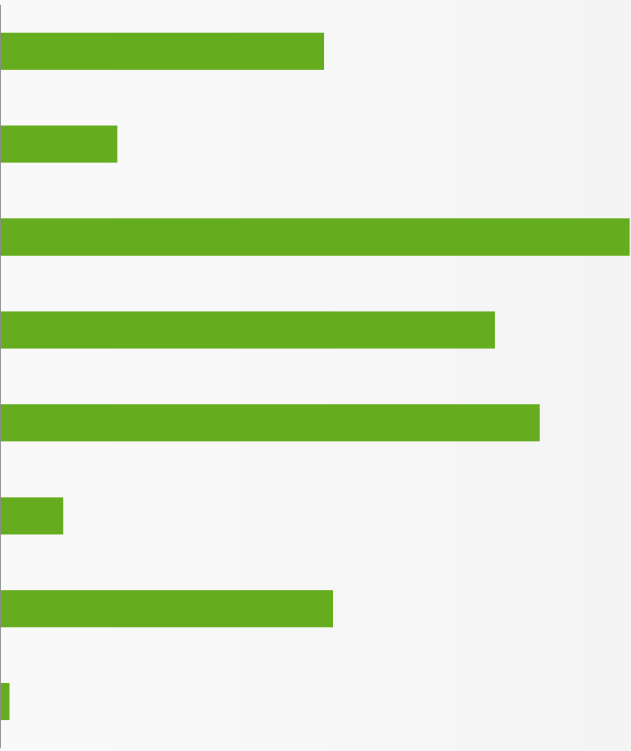
BASF's Accelerators contribute to the UN Sustainable Development Goals

Absolute sales 2021
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



(including double nominations)

Primarily addressed SDGs





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

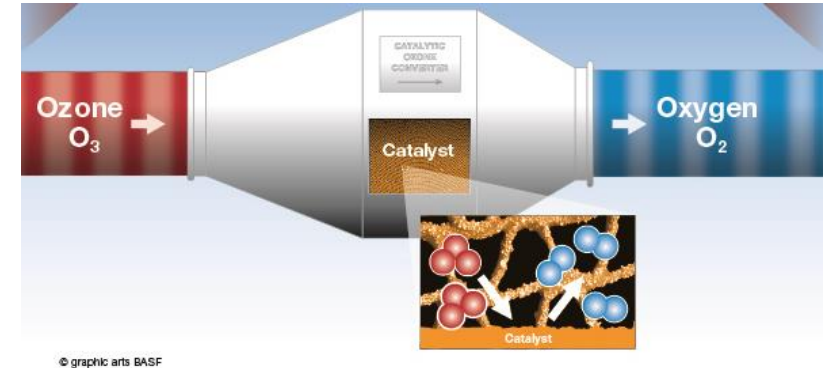
Process information

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

Application: Spent catalyst recycling, precious metals recovery

Customer Industry: Catalysts

Market: Europe, North America



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

Differentiation potential

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

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

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.

→ A patented catalyst coating that transforms ground level ozone, the main component of smog, into oxygen by simply driving down the road



Differentiation potential

- Emissions reduction
- Cost savings downstream

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 NO_x (Nitrogen Oxides) emissions from Diesel-engine powered vehicles.
- Stricter emission standards drive the requirement for active filter systems in conjunction with NO_x reduction technologies; BASF's patented zeolite SCR catalysts exhibit high temperature stability and meet challenging catalyst durability requirements.

→ Patented zeolite SCR catalysts offer very high temperature stability and operating temperature flexibility to remove NO_x to meet stringent emission regulations around the globe



Differentiation potential

- Emissions reduction
- Cost savings downstream
- Resource efficiency

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 (NO₂), 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

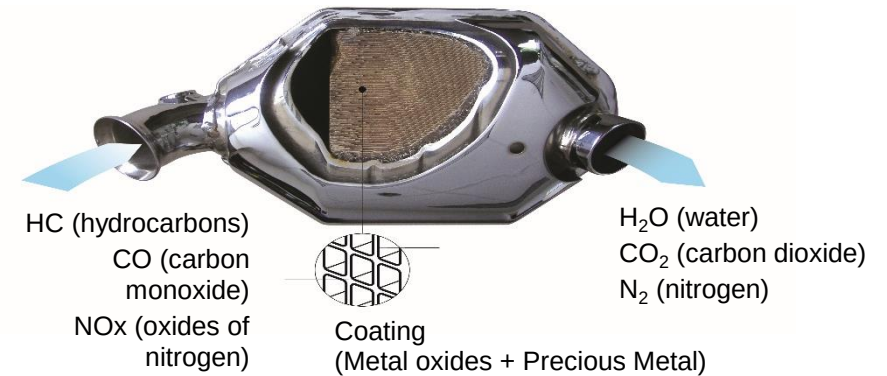
Customer Industry: Automotive

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_x) before they reached the atmosphere.

→ Leading-edge emissions abatement technology that helps auto manufacturers meet increasingly stringent environmental regulations around the world



Differentiation potential

Customer:

- Emissions reduction
- Cost savings downstream
- Resource efficiency

Accelerator

FWC™ Four-way Conversion Catalysts

Process information

Application: Emissions control catalysts

Customer Industry: Automotive

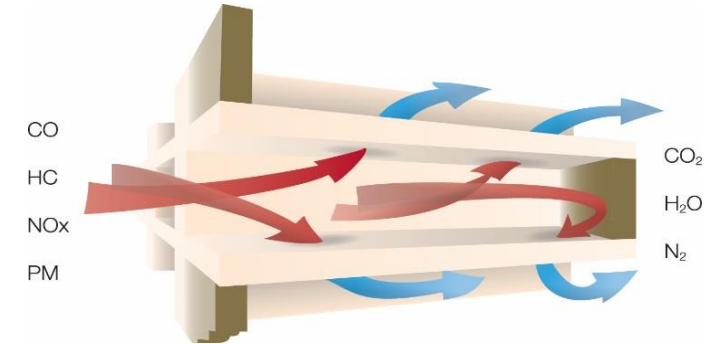
Market: Global

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

FWC™ principle of operation



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 NO_x(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

→ Enabling eco-efficient de-icing



Differentiation potential

- Cost savings downstream
- Water scarcity and pollution

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)

→ Contributing to use renewable feedstocks in the mass balance approach

Bio-naphtha
delivery



Differentiation potential

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

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

→ Enabling product innovation for SCR catalysts and spread of clean technologies for internal combustion engine



Differentiation potential

Customer:

- Local source: Reduced road transport; Reduced CO₂ footprint

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.

→ Enabling BASF customers to reduce energy, material and investment cost



Differentiation potential

Customer:

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

Accelerator PrimeCube®

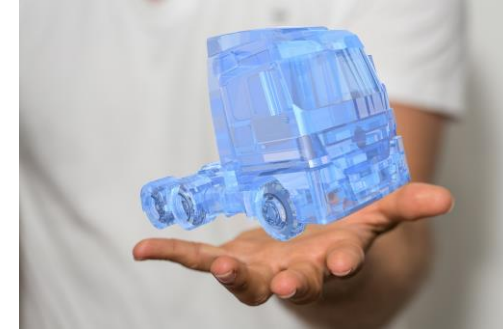
Process information

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



PrimeCube® – BASF Verbund Process for highly efficient performance 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

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

Application: Rapidly drying primer filler, ideally suited for minor and moderate repair jobs

Customer Industry: Automotive refinish coatings

Market: EMEA

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®

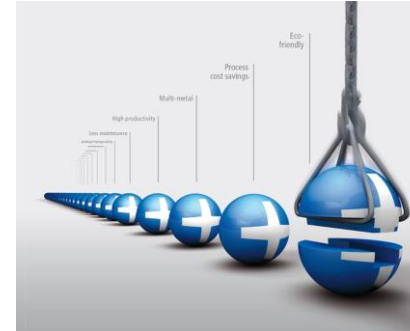
Process information

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

Application:	Automotive Refinish Coatings Solutions
Customer Industry:	Automotive
Market:	Global

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

→ More



Differentiation potential

Customer:

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

Accelerator CIP

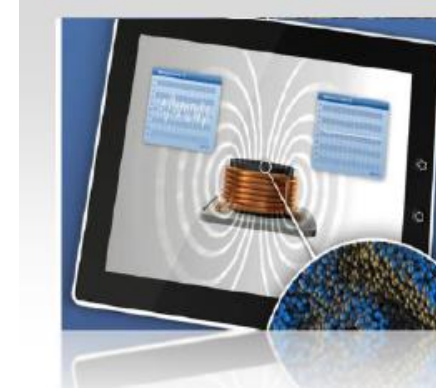
Process information

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

Customer:

- 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

Sustainability performance

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

→ Acrodur® enables the production of lightweight and sustainable composites



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

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**

ELECTRIFIED®
Also suitable for electric vehicles

Accelerator

GLYSANTIN® ECO G30® BMB / G34® BMB / G40® BMB / G64® BMB / G65® BMB

Process information

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

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**

ELECTRIFIED®
Also suitable for electric vehicles

■ BASF
We create chemistry

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**

ELECTRIFIED®

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

→ Jounce Bumper replacing rubber in new cars



Differentiation potential

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

Accelerator

Top Mounts MH24, MHKG and MHLS

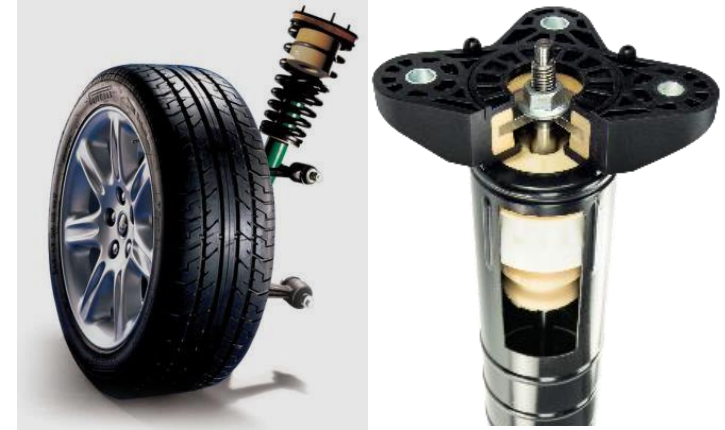
Process information

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

→ Top Mounts enable high comfort and safety for automotive



Differentiation potential

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

Accelerator NEOPOLEN®

Process information

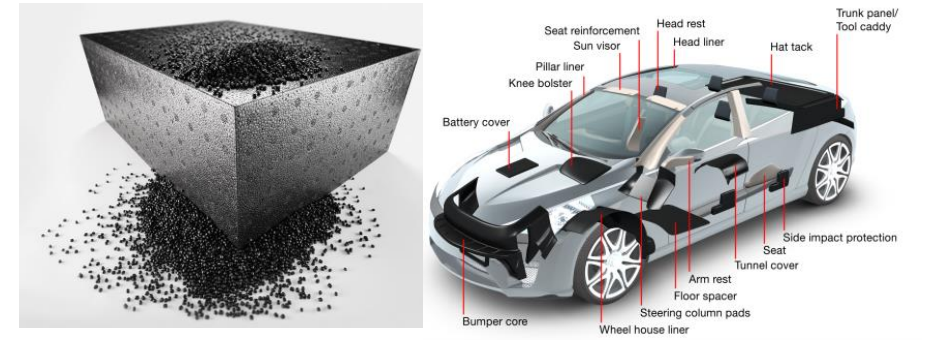
Application: Serial automotive parts

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

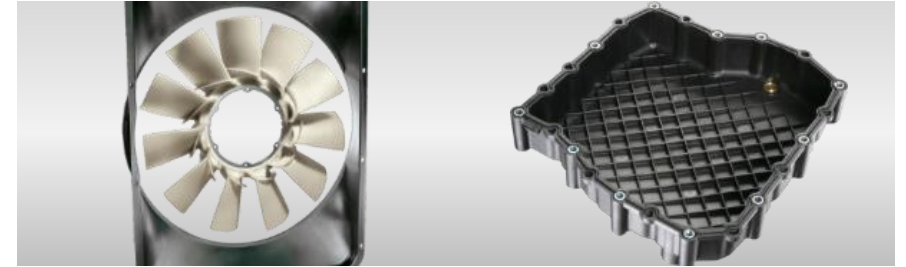
Customer Industry: Powertrain

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

Accelerator Neopor®

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)

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



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

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

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



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®

Accelerator Styrodur®

Process information

Application: Perimeter and inverted roof insulation

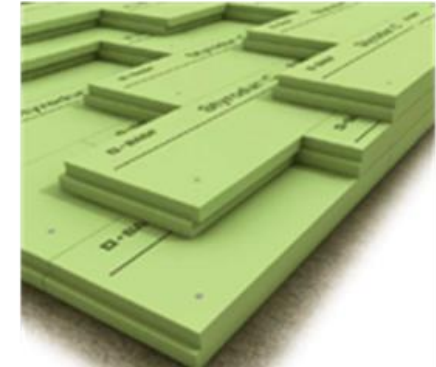
Customer Industry: Construction (renovation)

Market: Europe

Sustainability performance

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

→ Styrodur® allows reduction of CO₂ emissions and energy savings due to excellent insulating performance



Differentiation potential

Customer:

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

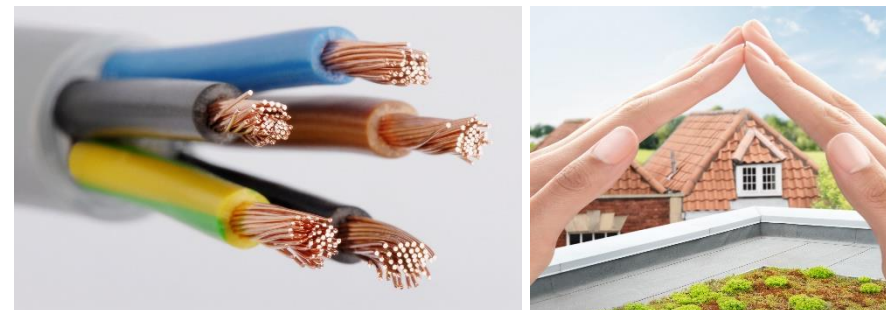
Accelerator Palatinol® 10-P Biomass Balanced

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 TiO₂ 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 TiO₂



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

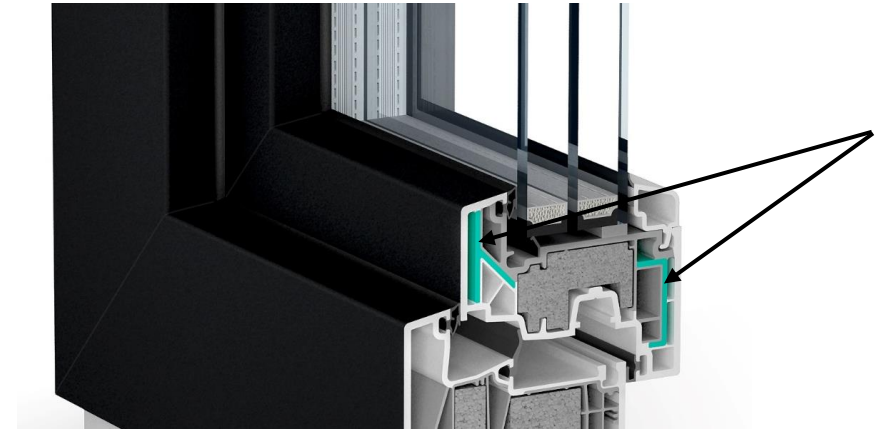
Customer Industry: Construction

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

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



Differentiation potential

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

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 REDcert²
- 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



Baby Care



Adult Inco



Feminine Care

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



Adult Inco

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).

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



Baby Care



Adult Inco



Feminine Care

Differentiation potential

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

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



Baby Care



Adult Incontinence



Feminine Hygiene

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

→ 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

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

→ acResin® for high-performance adhesives with significant sustainability benefits



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

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

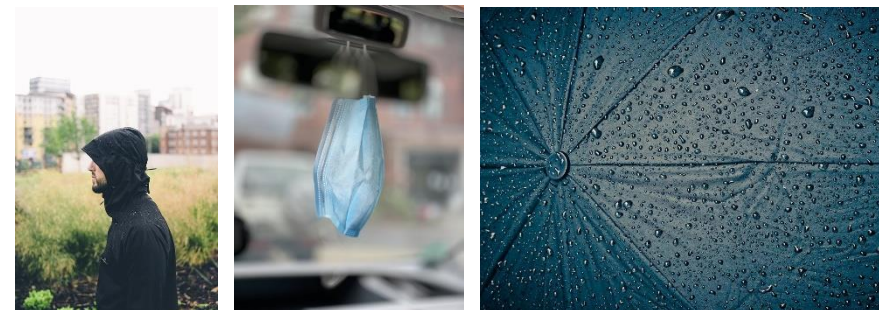
Accelerator Behenyl Methacrylate

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 (C¹⁴ 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

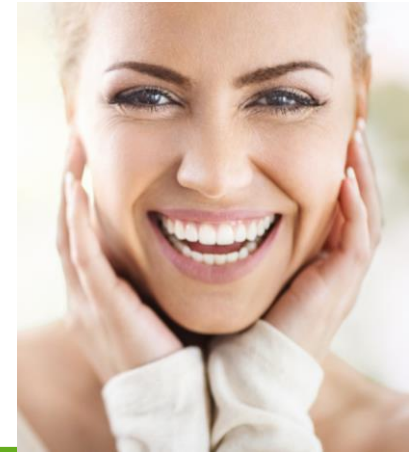
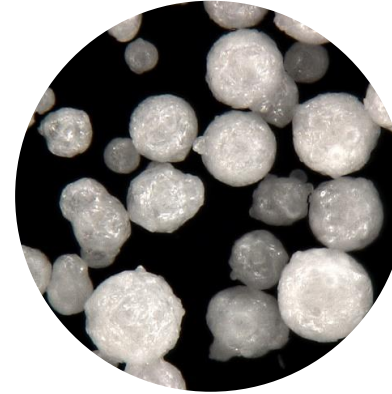
Process information

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

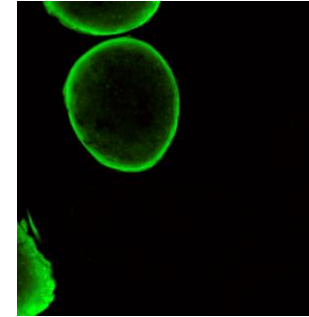
Process information

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

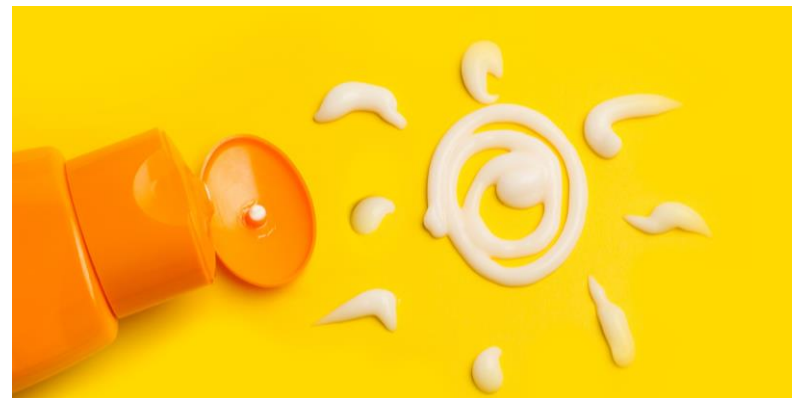
Application:

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

Internal



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

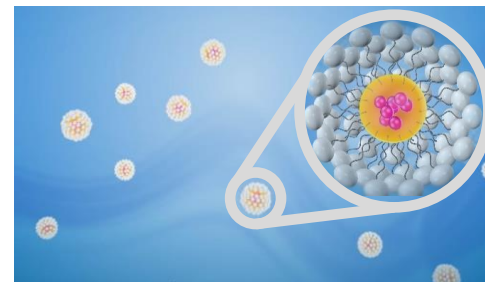
Process information

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)

→ Cold processable and easy to handle ultra-mild blend innovation



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

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

Product information

Application	Various I&I applications, f.e. as scale inhibitor or for water hardness control
Customer industry	Industrial & Institutional Cleaning
Market	Global

Differentiation potential

Customer	▪ Alternative to STPP, NTA, GLDA, TSC... ▪ Enables solid format (significant contribution to save energy, cost, packaging, space) ▪ Sustainable positioning
Consumer	▪ Excellent performance and material protection

Sustainability performance

- High performance as strong chelating agents
- Readily biodegradable
- Meet requirements of EU Ecolabel, Blue Angel and Nordic Swan
- Good eco-tox profile compared to other strong chelating agent
- Ultimate types with glass protection
- 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



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

Accelerators

Trilon® M types / Trilon® Ultimate types

Product information

Application	Chelating agent mainly for Automatic Dishwashing Detergents
Customer industry	Home Care
Market	Global

Differentiation potential

Customer	▪ Strong alternative to Citrate, Phosphonate, GLDA ▪ Material protection claims: Prevention of scale formation, Ultimate 2 G w/ glass protection ▪ Sustainable positioning
Consumer	▪ Combines superior cleaning performance with sustainability

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		Differentiation potential	
Application	Performance Booster for Automatic Dishwashing Detergents	Customer	- Supports state-of-the-art sustainable All-in-1 products - Improved build-up performance - Supports rinse efficiency (reduced filming & spotting) - Easy-to-use for tablets
Customer industry	Home Care	Consumer	- Sustainable ADW detergents - Perfect shine
Market	Global		

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



Boosting performance and sustainability profile of modern ADW tablets

Accelerator

Polyquart® Ecoclean

Product information	
Application	Surface Care Ingredient in Hard Surface Cleaners
Customer industry	Home Care and I&I
Market	Global

Differentiation potential	
Customer	- Combines sustainability with performance - Supports modern claims like “easy-to-clean again”, “streak-free” or “quick drying”
Consumer	- Enables sustainable cleaners - Makes cleaning more convenient and saves time

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	



Bio-based Performance Booster for sustainable HSC formulations

Accelerators

Dehypon® types

Product information		Differentiation potential	
Application	Rinse surfactants in Automatic Dishwashing Detergents	Customer	▪ E 126, E 127, WET, and Shine: Reduced spotting claims ▪ GRA: Spotting performance booster; PEG alternative / tableting aid ▪ Shine: Reduced use level at equal performance
Customer industry	Home Care	Consumer	▪ Improved plastic drying and great shine on glass ▪ Energy savings
Market	Global		
Products	Dehypon® E 126, E 127, WET and Shine		
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		Differentiation potential	
Application	Dye Transfer Inhibitors in Laundry detergents	Customer	▪ Color Care claim, “no sort” claim
Customer industry	Home Care and I&I	Consumer	▪ Convenience: “no sort” as light and dark colored textiles can be washed together
Market	Global		▪ Prolonging the lifetime of textiles
Sustainability performance			
▪ Prevent discoloration caused by fugitive direct and reactive dyes		▪ Easy to formulate also in super concentrated detergents (liquid mono doses)	
▪ Prolong the lifetime of textiles		▪ Sokalan® HP 56 A EcoBalanced up to 100% bio-certified via mass balance and with reduced Product Carbon Footprint	
▪ Meet requirements of EU Ecolabel, Blue Angel and Nordic Swan			



Ingredients that support consumer needs for color care in laundry detergents

Accelerator

Lutropur[®] MSA

Product information		Differentiation potential	
Application	Organic acid for Hard Surface Cleaners and CIP	Customer	▪ Easy-to-handle and non-oxidizing ▪ Sustainable, high performing acid
Customer industry	Home Care and I&I	Consumer	▪ Faster scale removal ▪ Material protection (low corrosiveness) ▪ Odorless
Market	Global		

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

Product information	
Application	Hard Surface Cleaners, Hand Dishwashing Detergents, Laundry Detergents
Customer industry	Home Care and I&I
Market	Global

Differentiation potential	
Customer	- Support formulations based on renewable resources - Enable good foaming properties - Material protection (mild and safe for surfaces)
Consumer	- Perfect shine - Sensitive skin solution for laundry (dermatologically tested)

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

Accelerator

Sokalan® HP 20

Product information		Differentiation potential	
Application	Performance Booster in Laundry and Hand Dishwashing Detergents	Customer	- Boosts performance in surfactant optimized formulations - Enables anti-graying claim - Improves cleaning and foam stability in HDW formulations - Compatible w/ liquid formulas
Customer industry	Home Care and I&I	Consumer	- Excellent primary cleaning - Prolonged lifetime of textiles - Convenience & energy savings
Market	Global		
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		Differentiation potential	
Application	Performance Booster in Laundry Detergents	Customer	▪ Supports anti-graying, stain removal and low temperature washing claims ▪ Delivers superior performance ▪ Easy to formulate into liquid concentrates
Customer industry	Home Care and I&I		
Market	Global		
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		Differentiation potential	
Application	Laundry and Hand Dishwashing Detergents	Customer	▪ Biological and renewable alternative ▪ High compatibility in liquid formulations ▪ Enables formula compaction and optimization
Customer industry	Home Care and I&I		
Market	Global		
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		Differentiation potential	
Application	Laundry Detergents	Customer	▪ High compatibility in liquid formulations ▪ Enables anti-graying claims ▪ Biological and renewable alternative
Customer industry	Home Care and I&I	Consumer	▪ Anti-graying keeps textiles looking new for longer ▪ Energy savings (low temp.)
Market	Global		

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

Accelerator Pyranol

Process information

Application: Fragrance (Home and Personal Care)
Customer Industry: Consumer Goods
Market: Global

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

→ Membranes made of Ultrason for securing availability of drinking water



Differentiation potential

Customer:

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

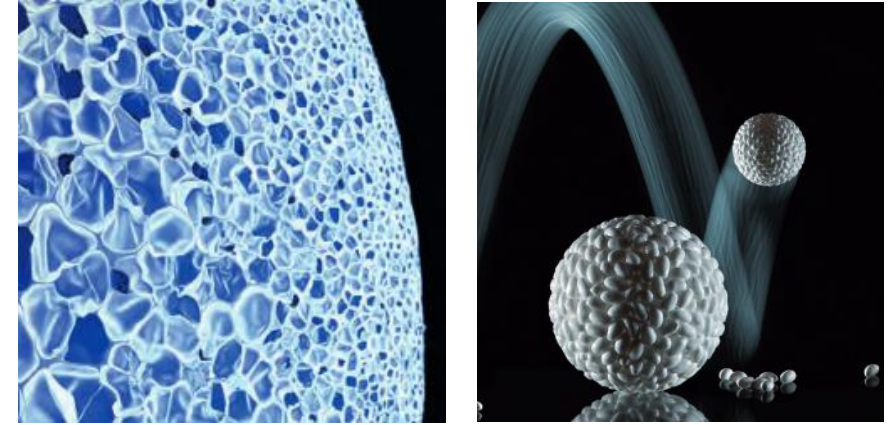
Accelerator Infinergy®

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

→ Combining purity with a good peace of mind



Benefits

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

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)

→ Designed to be safe – more sustainable coating process



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 tableted costing material of processing.

Accelerator Natugrain® TS

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.

→ Improvement of feed conversion



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

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

→ The most proven Phytase for improved feed conversion



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

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 thereof 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

→ Reduction of spoilage and improved feed hygiene



Benefits

- Protect feed quality effectively: BASF's organic acids protect feedstuff 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



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

→ 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



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

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

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



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

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

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

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



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

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

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



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

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 (*Conyza 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

| Optionale Zusatzinformationen

→ Label-free alternative to conventional solvents



Differentiation potential

- Health and safety
- Resource efficiency
- Biological efficacy

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

→ Low hazardous alternative to conventional solvents



Differentiation potential

- Health and safety
- Resource efficiency
- Biological efficacy

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

→ Non-hazardous, multi-performance additive



Differentiation potential

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

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

| Optionale Zusatzinformationen

→ Non-hazardous alternative to conventional solvents



Differentiation potential

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

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

→ Low-hazardous alternative to conventional solvents



Differentiation potential

- Health and safety
- Resource efficiency
- Biological efficacy

Accelerator

Agnique® PG 8105-G and Agnique® PG-8107-G

Process information

Application: Adjuvant and Compatibilizer

Customer Industry: Agriculture

Market: Global

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

| Optionale Zusatzinformationen

→ More efficient usage of active ingredient



Differentiation potential

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

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

| Optionale Zusatzinformationen

→ More efficient usage of active ingredient



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

Accelerator

Tinuvin® NOR® 356

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

→ Highly effective stabilizer of agricultural films



Differentiation potential

- Cost savings
- Resource efficiency
- Durability
- Waste reduction

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

Application: Mulch film

Customer Industry: Agriculture

Market: Global



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

Differentiation potential

- Cost Savings Downstream
- Pollution (air, soil)
- Resource Efficiency
- Climate Change & Energy
- Biodiversity & Renewables

→ 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



Sustainable Solution Steering

Accelerator Examples

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

Accelerator

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

→ Enabling wind energy for low carbon electricity production



Differentiation potential

- Climate change and energy

Accelerator

Sodium Nitrate for Concentrated Solar Power

Process information

Application:	Thermal storage
Customer Industry:	Concentrated Solar Power (CSP)
Market:	Global

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 ($> 550\text{ }^{\circ}\text{C}$), 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

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)

→ Combines higher selectivity with excellent biodegradability



Differentiation potential

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

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 Fuelese[®] 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

Application: Diverse film application
Customer Industry: Packaging and technical films
Market: Global

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

Accelerator Adlite®

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

→ 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.



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

→ Styropor® BMB contributes to resource conservation while keeping its technical properties intact



Differentiation potential

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

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

→ Phosphate free and biodegradable chelating agent



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

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

→ Renewable based emulsifier with superior environmental profile



Differentiation potential

Customer:

- Biodiversity and renewables
- Emission reduction
- Health and Safety

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

→ Sustainable and energy saving solution without changing fiber properties



Differentiation potential

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

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, HBF_4 , HNO_3 , 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

Application: Binder

Customer Industry: Steel industry, Foundry industry

Market: Europe

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

→ Label-free plasticizer for Rubber and Plastics industry

| Optionale Zusatzinformationen

Internal



Differentiation potential

Customer:

- Health and safety

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

→ Safe solution to reduce plastic waste and increase efficiency



Differentiation potential

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

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
- LUSC listed and therefore suitable for environmental acceptable lubricants in the marine industry (VGP regulation)
- Suitable for indirect food contact (NSF registered)

LUSC: Lubricant Substance Classification

VGP: Vessel General Permit

NSF: National Science Foundation

→ Water Soluble Polyalkylene Glycol base stocks with excellent sustainability profile



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

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)

→ Water Soluble Polyalkylene Glycol base stocks with excellent sustainability profile



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

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

→ High viscosity biodegradable base stocks providing superior performance



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)

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

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

→ Innovative energy efficient base stock technology



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

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

→ Enables the formulation of environmentally acceptable lubricants for marine



Differentiation potential

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

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

Accelerator 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

→ A novel low viscosity and high-performance ester base stock for various applications, automotive, industrial and marine



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

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

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



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

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

→ Ultramid® A3X enables renewable solar power generation



Differentiation potential

- Health and safety
- Pollution (air)



We create chemistry