Sustainable Solution Steering – Accelerator Example Collection

for external use
>60,000 solutions in scope

>12,000 Accelerator solutions with €15 billion sales in 2018

>60% of R&D budget spent on Accelerator projects in 2018

>800 actions defined

~2,400 experts involved e.g. R&D, Product Safety, Sales, Marketing, Sustainability
We create chemistry for a sustainable future

Our aspiration

We have a passion for chemistry and our customers.

This passion stems from our expertise, innovative and entrepreneurial spirit and the strength of our Verbund.

To be the world’s leading chemical company, we will grow profitably and create value for society.
Our customers in different industries face diverse challenges – Chemistry is key to solving these challenges

Agriculture  Health & Nutrition  Energy & Resources  Consumer Goods  Transportation  Electrical & Electronics  Construction & Housing

Chemistry as enabler to meet current and future needs

The world by 2050

~10 billion people  70% of the world population will live in cities  35% more primary energy consumption  30% more food needed
That’s why we initiated the systematic Sustainable Solution Steering approach.

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**
Development of action plans for strategies, R&D, and market approach
€22 billion sales with Accelerator products by 2025 through innovation

- >60,000 product applications analyzed by 2018 (€56.2 billion in sales, 96.5% of relevant portfolio)
- 27.7% Accelerators
  - >12,000 solutions for enhanced quality of life
  - Strong growth in their markets
  - On average margins ~6 percentage points above the rest of assessed portfolio
- Goal: €22 billion of sales with Accelerator products by 2025 (2018: €15 billion)
- Stronger integration in R&D pipeline, business strategies and M&A projects
- As of 2018, we will stop selling all Challenged products within maximum five years after classification

Target: Increase Accelerator share and phase out “challenged products” maximum 5 years after identification

* >60,000 product applications analyzed
BASF’s Accelerators contribute to a wide range of the UN Sustainable Development Goals

Sales shares of contributing Accelerators (%)

- Cost savings downstream: 68.3%
- Biodiversity and renewables: 4.3%
- Climate change and energy: 68.3%
- Emission reduction: 68.3%
- Resource efficiency: 68.3%
- Water: 68.3%
- Health and safety: 68.3%
- Hunger and poverty: 68.3%

(including double nominations)

Primarily addressed SDGs

- 2 Zero Hunger
- 3 Good Health and Well-Being
- 6 Clean Water and Sanitation
- 7 Affordable and Clean Energy
- 9 Industry Innovation and Infrastructure
- 11 Sustainable Cities and Communities
- 12 Responsible Consumption and Production
- 13 Climate Action
- 15 Life on Land
- 8 Decent Work and Economic Growth

BASF’s Accelerators contribute to a wide range of the UN Sustainable Development Goals.
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
Accelerator
Elastoflex® E3532

Process information

**Application:** Semi-structural parts for transportation (e.g. trunk floor)

**Customer Industry:** Transportation Industry

**Market:** Global

Sustainability performance

- Increased climate protection potential and energy savings
- Increased health and safety behavior
- Cost savings downstream

Differentiation potential

**Customer:**

- Weight reduction
- Lower processing temperature and lower worker exposure
- Shorter shifts

→ Elastoflex® E3532 is the newest product generation for structural parts for transportation
Accelerator
Topmount MH(KG) 24

Process information

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

Sustainability performance
- Increased resource efficiency by simple processing and smaller systems
- Noise reduction of car movements
- Very good impact strength
- Reduced weight compared to metal parts
- Cost savings downstream

Differentiation potential
Customer:
- Weight reduction
- Noise reduction
- Stability
**Accelerator Ultramid® Vision**

**Process information**

**Application:** The first semi-transparent polyamide  
**Customer Industry:** Transportation, Construction, Consumer & Industrial  
**Market:** Global

**Sustainability performance**

- Cost efficient material solution for applications in chemically challenging environments  
- High level of light transmission and transparency

**Differentiation potential**

**Customer:**

- Chemical and temperature resistance  
- Good scratch resistance  
- Suitable for flame-retardant applications  
- Very good UV stability

→ Ultramid® Vision is the first semi-crystalline polyamide that allows light to pass through largely unhindered
Accelerator
Ultradur® LUX

Process information

**Application:** Polybutylene terephthalate with improved laser transparency

**Customer Industry:** Transportation Industry

**Market:** Global

Sustainability performance

- Due to refined morphology, laser transparency has been improved from 30 to 60 percent
- Much higher welding speed while the process window is considerably wider
- Thicker joining partners than before can be welded

Differentiation potential

- Greater freedom of design
- Shorter cycle times
- High quality and process consistency
- Greater flexibility

→ Ultradur® LUX with improved laser transparency allows more flexibility in production
Accelerator Formic Acid

Process information

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

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

Differentiation potential
- Cost savings downstream
- Water scarcity and pollution

→ Enabling eco-efficient de-icing
Accelerator Glysantin® G 64

Process information

Application: Engine coolant
Customer Industry: Automotive
Market: Global

Sustainability performance
- Excellent heat transfer in the engine cooling system
- Improved thermal stability
- Minimizes build-up of deposits
- Excellent corrosion inhibition

Differentiation potential
Customer:
- Cost savings due to reduced maintenance
- Extended lifetime of engine cooling system

→ Next generation engine coolant
Accelerator Irgalube® FE 1

Process information

Application: Lubricant additive
Customer Industry: Automotive
Market: Global

Sustainability performance

- Improved engine performance
- Synergistic effects with ZDDP (zinc dialkyldithiophosphate)
- Higher efficiency compared to GMO (glycerol mono oleate)

Differentiation potential

Customer:
- Improved fuel economy
- Reduced emission (CO₂)
- Based on renewable raw materials
- Ashless additive

→ Improves fuel economy, acceleration and horsepower
Accelerator Synative® ES TMP

Process information

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

Sustainability performance

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

Differentiation potential

- **Customer:**
  - Reduce impact on the aquatic environment
  - Excellent biodegradability
  - High renewable content of >80 percent
  - Enable OSPAR listing

→ Enables the formulation of environmentally acceptable lubricants for marine
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

Customer:

- 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

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

Differentiation potential

**Customer:**

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

Process information

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

Sustainability performance

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

Differentiation potential

**Customer:**
- Emissions reduction
- Cost savings downstream

→ A patented catalyst coating that transforms ground level ozone, the main component of smog, into oxygen by simply driving down the road
Accelerator
Three-Way-Catalysts (TWC)

Process information

Application: Emissions control catalyst
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 (NOx) 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 Catalyst

Process information

Application: Emissions control catalyst
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.

Differentiation potential

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

Innovative single-component four-way conversion catalyst that removes multiple pollutants from gasoline engine exhaust
Accelerator SCR (Selective Catalytic Reduction)

Process information

Application: Emissions control catalyst
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 NOx (Nitrogen Oxides) emissions from Diesel-engine powered vehicles.
- Lower emission standards drive the requirement for active filter systems in conjunction with NOx 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 NOx to meet stringent emission regulations around the globe

Differentiation potential

Customer:
- Emissions reduction
- Cost savings downstream
- Resource efficiency
Accelerator
Diesel Oxidation Catalyst (DOC)

Process information

Application: Emissions control catalyst
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 emissions standards

Differentiation potential

Customer:
- Emissions reduction
- Resource efficiency
Accelerator
Catalytic Soot Filter (CSF)

Process information

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

Sustainability performance

- Stage V, Euro VI, China NS VI, India BS VI regulations enforce, in addition to HC (Hydrocarbons), CO (Carbon Monoxide), and NOx (Nitrogen Oxides), tighter control of PM (Particulate Matter) emissions from Diesel engine powered vehicles.
- CSF catalyst filters particulates, converts Hydrocarbons (HC) and Carbon monoxide (CO), oxidizes NO to NO₂, and burns off particulates during filter regeneration process.

Differentiation potential

Customer:
- Emissions reduction
- Resource efficiency

→ Single-component multifunctional catalyst that removes multiple pollutants from Diesel engine exhaust
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 CO$_2$ footprint of the engine

Differentiation potential

**Customers:**

- Local Source
  - Reduced road transport
  - Reduced CO$_2$ footprint

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

Differentiation potential

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

➔ An innovative solution for the highest eco-efficiency
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
Integrated Process

Process information
- **Application:** OEM Coatings, providing color and effect
- **Customer Industry:** Automotive
- **Market:** Global

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

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

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

Process information

<table>
<thead>
<tr>
<th>Application</th>
<th>Coatings for commercial vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Industry</td>
<td>Automotive</td>
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<td>Global</td>
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</table>

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.

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.

Differentiation potential

Customer:
- Cost savings downstream
- Resource efficiency
- Climate change and energy
- Health and safety

→ New filler system – directly on metal
**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.

**Differentiation potential**

Customer:

- Cost savings downstream
- Resource efficiency
- Climate change and energy

→ Boost efficiency at the speed of light
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**

- Cost savings downstream
- Resource efficiency
- Climate change and energy

*Image: Easy chemical symbol*
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 Acrodur®

Process information

Application: Binding agent for natural, synthetic and glass fibers
Customer Industry: Automotive, Furniture
Market: Global

Sustainability performance

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

Differentiation potential

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

→ Acrodur® enables the production of lightweight and sustainable composites
Sustainable Solution Steering®
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
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 percent), which allows material cost savings for end customers.

Differentiation potential
- Insulation 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 percent in comparison to the fossil based Neopor®.

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

Differentiation potential

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

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

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

Process information

- **Application:** PIR system for flame-retardant sandwich elements
- **Customer Industry:** Construction, Building
- **Market:** Europe

Sustainability performance

- Increased resource efficiency and decreased energy consumption
- Increased health and safety behavior

Differentiation potential

- **Customer:**
  - Low thermal conductivity values
  - Extra-high temperature stability; compliant with exacting fire protection standards
  - Fulfills requirements of LPS 1181 and EN-13501-2 fire resistance tests

→ Elastopir® is the latest product generation for sandwich elements and insulating panels
Accelerator Cavipor® FTX 1

Process information

- **Application:** Thermal insulation
- **Customer Industry:** Construction
- **Market:** Europe

Sustainability performance

- Ecological – natural and upcycled raw material
- CO₂ – efficient – low energy consuming production
- Non combustible – mineral based
- Non hazardous – foamed with water and air
- Recyclable – re-use of old material

Differentiation potential

- Homogeneous insulation
- Transport and store 1/10 of foam volume
- Safe, fast and clean application
- Breathable
- Easily disposable

→ Reliable insulation
Accelerator Kauranat® MS 1001

Process information

Application: Wood binder
Customer Industry: Wood working industry
Market: global

Sustainability performance
- Accelerated production speed
- Lowered formaldehyde emission
- Increased production efficiency
- Reduced binder demand

Differentiation potential
- Capacity increase of up to 20 percent
- Profitable production of low emission boards
- Decrease of energy consumed per m³ product
- Lower overall binder demand

→ Efficient binding
# Accelerator Neopentyl Glycol

## Process information

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<th>Powder Coatings Resins</th>
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</thead>
<tbody>
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<td>Automotive, Construction</td>
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<td>Market</td>
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</table>

## 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

## Differentiation potential

- Biodiversity & Renewables
- Climate Change and Energy
- Resource efficiency
Accelerator Mattex® PRO

Process information

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

Sustainability performance

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

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

Differentiation potential

- Cost saving downstream
- Resource efficiency
- Health and safety
- Climate change and energy
Accelerator Suvinil® Acrylic Antibacterial

Process information

Application: Wall paint
Customer Industry: Decorative paints
Market: South America

Sustainability performance
- Eliminates 99 percent of the microorganisms on the surface of any wall and prevents them from returning for two years
- The paint can be washed without compromising the effect, making it ideal for use in nurseries, hospitals and schools
- It is available in a wide range of colors and allows for individual design

Differentiation potential
- The effectiveness of the paint has been approved according to the parameters of JIS 2801:2000 (Japanese Industrial Standard) for antimicrobial products
- Suvinil Acrylic Antibacterial is the first paint to get approval from Anvisa (Brazil’s National Health Surveillance Agency), which certifies its safety and effectiveness

Protection from microorganisms: Suvinil Acrylic Antibacterial allows a healthier environment at home
Accelerator
Acronal® ECO 6270

Process information

Application: Universal binder for solvent-free interior and exterior decorative paints
Customer Industry: Paints and coatings
Market: Europe

Sustainability performance
- Low odor
- Water-based
- For solvent-free, low volatile organic compounds (VOC) paints
- Ammonia-free
- Formaldehyde-free

Differentiation potential
Customers:
- Outstanding weather resistance
- High pigment binding power
- Universal character for interior and exterior applications
- Improves stain resistance and cleanability

→ Acronal® ECO 6270 for health-friendly and environmentally advanced paints
Accelerator
Acronal® EDGE 6295

Process information

Application: Binder for exterior paints and textured finishes on mineral substrates e.g. masonry paints
Customer Industry: Paints and coatings
Market: Europe

Sustainability performance
- Water-based solution
- Better durability and longer renovation cycles
- Excellent hydrophobicity and rain protection

Differentiation potential
Customers:
- Superior color retention
- Excellent exterior durability
- Broad formulation latitude

→ Acronal® EDGE 6295 for premium exterior paints with superior performance
Sustainable Solution Steering®
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
Process information

Application: PU system for insulation of fridges & freezers
Customer Industry: Household appliances
Market: Global consumer refrigeration market

Sustainability performance
- Increased climate protection potential and energy savings
- Increased resource efficiency
- Cost savings downstream

Differentiation potential
- Lower thermal conductivity of ~0.5 mW/mK which enables the achievement of energy efficiency classes A++ and A+++.
- Faster cycling time due to better demoulding behavior which leads to higher output in the production (efficiency increase).
- Higher compressive strength values lead to lower material consumptions per unit (fridge, freezer).

→ Elastocool® Advanced is the latest product generation of insulation material for fridges & freezers
Accelerator ecovio® F2371 (peepoo®)

Process information

- **Application:** Peepoo® bags
- **Customer Industry:** Consumer Goods
- **Market:** Global

Sustainability performance

- Biodegradability in industrial compost enables composting of human wastes which helps enriching depleted soil
- Valuable nutrients for farming as a substitute for fertilizers enable energy savings and resource efficiency
- Helps achieving safety and health standards beyond industry level

Differentiation potential

- Differentiation potential
- Cost Savings Downstream
- UN Millennium Development Goals “Clean Water and Sanitation”
- Resource Efficiency
- Water Scarcity & Pollution
- Biodiversity & Renewables
- Health and Safety

→ ecovio® for peepoo® supports sustainable social welfare by driving the purpose of offering access to sanitation via a public-private partnership business model.
Accelerator
Styropor® BMB

Process information

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

Sustainability performance

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

Differentiation potential

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

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

Process information

Application: Spandex, TPU, elastomers
Customer Industry: Textile, plastics
Market: Global

Sustainability performance

- Value chain based on the direct fermentation of renewable resources by high-performing microorganisms
- The production process of renewable PolyTHF® precursor relies on a patented technology from Genomatica (GENO BDOTM)
- Ecologically attractive alternative to petrochemical raw materials

→ Contributes to the use of renewable feedstock

Differentiation potential

- Biodiversity and renewables
- Climate change and energy
Accelerator
Ultraform® PRO AT

Process information

Application: Medical applications
Customer Industry: Consumer goods
Market: Global

Sustainability performance

- Products with high purity
- Fulfilling medical regulation
- Drug Masterfile available
- Documentation and traceability

Differentiation potential

Customer:

- Great flexibility
- Consistent quality
- Health and Safety
Accelerator
Elastollan® FHF

Process information

Application: Charging cables
Customer Industry: Consumer Goods
Market: Global

Sustainability performance

- Flame retardant TPU with improved mechanical performance
- Fulfilling safety standards as per norms
- Meeting regulatory requirements without health concerns

Differentiation potential

Customer:

- Improved performance
- Consistent quality
- In-house FR testing as per customer specifications

→ Elastollan® FHF is a new generation flame retardant TPU with improved mechanical performance and fulfilling both safety and regulatory standards
Accelerator Dihydrorosan

Process information

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

Sustainability performance
- Safe in use
- No CMR category
- No allergen

Differentiation potential
Customer:
- 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 Pyranol

Process information

- **Application:** Fragrance (Home & 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
HySorb® permeable products

Process information

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

**Customer Industry:** Hygiene Industry

**Market:** Global

Sustainability performance

- Highly effective for liquid distribution and absorption, thus replacing bulkier traditional materials such as fluff pulp in diapers
- Keep babies skin dry, provides comfort, improving quality of life for families
- Using less material for thinner diapers saves energy and resources, and reduces the volume of waste heading to landfill or incinerators

→ High performance superabsorbent replacing fluff pulp in diapers

Differentiation potential

**Customer:**
- Light weight diapers have an improved eco-efficiency
- Major flexibility for diaper core design

**Consumer:**
- Modern diapers offers benefits in terms of dryness, comfort, weight and waste reduction
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 driving the use of biomass

Differentiation potential

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

Baby Care

Adult Inco

Feminine Care
Accelerator
HySorb® Advanced Odor Control

Process information

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

**Customer Industry:** Hygiene Industry

**Market:** Global

Sustainability performance

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

→ High performance superabsorbent with odor control functionality

Differentiation potential

**Customer:**
- Differentiation through claims

**Consumer:**
- Comfort
- Quality of life
- Discreetness
Accelerator 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 (SAP and Fluff reduction)
- Increased dosing accuracy for waste reduction
- Benefits in terms of logistic like transportation and storage
- Reduction of diaper’s carbon footprint

→ New generation of high efficient superabsorbent polymers

Differentiation potential

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

Consumer:
- Thinner diapers with increased comfort and haptic
Accelerator Adlite®

Process information

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

Sustainability performance

- More sustainable bleaching agent for paper industry compared to conventional peroxide based bleaching
- Reduction of specific energy consumption by up to 20 percent
- Simplified production process enables low raw material consumption
- Less anionic waste (e.g. COD)
- Brightness and mechanical properties at least comparable to peroxide bleaching

Differentiation potential

Customers:
- Reduction of chemicals and raw materials used
- Cost reduction
- Enables tapping into new markets
- Improved pulp properties (e.g. tensile, T.E.A. and burst)

→ Adlite® is the first reductive solution to offer a degree of brightness comparable to oxidative bleaching while keeping the uniformity of the wood fiber intact
Accelerator Ultramid® Flex F

Process information

Application: Diverse film applications
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 percent)
- Protect food from damaged packaging

Differentiation potential

Customers:
- Bio-based product
- Reduced emission (CO₂)
- Based on renewable raw materials
- Higher tear and puncture resistance
Accelerator
Hexamoll® DINCH

Process information

Application: Medical devices, toys, food packaging, flooring, wall covering, sport and leisure products

Customer Industry: Medical, Toys, Food, Construction, Consumer goods

Market: EMEA, Asia Pacific, North America

Sustainability performance

- A unique performance comes along with an excellent toxicological profile and low migration rate
- Approved and certified by many competent authorities and institutions worldwide
- Established since 2002 for applications with close human contact

Differentiation potential

- Alternative non-phthalate plasticizer
- Excellent toxicological profile
- Award winning plasticizer (e.g. ICIS Innovation Award 2006, BASF Innovation Award 2006, Solvin Award 2013)
- Trusted by leading brand owners and retailers

Hexamoll® DINCH - the trusted non-phthalate plasticizer
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 percent 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

→ Regarded as break through innovation and was awarded with market prizes

Differentiation potential

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

Consumer:
- New natural cosmetic concepts
Accelerator
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

Differentiation potential

- Cost reduction
- Time saving
- Increased flexibility

→ Water-based lamination adhesives for more sustainable flexible packaging
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
- Superior eco-efficiency performance compared to solvent based alternatives for PSA

Differentiation potential

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

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

Process information

**Application:** Flexible packaging inks

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

**Market:** Global

Sustainability performance

- Conversion to water-based printing technology, replacing solvent
- Enable lighter packaging

Differentiation potential

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

→ This water-based product also enables the creation of a lighter packaging
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
Accelerator Ultrason® E 6020 P

Process information

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

Sustainability performance

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

Differentiation potential

Customer:

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

Benefits

- High efficacy: Adding Natugrain® TS to pig and poultry diets is a valuable and reliable improvement to animal diets with the potential to reduce costs
- High product quality and stability: BASF’s enzymes are produced using the best quality management standard possible

→ Improvement of feed conversion
Accelerator Natuphos® E

Process information

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

Sustainability performance

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

Benefits

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

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

Process information

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

**Sustainability performance**

- Luprosil® in silage prevents the formation of molds and 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.

**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

→ Reduction of spoilage and improved feed hygiene
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: The “mini laboratory kit” allows food producers to easily check if they are adding the correct amount of Vitamin A to products
Accelerator PronovaPure® Omega-3 oils

Process information

- **Application:** Human nutrition, dietary supplements
- **Customer Industry:** Dietary supplements, Human nutrition
- **Market:** Global

Sustainability performance

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

Benefits

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

→ Combining purity with a good peace of mind
Accelerator
Omega-3 oils – e.g. PronovaPure®

Process information

Application: Dietary supplements, pharma products
Customer Industry: Human nutrition, Pharma
Market: Global

Sustainability performance

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

Benefits

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

→ Combining purity with a good peace of mind
Accelerator Interceptor® G2 Mosquito Nets

Process information

**Application:** Long-lasting insecticide-treated mosquito net

**Customer Industry:** Public health

**Market:** Malaria control
Africa, Asia and South America

Sustainability performance

- There are 200 million malaria cases each year and numbers are rising as mosquitoes develop resistance to conventional insecticides.
- Interceptor® G2 is an innovative new net that combats insecticide-resistant mosquitoes. It is the first WHO-recommended mosquito net that is not based solely on conventional chemistry.
- The novel combination of two active ingredients - chlorfenapyr and alpha-cypermethrin - both protects sleepers from malaria and combats resistant mosquitoes.

Differentiation potential

- Proven to control insecticide-resistant mosquitoes effectively
- Tested and recommended by WHO
- Active ingredient is new to public health
- Meets international safety standards for protecting babies, children and adults
- Long-lasting – up to 3 years and 20 washes

→ Fusion of BASF’s expertise in textile technology and insect control for long-term effectiveness against resistant mosquitoes
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

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### Sustainability performance

- Increase resource efficiency and reduce waste:
  - No plasticizers needed
  - Improved storability: storable in different humidity conditions and defect rate reduction (e.g. Kollicoat® protect)

### Benefits

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

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

→ Designed to be safe – more sustainable coating process
Sustainable Solution Steering
Accelerator Examples

1. Transportation
2. Construction
3. Consumer Goods
4. Health & Nutrition
5. Agriculture
6. Energy & Resources
Accelerator ecovio® M2351 (mulch film)

Process information

Application: Mulch film
Customer Industry: Agriculture
Market: Global

Sustainability performance
- Biodegradability in soil leaving no residues in the field after ~2 years, unlike traditional polyethylene films
- Resource efficiency and water savings over time (higher yields by avoiding the white pollution of PE residues)
- Avoiding emissions of toxic substances from open burning of PE mulch film
- Waste reduction, avoiding soil displacement by PE residues

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

Differentiation potential
- Cost Savings Downstream
- Pollution (air, soil)
- Resource Efficiency
- Climate Change & Energy
- Biodiversity
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 percent
- Cool canopy, increasing photosynthesis to maximize yield
- Repel some insects, certified for organic use in the US and Europe

Differentiation potential

Customer:
- Biodiversity
- Resource efficiency
- Health and safety
- Climate change and energy

→ Improve overall plant health and therefore productivity
**Accelerator**

**Tinuvin® NOR 371**

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**Process information**

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

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**Sustainability performance**

- High molecular weight hindered amine NOR stabilizer with outstanding stabilization of agricultural films even in presence of chemicals such as pesticides, insecticides or soil disinfection agents
- Outstanding performance also as long-term thermal stabilizer contributing to resource efficiency

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**Differentiation potential**

- **Customer:**
  - Cost savings downstream
  - Resource efficiency

→ Highly effective stabilizer of agricultural films
Accelerator
Propionic Acid

Process information

Application: Feed preservation
Customer Industry: Agriculture
Market: Global

Sustainability performance

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

Differentiation potential

- Cost savings downstream
- Climate change and energy
- Resource efficiency

→ Enabling environmentally friendly feed preservation
Accelerator
Nealta® / Sultan® Miticide

Process information

Application: Foliar miticide
Customer Industry: Agriculture
Market: Fruit and vegetable cultivation
North and South America

Sustainability performance

- Provides today’s growers with a novel high-performing miticide that can be the foundational tool for their integrated pest management and resistance management programs while providing favorable safety to beneficial insects.

Differentiation potential

- Novel mode of action
- Strong and competitive performance against mites
- Controls all life stages of mites (eggs, nymphs, adults)
- Favorable safety to beneficial insects

→ Foundational tool for integrated pest and resistance management programs
Accelerator
RAK® Pheromones

Process information

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

Sustainability performance

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

Differentiation potential

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

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

Process information

Application: Foliar/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 Limus® Nitrogen Stabilizer**

**Process information**

- **Application:** Soil
- **Customer Industry:** Agriculture, Farming
- **Market:** North America, South America, Asia

**Sustainability performance**

- Prevents urea from being broken down to ammonia allowing time for rainfall to move urea into the soil where it is more protected.
- Allows plants to efficiently utilize Nitrogen; crop yield potential increases up to 12 percent greater return on investment for growers.
- Reduces ammonia losses significantly by up to 90 percent.

→ Enhanced nitrogen use efficiency for optimal plant nutrition

**Differentiation potential**

- Patented combination of two urease inhibitors (30 percent more effective than a single inhibitor)
- Greater on-urea stability allowing more efficient application, storage and transportation of fertilizers under a wide range of temperatures and humidity
- Flexibility to use with urea or urea ammonium nitrate solutions
Accelerator
Priaxor® Fungicide

Process information

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

Sustainability performance

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

Differentiation potential

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

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

Process information

- **Application:** Foliar fungicide
- **Customer industry:** Agriculture
- **Market:** Fruit and vegetables
  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.

Differentiation potential

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

→ Merivon® is a key component of Integrated Resistance Management programs
Accelerator Vault® HP System

Process information

- **Application:** Biological seed treatment system
- **Customer industry:** Agriculture
- **Market:** North and South America

Sustainability performance

- Vault® HP is a multi-component, yield-enhancing biological seed treatment system for soybeans and other dicots.
- The robust rhizobial inoculant improves root nodulation for more nitrogen-fixation potential, improved root architecture and nutrient uptake resulting in greater plant vigor, stress reduction, and optimized yield potential to support the grower’s business and production sustainability.

Differentiation potential

- Increases yield enhancement and resource efficiency
- Extends suppression of diseases caused by Rhizoctonia and Fusarium spp
- Offers the lowest application rate in the industry
- Extends the window of protection 30-45 days beyond the base protection of a seed-applied fungicide
- More effective long-term nitrogen management for subsequent crops

→ Innovative technology based on naturally-occurring biologicals and biochemistry that enables our customers to optimize crop yield potential and resource efficiency
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

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

Resource efficiency thanks to low use rate and very effective control of resistant weeds
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 Clearfield® Rice

Process information

- **Application:** Clearfield Production System
- **Customer industry:** Agriculture
- **Market:** Rice - Malaysia

Sustainability performance

- Combines the use of conventionally-bred herbicide-tolerant seeds with purpose-designed herbicide
- Resulting in a better option for weed control and consequently, greater productivity as well as improvement in crop quality

Differentiation potential

- Only solution available in the market to control red rice, combining an effective mode of action with non-GMO herbicide-tolerant seed
- Significantly higher yields (avg. increase of 2-4 MT/ha) with the Clearfield Production System
- Value for the customer: Up to 3 times greater rice yield

→ Unique non-GMO herbicide-tolerant system against red rice leading to greater yield and harvest quality
Accelerator
Inscalis® Insecticide

Process information

Application: Foliar insecticide
Customer industry: Agriculture
Market: Specialty crops, row crops, ornamentals
North and South America, Asia

Sustainability performance

- Environmental – Allows beneficial insects to thrive
  - Bloom-time application
  - Integrated pest management
- Societal – Responsible use
  - Application benefit
- Financial – Meeting growers’ bottom line
  - Highly efficacious, low use-rate compound
  - Fast onset of action leading to reduced insect damage
  - Viral/bacterial transmission reduction, increasing quality

Differentiation potential

- Exceptional activity at low rates, with long residual effect
- Quick onset of feeding cessation leading to reduced virus transmission
- New tool for resistance management with new chemical class and unique mode of action
- Favorable environmental profile with low toxicity to pollinators and beneficial insects

→ Inscalis® redefines pest management with precision and flexibility
Sustainable Solution Steering

Accelerator Examples

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

Process information

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

Sustainability performance

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

Differentiation potential

- Climate change and energy

→ Enabling wind energy for low carbon electricity production
Accelerator 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\(^1\) registered for the use in Offshore Oil & Gas industry
- BASF manufacturing process safer than the conventional route (chlorine oxidation)

Differentiation potential

- **Customer:**
  - Health and safety
  - Biodegradability
  - Extended lifetime of equipment due to its better corrosion profile

→ Combines superior performance with excellent environmental and safety profile

\(^1\) Centre for Environment, Fisheries and Aquaculture Science
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
Customer:
- Cost savings associated with improved water recovery and quicker rehabilitation time
- Reduce 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 waste water, and as consequence the residue footprint, are reduced
- CCD* 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

Customer:

- Savings in the cost of recovery or replenishment of process water can be achieved
- Reduce fresh water consumption
- Enable waste reduction
- Improved resource efficiency
- Reduce energy consumption

*Counter Current Decanter
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 material)
- Faster flotation kinetics (lower energy consumption)

Differentiation potential

- **Customer:**
  - Biodegradability
  - Cost savings (mining and energy)
  - Reduction of emissions into water

→ Combines higher selectivity with excellent biodegradability
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 °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
Sodium and Potassium Methylate Solution

Process information

Application: Catalysts for Biodiesel
Customer Industry: Biodiesel
Market: Global

Sustainability performance

- Effective catalyst for biodiesel production
- High yield and high reactivity, lower raw materials use, reduced by-products and increased process effectiveness
- Biodiesel substitute reduced GHG emission compared to conventional diesel by up to 85 percent
- Potassium methylate enables production of biodiesel from waste materials such as used cooking oil or animal fat

Differentiation potential

- Reduced GHG emission
- Positive impact on energy and climate change
- Cost reduction

Sodium and potassium methylate enable effective production of biodiesel
We create chemistry