

Dispersions & Pigments Performance Chemicals



Industrial Solutions



**BASF**  
We create chemistry

# Industrial Solutions

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BASF Capital Markets Day, March 26, 2021



# Cautionary note regarding forward-looking statements

*This presentation contains forward-looking statements. These statements are based on current estimates and projections of the Board of Executive Directors and currently available information. Forward-looking statements are not guarantees of the future developments and results outlined therein. These are dependent on a number of factors; they involve various risks and uncertainties; and they are based on assumptions that may not prove to be accurate. Such risk factors include those discussed in Opportunities and Risks on pages 158 to 166 of the BASF Report 2020. BASF does not assume any obligation to update the forward-looking statements contained in this presentation above and beyond the legal requirements.*

# Industrial Solutions – focus, integration and customer value













**Broad portfolio** highly relevant to **specific customer industries**

Enabling **resource efficiency** and **sustainability** in customers' applications

Superior customer value through **deep application expertise** and chemical know-how

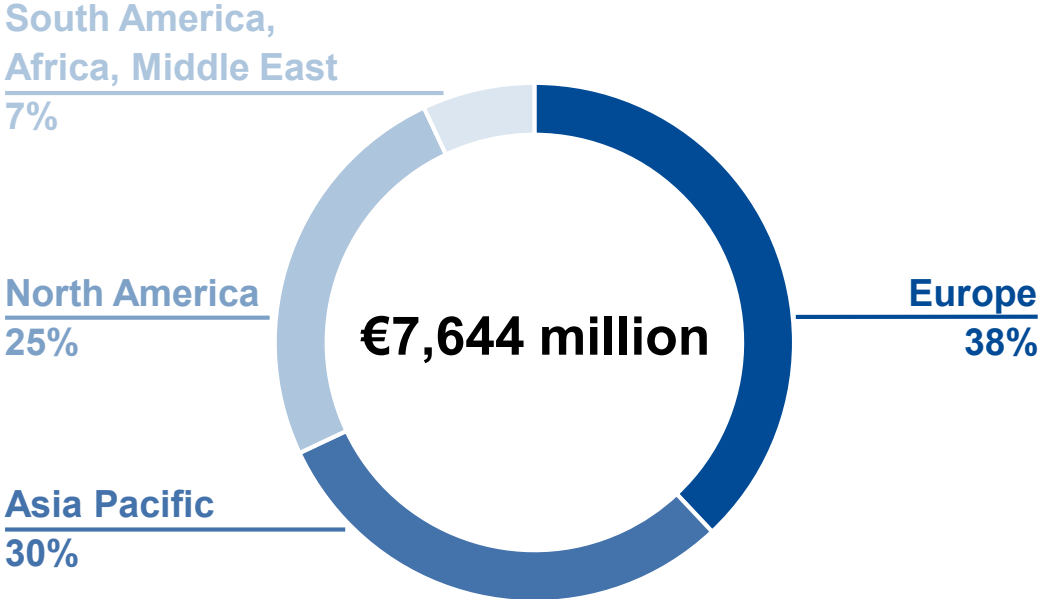
Strongly integrated in **BASF Verbund** via multiple value chains

# Each segment has a clear and compelling path forward

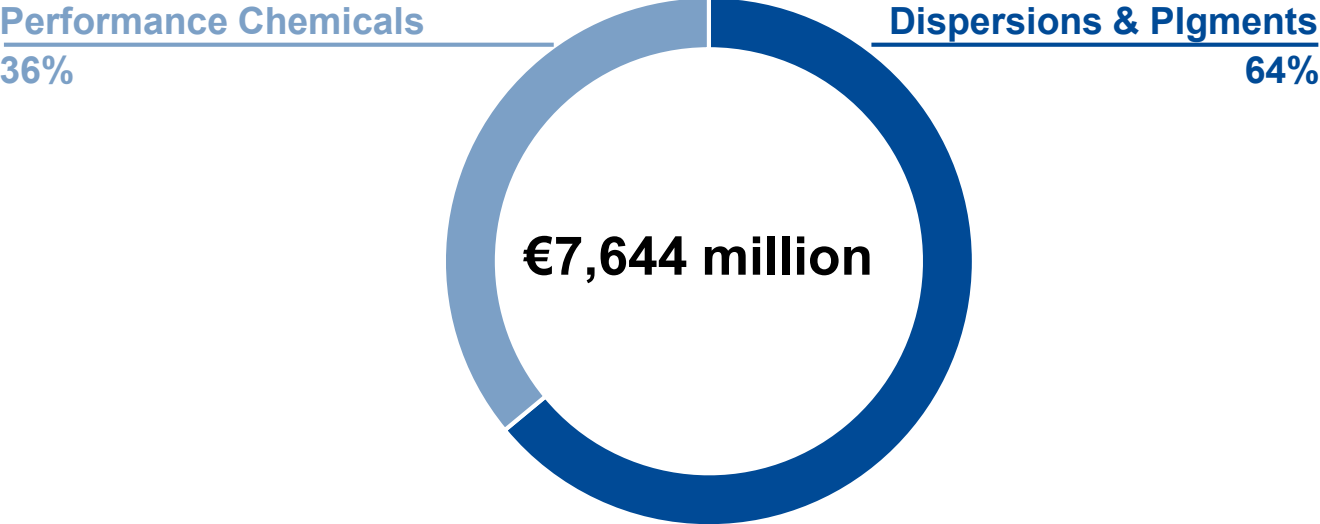
	Chemicals	Materials	Industrial Solutions	Surface Technologies	Nutrition & Care	Agricultural Solutions
% of sales 2020 <sup>1</sup>	14%	18%	13%	28%	10%	13%
EBITDA bsi 2020 <sup>1</sup>	1.3 billion	€1.7 billion	€1.2 billion	€1.0 billion	€1.2 billion	€1.7 billion
Core theme	Verbund	Advanced materials	Additives platform	Surface modification platform	Consumer ingredients	Integrated offering of crop protection, seeds & traits, digital solutions
Innovation focus	Improved or new processes	Applications, biomaterials	Formulations	Battery materials, surface effects	Biotechnology, formulations	Crop protection, seeds & traits, digital farming
Capex relevance						
M&A relevance						
Sustainability	ChemCycling™	Bio-based materials	More from less	Low-emission mobility	Bio-based and natural, traceability	Better with less

# Industrial Solutions: Our sales split at a glance

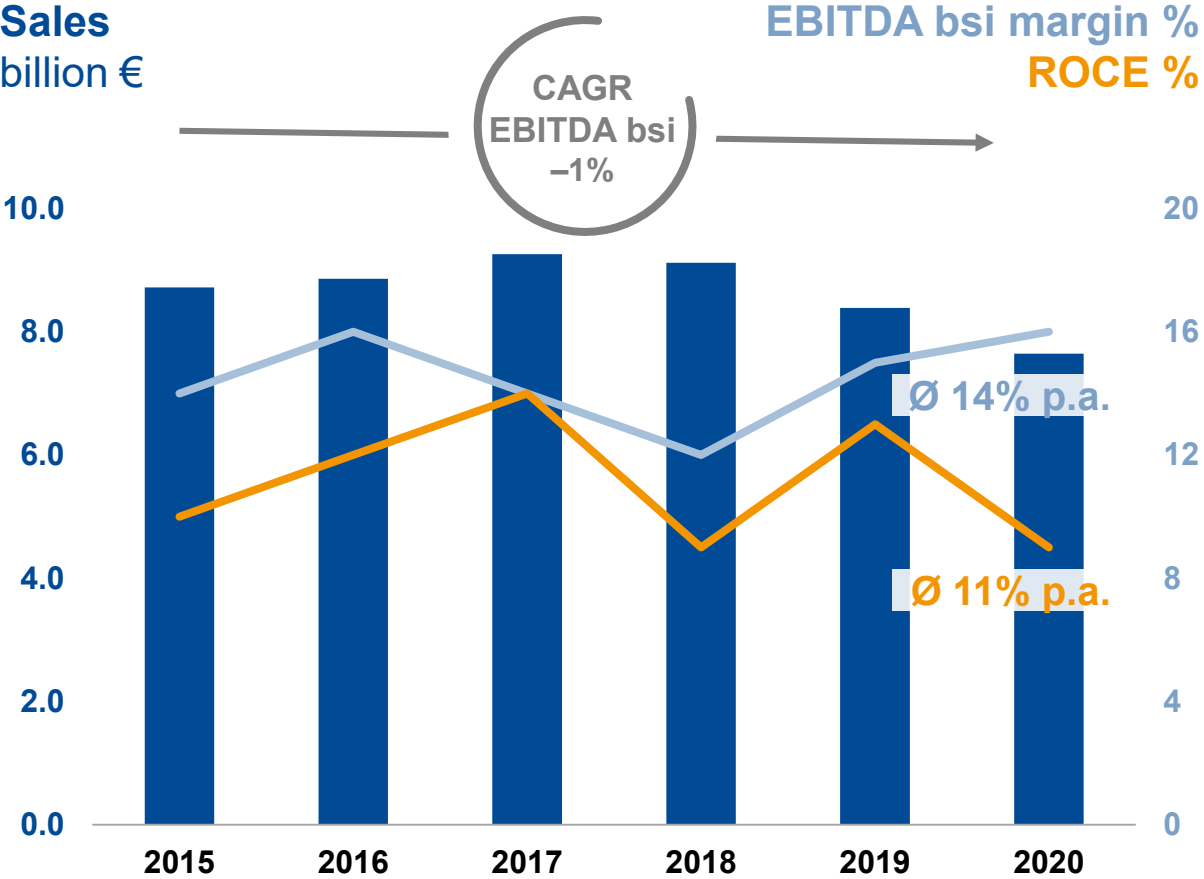
Sales by region<sup>1</sup> 2020



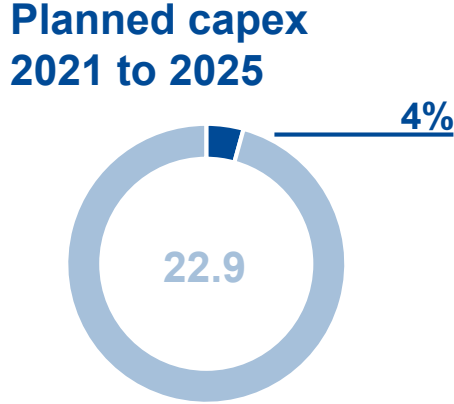
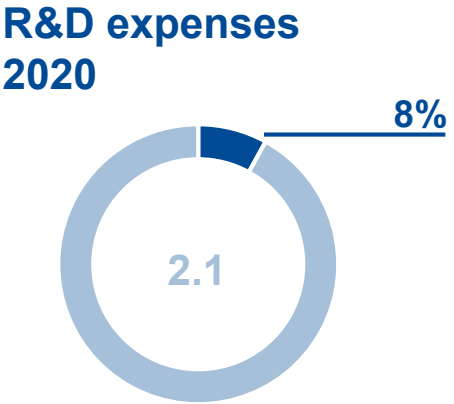
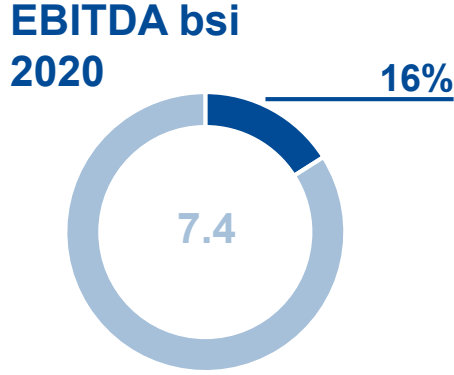
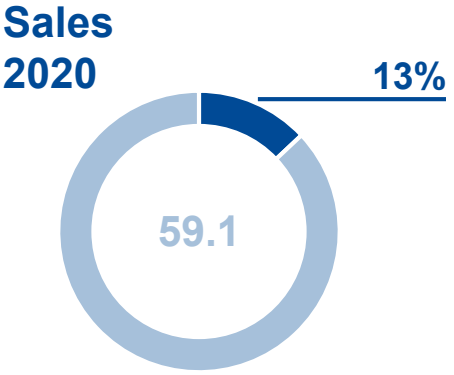
Sales by division 2020



# Industrial Solutions is a stable earnings contributor and cash generator for BASF

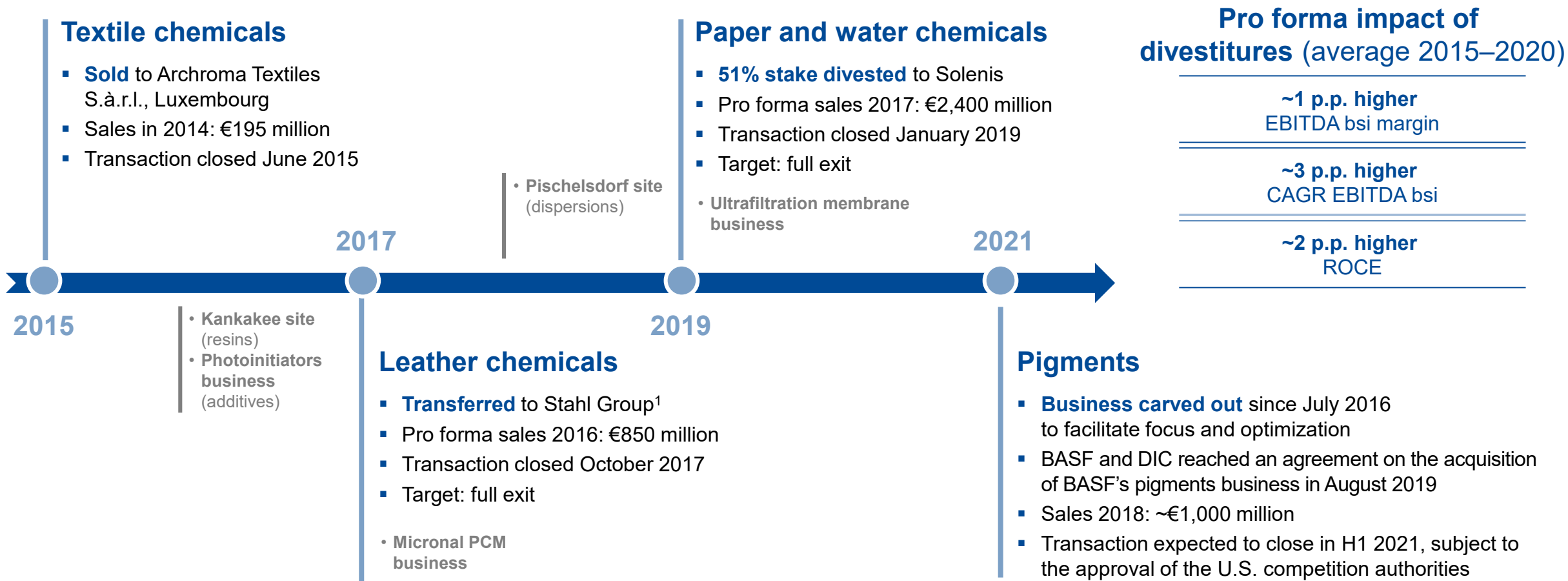


billion €



■ BASF Group ■ Industrial Solutions

# Value-optimizing exits have focused the portfolio and improved profitability



# Dispersions & Pigments: Our products add value to multiple industrial applications



**51%<sup>1</sup>** Dispersions **#1**

**Main applications**

- Adhesives
- Architectural, construction, paper coatings
- Nonwovens

**Key customer examples**

- Behr, Sika



**17%<sup>1</sup>** Resins **#3**

**Main applications**

- Automotive, industrial coatings
- Furniture and flooring
- Printing and packaging

**Key customer examples**

- PPG, Sun Chemical/DIC Group



**13%<sup>1</sup>** Additives **#3**

**Main applications**

- Adhesives
- Architectural, paper, industrial, automotive and wood coatings
- Printing and packaging

**Key customer examples**

- Akzo Nobel, Henkel



**18%<sup>1</sup>** Electronic materials **#4**

**Main applications**

- No.1 position in ultra-pure materials for semiconductors
- Displays
- Metal powder injection molding

**Key customer examples**

- TSMC, Intel, Samsung

Key materials for multiple industries, but predominantly serving the coatings industry



# Performance Chemicals: Leading market position in attractive customer industries



**Main applications**

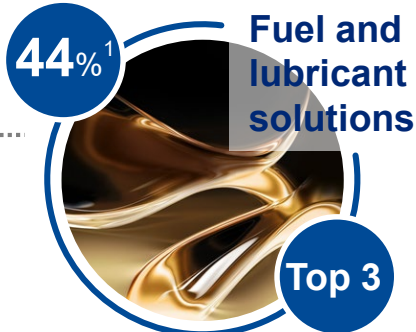
- Plastics in packaging, agriculture, automotive, construction, electronics

**Main products**

- Antioxidants
- Light stabilizers
- Customer-specific blends

**Key customer examples**

- Exxon, Sabic, LyondellBasell



**Main applications**

- Transportation
- Mineral oil

**Main products**

- Mineral oil additives
- Automotive fluids
- Polyisobutylenes
- Lubricant components
- Lubricant formulations

**Key customer examples**

- Lubrizol, VW, Shell



**Main applications**

- Mining and ore processing

**Main products**

- Additives and agents for leaching and solvent extraction
- Solid-liquid separation
- Flotation

**Key customer examples**

- Glencore, BHP



**Main applications**

- Oil and gas

**Main products**

- Additives and agents for drilling, stimulation, cementing, production and enhanced oil recovery

**Key customer examples**

- Schlumberger, Halliburton



**Main applications**

- Coatings, paper, plastics, automotive, agriculture

**Main products**

- Industrial performance minerals (calcined and hydrous kaolin)

**Key customer examples**

- Corning, Hansol

# Industrial Solutions is an integral part of the Verbund

36%

## Internal sourcing<sup>1</sup>

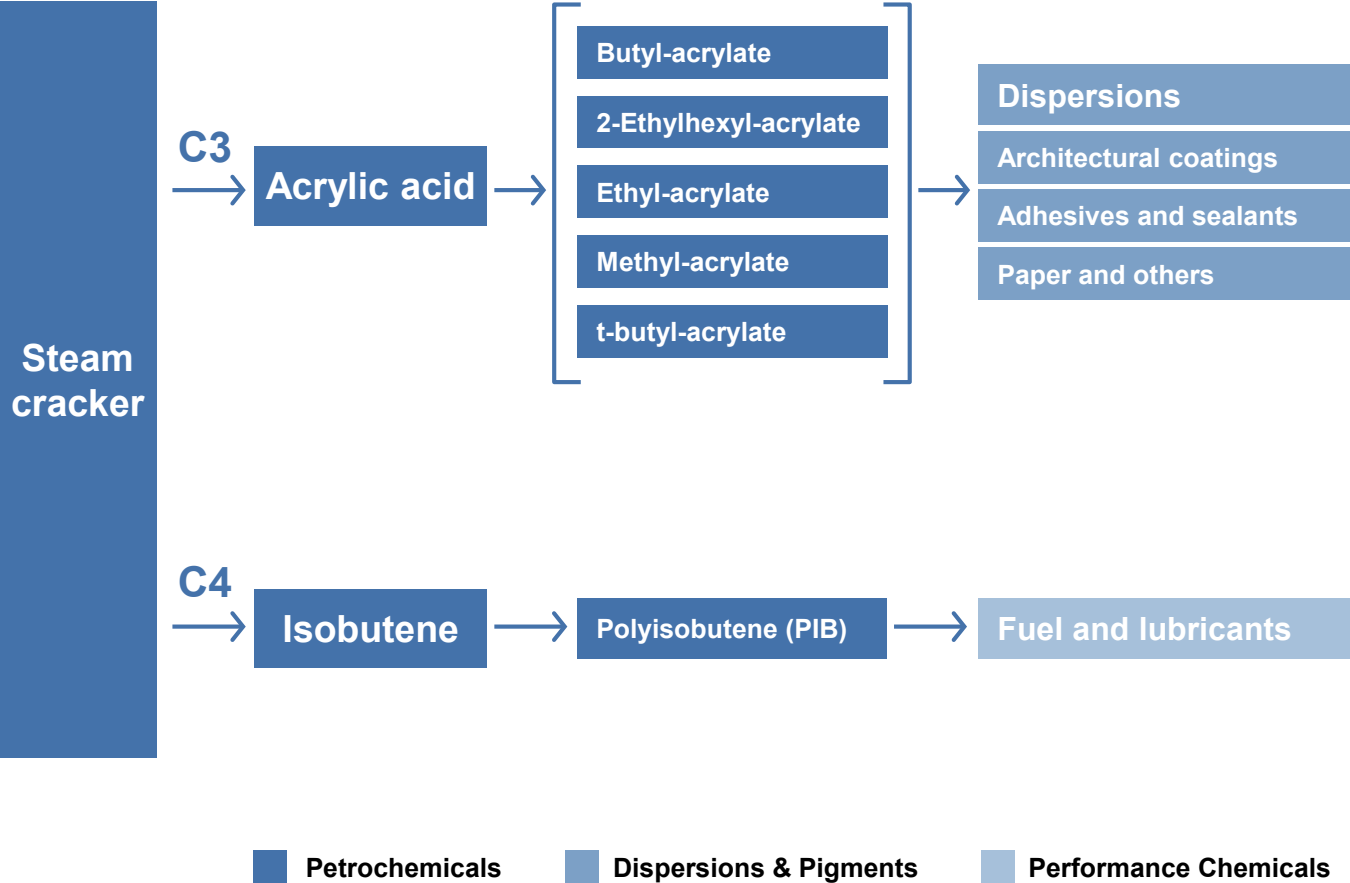
- C3 acrylic acid chain
- C2 ethylene oxide chain
- Oxo-C4 value chain
- Aromatics styrene monomers chain
- Others

6%

## Internal sales<sup>1</sup>

- Coatings
- Performance Materials
- Care Chemicals
- Others

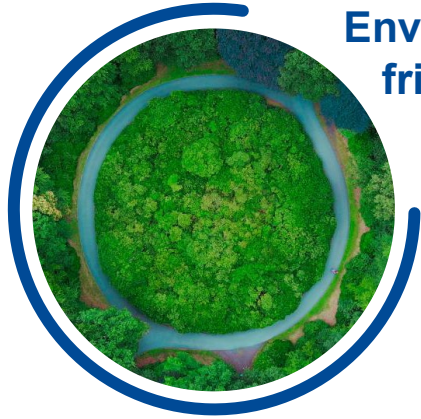
# Strong Verbund integration – adding value for BASF



- **~90%** of C3 raw materials for dispersions products are sourced from BASF or its joint ventures
- Dispersions are the highest value outlet for BASF’s C3 value chain
- **~85%** of the fuel additive and PIB business is based on BASF’s C4 value chain
- Fuel and lubricant solutions account for **~65%** of BASF’s isobutene production in Europe



# Catering to trends and demands in multiple industries



## Environmentally friendly industrial products

- Additives to improve mechanical recycling of plastics
- Dispersions and additives for low-VOC<sup>1</sup> and low-odor coatings
- Waterborne/biodegradable adhesives and polymers



## Efficient use of resources and reduction of waste

- Additives to reduce fuel consumption
- Products that enable higher yields in the mining industry
- Antioxidants and light stabilizers for more durable plastics
- Electronic chemicals for increased process and device speed



## Digitalization and new business models

- Efficient interfaces for joint development of products and formulations
- Example: Intelligent Mine, a combination of chemical and process expertise with artificial intelligence models

# Acronal® 6292: Converting challenges into solutions

High hiding power

Excellent scrub resistance

Low-odor

Eco-friendly



- **Acronal® 6292** is a styrene-acrylic binder, containing low volatile organic compounds. Its **increased pigment binding power** makes it a **cost-competitive** alternative to vinyl acetate ethylene emulsions
- A **biomass balance** version, **Acronal® MB 6492** from **renewable feedstock** uses less fossil-based resources and **reduces the carbon footprint** by up to 90% with no change in performance or customer formulation
- Acronal® 6292 facilitates the manufacture of **biocide-free paints** tested and certified by independent agencies
- Paints based on Acronal® 6292 provide **superior indoor air quality**. They are a growing part of product portfolios of major paint manufacturers
- The use of Acronal® 6292 provides a **broad latitude for paint formulations**

# Mechanical recycling is a fast-growing market enabled by innovative plastic additives

Mechanically recycled plastics globally  
million metric tons



## Addressing specific issues in mechanical plastics recycling through additive packages:

- **Stability:** Protection from oxidative damage
- **Quality:** Enhanced mechanical and optical properties

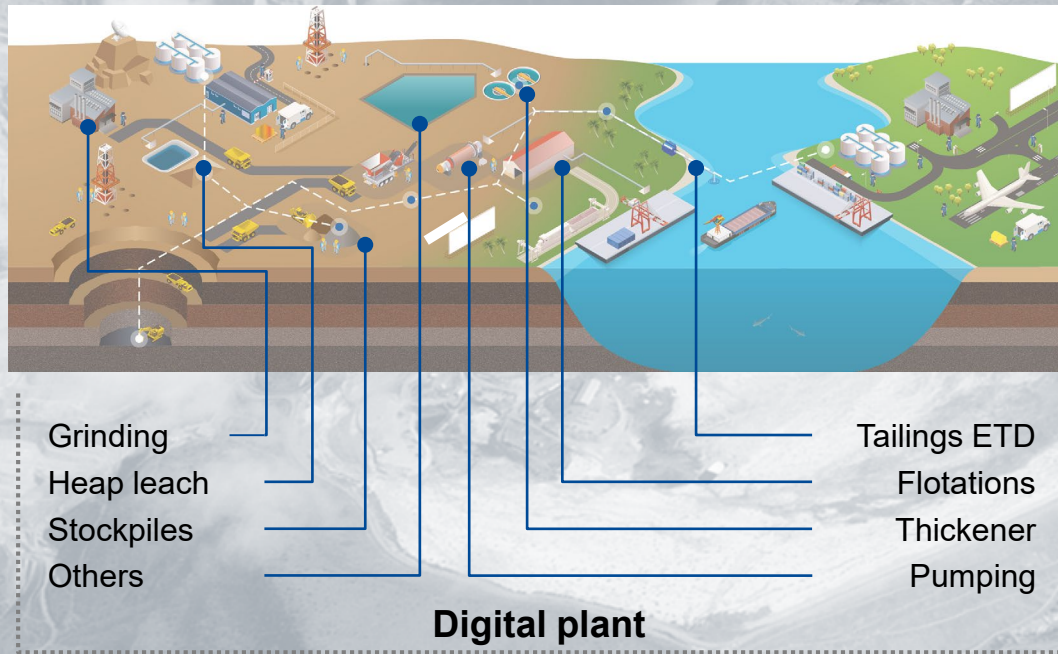
## Collaborating across a network of partners to enable prototyping and launch:

- Recyclers
- Manufacturers
- Brand owners and retailers



# We are leveraging our chemical know-how with digital technologies to build new businesses and growth fields

## BASF Intelligent Mine: Partnership with IntelliSense.io



Artificial intelligence  
digital expertise



Chemistry and mineral  
process expertise



Combination of unique chemical and process expertise and trusted artificial intelligence models enables:

- Increased efficiency and safety through smart and real-time decision making at mines
- Improved sustainability through better recovery, optimized dosing of chemicals and lower water usage
- Process optimization across the full beneficiation process, from pilot to port

> New service-based revenue stream for BASF leveraging complementary industry expertise



# Customer proximity and deep application know-how drive sustainable solutions

## Competence

- More than **15 major R&D sites** and **technology centers**
- **Networked technical expertise** and **industry know-how**
- **Joint development** and **collaboration** with strategic customers and external institutions

## Key success factors

- **Customer-driven** product development
- Performance enhancements by **combining product development, technical service** and **data harvesting**
- **Digital tools** to enable efficiency and accelerate time to market

## Markets

- **New formulations and components**
- **New business models**



# Industrial Solutions – our ambition for sustainable growth

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**2–4%**

organic volume  
growth p.a.

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**14–17%**

EBITDA bsi  
margin

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**>14%**

ROCE

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- Serve selected industry segments with an **optimized portfolio** and **high customer relevance**
- Build on **customer proximity** and deep **application know-how** to meet emerging customer needs
- Realize new business opportunities with **resource-efficient** solutions and **new business models**
- Focus on **cash generation** and **ROCE**



We create chemistry

# Industrial Solutions – Broad range of products for many different industrial applications

Divisions	BASF's offering for our customers	Financial figures billion €	2018	2019	2020
<b>Dispersions &amp; Pigments</b>	<ul style="list-style-type: none"> <li>▪ Dispersions</li> <li>▪ Resins</li> <li>▪ Additives</li> <li>▪ Electronic materials</li> <li>▪ Pigments<sup>1</sup></li> </ul>	Sales	9.1	8.4	7.6
		of which			
		Dispersions & Pigments	5.3	5.2	4.8
		Performance Chemicals	3.8	3.2	2.8
		EBITDA bsi	1.1	1.2	1.2
		EBITDA bsi margin (%)	12.0	14.9	15.6
<b>Performance Chemicals</b>	<ul style="list-style-type: none"> <li>▪ Plastic additives</li> <li>▪ Fuel and lubricant solutions</li> <li>▪ Oilfield and mining solutions</li> <li>▪ Kaolin</li> </ul>	EBIT bsi	0.7	0.8	0.8
		ROCE (%)	8.7	12.5	9.3
		Investments (incl. M&A)	0.4	0.4	0.3
		R&D	0.2	0.2	0.2

<sup>1</sup> On August 29, 2019 BASF and DIC reached an agreement on the acquisition of BASF's global pigments business. Closing is expected in H1 2021, subject to the approval of the U.S. competition authorities.

# Industrial Solutions – focused portfolio with core chemistries and deep application know-how

## Divisions

- Dispersions & Pigments<sup>1</sup>
- Performance Chemicals

## Strategy

- Drive organic growth in key industrial markets with low cyclicity
- Grow value-enhancing ingredients and solutions by building on industry and application know-how

## Verbund integration

- Deeply embedded in the C2, C3 and C4 value chains
- Tapping into BASF's strong expertise in catalysis, process development, formulation technologies and sustainable technologies

## Innovation

- Increased focus on formulation development
- Enhanced process innovation focus to maintain cost competitiveness

## Capex

- Selectively expand into high-growth regions by leveraging the integration into BASF value chains

## Sustainability

- Address resource efficiency as key market driver ("more from less")
- Capture opportunities from societal and regulatory trends

## Peers

- Arkema, Clariant, Dow, Lanxess