



WMF 2023

# Construction, Sustainability, and Materials

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Chairman and CEO Arkema (France), Co-Chair

Nancy, July 2023



# Building & Construction: a vast market, core to mankind activity



**~15%**  
of the  
world GDP

## With many subsegments that have different dynamics

Residential vs  
Non-residential

Single homes,  
Buildings,  
Infrastructure

New construction  
vs Renovation

## And a significant traditional geographical diversity

Weather,  
Culture,  
Raw Materials

Value chain  
structuration

Relative  
weight of  
subsegments

# Building & Construction have a high impact



## On Society and Health

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> **90%** time spent indoors



## On Climate and Resources

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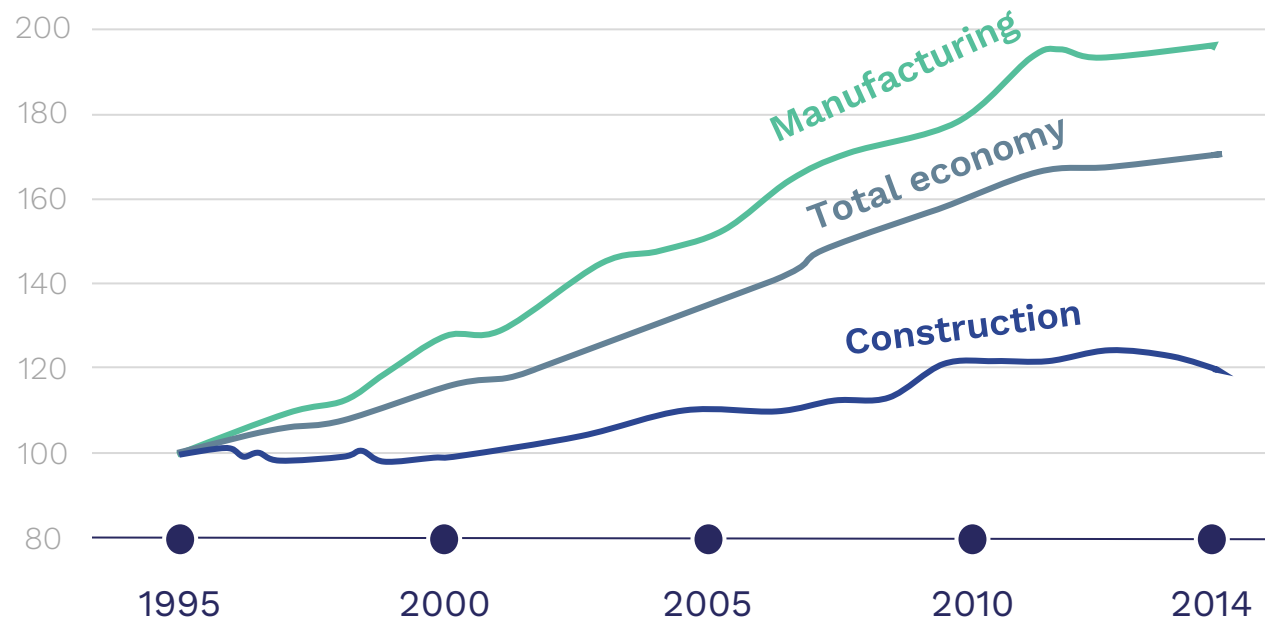
> **30%** CO<sub>2</sub> emissions & energy consumption

> **1/3** total landfill waste (EU)

# Limited productivity improvement over decades

**Real Gross value added per hour worked  
by person engaged 2005, \$**

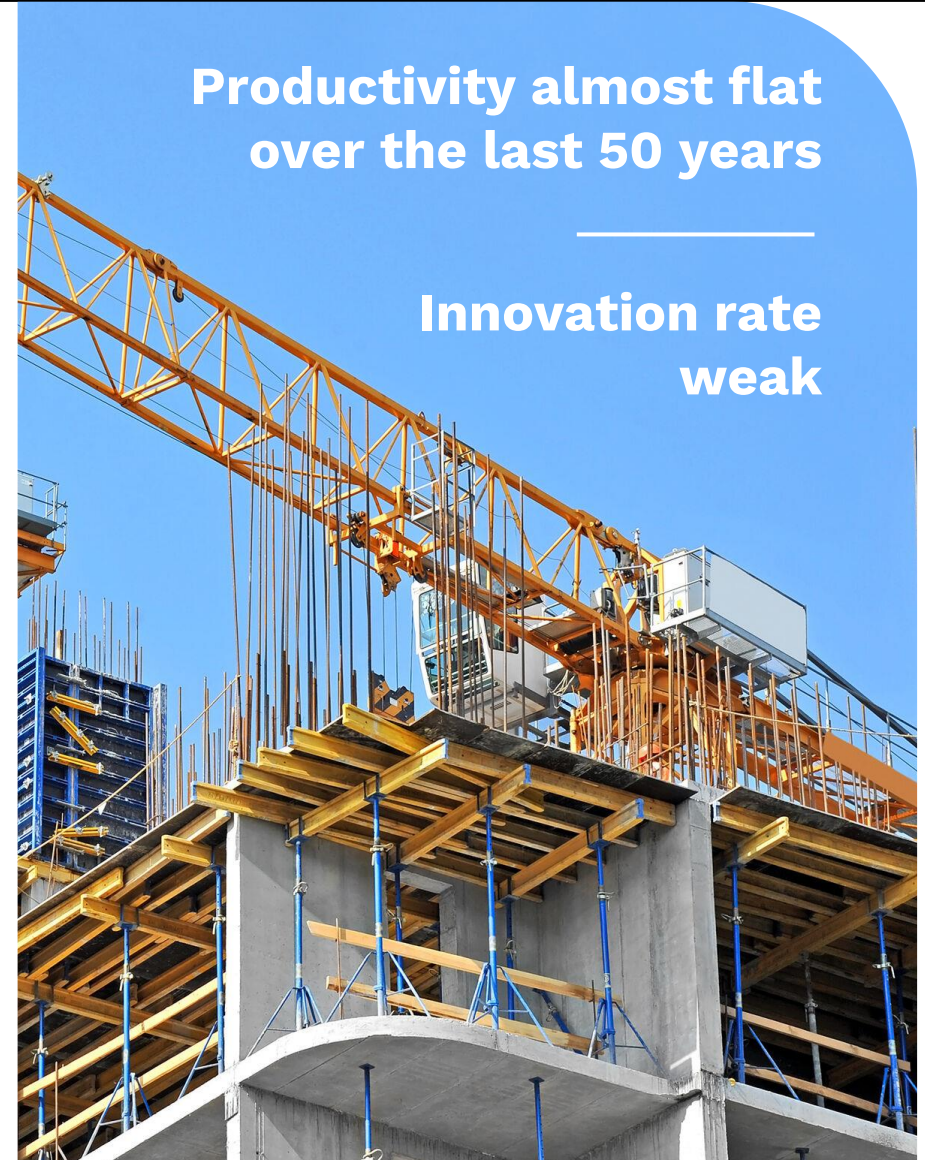
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Based on a sample of 41 countries that generate 96% of Global GDP  
Sources: OECD, WIOD, GGCD-10, World Bank, BEA, BLS, national statistical agencies of Institute analysis

**Productivity almost flat  
over the last 50 years**

**Innovation rate  
weak**



# Climate change may boost traditional innovation drivers



## **Increasing pressure and incentives**

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Regulations

Incentives

Energy prices

Carbon neutrality targets

Fast climate adaptation (e.g. “summer comfort”)

## **Material innovation accelerates to respond to demand of**

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Performance in use for energy savings

Embedded CO<sub>2</sub>

# Disruptive innovation approaches



## Off-site manufacturing and 3D Printing

- Higher quality, better material use
- Quicker and cleaner works



## Focus on life cycle by reducing waste, reusing, recycling

- Waste management in works
- Design for evolutivity and dismantling


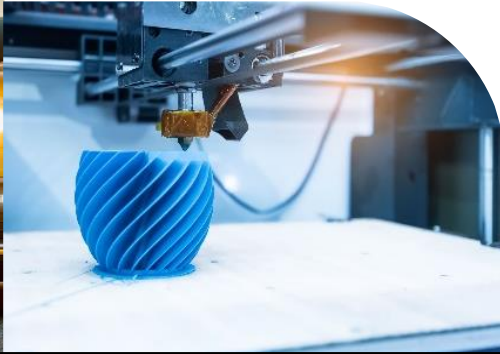


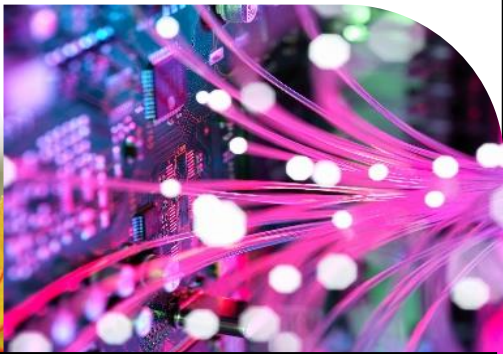


## Digitalization as an enabler

- Design
- Construction efficiency:  
Building Information Modeling
- Operation in use:  
Building Management System
- Traceability for repair and reuse

# At Arkema, we innovate for sustainability and performance

## We focus our efforts on 5 Innovation Platforms

				
New energies and clean mobility	Lightweight materials and design	<b>Living comfort and home efficiency</b>	Natural resources and the circular economy	Electronics solutions

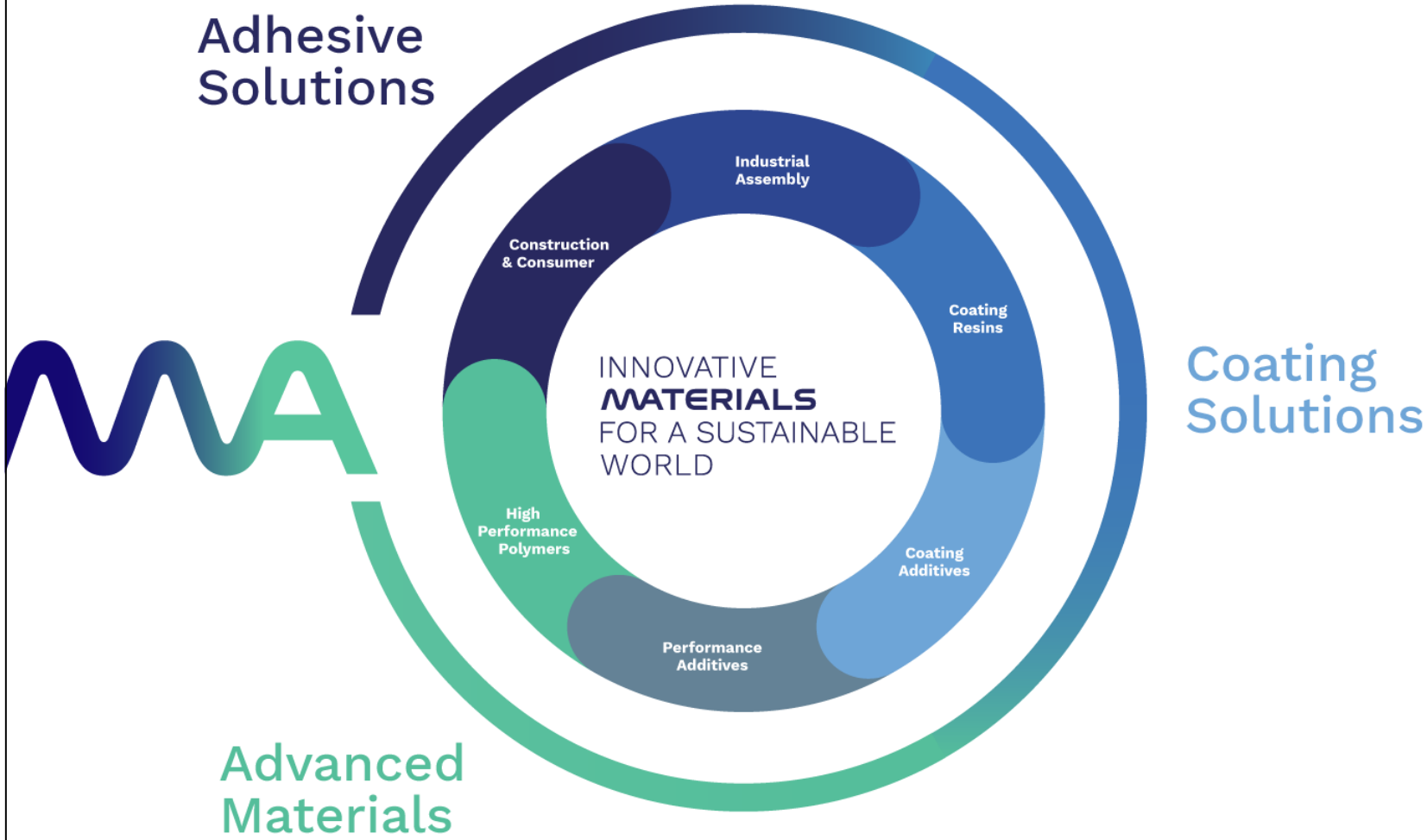
**>90%** of the patents we file are related to sustainable development

**53%** of our sales contribute significantly to UN SDGs\* in 2022

ImpACT+ target: **65%** by 2030

(\* Based on 86% of our sales assessed (excluding Ashland Performance Adhesives)

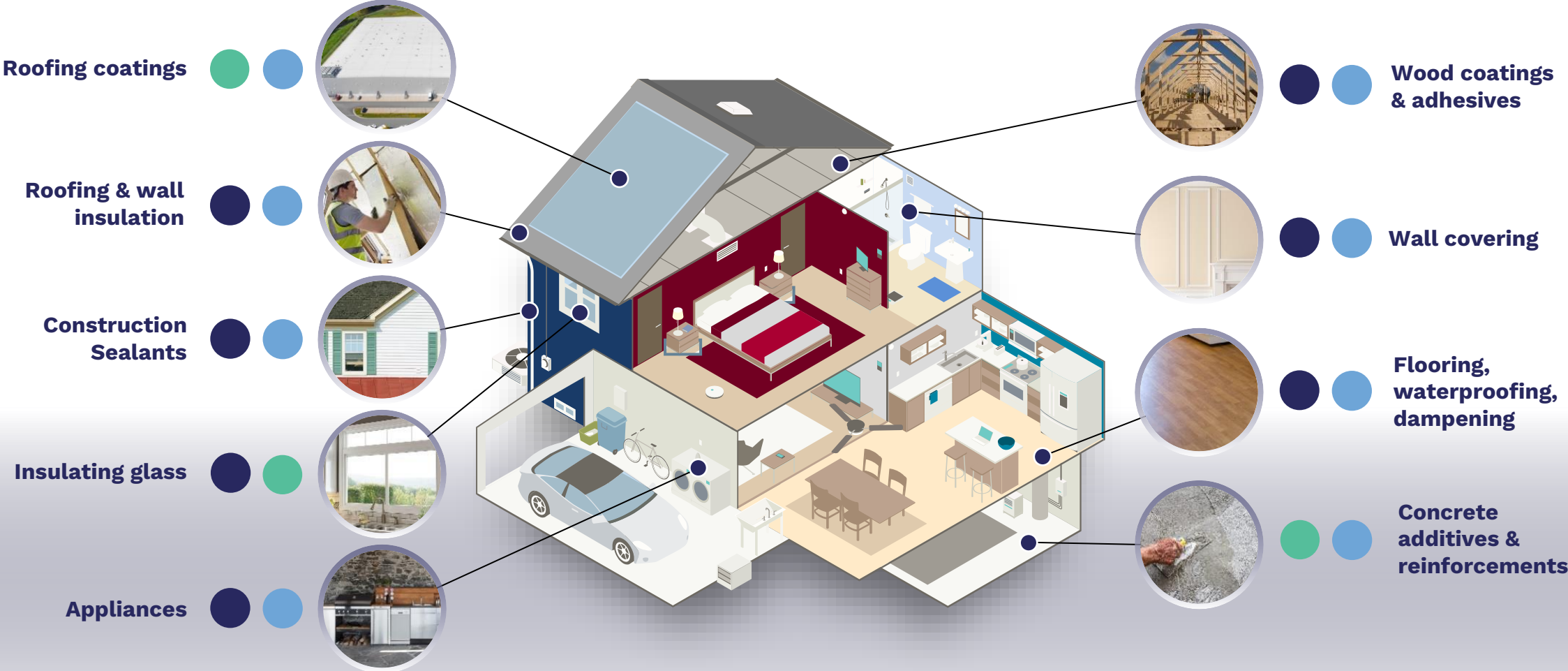
# Strong synergies between our 3 Specialty Materials segments





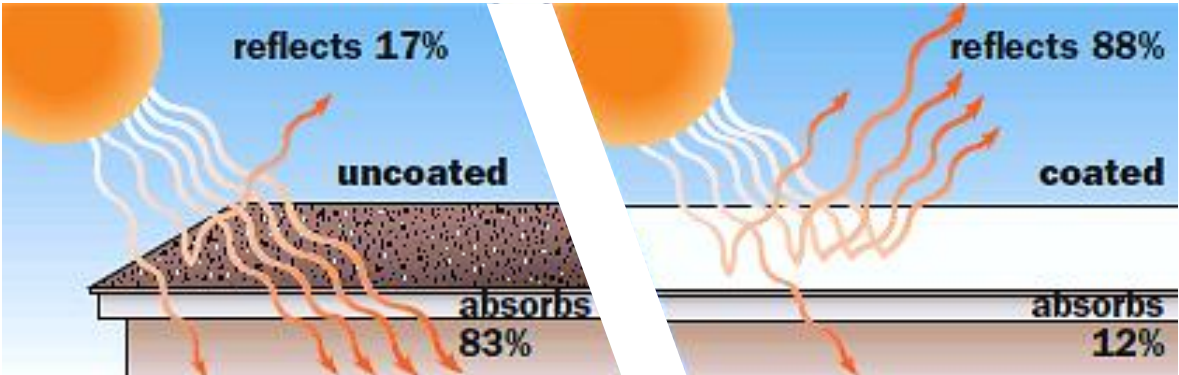
# Our solutions are everywhere

● Adhesive Solutions   ● Advanced Materials   ● Coating Solutions

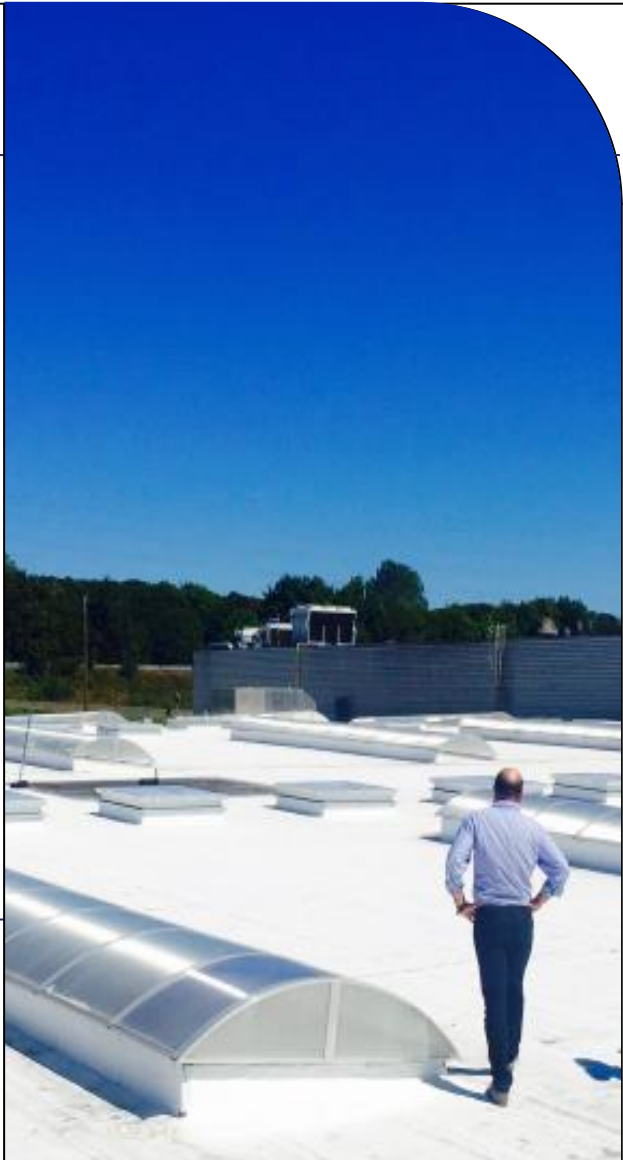


# Cool roofs to lower building temperatures and save energy

## Enabling energy savings



Can reduce interior temperature by **6°C to 10°C**



Thanks to Arkema's unique portfolio



BOSTIK

COAPUR™

ENCOR®  
FLEX

KYNAR AQUATEC®

COADIS™

# Efficient, durable and safe insulation

## Durable Insulating Glazings



Butyl Sealants



Molecular Sieves



## Safer Insulating materials

Glass fibers are held firm with performance **Encor<sup>®</sup> Viscodis<sup>®</sup>** acrylic insulation binders

**a new**  
formaldehyde free  
**technology**

# New coating solutions for more sustainable paints

Unique expertise & solutions in  
**low VOC curing technologies**

Solutions for  
**biobased solvent free interior paints**

Waterborne



High solid



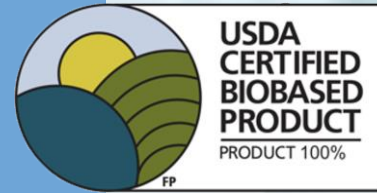
Powder



UV LED



**SYNAQUA**<sup>®</sup>



MADE FROM  
**97% BIOBASED**  
RAW MATERIALS\*

\* According to ASTM-D6866-12

# Waterproofing and humidity management

We create high performance technologies that help **control moisture & mold...**

...and others that **insulate homes** from water, noise and other disruptors

Hytec E736 Turbo



Aqua Blocker



Roll-Cote



Silentstik



And we also support more disruptive trends



**sto panel**

Prefab panel systems and roofing systems

**M** **Mighty Buildings**

Combining 3D printing, robotics & material science



**ARKEMA** INNOVATIVE  
**MATERIALS** FOR  
A SUSTAINABLE WORLD