IN-MOLD ELECTRONICS TECHNOLOGY

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SABIC AT-A-GLANCE

1976
Company established

35,000
Employees around the world

50
Countries of operations

4th
Largest global chemical company*

117th
Largest public company in the world

4
Core businesses

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84.5
US$ B**
Total assets

4.8
US$ B**
Net income

35.4
US$ B**
Annual revenue

≈ 150
New products each year

12,190+
Global patent filings

61
World-class plants worldwide

*Forbes 2017  **Billion
STRATEGIC INDUSTRIES WE SERVE

AGRI-NUTRIENTS
Our portfolio of high quality agri-nutrients play a vital role in helping to secure adequate global food supply and make it possible to produce more food from less land.

CLEAN ENERGY
SABIC’s specialty and polymer products can help create sustainable renewable-energy solutions for the future.

ELECTRICAL & ELECTRONICS
Manufacturers need to make products in a cost-effective manner, yet meet consumers’ expectations for style, ease of use and sustainability. Our materials are the foundation for the next generation of electronic devices.

CONSTRUCTION
We provide products to architects and builders who seek solutions to satisfy public demand for environmentally responsible structures while providing design freedom.

MEDICAL DEVICES
We help customers successfully address the challenges facing the industry by providing advanced technologies, a broad product portfolio, and a healthcare policy.

PACKAGING
SABIC polymers seek to help food and drink producers meet their goals while still providing sustainable benefits like lightweighting and environmentally-focused initiatives.

TRANSPORTATION
Automobiles, aircraft, rail interiors, heavy-duty trucks and other vehicles require new approaches to meet ever-rising requirements. We put our material, design and technical expertise to work to help OEMs meet this challenge and drive innovation to new levels.

CLEAN ENERGY
SABIC’s specialty and polymer products can help create sustainable renewable-energy solutions for the future.
OUR BUSINESSES

BUSINESS PORTFOLIO

PETROCHEMICALS
- Polyolefins
- PVC & Polyester
- Rubber Chemicals
- Specialty Polymers & Polymer Additives
- Olefins, Oxygenates and Aromatics
- Chemical Intermediates & Industrial Gases

SPECIALTIES
- Engineered Thermoplastics
- Specialty Compounds
- Sheet & Film
- Composites
- Additive Manufacturing
- Fluids
- Thermosets and Additives

AGRI-NUTRIENTS
- Nitrogen
  - Prilled Urea
  - Granular Urea
  - Ammonia
- Phosphate
  - DAP and Dark DAP
  - MAP
- Specialty
  - NPK
  - TGU

METALS*
- Long Steel
  - Rebar
  - Wire Rod
  - Rebar in Coil
- Flat Steel
  - Hot Rolled Coils
  - Cold Rolled Coils
  - Galvanized Rolled Coils
  - Pre-painted Rolled Coils

* Supplied under SABIC brand through Hadeed, a fully-owned SABIC Affiliate
KEY TRENDS: SURFACE FUNCTIONALIZATION
SPECIALTIES SBU: SURFACE FUNCTIONALIZATION

Films + Conductivity + Resistivity + Photonics + Barrier + Sensing → Hybrid / Printed Electronics → Structural / In-mold Electronics → Solutions → Consumer Electronics + Medical + Automotive + Robotics / Industrial
SABIC LEXAN™ PC and ULTEM™ PEI film for In-Mold Electronics (IME)

Courtesy of Tactotek™
HOW TO INTEGRATE ELECTRONICS ON 3D OBJECTS

From rigid and 2D electronics ............... ... to 3D integrated electronics

*Courtesy of Tactotek™
IME: VALUE PROPOSITION

TODAY

Design
- Enables styling: 3D electronics & packaging optimization
- Enables haptic, communications, touch, sensors

Several discrete components

TOMORROW

Engineering
- Weight saving up to 70%
- Thickness reduction, up to 90%
- Assembly simplification and electronics protection
- Cost: One injection tool vs many

One integrated part

*Courtesy of Tactotek™*
IN-MOLD DECORATION (IMD) + PRINTED ELECTRONICS
IME: COMBINING IMD AND PRINTED ELECTRONICS

Substrate
- Coated/Uncoated PC
- PC/PMMA PEI

Graphics printing
- Decorative inks Background Style

Functional printing
- Conductive inks Dielectric inks

Components integration
- LEDs
- IC components
- Sensors
- Transparent conductors

Thermoforming
- 3D parts

Injection overmolding
- Structural part Special touch effect

*Courtesy of Tactotek™
IN-MOLD ELECTRONICS: EXAMPLE OF FEATURES

**Integrated components:**

- Conductors
- Antennas
- LEDs
- IC components
- Transparent conductors
- Sensors
- Haptics-under development

*Courtesy of TactoTek™*
IME: SABIC’S SOLUTIONS

**A FILM**
3D formable coated LEXAN™ PC film HP92VT, HPXX*T
Uncoated high heat formable ULTEM™ 1000

**OVERMOLDING RESINS**
LEXAN™ RESINS
CYCOLOY™ PC/ABS
CYCOLAC™ ABS
LEXAN™ HFD
ULTEM™ 1000

**B FILM**
Uncoated formable PC film: examples LEXAN™ 8010,
LEXAN™ 8A13E, Uncoated high heat formable
ULTEM™ 1000

*XX = 92, 60, 40, 12
OUR DEVELOPMENT PARTNERS

- Technology developer
- Films & resins
- Inks & dielectrics
- Pilot Production
THANK YOU