We create chemistry that lets individual needs love global innovation.

The Global Leader in Catalysis
BASF — The Global Leader in Catalysis

As the world’s leading supplier of environmental and process catalysts, BASF’s Catalysts division creates chemistry for a sustainable future. We offer exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, we develop unique, proprietary solutions that drive customer success.

Driving Innovation Through Research and Technology

Our extensive experience has led us to gain the broadest knowledge base in the industry. Product innovation is driven by our significant and ongoing investment in R&D. This competitive strength allows BASF to bring customers the most effective and efficient solutions.

Strategic Collaboration Drives Our Customers’ Success

BASF helps our customers to be more successful through our experience, technological expertise, market know-how, and innovative strength in chemistry. As BASF - The Chemical Company, we are the world leader in chemicals and chemical processes. We develop distinctive solutions to meet our customers’ requirements through collaboration and partnerships.

Use your mobile device’s tag reader to learn more about catalysis.
Total Catalyst Solution

The value of the catalyst solution is measured by more than just its price. At BASF, we understand that it must include commercial and technical support, global supply, and responsive customer service. That's why we've built a commercial and technical group that collectively has unparalleled experience in the development and application of catalyst technologies across the entire range of catalytic processes. This expertise is further strengthened by a global team of customer service providers, more than 30 centers of manufacturing excellence and the capability of BASF’s global supply chain.

Comprehensive Portfolio of Products and Services

- **Mobile Emissions Catalysts**
  Emissions-control catalysts for light-duty vehicles, heavy-duty diesel vehicles (on- and off-road), motorcycles, and utility engines.

- **Precious Metals Services**
  Full suite of precious metal products and services including procurement, trading, sales, and refining as well as salts and solutions preparation.

- **Process Catalysts & Technologies**
  Adsorbents and catalysts supporting the chemical, petrochemical, polyolefin, refining, and gas processing industries including custom catalyst and manufacturing capabilities.

- **Battery Materials**
  Advanced application-specific cathode materials, electrolytes, and other materials to support higher energy density, improved efficiency and safety of lithium-ion batteries.

- **Catalytic Surface Coatings**
  Used in the global petrochemical industry, BASF Qtech offers advanced catalytic surface coatings for steam cracker furnace tubes and coils, enabling the Catalytically-Assisted Manufacture of Olefins (CAMOL™). The coatings improve operational profitability of steam cracker furnaces by reducing carbon formation, increasing on-line production time and reducing coke frequency, energy requirements and CO₂ emissions.

- **Clean Air Platform — Confined Space Air Quality & Stationary Emissions Control**
  Extensive line of catalysts and sorbents for emission reductions from power plants, aircraft, process industries, and a wide variety of other stationary applications. The portfolio includes oxidation catalysts for the reduction of VOC, greenhouse gases, and CO₂; reduction catalysts for NOx, ammonia, and N₂O; as well as mercury sorbents for the control of mercury emissions to meet regulatory requirements.
**EMPRO™ Mobile Emissions Catalysts**

**Principal Products**
- Three-Way Catalysts (TWC)
- Diesel Oxidation Catalysts (DOC)
- Catalyzed Soot Filters (CSF)
- Selective Catalytic Reduction (SCR)
- SCR on Filter (SCR.2F)
- Ammonia Oxidation Catalysts (AMX)
- Lean NOx Traps (LNT)
- PremAir® Ozone Decomposition Catalysts
- EvapTrap™ Air Intake Hydrocarbon Trap
- Four-Way Conversion Catalysts (FWC™)
- Multifunctional catalyzed soot filter (CSF.4)

**Our Award-Winning Technology**
- Developed the first three-way auto emissions catalyst
- Earned first US EPA Urban Bus Retrofit certificate

1976 • 1982 • 1995 • 2000 • 2

Awarded the United Nations “Award of the Decade” for environmental innovation and achievement

Commercialized the first catalyst system for destroying ozone

Use your mobile device’s tag reader to view BASF’s mobile emissions videos.
The World’s Leading Provider of Mobile Emissions Catalysts

Our mobile emissions catalysts are designed to protect the air we breathe by removing impurities, such as hydrocarbons (HC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM). We create catalysts for:

- Light-duty vehicles (gas and diesel)
- Heavy-duty diesel vehicles (on- and off-road)
- Motorcycles, utility engines, and more
- Alternative fuel vehicles including natural gas vehicles

- Awarded the National Medal of Technology for Three-Way Catalysts (TWC) development
- Commercialized first emissions catalyst for non-road diesel engine applications
- Announced FWC™ catalyst to remove 4 pollutants with 1 component from gasoline-engine exhaust
- Earned Edison Patent Award for advanced zeolite catalyst
- Introduced CSF.4 which can eliminate one catalytic component from diesel-engine exhaust systems
- Earned the Environmental Excellence in Transportation Award
- Introduced CSF.4 which can eliminate one catalytic component from diesel-engine exhaust systems

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Precious Metals Services

Full Loop Service Provider

As a world leader with decades of experience in Platinum Group Metals (PGMs), we offer “full loop” services and products that include:

- An integrated trading platform approach
  - Price risk mitigation
  - Enhanced visibility to supply/demand fundamentals
  - Robust financial service alternatives (e.g. hedging and leasing)
  - Global trading offices provide 24/7 access to world metals exchanges and key bullion centers

- Recycling of spent automotive & process catalysts
  - Comprehensive refining technologies
  - Resource efficient, environmentally responsible
  - Highly developed sampling methods and analysis
  - Synergy with integrated trading platform

As a leading supplier of environmental and process catalysts, BASF leverages its unparalleled market insight and decades of metal sourcing, trading and hedging expertise to create a tangible competitive advantage for our customers. In addition, we offer sophisticated systems for precious metal refining and recovery to create viable secondary sources of PGMs.

24/7 Global Market Presence

BASF maintains 24-hour market access with offices in Tokyo (Japan), Seoul (Korea), Shanghai (China), Moscow (Russia), Zug (Switzerland), London (UK), and Iselin, NJ (USA).

BASF’s metal is recognized as ‘good delivery’ on major exchanges and in key bullion centers, including CME, TOCOM, London and Zurich. The EIB (Engelhard Industrial Bullion) prices are recognized as leading benchmark prices for consumers of precious metals products. BASF is a founding member of the London Platinum and Palladium Market (LPPM).
Global Leader in Precious Metals Recycling & Refining

To create superior precious metals products, BASF starts with high-purity precious metals. After manufacturing at our ISO 9002-certified facilities, our PGM salts, solutions and activated metal powders are used to create both heterogeneous and homogeneous catalysts. Based on our customers’ specific needs, we can also design and develop customized compounds to meet their exact requirements.

PGM Recycling, Recovery & Re-use from Scrap Auto Catalytic Converters & Process Catalysts

Spent automotive catalytic converters and process catalysts often contain precious metals of considerable value which can be recycled and recovered by a reliable and trusted partner. With 150 years of service and an established model of integrity, BASF Metals Recycling can provide customers with superior overall value.

We recycle and refine precious metals contained in scrapped automotive catalytic converters. We accept ceramic catalytic converters, both canned and as monolith, as well as metallic catalytic converters. Further, auto catalyst converters vary widely in quality in terms of precious metals content.

Additionally, BASF reclaims metal from spent process catalysts on a toll basis for re-use in the manufacturer of fresh catalysts. Our highly-developed sampling and analysis provides precise results for recycling lots with detailed documentation provided at each step.

When waste is value, it’s because at BASF, we create chemistry.
Process Catalysts & Technologies

Chemical reactions require catalysts. As the global leader in catalysis, BASF acts through continuous product and process innovations in collaborative partnerships with our customers. The result is a broad catalyst portfolio backed by dedicated customer and technical service and enabled through the strength of BASF.

Adsorbents
BASF offers adsorbents for a broad range of fuel and air-purification applications in the chemical, gas processing, petrochemical and refining industries. Our products include:

- Activated Alumina Adsorbents
- Activated Bentonite Adsorbents
- Alumino-Silica Gel (Sorbead®) Adsorbents
- Catalyst Substrates & Intermediates
- Metal Oxide Adsorbents
- Molecular Sieve Adsorbents

* In Europe, Sorbead® adsorbents are known by the registered trade name KC-Trockenperlen®

Chemical Catalysts
BASF offers catalyst solutions along the chemical synthesis value chain including catalysts for:

- Environmental & Fine Chemicals
- Oleochemicals & Biorenewables
- Oxidation & Dehydrogenation
- Petrochemicals
- Fuel Processing Catalysts for Fuel Cells
- Syngas Process (Pre-reforming)

Polyolefin Catalysts
BASF offers Lynx® polymerization catalysts for polyethylene and polypropylene, as well as custom polyolefin catalysts that offer increased plant throughput and polymer differentiation.
Experience BASF catalyst process unit animations in 3D Augmented Reality (AR).

**Refining Catalysts**
BASF delivers innovation, value and performance to refineries. Our portfolio of Fluid Catalytic Cracking (FCC) catalysts, additives, and co-catalysts is supplemented by expert technical support and services.

**Custom Catalysts**
BASF offers a broad portfolio of process catalyst technologies and unrivaled technical expertise that is critical to the successful development and commercialization of custom catalyst solutions.
Battery Materials

Comprehensive offer for eMobility, consumer electronics, and stationary storage applications.

- HED™ NCM (Nickel Cobalt Manganese) cathode materials
- HED™ LFP (Lithium Iron Phosphate) cathode materials
- HED™ LMO (Lithium Manganese Oxide) cathode materials
- HED™ NCA (Nickel Cobalt Aluminum Oxide) cathode materials
- Selectlyte™ Electrolytes
- Ovonic™ NiMH (Nickel Metal Hydride) technology licensing
- Global R&D and Application Services
- Optimized Material Systems

Understanding of the Cathode/Electrolyte system allows us to effectively predict and design optimized material systems with new performance requirements faster and more effectively.

It is our goal to make our customers even more successful through our core strengths.

BASF is the leading chemical company serving the automotive industry

Global organization combining economy of scale with customer proximity

Large R&D funds driving innovations in key geographical regions

Comprehensive portfolio, leveraging integrated approach

Unique IP position & FTO for all major applications

Use your mobile device’s tag reader to learn more about BASF’s Battery Materials.
Driving New Business Opportunities

BASF’s Catalysts division is committed to expanding its technologies and markets beyond those we currently serve, creating new business platforms to drive future sustainable growth. We are targeting these strategic growth platforms in particular:

- **Clean Air**
  Building on our extensive technology expertise in emissions control, we are expanding our capabilities to provide solutions to enable clean air for a sustainable future.
  As a pioneer in the clean air industry, we have a broad range of competencies to meet customer requirements for air quality and regulatory compliance, including greenhouse gas abatement. We are now expanding our focus to address a wider scope of applications that can positively affect health, manufacturing, equipment operation, and odor control.
  We can leverage our expertise to help customers find solutions to improve air quality wherever needed, including confined spaces such as buildings, manufacturing facilities, and residential housing.

- **Sustainability is at the core of BASF’s purpose:**
  "We create chemistry for a sustainable future."
  One way BASF contributes is by providing innovative solutions that help its customers make their products more sustainable.
  By reconciling profitability with social responsibility and environmental protection, we are unlocking sustainable benefits for our customers and for BASF. Our solutions are enabling high performance and continuous operational improvements while minimizing environmental impact.
  At BASF, we combine applications engineering expertise with innovative design and chemistry. This creates a more sustainable operation and environment for our customers and along the value chain.

- **Catalytic Surface Coatings**
  Leveraging our market and technical expertise in Catalysis, we are developing sustainable, leading-edge catalytic surface coating solutions for the petrochemical industry.
  BASF Qtech offers advanced catalytic surface coatings that are applied on the internal surfaces of steam cracker furnace tubes and coils. This enables the Catalytically-Assisted Manufacture of Olefins (CAMOL™) from a range of petroleum feedstocks.
  The coatings improve operational profitability of steam cracker furnaces by reducing carbon formation, increasing on-line production time and reducing de coke frequency, energy requirements and CO₂ emissions.

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**Key Capabilities of BASF’s Catalysts division**
- Technology leadership in mobile emissions and process catalysis
- Recognized precious metals expertise
- Partnerships with industry leaders
- Strong position in Asia through joint ventures
- Largest global R&D capability
- Operational excellence in catalyst production and use
About Us

BASF’s Catalysts division is the world’s leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF’s Catalysts division develops unique, proprietary solutions that drive customer success.

BASF - The Chemical Company

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