

# Clariant Capability Showcase

SOCMA 2025  
Nashville, TN

Clariant Catalysts  
01.02.2024

Greater chemistry

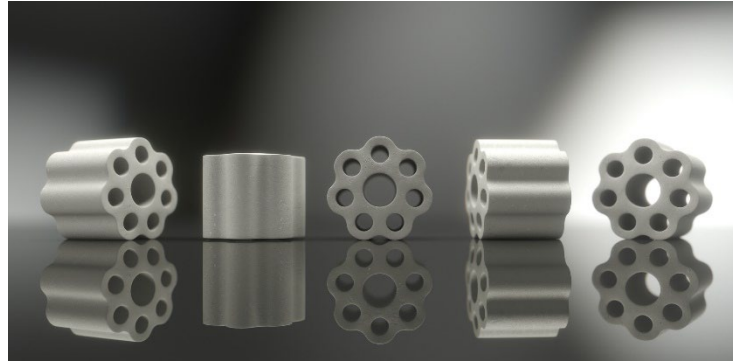


# Clariant at a Glance



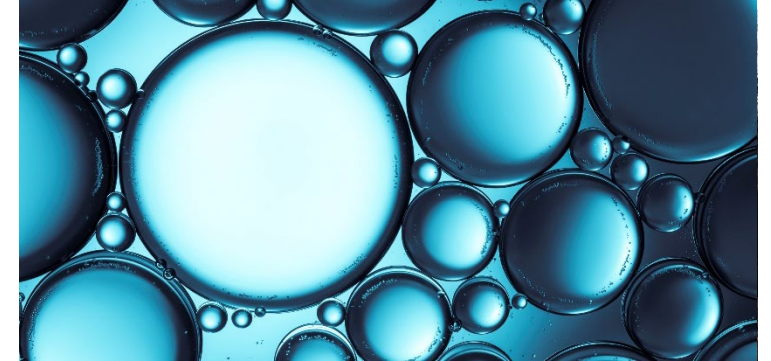
## Care Chemicals

- Personal & Home Care
- Crop Solutions
- Industrial Applications
- Base Chemicals
- Oil Services
- Mining Solutions



## Catalysts

- Syngas & Fuels
- Ethylene
- Propylene
- Specialties
- Biofuels & Derivatives
- Applied Catalyst Technology



## Adsorbents & Additives

- Purification
- Foundry & Specialties
- Cargo & Device Protection
- Coatings & Adhesives
- Plastics
- E-Mobility & Electronics

# We are an independent catalyst manufacturer with 70+ years in catalyst expertise and innovation

Global R&D, scale-up, and manufacturing capabilities

15

production sites with  
> 50,000 tpy capacity

20

new catalysts launched per  
year on average

1 to 5000

kgs of scale-up expertise from  
pilot to commercial scale

- Dedicated assets for customers and multipurpose lines
- Multiple manufacturing lines for production trials
- Identical unit operations in pilot and commercial scale for faster scale-up
- Dedicated custom team to ensure firewall and IP protection



# Custom catalyst manufacturing for a range of applications thanks to a broad range of catalyst expertise



Syngas

- Ammonia
- Methanol
- Hydrogen
- Fuel cell
- GTL/Fischer-Tropsch



Refinery/Fuels

- Gasoline Isomerization
- Gasoline from Olefins
- Diesel from Olefins
- Diesel Dewaxing
- Fuels from alternative feedstocks
- Purification of gaseous and liquid streams



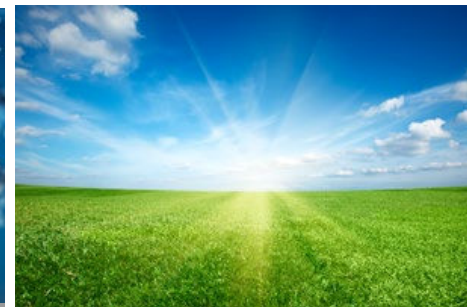
Petrochemicals

- Steam cracker
- Olefins purification
- Ethylene derivatives
- Styrene
- On-purpose Propylene
- On-purpose Butylene
- Polypropylene



Chemical Catalysts

- Oxidation
- Hydrogenation
- Bio-based feedstock
- Fine Chemicals



Emissions Control

- Industrial off-gas treatment
- Exhaust gas treatment for stationary engines
- Zeolite powders for diesel exhaust applications

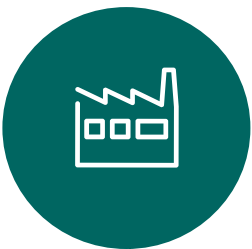


# Our collaboration models: We are flexible to work with, and our models are based on your individual needs



## Custom Manufacturing

We develop a manufacturing process, and we produce to your specs with our know-how



## Toll Manufacturing

Existing catalysts made to your specifications with your know-how



## Licensed Manufacturing

Catalyst sales by Clariant, royalty paid to IP owner



## Catalyst Design










We develop a new catalyst for an existing application



## Joint Development

New catalyst is needed for a process still being developed.

# What is custom catalyst manufacturing?

	commercial recipe exists	manufacturing process exists	lab recipe exists only	scale-up required	we develop production process	we produce to your specs
Custom catalyst manufacturing						
Toll manufacturing			<div>adapted to our assets</div>			

We offer both, but our strength lies in custom catalyst manufacturing know-how

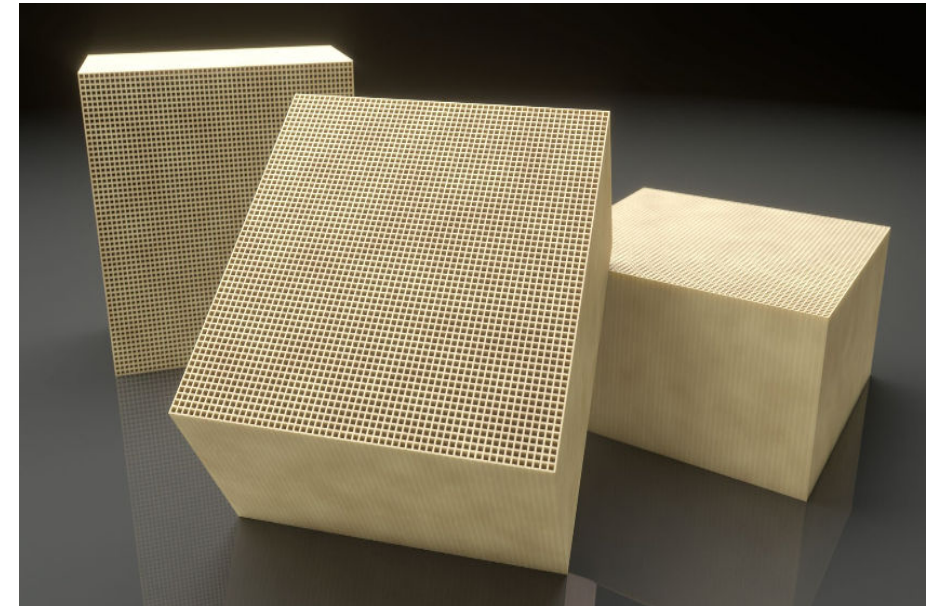
# Production Capabilities - Precipitation

- ❖ Acid-Base Precipitation
  - ❖ Heated/Chilled
  - ❖ Stainless Steel & Glass-Lined
- ❖ Filtration & Washing
  - ❖ Filter Press
  - ❖ Decanting
  - ❖ Rotary Filter
- ❖ Reslurry Vessels & Spray Drying
  - ❖ Nozzle Spray Drying
  - ❖ Rotary Atomizer Spray Drying



# Production Capabilities - Impregnation

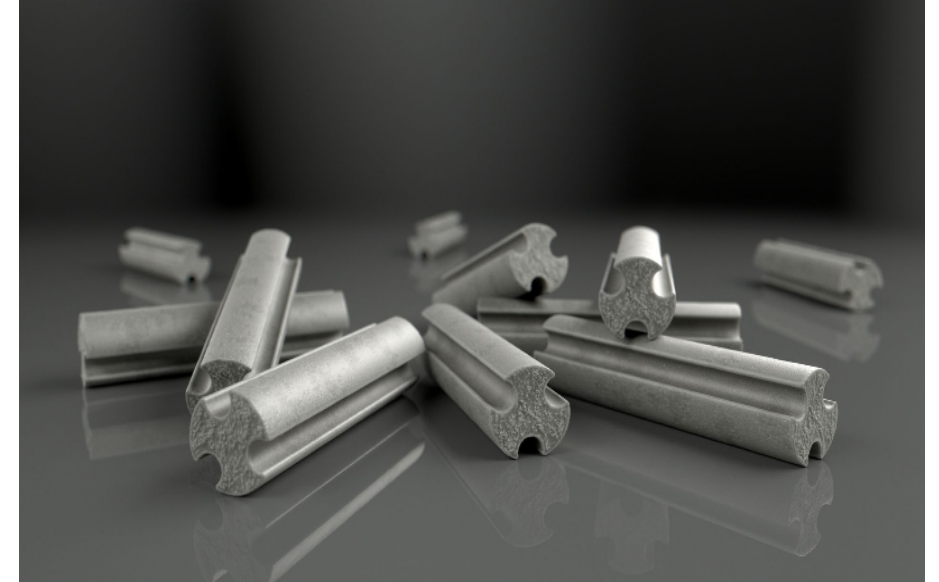
- ❖ Incipient Wetness
- ❖ Excess Soak Impregnation
- ❖ Vacuum Impregnation
- ❖ Controlled Eggshell Coating
- ❖ Washcoating





## Production Capabilities - Forming

- ❖ Extruding
- ❖ Tableting
- ❖ Pelletizing
- ❖ Granulation & Grinding
- ❖ Spheroidizing



# Production Capabilities - Calcination

- ❖ Calcination in Air, Nitrogen, and Steam
  - ❖ Box Ovens
  - ❖ Belt Calciners
  - ❖ Rotary Calciners
  - ❖ Tunnel Kilns
  - ❖ Fluid Bed Drying
- ❖ Vacuum Drying
- ❖ Flash Drying





## Production Capabilities - Other

- ❖ Reduction & Stabilization
- ❖ Passivation of Pyrophoric Catalysts
- ❖ Zeolite synthesis
- ❖ Mixing & Compounding
- ❖ Sulfurization
- ❖ Regeneration



# The collaborative approach with our customers throughout the process accelerates time to market

## Our Team



## Collaboration with Customers

AIR  
PRODUCTS



Hydrogenious<sup>LOHC</sup>

LUMMUS  
TECHNOLOGY



سابك  
SABIC

AIR COMPANY

▶▶ A Clariant custom catalyst project lasts  
**0.5 to 2.0 years on average**



# Benefits of working with Clariant for custom catalyst manufacturing



**Equipment and  
capabilities**



**Speed to  
market**



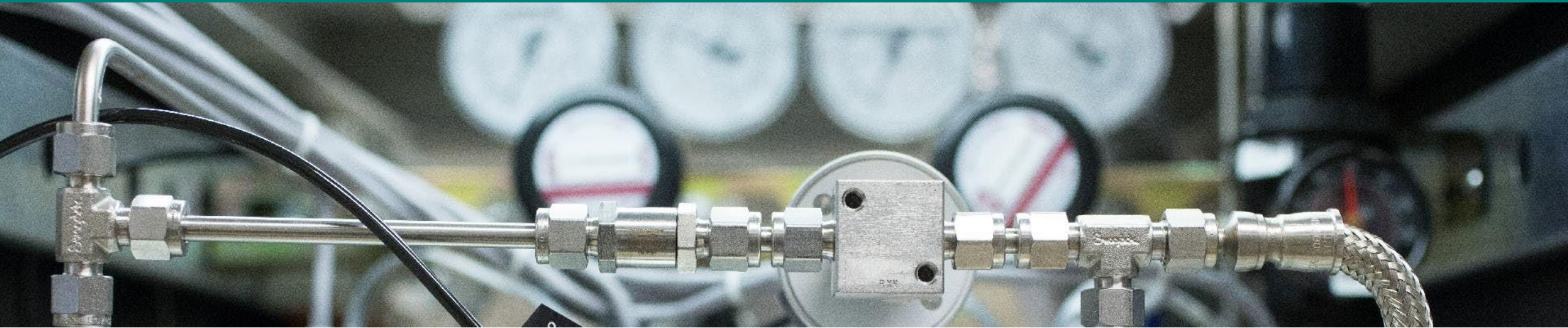
**IP protection &  
firewalls via  
dedicated team**



**Flexible custom  
solutions**



**Independent  
catalyst supplier**



# Thank You! Please Come see us at Booth 615!



**Jordan Knapp**  
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**Clariant Custom Catalysts**

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