Transition-Metal Catalysis

Your experienced partner with a full service offering

> 30 years of experience in developing, tailoring & commercializing catalysts for organic reactions

Our in-house library of homogenous catalysts comprises:

- Approx. 1200 ligands
- Approx. 250 metal precursors
- All important ligand classes.

Catalyst/product separation by nanofiltration for catalyst recycling (Evonik membrane technology).

> 20 years of experience in catalytic process development

A complete portfolio of catalyst technology

Evonik is a leading supplier of heterogeneous catalysts

- Precious metal powder catalysts (>100 commercial products)
- Custom-made precious metal powder catalysts
- Raney-type catalysts (>10 commercial products)
- Continuous process catalysts

Inhouse catalyst production

Evonik offers the advantages of a combination of in-house catalyst development, production, as well as the development and scale up of the final organic process.

Your advantage:

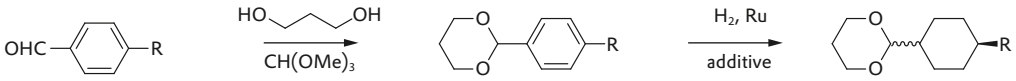
- Superior technical solutions
- Quicker timelines
- Secure supply chain
- Seamless catalyst recovery

Broad range of covered reaction types

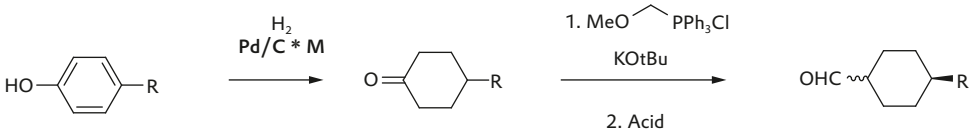
- (Enantioselective) hydrogenation
- (Enantioselective) reductive amination
- Hydroformylation
- C-X coupling
- C-C coupling
- Metathesis
- Oxidation
- Dehydrogenation
- and many more

EVONIK
Leading Beyond Chemistry

Efficient and flexible solutions: Finding the most cost-effective solution



Route 1: Hydrogenation of benzaldehyde at < 6 bar. Addition of metal salts allowed for quantitative conversion at 6 bar instead of 20 bar.



Route 2: Selective hydrogenation of phenols. Doping of Pd/C catalysts allowed a high conversion of phenol to cyclohexanon with minimal formation of cyclohexanol.

From first lead detection to a scaleable process – our capacities around the world:

- Globally cGMP production of APIs in five different sites
- Up to 25 bar
- 80 °C – 200 °C
- 100 – 16.000 l
- Glass lined or Hastelloy
- Highly potent compounds

From first lead detection to a scaleable process

- First lead detection (HTS): 96 well plates; up to 100 °C, 100 bar
- Catalyst optimization (HTS): Four reactor batteries (4 x 8 reactors/2 ml); up to 140 °C, 150 bar
- Process development: Various reactors (30 ml – 300 ml): Up to 140 °C, 150 bar
- Scale up: Various autoclaves: Monel-, stainless steel- or glass-made (1000–2500 ml): Up to 60 bar, 150 °C

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