Media Release

Clariant unveils groundbreaking catalysts developed jointly with Linde Engineering for novel ethylene production technology

- Novel catalysts are a step change in selectivity and productivity for the oxidative dehydrogenation of ethane
- New catalysts and process design reduce costs; CO₂ emissions reduced by up to 100% compared with conventional steam cracking
- Available exclusively for Linde’s EDHOX™ catalytic on-purpose ethylene technology

Munich, October 7, 2021 – Clariant Catalysts has teamed up with Linde Engineering to develop new catalysts for the oxidative dehydrogenation of ethane (ODH-E), an innovative, low-emissions catalytic technology for the production of ethylene. The novel catalyst is a step change in selectivity and productivity, now making ethylene production via ODH-E commercially feasible.

Clariant’s ODH catalysts are available exclusively for Linde Engineering’s innovative EDHOX™ catalytic on-purpose ethylene technology. In contrast to conventional steam cracking, which operates at process temperatures up to 900°C, EDHOX™ operates at moderate temperatures—below 400°C, enabling comparatively low CO₂ emissions. Also inherent to Linde Engineering’s process are the sequestration of CO₂ and the potential for electrification. Together, these differences lead to a reduction of CO₂ emissions by up to 100% compared with conventional steam cracking.

The new catalysts by Clariant are the first to offer high selectivity to ethylene and acetic acid (up to 93%) for the oxidative dehydrogenation of ethane, while also demonstrating outstanding productivity at such conditions, minimizing the formation of by-products. Furthermore, the development of the new catalysts and their impact on CO2 emissions support Clariant’s objectives to drive low-carbon solutions through sustainable innovation and to generate value with safe chemistry and the responsible use of resources.

“We are honored to partner with Linde Engineering on this groundbreaking innovation. Bringing together both catalyst know-how and process design expertise has resulted in a novel production technology, driving innovation and sustainability for years to come,” said Stefan Heuser, Senior Vice President and General Manager at Clariant Catalysts.
Reinhart Vogel, Vice President Petrochemical Plants at Linde Engineering, stated, “By working with Clariant Catalysts, a more sustainable, alternative path to ethylene is not only a vision, but also becoming a reality. EDHOX™ technology has now been successfully validated in a full-scale demonstration plant for commercial use. We look forward to our continued partnership together, and we continue focusing on low-cost solutions for our customers while transitioning to a greener economy.”
Clariant is a focused, sustainable and innovative specialty chemical company based in Muttenz, near Basel/Switzerland. On 31 December 2020, the company employed a total workforce of 13,235. In the financial year 2020, Clariant recorded sales of CHF 3.860 billion for its continuing businesses. The company reports in three business areas: Care Chemicals, Catalysis and Natural Resources. Clariant's corporate strategy is based on five pillars: focus on innovation and R&D, add value with sustainability, reposition portfolio, intensify growth, and increase profitability.

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Clariant's Catalysts business unit is a leading global developer and producer of catalysts for industrial processes. It has been part of the Catalysis business area of the Clariant Group since the acquisition of the German Süd-Chemie in 2011. Clariant Catalysts has a total of 14 production sites (incl. Joint Ventures), 7 sales offices, and 10 R&D and technical centers around the world. Approximately 2,044 employees serve customers across all regional markets. Aimed at delivering sustainable value to customers, Clariant’s catalysts and adsorbents are designed to increase production throughput, lower energy consumption, and reduce hazardous emissions from industrial processes. The broad portfolio also includes products that enable the use of alternative feedstock for chemical and fuel production.