Renewable methanol not only mitigates problems around industrial CO$_2$ emission but it also provides a solution to store and transport the solar and wind power. The MK-317 SUSTAIN™ is designed to provide efficient and stable conversion of CO$_2$ to renewable methanol.

Direct conversion of CO$_2$ to methanol synthesis is challenged by the demands on high catalyst stability and methanol selectivity. For decades, scientists all over the world have been working to find the optimal catalyst formulation that can deliver efficient and stable conversion despite severe operating conditions. Based on Topsoe’s extensive knowledge of copper-based methanol synthesis catalysts and more than 20 years of industrial experience of CO$_2$ utilization for production of methanol, our scientists have developed MK-317 SUSTAIN™ to help you achieve high and stable conversion over a long time.
Excellent stability
Catalyst stability in methanol synthesis or in any catalytic process is essential to preserve catalyst life and to achieve the required production rate. Both high-temperature operation to obtain a reasonable kinetic conversion and water formation associated with direct conversion of CO₂ to methanol amplify the catalyst deactivation rate. MK-317 SUSTAIN™ is unique and offers excellent stability even under these severe operating conditions. This is due to an optimized copper dispersion along with an optimized zinc coverage of the copper particles.

Unmatched selectivity
MK-317 SUSTAIN™ has a superior selectivity for the formation of methanol from CO₂ and hydrogen. High selectivity suppresses by-product reactions and favors methanol formation. In addition, the high activity of MK-317 SUSTAIN™ allows for relatively low-temperature operation, which further reduces the formation of by-products. With MK-317 SUSTAIN™, this means significantly lower amounts of by-products, resulting in lower distillation costs as well as increased hydrogen and overall process efficiency.

High mechanical strength
The mechanical strength of methanol synthesis catalysts is one of the most important factors for reliable and efficient plant performance. Low mechanical strength can lead to a rapid increase in pressure drop, resulting in inefficient plant performance and even premature catalyst replacements. In addition, the high mechanical strength of MK-317 SUSTAIN™ offers the robustness needed for the characteristically demanding operating conditions for direct CO₂ to methanol production, thereby ensuring high plant availability and reliability.

Advantages:
- Excellent stability
- High selectivity
- High mechanical strength

Technical specs:
- Composition: Cu, ZnO, Al₂O₃
- Size & shape: 6×4 mm pellets