

AdE-Biocat™

Selective Hydrogenation Catalyst



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Advanced Energy Materials, LLC's (ADEM) advanced Cr free catalysts: **AdE-Biocat-101™** and **AdE-Biocat-201™** represent a series of active metals anchored onto nanowires-based supports for high performance and selective hydrogenation applications.

ADEM introduces a new generation of hydrogenation catalysts "AdE-Biocat™" developed with improved production techniques following years of R&D and scale-up tests. AdE-Biocat™ catalysts contain single crystal surfaces of uniform metal oxide nanowires as carrier with highly dispersed and multiple active sites on the surface, resulting in higher activity for the catalyst at milder operating conditions.

AdE-Biocat™ is a series of drop-in catalysts for production of biorenewable chemicals such as furfuryl alcohol and 2-methylfuran replacing conventional copper chromite catalysts, known to contain hazardous chemicals.

The advantage of AdE-Biocat™ is that the metal composition can be tuned to achieve high selectivity for a desired product. Unique features of these catalysts are stability and nonsinterability.

AdE-Biocat-101™ has been demonstrated to operate at milder operation conditions (lower pressure <15 bar and temperature ~ 200 °C) to produce furfuryl alcohol at 100% selectivity (Figure 1).

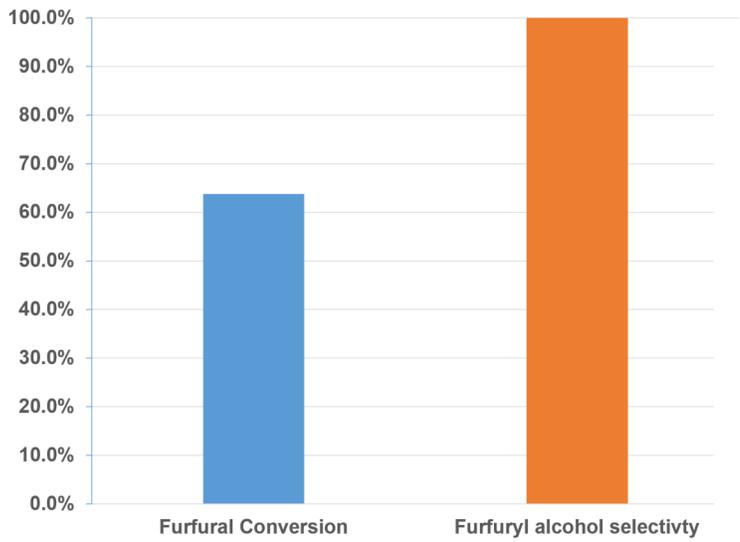
AdE-Biocat-201™ is a bimetallic catalyst specifically designed for production of 2-methylfuran in a single step from furfural using batch liquid phase reactor. Tests performed in a batch reactor at 220 C and 15 bar, achieved 100% conversion. of furfural and 66.8% of selectivity to 2-methylfuran.



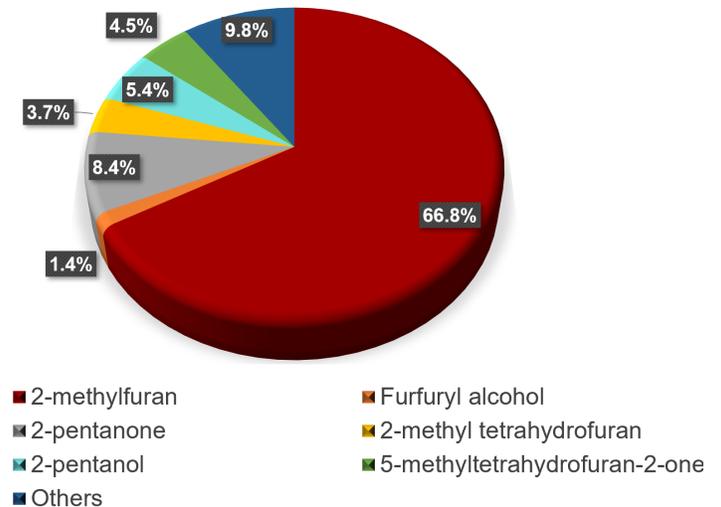
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Hydrogenation of Furfural to Furfuryl Alcohol using AdE-Biocat-101™



Hydrogenation of Furfural to 2-methylfuran using AdE-Biocat-201™ : Product distribution



Advantages

- ◆ Cr free Cu based monometallic catalysts on nanowire supports for selective hydrogenation of Furfural to furfuryl alcohol
- ◆ Cr free bimetallic catalysts on nanowire supports for selective hydrogenation and hydrogenolysis of furfural to 2-MF
- ◆ Can be applied in both liquid phase and vapor phase processes.
- ◆ Precious metal free catalysts
- ◆ Available in both powder and extrudate forms

