



REACT Technology Eurecat

CATALYST REACTIVATION

In order to meet increasingly stringent product specifications, many refineries are choosing the latest generation catalysts that provide the highest activity. One such catalyst type is the STARS™ technology from Albemarle Catalysts. Not only are STARS catalysts high in activity when new, their Type II active sites can be rejuvenated utilizing Albemarle's proprietary REACT™ technology. REACT processing can recover over 90% of fresh STARS catalyst activity – a substantial improvement over conventionally regenerated STARS catalysts.

REACT technology allows STARS catalysts to be re-used in their original application or cascaded down to less demanding applications with little sacrifice in activity. REACT reduces overall catalyst costs and minimizes the impact of catalyst usage on the environment.

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THE REACT PROCESS

The REACT technology is a proprietary multi-step process that actually redistributes the active metals and re-establishes the active catalytic sites in a Type II configuration. Included in the REACT process is a Special Regeneration step that minimizes damage to Type II catalysts caused by standard regeneration techniques.

Each REACT campaign begins with a thorough analysis of several representative samples from the spent catalyst load to verify that the quality of the catalyst is high enough to allow the desired activity recovery. Once REACT processing is completed on a commercial scale, a composite sample is thoroughly tested in a pilot plant using either a ULSD or an HDN protocol. Typically an RVA exceeding 90% of the RVA of fresh catalyst can be achieved provided the catalyst does not contain excessive amounts of contaminants and has not been exposed to extreme operating conditions. Pilot scale activity testing is included in the REACT processing fee.

PROVEN TECHNOLOGY

REACT treatment of STARS catalysts was first commercialized in Europe in 1999. Since that time, the Eurecat Group has applied the REACT treatment to over 20 million pounds of STARS catalysts.

EXAMPLE: KF-757 CoMo

KF-757 STARS catalyst from Albemarle is used in hundreds of hydroprocessing units around the world. Its activity after standard regeneration varies depending on contamination levels, but in most cases standard regeneration only recovers 50%-70% of KF-757's original activity. The table below shows a comparison between standard regeneration, REACT processing, and fresh KF-757.

Catalyst: KF-757	RVA HDS	Product Sulfur (ppm)
Regenerated	52	122
REACT	95	20
Fresh	100	19

EXAMPLE: KF-848 NiMo

KF-848 STARS catalyst is commonly used as a hydrocracker pretreat catalyst. Standard regeneration of KF-848 provides a product with approximately 50% activity compared to fresh. While this is suitable for many applications, REACT processing can reestablish the Type II active sites, returning a catalyst that is almost as active as it was when fresh.

Catalyst: KF-848	RVA HDN	Product nitrogen (ppm)
Regenerated	65	118
REACT	98	42
Fresh	100	40

All information concerning REACT is offered in good faith and is believed to be reliable. However, this information shall not be construed as a formal commitment or warranty from Eurecat.

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