

Increase Profits by Treating **Cracked Stocks** at **Startup**



CATALYST SERVICES

- **TOTSUCAT PREAMTIVATION**

Allows the fastest and safest startup possible.

- **SPECIALTY REGENERATION AND REJUVENATION**

Get >95% activity from Special Regeneration and/or Rejuvenation. Our techniques are much different than a simple carbon burn.

- **SAS SERVICE**

Only get the "good stuff" back with our Sample, Analyze, and Segregate Service.

- **CATALYST RESALE**

Why buy fresh catalysts when regenerated catalysts with "like-fresh" activity are available?

- **ACTIVITY TESTING**

Don't just rely on surface area and poison levels. With two multi-tube test units, Eurecat now runs 82 activity tests per month to measure the true catalyst activity at ULSD conditions.

- **PRESSURE DROP TESTING**

Eurecat offers Pressure Drop Testing at our laboratories in the US and Europe. This provides you with real-world ΔP predictions.

TOTSUCAT CFP ALLOWS HYDROTREATER STARTUPS WITH CRACKED FEEDS

Eurecat has developed an exclusive procedure that **allows the direct introduction of cracked or heavy feeds without the 3-4 day delay** typically recommended by catalyst manufacturers after sulfiding. This carefully controlled process, called Totsucat[®] CFP (Cracked Feed Protection), gently seasons the catalyst so cracked stocks can be used immediately at startup.

Cracked feeds contain significant quantities of olefins and aromatics. Hyperactive sites present on freshly sulfided catalysts cause these "cracked" compounds to form coke and gums that readily deposit on the catalyst surface. These deposits block the catalyst pores and active sites, leading to a substantial reduction in catalyst activity and cycle length.

To avoid the negative effect of cracked feeds, catalyst manufacturers recommend a break-in period of at least 3 days using only straight run (SR) feed. Delaying the processing of cracked stocks allows catalyst hyper-activity to subside, minimizing coke and gum formation at startup.

Catalyst treated with CFP are no longer ultra active at startup. Cracked and heavy feedstocks can be gradually introduced during the first hours of heat up without causing permanent damage to the catalyst. Coke and gum deposits are minimized since the catalyst activity has been carefully modified following activation. Many CFP users also experience lower deactivation rates by using Cracked Feed Protection.

Eurecat Sulfiding Technologies

PROFITS = CRACKED STOCKS

THE TOTSUCAT PROCESS

Pre-Activating hydrotreating catalysts with Totsucat offers **many benefits** to the refiner including:

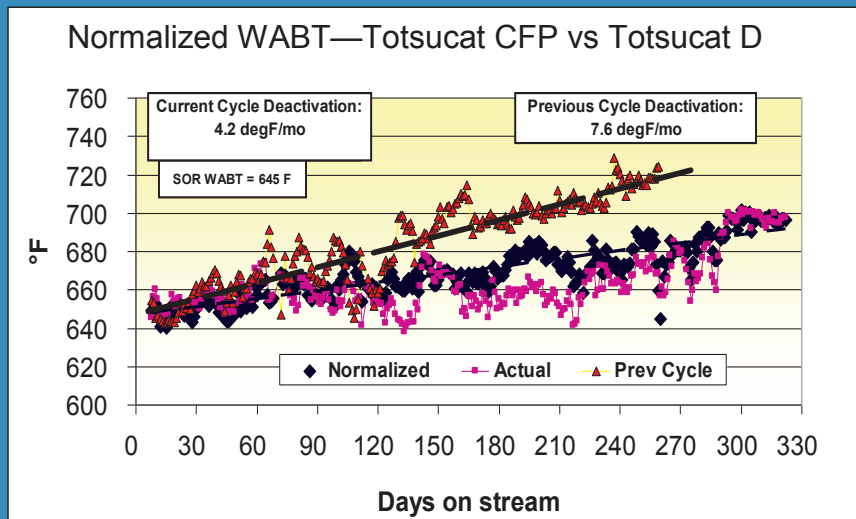
- **Load-and-Go reactor startups.** The active metal sulfides are totally formed during the Totsucat treatment. No additional sulfiding agents or complex activation procedures are required after loading.
- **No temperature excursions.**
- **No need for additional hydrogen** at startup.
- **Minimal sour water formation** during startup.
- **No odors or HSE issues** related to the handling of sulfiding chemicals and H₂S.
- **Negligible amounts of H₂S** are released during reactor heat up, protecting sulfur sensitive units downstream and preventing a sulfur overload of your SRU.

Starting up with Totsucat-treated catalysts is similar to a restart after an emergency shut down. **Startup time is reduced to a few hours** while the risk of damaging the catalyst prior to activation is eliminated. The catalyst load will achieve peak performance since sulfiding and activation is controlled at very precise conditions by the patented Totsucat process.

 **EURECAT**
Sulfiding Technologies

TOTSUCAT CFP APPLICATIONS

DISTILLATE HYDROTREATERS - Totsucat CFP was used to activate, sulfide, and protect a load of ULSD catalyst for a “stressed” distillate hydrotreater. During this cycle, significant quantities of LCO were fed to the unit during the entire run. Despite the added demands placed on the unit, Cracked Feed Protection produced a cycle length increase of almost 50% compared to the previous cycle. The graph below illustrates the reduced deactivation rate for the catalyst charge treated with Totsucat CFP (Current Cycle) versus the Previous Cycle with Totsucat D.



COKER NAPHTHA - A Gulf Coast refiner started up a coker naphtha unit with 50% cracked stocks in the feed after loading Totsucat CFP activated and protected catalyst. The data below shows that despite starting with cracked stocks, cycle length improved while the WABT was more stable throughout the run. CFP not only allows you to improve product margins, but also eliminates the need for extra tankage to store straight run and cracked feeds while the catalyst is broken in.

