

**Abstract Title: Direct Catalytic Cracking of Crude Oils to Produce Petrochemicals Feedstock**

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Direct catalytic cracking of Murban (MBC) and Upper Zakum (UZC) crude oils has been evaluated over a simulated equilibrium catalyst (E-Cat) in a realistic short contact time Resid test (SCTRT). The unique features of the unit makes an excellent tool for catalyst development, screening, and testing of residual feed and solve limitations of micro activity (MAT) and advanced fluid cracking (ACE) testing units by instantaneous mixing of catalyst and feed. The E-Cat has been prepared in the laboratory by deactivation method using cyclic deactivation unit (CDU) with the spiked organic metal contaminants in heavy gas oil by crack on metals to achieve the required amount of nickel and vanadium content. The E-Cat blended with olefin additive zeolite catalyst tested in an SCART unit cracking at 1 second. The first time, we are using this innovative method of producing light olefins from direct cracking of crude oils using SCTRT. The performance evaluation of the E-Cat reaction conditions is: temperature between 630 and 700°C; metal content around 8300 ppmwt; 10% olefin additive and catalyst/oil ratio between 5 and 8. The conversion increases with the increase of temperature and catalyst to oil ratio for Murban and Upper Zakum crude oil.

Key words: RFCC, catalytic cracking, olefin additive, light olefins

Key bullet points:

- Catalytic evaluation of light and heavy resid oils are evaluated over lab deactivated equilibrium catalysts
- Extended parameters for the prediction of yield patterns between the crudes and their products cuts