

Title (en)
Complete catalytic hydroconversion process for heavy petroleum feedstocks

Title (de)
Wasserstoffumwandlungsverfahren von schweren Kohlenwasserstoffeinsätzen

Title (fr)
Procédé d'hydroconversion de charges hydrocarbonées lourdes

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EP 0732389 A2 19960918 (EN)

Application
EP 96103874 A 19960312

Priority
US 40601695 A 19950316

Abstract (en)
A process for high catalytic hydroconversion of heavy liquid hydrocarbon feedstocks, such as petroleum resid containing at least about 40 vol % material boiling above 975 DEG F<+>, using two-staged catalytic reactors operated at elevated temperature and pressure conditions so as to produce increased yields of lower boiling hydrocarbon liquids and gas products. In the process, the feedstock is reacted with hydrogen in a first stage catalytic ebullated bed reactor operated at 820-875 DEG F temperature, 1500-3500 hydrogen partial pressure, and 0.30-1.0 Vf/Hr/Vr space velocity. The first stage reactor effluent liquid portion is fed into a second stage catalytic reactor maintained at lower temperature of 700-800 DEG F, 0.10-0.80 Vf/hr/Vr space velocity. The particulate catalyst material used in each stage reactor contains 2-25 wt.% active metals, and has 0.30-1.50 cm<2>/gm total pore volume and 100-400 m<2>/gm surface area. From the second stage reactor effluent, a vacuum bottoms fraction normally boiling above about 850 DEG F and preferably above 900 DEG F is removed and recycled back to the first stage reactor, so as to provide a recycle volume ratio to fresh feedstock of 0.2-1.5/1 and achieve increased hydroconversion to produce lower boiling liquid products. If desired, used catalyst withdrawn from the second stage reactor can be treated and passed back to the first stage catalytic reactor for further use therein before being discarded, so as to provide for matched reaction conditions and catalytic activity in each stage reactor. <IMAGE>

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Cited by
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