cleaved or hydrocracked, in the presence of hydrogen, to yield lower boiling point products.

[0010] Hydrocracking catalysts are bi-functional: hydrogenation/dehydrogenation reactions are facilitated by the metal components, and the cracking reaction is facilitated by the solid acid components. Both reactions need the presence of high pressure hydrogen.

[0011] During hydrocracking, carbocations are formed by contacting the feedstock with the catalyst. The carbocations undergo isomerization and dehydrogenation to form an olefin, or crack at a beta position to form an olefin and a new carbocation. These intermediate products undergo hydrogenation to form the lower boiling point middle distillate products listed in the table below.

Middle Distillate Products	Typical Cut Points, °F (°C) For North American Market
Light Naphtha	C_5 – 180 (C_5 – 82)
Heavy Naphtha	180 – 300 (82 – 149)
Jet	300 – 380 (149 – 193)
Kerosene	380 – 530 (193 – 277)
Diesel	530 – 700 (277 – 371)

[0012] When conventional SY zeolites are used in hydrocracking processes, less profitable naptha products form from unwanted secondary hydrocracking of materials in the jet boiling range. Accordingly, there is a current need for a hydrocracking catalyst that exhibits a higher degree of selectivity towards production of heavy middle distillate products (380 - 700°F), particularly diesel products.

SUMMARY OF THE INVENTION

[0013] Described herein is an improved finished hydrocracking catalyst containing a high nanopore volume HNPV SY zeolite component. The HNPV SY zeolite is also characterized as having an enhanced acid site distribution as compared to conventional SY zeolites.

[0013a] In one aspect, there is provided a hydrocracking catalyst, comprising:

a support;

an amorphous silica alumina material;

a stabilized Y zeolite having an acid site distribution index factor of between 0.02 and 0.12; and

at least one metal selected from the group consisting of elements from Group 6 and Groups 8 through 10 of the Periodic Table.

[0013b] In one aspect, there is provided a process for hydrocracking a hydrocarbonaceous feedstock, comprising contacting the feedstock with a hydrocracking catalyst under hydrocracking conditions to produce a hydrocracked effluent;

the hydrocracking catalyst comprising

a support;

an amorphous silica alumina material;

a stabilized Y zeolite having an acid site distribution index factor of between 0.02 and 0.12; and

at least one metal selected from the group consisting of elements from Group 6 and Groups 8 through 10 of the Periodic Table.