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(54) Title: HYDROCARBON UPGRADING PROCESS

(57) Abstract: Low sulfur gasoline of relatively high octane number is produced from a catalytically or thermally cracked, olefin-rich, sulfur-containing hydrocarbon stream by hydrodesulfurization followed by treatment over an acidic catalyst containing a molecular sieve belonging to the MCM-22 family in combination with a metal component, preferably selected from the transition elements of the 4th and 5th periods of the Periodic Table. The treatment over the acidic catalyst in the second step restores the octane loss which takes place as a result of the hydrogenative treatment and results in a low sulfur gasoline product with an octane number comparable to that of the hydrocarbon feed.