C L A I M S

1. A process for regeneration of a hydrocarbon conversion catalyst subject to coking which comprises:

(a) alternately contacting a hydrocarbon feed with an catalyst under conversion reaction conditions in a reactor for a short period of time, preferably 30 minutes or less, more preferably 20 minutes or less, most preferably 10 minutes or less, to produce reaction products and then contacting the catalyst with hydrogen-containing gas at elevated temperature for a short period of time, preferably 30 minutes or less, more preferably 20 minutes or less, most preferably 10 minutes or less,

(b) repeating the cycle of step (a) at least one time,

(c) regenerating the catalyst by contacting it with an oxygen-containing gas at elevated temperature,

(d) optionally subjecting the regenerated catalyst to a metal redispersal treatment,

(e) optionally reducing the regenerated catalyst, preferably with hydrogen-containing gas,

(f) optionally sulfiding the catalyst, and

(g) repeating steps (a) through (f) at least one time.

2. The process of claim 1 wherein the process is carried out in at least three reactors arranged in parallel and at least one reactor is operated according to step (c) and at least two reactors are operated according to step (a) and in at least one of the at least two reactors operated according to step (a) the catalyst is contacted with the hydrocarbon feed and in at least one of the at least two reactors operated according to step (a) the catalyst is contacted with hydrogen-containing gas.

3. The process of claims 1 and 2 wherein the process is carried out in at least four reactors arranged in parallel and at least one reactor is operated according to step (c) and at least three reactors are operated according to step (a) and in at least one of the at least three reactors operated according to step (a) the catalyst is contacted with the hydrocarbon feed and in at least one of the at least three reactors operated according to step (a) the catalyst is contacted with hydrogen-containing gas.

4. The process of claims 1 to 3 wherein step (a) is carried out at 400 to 700°C, 0.01 to 1.0 MPa and a gas hourly space velocity of 300 to 6000 hr^{-1}.

5. The process of claims 1 to 4 wherein step (c) is carried out at 400 to 700°C, preferably 400 to 550°C.

6. The process of claims 1 to 5 wherein the oxygen-containing gas in step (c) is air.

7. The process of claims 1 to 6 wherein, after step (c), the regenerated catalyst is subjected to metal redispersal, preferably by oxychlorination.

8. The process of claims 1 to 7 wherein, after step (e), the regenerated catalyst is sulfided.

9. The process of claims 1 to 8 wherein after step (d) the regenerated catalyst is reduced.

C L A I M S

1. A process for regeneration of a hydrocarbon conversion catalyst subject to coking which comprises:

(a) alternately contacting a hydrocarbon feed with an catalyst under conversion reaction conditions in a reactor for a short period of time, preferably 30 minutes or less, more preferably 20 minutes or less, most preferably 10 minutes or less, to produce reaction products and then contacting the catalyst with hydrogen-containing gas at elevated temperature for a short period of time, preferably 30 minutes or less, more preferably 20 minutes or less, most preferably 10 minutes or less,

(b) repeating the cycle of step (a) at least one time,

(c) regenerating the catalyst by contacting it with an oxygen-containing gas at elevated temperature,

(d) optionally subjecting the regenerated catalyst to a metal redispersal treatment,

(e) optionally reducing the regenerated catalyst, preferably with hydrogen-containing gas,

(f) optionally sulfiding the catalyst, and

(g) repeating steps (a) through (f) at least one time.

2. The process of claim 1 wherein the process is carried out in at least three reactors arranged in parallel and at least one reactor is operated according to step (c) and at least two reactors are operated according to step (a) and in at least one of the at least two reactors operated according to step (a) the catalyst is contacted with the hydrocarbon feed and in at least one of the at least two reactors operated according to step (a) the catalyst is contacted with hydrogen-containing gas.

3. The process of claims 1 and 2 wherein the process is carried out in at least four reactors arranged in parallel and at least one reactor is operated according to step (c) and at least three reactors are operated according to step (a) and in at least one of the at least three reactors operated according to step (a) the catalyst is contacted with the hydrocarbon feed and in at least one of the at least three reactors operated according to step (a) the catalyst is contacted with hydrogen-containing gas.

4. The process of claims 1 to 3 wherein step (a) is carried out at 400 to 700°C, 0.01 to 1.0 MPa and a gas hourly space velocity of 300 to 6000 hr^{-1}.

5. The process of claims 1 to 4 wherein step (c) is carried out at 400 to 700°C, preferably 400 to 550°C.

6. The process of claims 1 to 5 wherein the oxygen-containing gas in step (c) is air.

7. The process of claims 1 to 6 wherein, after step (c), the regenerated catalyst is subjected to metal redispersal, preferably by oxychlorination.

8. The process of claims 1 to 7 wherein, after step (e), the regenerated catalyst is sulfided.

9. The process of claims 1 to 8 wherein after step (d) the regenerated catalyst is reduced.

10. A regenerated catalyst produced by the process of any one of claims 1 to 9.