

Title (en)  
Process for the isomerisation of gasolines with high benzene content

Title (de)  
Verfahren zur Isomerisierung von Benzin mit hohem Benzolgehalt

Title (fr)  
Procédé f d'isomérisation d'essences à teneur élevée en benzène

Publication  
**EP 0949317 A1 19991013 (FR)**

Application  
**EP 99400568 A 19990309**

Priority  
FR 9803958 A 19980331

Abstract (en)  
Upstream of the reactor a balance fluid is introduced, which, at 40 degrees C and atmospheric pressure, is a gas and has a density less than or equal to that of pentane under the same conditions. The paraffins have 5 or 6 atoms and more than 2 wt.% benzene, in which the load is passed through a reactor (5) containing an isomerization catalyst in the presence of hydrogen, at a total pressure greater than  $10 \times 10^5$  Pa (10 bars) and a mean temperature of 100-200 degrees C. The balance fluid is injected immediately upstream of the first isomerization reactor, at a level in the introduction zone where the fluids are mixed, at mid-height of the catalyst bed (6), and after preheating of the reaction mixture and before injecting the mixture into the reactor. The balance fluid contains a substantial quantity of hydrogen and/or hydrocarbons with 1-5 (or 1-4) C. The fluid also contains a small quantity of hydrocarbons with 6 or 7 C and/or inert gases such as nitrogen or other appropriate light fluid. The fluid contains a substantial quantity of the light components from a fractionating column (20) for the effluents from the isomerization unit. The composition and/or flow rate of the balance fluid is optimized as a function of the characteristics of the load to be treated, in particular its benzene content. The balance fluid is injected at a rate of 5-150 Nm<sup>3</sup>/m<sup>3</sup> of load, preferably 5-60 Nm<sup>3</sup>/m<sup>3</sup> of load, and at a temperature less than or equal to that of the reactants, preferably 20-180 degrees C. The isomerization unit contains several reactors in series (5, 8) and a section rich in non-isomerized paraffins with 5 or 6 C containing naphthenes, is separated from the effluent of the isomerization unit and is recycled immediately downstream of the first reactor. Independent claims are included for: (i) the apparatus for the above process; and (ii) the use of the unit to isomerize light petrols from catalytic cracking, on their own or part of a mixture.

Abstract (fr)  
L'invention concerne un procédé d'isomérisation d'une charge hydrocarbonée contenant une quantité substantielle d'hydrocarbures paraffiniques à 5 ou 6 atomes de carbone et du benzène à une teneur supérieure ou égale à 2 % en poids, dans lequel la charge à traiter passe, en présence d'hydrogène, à une pression totale supérieure ou égale à  $10.10^5$  Pa (10 bars) et à une température moyenne comprise entre 100 et 200°C, dans au moins un réacteur (5) contenant un catalyseur. Selon l'invention, on introduit, dans la partie amont de la zone réactionnelle, un fluide d'appoint qui, à 40°C et sous pression atmosphérique ( $1.0134.10^5$  Pa), se trouve à l'état gazeux et possède une densité inférieure ou égale à celle du normal-pentane considéré dans les mêmes conditions. <IMAGE>

IPC 1-7  
**C10G 45/58**; **C10G 65/08**

IPC 8 full level  
**C10G 49/02** (2006.01); **C10G 45/58** (2006.01); **C10G 65/08** (2006.01)

CPC (source: EP US)  
**C10G 45/58** (2013.01 - EP US); **C10G 2400/02** (2013.01 - EP US)

Citation (search report)  
• [DA] US 5003118 A 19910326 - LOW CHI-CHU D [US], et al  
• [A] EP 0552070 A1 19930721 - INST FRANCAIS DU PETROLE [FR]  
• [A] EP 0661370 A1 19950705 - INST FRANCAIS DU PETROLE [FR]  
• [A] US 5360534 A 19941101 - RICE LYNN H [US], et al  
• [A] FR 2623203 A1 19890519 - INST FRANCAIS DU PETROLE [FR]

Cited by  
CN110320307A

Designated contracting state (EPC)  
AT BE CH DE DK ES FI FR GB GR IE IT LI LU NL PT SE

DOCDB simple family (publication)  
**US 2002139712 A1 20021003**; **US 6881385 B2 20050419**; AT E267239 T1 20040615; DE 69917363 D1 20040624; DE 69917363 T2 20050512; EP 0949317 A1 19991013; EP 0949317 B1 20040519; ES 2221327 T3 20041216; FR 2776667 A1 19991001; FR 2776667 B1 20000616; JP 4112114 B2 20080702; JP H11323356 A 19991126; US 6416657 B1 20020709; ZA 992450 B 19991001

DOCDB simple family (application)  
**US 10747702 A 20020328**; AT 99400568 T 19990309; DE 69917363 T 19990309; EP 99400568 A 19990309; ES 99400568 T 19990309; FR 9803958 A 19980331; JP 9214899 A 19990331; US 28244299 A 19990331; ZA 992450 A 19990330