

Title (en)

CHROMIUM-FREE WATER-GAS SHIFT CATALYST AND PROCESS FOR MAKING THE SAME

Title (de)

CHROMFREIER WASSER-GAS-KONVERTIERUNGSKATALYSATOR UND VERFAHREN ZUR HERSTELLUNG DAVON

Title (fr)

CATALYSEUR DE DÉPLACEMENT DE GAZ À L'EAU EXEMPT DE CHROME ET SON PROCÉDÉ DE FABRICATION

Publication

**EP 3268307 A4 20180725 (EN)**

Application

**EP 16762388 A 20160309**

Priority

- US 201562130649 P 20150310
- US 2016021473 W 20160309

Abstract (en)

[origin: CN107406252A] A chromium-free water-gas shift catalyst. In contrast to industry standard water-gas catalysts including chromium, a chromium-free water-gas shift catalyst is prepared using iron, boron, copper, aluminum and mixtures thereof. The improved catalyst provides enhanced thermal stability and avoidance of potentially dangerous chromium. Various embodiment's of a chromium-free water-gas catalyst including iron and boron are disclosed, some of which include copper, or aluminum and copper. The boron may reside substantially at the surface of the catalyst. In another series of embodiment's, a chromium-free water-gas catalyst may include boron and copper, and these embodiment's may further include aluminum or iron.

IPC 8 full level

**C01B 3/12** (2006.01); **B01J 21/04** (2006.01); **B01J 23/00** (2006.01); **B01J 23/72** (2006.01); **B01J 23/745** (2006.01); **B01J 35/10** (2006.01);  
**B01J 37/03** (2006.01); **B01J 37/08** (2006.01); **C01B 3/16** (2006.01)

CPC (source: EP US)

**B01J 21/04** (2013.01 - EP); **B01J 23/002** (2013.01 - EP); **B01J 23/72** (2013.01 - EP); **B01J 23/745** (2013.01 - EP US);  
**B01J 35/613** (2024.01 - EP US); **B01J 35/615** (2024.01 - EP US); **B01J 37/03** (2013.01 - EP); **B01J 37/088** (2013.01 - EP US);  
**C01B 3/16** (2013.01 - EP US); **B01J 2523/00** (2013.01 - EP); **C01B 2203/0283** (2013.01 - EP US); **C01B 2203/1047** (2013.01 - EP US);  
**Y02P 20/52** (2015.11 - EP)

Citation (search report)

- [X] EP 0296734 A1 19881228 - ICI PLC [GB]
- [X] US 4402745 A 19830906 - RAY RANJAN [US], et al
- [XI] EP 2826561 A1 20150121 - BENEFUEL INC [US]
- [XI] US 4590324 A 19860520 - SATEK LARRY C [US]
- [XI] WO 2004043583 A2 20040527 - CONOCOPHILLIPS CO [US]
- [XI] WO 2008141827 A1 20081127 - SAUDI BASIC IND CORP [SA], et al
- [I] WO 0174484 A2 20011011 - UNIV MICHIGAN [US], et al
- [X] CLIVE BARNETT: "HYDROGENATION OF ALIPHATIC NITRILES OVER TRANSITION METAL BORIDES", INDUSTRIAL AND ENGINEERING CHEMISTRY: PRODUCT RESEARCH AND DEVELOPMENT, vol. 8, no. 2, June 1969 (1969-06-01), pages 145 - 149, XP001278811
- See references of WO 2016145023A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

CN 107406252 A 20171128; EP 3268307 A1 20180117; EP 3268307 A4 20180725

DOCDB simple family (application)

CN 201680010633 A 20160309; EP 16762388 A 20160309