

Title (en)
POLYMERS AS DIESEL FUEL ADDITIVES FOR DIRECT INJECTION DIESEL ENGINES

Title (de)
POLYMERE ALS DIESELKRAFTSTOFFADDITIVE FÜR DIREKTEINSPRITZENDE DIESELMOTOREN

Title (fr)
POLYMÈRE COMME ADDITIF POUR GAZOLE POUR MOTEURS DIESEL À INJECTION DIRECTE

Publication
EP 3555244 B1 20230531 (DE)

Application
EP 17807843 A 20171129

Priority
• EP 16204390 A 20161215
• EP 2017080838 W 20171129

Abstract (en)
[origin: WO2018108534A1] Use of copolymers obtainable by - in a first reaction step (I) - copolymerization of (A) at least one ethylenically unsaturated mono- or dicarboxylic acid or derivatives thereof, preferably a dicarboxylic acid, (B) at least one α -olefin having from at least 12 up to and including 30 carbon atoms, (C) optionally at least one further aliphatic or cycloaliphatic olefin comprising at least 4 carbon atoms which is distinct from (B), and (D) optionally one or more further copolymerizable monomers distinct from the monomers (A), (B) and (C) and selected from the group consisting of (Da) vinyl esters, (Db) vinyl ethers, (Dc) (meth) acrylic esters of alcohols comprising at least 5 carbon atoms, (Dd) allyl alcohols or ethers thereof, (De) N-vinyl compounds selected from the group consisting of vinyl compounds of heterocycles containing at least one nitrogen atom, N-vinyl amides or N-vinyl lactams, (Df) ethylenically unsaturated aromatics, (Dg) α,β -ethylenically unsaturated nitriles, (Dh) (meth)acrylic amides and (Di) allyl amines, followed by - in a second reaction step (II) - partial reaction of anhydride or carboxylic acid functionalities present in the copolymers obtained from (I) with at least one compound (E) containing at least one alcohol group and/or at least one amino group and - in a third reaction step (III) - hydrolysis of the anhydride functionalities present in the copolymer obtained from (II) and/or partial saponification of carboxylic ester functionalities present in the copolymer obtained from (II) as a diesel fuel additive.

IPC 8 full level
C10L 1/196 (2006.01); **C10L 1/198** (2006.01); **C10L 1/236** (2006.01); **C10L 1/2383** (2006.01); **C10L 10/04** (2006.01); **C10L 10/06** (2006.01); **C10M 149/04** (2006.01); **C10M 149/06** (2006.01); **C10N 30/04** (2006.01); **C10N 40/25** (2006.01); **C10N 70/00** (2006.01)

CPC (source: EP US)
C10L 1/1963 (2013.01 - EP US); **C10L 1/1966** (2013.01 - EP US); **C10L 1/1985** (2013.01 - EP US); **C10L 1/2364** (2013.01 - EP US); **C10L 1/2366** (2013.01 - EP US); **C10L 1/2383** (2013.01 - EP US); **C10L 10/04** (2013.01 - EP US); **C10L 10/06** (2013.01 - EP US); **C10L 10/08** (2013.01 - US); **C10M 149/04** (2013.01 - EP); **C10M 149/06** (2013.01 - EP); **C10L 2230/22** (2013.01 - US); **C10L 2270/026** (2013.01 - EP US); **C10L 2300/20** (2013.01 - US); **C10M 2209/086** (2013.01 - EP); **C10M 2209/109** (2013.01 - EP); **C10M 2217/06** (2013.01 - EP); **C10N 2030/04** (2013.01 - EP); **C10N 2040/253** (2020.05 - EP); **C10N 2070/00** (2013.01 - EP)

C-Set (source: EP)
1. **C10M 2209/086** + **C10M 2205/028**
2. **C10M 2217/06** + **C10M 2205/028** + **C10M 2209/086**
3. **C10M 2209/109** + **C10M 2205/028** + **C10M 2209/086**
4. **C10M 2209/109** + **C10M 2205/028** + **C10M 2209/086** + **C10M 2209/105**

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)
WO 2018108534 A1 20180621; CN 110088253 A 20190802; CN 110088253 B 20220318; EP 3555244 A1 20191023; EP 3555244 B1 20230531; ES 2948483 T3 20230913; MY 202420 A 20240428; PL 3555244 T3 20231106; US 10947467 B2 20210316; US 11566196 B2 20230131; US 2020056109 A1 20200220; US 2021163837 A1 20210603

DOCDB simple family (application)
EP 2017080838 W 20171129; CN 201780077256 A 20171129; EP 17807843 A 20171129; ES 17807843 T 20171129; MY PI2019003427 A 20171129; PL 17807843 T 20171129; US 201716462759 A 20171129; US 202117171456 A 20210209