

Title (en)

Process to improve the cold flow properties of fuel oils

Title (de)

Verfahren zur Verbesserung der Kaltfließseigenschaften von Brennstoffölen

Title (fr)

Procédés d'amélioration des propriétés d'écoulement à froid d'huiles combustibles

Publication

EP 0931824 B1 20050831 (DE)

Application

EP 98124678 A 19981224

Priority

DE 19802690 A 19980124

Abstract (en)

[origin: EP0931824A2] An additive containing copolymers of lower olefins and vinyl esters, and copolymers and terpolymers of ethylene and vinyl esters or acrylic acid esters is used to improve the cold flow properties of fuels. Process for improving the cold flow properties of fuels containing less than 500 ppm sulfur and at least 8 wt.% n-paraffins having a chain length of 8 C or longer comprises adding an additive comprising a mixture of either (A1) 15-50 wt.% copolymer of lower olefins and vinyl esters containing (a) up to 96 mol.% bivalent structure of formula (I): CH₂CR₁R₂ (where R₁ and R₂ = hydrogen or methyl, and (b) 1-10 mol.% bivalent structure of formula (II): CH₂CHOCOR₃ (where R₃ = 6-16 C alkyl having a tertiary carbon atom); or (A2) 15-50 wt.% copolymer of lower olefins and vinyl esters containing (a) up to 96 mol.% bivalent structure of formula (I), (b) 1-10 mol.% bivalent structure of formula (II), and (c) up to 10 mol.% of bivalent structure of formula (III): CH₂CHOCOCH₃, in which the sum of the structural units of formula (II) and (III) is 4-12 mol.%; and (B) 85-50 wt.% of a further copolymer or terpolymer of ethylene and vinyl esters or acrylic acid esters.

IPC 1-7

C10L 1/18; **C10L 1/14**; **C08L 23/08**

IPC 8 full level

C10L 1/192 (2006.01); **C10L 1/14** (2006.01); **C10L 1/195** (2006.01); **C10L 1/196** (2006.01); **C10L 1/197** (2006.01); **C10L 10/18** (2006.01)

CPC (source: EP US)

C10L 1/143 (2013.01 - EP US); **C10L 1/195** (2013.01 - EP US); **C10L 1/1973** (2013.01 - EP US)

Cited by

EP1857528A1; EP1433836A1; EP1146108A3; EP1391498A4; DE10012269C2; EP1134275A3; US6593426B2; US6565616B1; EP2449063B1; EP2449063B2

Designated contracting state (EPC)

AT BE DE ES FR GB NL SE

DOCDB simple family (publication)

EP 0931824 A2 19990728; **EP 0931824 A3 19990915**; **EP 0931824 B1 20050831**; AT E303426 T1 20050915; CA 2260169 A1 19990724; CA 2260169 C 20080916; DE 19802690 A1 19990729; DE 19802690 C2 20030220; DE 59813030 D1 20051006; ES 2248874 T3 20060316; JP 4370011 B2 20091125; JP H11256171 A 19990921; NO 990293 D0 19990122; NO 990293 L 19990726; US 6110238 A 20000829

DOCDB simple family (application)

EP 98124678 A 19981224; AT 98124678 T 19981224; CA 2260169 A 19990122; DE 19802690 A 19980124; DE 59813030 T 19981224; ES 98124678 T 19981224; JP 1479699 A 19990122; NO 990293 A 19990122; US 23572399 A 19990122