

Title (en)

METHOD FOR REDUCING LOW SPEED PRE-IGNITION

Title (de)

VERFAHREN ZUR VERMINDERUNG VON VORZÜNDUNG MIT NIEDRIGER GESCHWINDIGKEIT

Title (fr)

PROCÉDÉ DE RÉDUCTION DU PRÉ-ALLUMAGE À FAIBLE VITESSE

Publication

EP 3697873 A1 20200826 (EN)

Application

EP 18797347 A 20181016

Priority

- US 201762573723 P 20171018
- US 2018056008 W 20181016

Abstract (en)

[origin: WO2019079246A1] Use of an unleaded gasoline fuel composition for reducing the occurrence of Low Speed Pre-Ignition (LSPI) in a spark-ignition internal combustion engine, wherein the unleaded gasoline fuel composition comprises a gasoline base fuel and detergent additive package, wherein the detergent additive package comprises a Mannich base detergent mixture, wherein the mixture comprises a first Mannich base detergent component derived from a di- or polyamine and a second Mannich base detergent component derived from a monoamine, wherein the weight ratio of the first Mannich base detergent to the second Mannich base detergent mixture ranges from about 1:6 to about 3:1, and wherein the spark-ignition internal combustion engine is lubricated with a lubricant composition comprising from 1200ppmw to 3000ppmw of calcium, based on the total lubricant composition.

IPC 8 full level

C10L 1/22 (2006.01)

CPC (source: EP US)

C10L 1/143 (2013.01 - US); **C10L 1/1616** (2013.01 - US); **C10L 1/1985** (2013.01 - US); **C10L 1/221** (2013.01 - EP); **C10L 1/2222** (2013.01 - US); **C10L 1/224** (2013.01 - US); **C10L 10/10** (2013.01 - EP); **C10L 2200/0423** (2013.01 - EP US); **C10L 2250/04** (2013.01 - US); **C10L 2270/023** (2013.01 - EP US)

Citation (search report)

See references of WO 2019079246A1

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

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

WO 2019079246 A1 20190425; BR 112020007475 A2 20201027; CN 111212891 A 20200529; EP 3697873 A1 20200826; EP 3697873 B1 20210526; JP 2021500427 A 20210107; MX 2020003688 A 20200803; PH 12020550429 A1 20210426; RU 2020115943 A 20211118; RU 2020115943 A3 20220323; US 2020283691 A1 20200910; ZA 202002395 B 20230125

DOCDB simple family (application)

US 2018056008 W 20181016; BR 112020007475 A 20181016; CN 201880066817 A 20181016; EP 18797347 A 20181016; JP 2020520731 A 20181016; MX 2020003688 A 20181016; PH 12020550429 A 20200416; RU 2020115943 A 20181016; US 201816756502 A 20181016; ZA 202002395 A 20200504