

Title (en)

Use of ionic liquids for non-machining shaping of metal workpieces

Title (de)

Verwendung von ionischen Flüssigkeiten für die spanlose Umformung von metallischen Werkstücken

Title (fr)

Utilisation de liquides ioniques pour la déformation sans tension de pièces à usiner métalliques

Publication

EP 2022574 A1 20090211 (DE)

Application

EP 08160056 A 20080710

Priority

DE 102007034353 A 20070724

Abstract (en)

Use of at least an ionic liquid or its mixture for a non-cutting shaping process of metallic work pieces, is claimed.

Abstract (de)

Die Erfindung betrifft die Verwendung mindestens einer ionischen Flüssigkeit oder einer Mischung von ionischen Flüssigkeiten für spanlose Umformprozesse von metallischen Werkstücken, insbesondere für Innenhochdruckumformung.

IPC 8 full level

B21D 26/02 (2006.01); **B21D 37/18** (2006.01); **C10M 105/00** (2006.01)

CPC (source: EP US)

B21D 22/201 (2013.01 - EP US); **B21D 26/02** (2013.01 - EP US); **B21D 37/18** (2013.01 - EP US); **C10M 105/00** (2013.01 - EP US); **C10M 2207/122** (2013.01 - EP US); **C10M 2215/04** (2013.01 - EP US); **C10M 2215/222** (2013.01 - EP US); **C10M 2215/226** (2013.01 - EP US); **C10M 2219/042** (2013.01 - EP US); **C10M 2219/044** (2013.01 - EP US); **C10N 2020/077** (2020.05 - EP US); **C10N 2030/08** (2013.01 - EP US); **C10N 2040/24** (2013.01 - EP US)

Citation (applicant)

- DE 10115696 A1 20021010 - HENKEL KGAA [DE]
- F. KLOCKE; W. KÖNIG: "Fertigungsverfahren 4. Umformtechnik: Umformen", August 2006, SPRINGER VERLAG
- K.R. SEDDON, J. CHEM. TECHNOL. BIOTECHNOL., vol. 68, 1997, pages 351 - 356
- "Ionic Liquids in Synthesis", WILEY
- "Green Industrial Applications of Ionic Liquids", NATO SCIENCE SERIES. LI. MATHEMATICS, PHYSICS AND CHEMISTRY, vol. 92
- "Ionic Liquids: Industrial Applications for Green Chemistry", vol. 818, ACS. SYMPOSIUM SERIES

Citation (search report)

- [PX] WO 2008071396 A1 20080619 - UNIV FRIEDRICH ALEXANDER ER [DE], et al
- [Y] DE 102006035239 B3 20070628 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- [Y] DE 102004033021 A1 20060202 - IOLITEC IONIC LIQUID TECHNOLOG [DE]
- [Y] WO 2005021484 A2 20050310 - KALB ROLAND [AT], et al
- [Y] US 2007135657 A1 20070614 - HOBBS STEVEN J [US], et al

Cited by

EP2530138A1; EP2607437A1; DE102011088787A1; US8722836B2

Designated contracting state (EPC)

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

Designated extension state (EPC)

AL BA MK RS

DOCDB simple family (publication)

EP 2022574 A1 20090211; CN 101353609 A 20090128; DE 102007034353 A1 20090129; JP 2009030056 A 20090212; US 2009029887 A1 20090129

DOCDB simple family (application)

EP 08160056 A 20080710; CN 200810130047 A 20080724; DE 102007034353 A 20070724; JP 2008189948 A 20080723; US 17657308 A 20080721