

Title (en)

ALLOYS AND METHODS TO DEVELOP YIELD STRENGTH DISTRIBUTIONS DURING FORMATION OF METAL PARTS

Title (de)

LEGIERUNGEN UND VERFAHREN ZUR ENTWICKLUNG VON STRECKGRENZENVERTEILUNGEN WÄHREND DER HERSTELLUNG VON METALLTEILEN

Title (fr)

ALLIAGES ET PROCÉDÉS DE DÉVELOPPEMENT DE DISTRIBUTIONS DE LIMITES D'ÉLASTICITÉ AU COURS DE LA FORMATION DE PIÈCES MÉTALLIQUES

Publication

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Application

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Priority

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Abstract (en)

[origin: US2019217363A1] This invention is related to a method to increase the strength of a metal stamping by supplying a metal blank which has the ability to strengthen in-situ during stamping to achieve sets of properties not expected and much higher based on the starting properties of the blank.

IPC 8 full level

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B21D 22/00 (2013.01 - EP US); **C21D 9/48** (2013.01 - EP US); **C21D 2211/004** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US)

Citation (search report)

- [Y] EP 3063305 A1 20160907 - NANOSTEEL CO INC [US]
- [A] US 2017166988 A1 20170615 - BRANAGAN DANIEL JAMES [US], et al
- [A] WO 2017117128 A1 20170706 - NANOSTEEL CO INC [US]
- [A] WO 2015126424 A1 20150827 - NANOSTEEL CO INC [US]
- [A] EP 3052671 A1 20160810 - NANOSTEEL CO INC [US]
- [Y] KAMIURA TOMOHIRO ET AL: "Study on effect of strain rate on elongation in advanced high strength steel", PROCEDIA ENGINEERING, vol. 207, 8 June 2017 (2017-06-08), pages 1988 - 1993, XP085261675, ISSN: 1877-7058, DOI: 10.1016/J.PROENG.2017.10.1097
- [A] DER: "Strain rate sensitivity of automotive sheet steels: influence of plastic strain, strain rate, temperature, microstructure, bake hardening and pre-strain", 31 January 2010 (2010-01-31), pages 1 - 2811, XP055811865, Retrieved from the Internet <URL:<http://publications.rwth-aachen.de/record/94600/files/3271.pdf>> [retrieved on 20210608]
- [A] LIM SUNG JUN ET AL: "Fracture loci of DP980 steel sheet for auto-body at intermediate strain rates", INTERNATIONAL JOURNAL OF AUTOMOTIVE TECHNOLOGY, THE KOREAN SOCIETY OF AUTOMOTIVE ENGINEERS, HEIDELBERG, vol. 18, no. 4, 24 May 2017 (2017-05-24), pages 719 - 727, XP036243666, ISSN: 1229-9138, [retrieved on 20170524], DOI: 10.1007/S12239-017-0071-Z

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