

Title (en)

Process for manufacturing of a part from a hot-rolled sheet

Title (de)

Herstellungsverfahren für Formteile aus warmgewalztem Stahlblech

Title (fr)

Procédé de réalisation d'une pièce à partir d'une bande de tôle d'acier laminée à chaud

Publication

EP 1013785 A1 20000628 (FR)

Application

EP 99403227 A 19991221

Priority

FR 9816477 A 19981224

Abstract (en)

A component is produced from a strip of rolled (especially hot-rolled) sheet steel, by coating with aluminum or its alloy and pressing operations. The process involves: (a) coating the rolled sheet with a metal or an alloy assuring protection of the surface and the steel; (b) raising the temperature of the coated sheet for forming; (c) producing, at the surface, an intermetallic alloy composite assuring protection against corrosion and decarburization of the steel, with the intermetallic composite able to assure a lubrication function; (d) forming the coated sheet, notably by pressing; (e) cooling the formed component in order to confer increased hardness of the steel and increased surface hardness in the coating. The metal used for coating the steel sheet is aluminum or an aluminum alloy, so that the intermetallic alloy composite is made up of aluminum, iron and silicon.

Abstract (fr)

Procédé de réalisation d'une pièce à partir d'une bande de tôle d'acier laminée et notamment laminée à chaud, caractérisée en ce que: on revêt la tôle laminée d'un métal ou d'un alliage métallique assurant une protection de la surface et de l'acier, on soumet la tôle revêtue à une élévation en température pour sa mise en forme, on réalise, de ce fait un composé allié intermétallique, en surface, assurant une protection contre la corrosion, contre la décarburation de l'acier, le composé intermétallique pouvant assurer une fonction de lubrification, on effectue la mise en forme notamment par emboutissage, on refroidit la pièce formée pour conférer des caractéristiques mécaniques de dureté élevées de l'acier et une dureté superficielle élevée du revêtement.

IPC 1-7

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IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

- [XA] FR 1297906 A 19620706
- [A] DE 1252034 B
- [A] US 4655852 A 19870407 - RALLIS ANTHONY T [US]
- [A] CH 382512 A 19640930 - FELTEN & GUILLEAUME CARLSWERK [DE]
- [A] GIEREK A. E.A.: "Tausalitieren - Eigenschaften und Einsatzgebiete", V.D.I. ZEITSCHRIFT, vol. 118, no. 8, April 1976 (1976-04-01), pages 19 - 22, XP002114744
- [A] DATABASE WPI Week 9046, Derwent World Patents Index; AN 347101, XP002114745, "Aluminised steel strip production process - involves cooling and hot rolling under compression to improve adhesion of covering to base"

Cited by

DE102007038215A1; JP2009518471A; DE102016122664A1; EP3159419A1; WO2017067827A1; DE10307184B3; EP2224034A1; EP1966404A4; DE102004038626B3; DE102013101134B3; DE102011053634B3; WO2005021820A1; AT412878B; DE102016122664A9; US2010098956A1; US2010294400A1; US10550447B2; DE102008027818A1; US10081857B2; WO2007028475A3; US7004004B2; US8361552B2; US8613819B2; DE102020107749A1; WO2009021489A2; EP1767659A1; FR2883007A1; DE10350885B4; EP2287344A1; EP3358037A1; EP2025771A1; DE102007038214A1; US8197616B2; US8685181B2; US8864921B2; EP3162558A1; US10974485B2; DE102022123741A1; WO2024056591A1; WO2018096055A1; US10323292B2; US11203807B2; WO2008053273A1; US8721809B2; US8722203B2; US9481916B2; US10570493B2; US7708843B2; US8114227B2; US10294557B2; EP1783234A2; EP3360981A1; WO2018146050A1; DE10318056B4; US2011159314A1; US8293379B2; EP3290200A1; EP3290199A1; US2019271057A1; EP3587105A1; EP3587104A1; US11041226B2; EP4023433A1; WO2007034063A1; WO2006097593A1; WO2009021743A1; WO2008110670A1; WO2008132303A1; WO2008102012A1; EP2177641A1; US7832242B2; US8021497B2; US8181331B2; US9194034B2; US8307680B2; US9708683B2; DE102016222993A1; US10577674B2; US10590507B2; US10597747B2; US10961602B2; US11326227B2; US11939643B2; US12012640B2; EP3088558B1; EP2086755B1; EP3587104B1

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