

Title (en)

High-strength steels having high impact energy absorption properties.

Title (de)

Hochfester Stahl mit hohen Stoßenergieaufnahmeeigenschaften.

Title (fr)

Aciers haute résistance ayant d'excellentes propriétés d'absorption d'énergie aux chocs.

Publication

EP 2314730 A1 20110427 (EN)

Application

EP 10181458 A 19971128

Priority

- EP 97913471 A 19971128
- JP 33138096 A 19961128
- JP 2829697 A 19970129
- JP 22300597 A 19970806
- JP 25883497 A 19970924
- JP 25888797 A 19970924

Abstract (en)

The object of the present invention is to provide high-strength steel sheets exhibiting high impact energy absorption properties, as steel materials, to be used for shaping and working into such parts as front side members of automobiles which absorb impact energy upon collision, as well as a method for their production. The high-strength steel sheets of the invention which exhibit high impact energy absorption properties are high-strength steel sheets with high flow stress during dynamic deformation characterized in that the microstructure of the steel sheets in their final form is a composite microstructure of a mixture of ferrite and/or bainite, either of which is the dominant phase, and a third phase including retained austenite at a volume fraction between 3% and 50%, wherein the average value $\bar{\sigma}_{dyn}$ (MPa) of the flow stress in the range of 3~10% of equivalent strain when deformed in a strain rate range of $5 \times 10^{-4} \sim 5 \times 10^{-3}$ (1/sec) after pre-deformation of greater than 0% and less than or equal to 10% of equivalent strain, satisfies the inequality: $\bar{\sigma}_{dyn} \geq 0.766 \times TS + 250$ as expressed in terms of the maximum stress TS (MPa) in the static tensile test as measured in a strain rate range of $5 \times 10^{-4} \sim 5 \times 10^{-3}$ (1/s) without deformation, and the work hardening coefficient between 1% and 5% of a strain is at least 0.080.

IPC 8 full level

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Citation (applicant)

- JP H0718372 A 19950120 - KAWASAKI STEEL CO
- JP S59219473 A 19841210 - NIPPON STEEL CORP
- JP H03351209 A
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- THE JOURNAL OF THE IRON AND STEEL INSTITUTE, vol. 206, 1968, pages 60

Citation (search report)

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- [A] EP 0707087 A1 19960417 - NIPPON STEEL CORP [JP]
- [A] EP 0295500 A1 19881221 - NIPPON STEEL CORP [JP]

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