

## Title (en)

Dual-phase type high-strength steel sheets having high impact energy absorption properties

## Title (de)

Hochfeste Zweiphasen-Stahlbleche mit hohen Stoßenergieaufnahmeeigenschaften

## Title (fr)

Feuilles d'acier biphasé à haute résistance ayant d'excellentes propriétés de déformation dynamique

## Publication

**EP 2314729 B2 20170308 (EN)**

## Application

**EP 10181225 A 19980316**

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- JP 8243497 A 19970317
- JP 19029797 A 19970715
- JP 19029997 A 19970715
- JP 22300897 A 19970806
- JP 25893897 A 19970924

## Abstract (en)

[origin: EP0969112A1] The invention relates to dual-phase type high-strength steel sheets, for automobiles, which have excellent dynamic deformation properties and exhibit impact absorption properties, and are intended to be used as structural members and reinforcing materials primarily for automobiles, as well as to a method of producing them, which dual-phase type high-strength steel sheets with excellent dynamic deformation properties are characterized in that the final microstructure of the steel sheets is a composite microstructure wherein the dominating phase is ferrite, and the second phase is another low temperature product phase containing martensite at a volume fraction between 3% and 50% after 5% deformation of the steel sheet, wherein the difference between the quasi-static deformation strength as when deformed in a strain rate range of  $5 \times 10^{-4}$  -  $5 \times 10^{-3}$  (s<sup>-1</sup>) after pre-deformation of more than 0% and less than or equal to 10% of equivalent strain, and the dynamic deformation strength  $\sigma_d$  when deformed in a strain rate range of  $5 \times 10^{-2}$  -  $5 \times 10^{-3}$  (s<sup>-1</sup>) after the aforementioned pre-deformation, i.e. ( $\sigma_d - \sigma_s$ ), is at least 60 MPa, and the work hardening coefficient at 5 SIMILAR 10% strain is at least 0.13. <IMAGE>

## IPC 8 full level

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## Citation (opposition)

## Opponent :

- GB 2043103 A 19801001 - FORD MOTOR CO
- R. G. DAVIES ET AL.: "Physical Metallurgy of Automotive High-Strength Steels", JOURNAL OF METALS, November 1979 (1979-11-01), pages 17 - 23
- R. A. KOT ET AL.: "Fundamentals of Dual-Phase Steels", 1981, THE METALLURGICAL SOCIETY OF AIME, CHICAGO, pages: 265 - 277
- R. G. DAVIES: "Influence of Martensite Composition and Content on the Properties of Dual Phase Steels", METALLURGICAL TRANSACTIONS, vol. 9A, May 1978 (1978-05-01), pages 671 - 679

## Cited by

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