

Title (en)  
MOLDING METHOD, HEAT TREATMENT SYSTEM, AND MOLDED PRODUCT

Title (de)  
FORMVERFAHREN, WÄRMEBEHANDLUNGSSYSTEM UND FORMPRODUKT

Title (fr)  
PROCÉDÉ DE MOULAGE, SYSTÈME DE TRAITEMENT THERMIQUE ET PRODUIT MOULÉ

Publication  
**EP 4321631 A3 20240228 (EN)**

Application  
**EP 23205839 A 20220330**

Priority  
• JP 2021056979 A 20210330  
• EP 22781078 A 20220330  
• JP 2022015940 W 20220330

Abstract (en)  
In heating step S101, a steel sheet is heated and made in an austenite state. In heating step S101, the whole region of the steel sheet is evenly heated, and the whole region of the steel sheet is made in the austenite state. In cooling step S102, only a first region set on the steel sheet in the austenite state is forcibly cooled (rapidly cooled) within a temperature range of a range where martensitic transformation does not occur. In cooling step S102, a second region other than the first region is cooled by natural cooling to maintain a state in which a temperature is higher than in the first region.

IPC 8 full level  
**C21D 1/18** (2006.01); **B21D 22/02** (2006.01); **B21D 22/20** (2006.01); **C21D 1/673** (2006.01); **C21D 9/46** (2006.01)

CPC (source: EP US)  
**C21D 1/18** (2013.01 - US); **C21D 1/673** (2013.01 - EP); **C21D 8/0205** (2013.01 - US); **C21D 8/0221** (2013.01 - US); **C21D 8/0294** (2013.01 - US); **C21D 9/0062** (2013.01 - US); **C21D 9/46** (2013.01 - EP US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP US); **C21D 2211/009** (2013.01 - EP US)

Citation (search report)  
• [XII] DE 202014010318 U1 20150401 - SCHWARTZ EVA [DE]  
• [XA] DE 10208216 C1 20030327 - BENTELER AUTOMOBILTECHNIK GMBH [DE]  
• [XA] EP 2365100 A2 20110914 - KIRCHHOFF AUTOMOTIVE D GMBH [DE]

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

Designated validation state (EPC)  
KH MA MD TN

DOCDB simple family (publication)  
**EP 4316684 A1 20240207**; EP 4321631 A2 20240214; EP 4321631 A3 20240228; JP 2022154099 A 20221013; JP 7052116 B1 20220411; US 2024043957 A1 20240208; US 2024167115 A1 20240523; WO 2022210868 A1 20221006

DOCDB simple family (application)  
**EP 22781078 A 20220330**; EP 23205839 A 20220330; JP 2021056979 A 20210330; JP 2022015940 W 20220330; US 202218552719 A 20220330; US 202318487518 A 20231016