

## **Microstructural analysis of hot press formed 22MnB5 steel**

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AIP Conference Proceedings

2017, 1896 (1), 020015

This paper presents a microstructural study on hot press formed 22MnB5 steel for enhanced mechanical properties. Hot press forming process consists of simultaneous forming and quenching of heated blank. The 22MnB5 steel was processed at three different parameter settings: quenching time, water temperature and water flow rate. 22MnB5 was processed using 33 full factorial design of experiment (DOE). The full factorial DOE was designed using three factors of quenching time, water temperature and water flow rate at three levels. The factors level were quenching time range of 5 - 11 s, water temperature; 5 - 27°C and water flow rate; 20 - 40 L/min. The as-received and hot press forming processed steel was characterised for metallographic study and martensitic structure area percentage using JEOL Field Emission Scanning Electron Microscopic (FESEM). From the experimental finding, the hot press formed 22MnB5 steel consisted of 50 to 84% martensitic structure area. The minimum quenching time of 8 seconds was required to obtain formed sample with high percentage of martensite. These findings contribute to initial design of processing parameters in hot press forming of 22MnB5 steel blanks for automotive component.