

## Accepted Manuscript

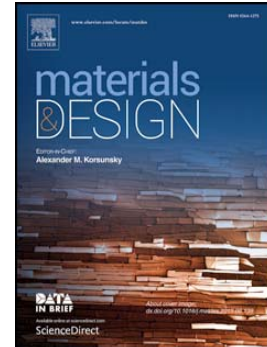
Effect of work hardening on mechanical behavior of resistance spot welding joint during tension shear test

Chengjie Liu, Xiankun Zheng, Hongyu He, Wurong Wang, Xicheng Wei

PII: S0264-1275(16)30403-8  
DOI: doi: [10.1016/j.matdes.2016.03.120](https://doi.org/10.1016/j.matdes.2016.03.120)  
Reference: JMADE 1598

To appear in:

Received date: 22 January 2016  
Revised date: 22 March 2016  
Accepted date: 23 March 2016



Please cite this article as: Chengjie Liu, Xiankun Zheng, Hongyu He, Wurong Wang, Xicheng Wei, Effect of work hardening on mechanical behavior of resistance spot welding joint during tension shear test, (2016), doi: [10.1016/j.matdes.2016.03.120](https://doi.org/10.1016/j.matdes.2016.03.120)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Effect of work hardening on mechanical behavior of resistance spot welding joint during tension shear test

Chengjie Liu <sup>a</sup>, Xiankun Zheng <sup>a</sup>, Hongyu He <sup>a</sup>, Wurong Wang <sup>a,\*</sup>, Xicheng Wei <sup>a</sup>  
<sup>a</sup>School of Materials Science and Engineering, Shanghai University, Shanghai, China

### Abstract

Thickness variation and plastic strain caused by forming process will severely affect the crash behaviors. The objective of this paper was to investigate the effect of work hardening on mechanical behavior in resistance spot welding. The microstructure and mechanical properties of as-received DP780 steel sheet (0%) and tensile stretched DP780 with 4%, 8% and 12% of pre-strain degree were scanned and analyzed as baselines, which were then jointed with press quenched 22MnB5 hot-stamping steel using resistance spot welding. The influence of work hardening on mechanical behavior, hardness profile and heating effected zone softening of welded joints were explored separately. It was concluded that the work hardening could promote load bearing capacity of spot weld joints by about five percent and induce a significant twenty percent drop down in energy absorption capability.

**Keywords:** Work hardening; Resistance spot welding; mechanical behavior; Fracture characteristic; HAZ analysis

---

\* Corresponding author Tel.: +86-21-56331377; fax: +86-21-56331377.  
E-mail address: [wrwang@shu.edu.cn](mailto:wrwang@shu.edu.cn)

Download English Version:

<https://daneshyari.com/en/article/7218288>

Download Persian Version:

<https://daneshyari.com/article/7218288>

[Daneshyari.com](https://daneshyari.com)