# Influence of Preheating and Heat Treatment after Welding According to the EN 13445 and ASME Code on the Hardness Level of Welded Joints for the Pressure Vessel Plates

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**The paper deals with an analysis of preheating and heat treatment after welding and their influence on the final hardness level in case of welded jonits for common materials applied for manufacture of pressure vessel plates. During the welding process, the higher values of hardness and simultaneously decreasing of plasticity was observed and measured in the heat affected zone. Therefore, there was necessary to preheat the base material, or to apply the heat treatment after welding, or to suggest any combination of both mentioned ways. First of all, the groups of tested plates with required parameters were chosen for the application of the submerged arc welding method (according to ČSN EN ISO 4063), and preparation of samples for hardness measurement (ČSN EN ISO 6507) as the next step. The main goal of this experiment was to determine the hardness level for two fine grained steel grades after welding with the given parameters, as well as to adjust or to eliminiate the heat treatment process (preheating, post-heating), if they are not necessary.**

**Keywords:** welding, heat treatment (pre-heating, post-heating), hardness level, EN 13445, ASME Code

## Acknowledgments

***This work was supported by the Ministry of Education, Youth and Sport of the Czech Republic, programm NPU1, project No. LO1207 and the SGS research project CTU in Prague, No. 161-1611360B001.***

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**Paper number: M201496**