

## Thermal diffusivity of X153CrMoV12 – a methodological study

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The main target of a recent research project in cooperation with Böhler Edelstahl GmbH & Co KG is to compare different methods for thermal diffusivity measurements of highly alloyed steels.

For this reason, thermal diffusivity is on one hand directly measured via Laser Flash Analysis (LFA) and, on the other hand, indirectly calculated from electrical resistivity using the Wiedemann-Franz-Law. Therefore, electrical resistivity (in the solid and the liquid states) needs to be known and is within the frame of this investigation measured using a fast pulse-heating apparatus. However, material-dependent lattice contributions of yet unknown magnitude need to be accounted for.

A relation between direct and indirect methods is sought after to improve measurements and simulations using the Wiedemann-Franz-Law. As a first step, a X153CrMoV12 steel of industrial relevance is investigated using both mentioned methods. The measured diffusivity results will be compared and presented within this study. The examination of other alloys is in preparation and will possibly help to quantify these lattice contributions for selected groups of alloys.

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