



METALLOGRAPHY

Macro- and Microscopic Microstructure Examinations

- In-depth analyzes of the materials and their respective process histories
- Identification of problems in the manufacturing process, e.g. with respect to casting and forming parameters, heat treatments or the input of foreign material

OUR SERVICES

- Preparation and documentation of sections of metallic materials and composite material samples
- Section analysis according to test standard as well as beyond that so as to be tailored to the respective Task
- Micromechanical analysis (down to individual phases) by means of Vickers microhardness measurement acc. to EN 6507-1
- Quantitative determination of particle and cell sizes acc. to ASTM E112
- Documentation and analysis of samples from forming and heat treatment tests

EQUIPMENT

- light microscope
- stereomicroscope
- microhardness

TESTING METHODS

- EN ISO 6507-1
- ASTM E 112-13



TEST PROCEDURE	PERFORMANCE PARAMETERS	APPLICATION
Microstructure characterisation	<ul style="list-style-type: none"> • Section preparation; • Recordings in incident light and with polarising filter • Magnification up to 1000x 	<ul style="list-style-type: none"> • Optimisation of casting parameters • Evaluation of element influences of complex material composites, weld seams, etc.
Particle size measurement	<ul style="list-style-type: none"> • Linear intercept method • a few μm up to several mm 	<ul style="list-style-type: none"> • Influence of particle refining or cooling rates • Microstructural homogeneity
Microhardness measurement	<ul style="list-style-type: none"> • Microhardness measurement according to Vickers • 1g to 1000g impression weight 	<ul style="list-style-type: none"> • Effect of heat treatment parameters • Mechanical analysis of individual phases
Topology measurement	<ul style="list-style-type: none"> • Confocal white light microscopy <ul style="list-style-type: none"> • vertical: $\geq 20\text{nm}$ • Lateral: several cm 	<ul style="list-style-type: none"> • Preparation of surface profiles • 3D documentation of surface qualities • Abrasion depths, etc.
Fracture surface analysis	<ul style="list-style-type: none"> • Stereomicroscopy, SE-REM analysis 	<ul style="list-style-type: none"> • Analysis of fracture types • structural and chemical analysis of inclusions

As a subsidiary of AIT **LKR Leichtmetallkompetenzzentrum Ranshofen GmbH** is pursuing a holistic research and development approach to lightweight construction in the vehicle sector - from new metal alloys and process technology to material-related structural design.



This makes LKR a powerful and independent partner for your development projects.

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