

Foundry Laboratory

Principal goals and activities

- Research and material analysis in sand and core mixtures.
- Research on shape and size factors of shaping of sand and core mixtures.
- Analyses of technology properties of sand and core mixtures.
- Research of base parameters of sand and core mixtures: mechanically compacted and chemically hardened.
- Research of gas generation properties in sand and core mixtures; chemical and physical-chemical analysis.
- Research in expansion properties of mechanically compacted and chemically hardened sand and core mixtures.

General focus of laboratory

- Analyses of properties of sand and core mixtures.
- Morphology and chemical nature of opening materials in founding.
- Research in the relationship of founding and mechanical properties of sand and core mixtures.
- Study of thermal stability of sand and core mixtures using inorganic and organic binding agents.
- Study of mechanical and thermal properties of sand and core mixtures.
- Monitoring of properties of sand and core mixtures at thermal load (up to 1200° C in various temperature modes).

Specific instruments and outcomes

- Multiserw – Morek laboratory sand mill.
- Multiserw device for sieve analysis.
- Multiserw stirrer for material washability test.
- AZ 30 compacting machine.
- RADWAG MAC 50/NH moisture meter.
- LRU device for measurement of mechanical properties in sand mixtures.
- LPiLR1 breathability analyzer.
- Meter of gas generation rate in sand and core mixtures.
- Founding dilatometer for heating temperatures up to 1000° C in various temperature modes.
- Binocular loupe (Carl Zeiss Jena).

Offer of technology and expertise

- Initial and final inspection of opening materials used in founding, shape characteristics of opening materials.
- Determination of the sum curve of opening material and the values of d50, d75/d25.
- Determination of gas content in sand and core mixtures with inorganic and organic bonding agents.
- Determination of pressure, shearing and flexural strength in sand and core mixtures.
- Determination of breathability of founding mixtures.
- Determination of thermal expansion properties in sand and core mixtures compacted into a test specimen 8 mm dia. × 50 mm.
- Determination of thermal expansion coefficient in sand and core mixtures.
- Training/seminars on topics: „Aluminium and its alloys“, „Preparation of products using high-pressure casting“, „List of founding technology in preparation of castings“

