Comparison of ABI Technique and Standard Methods in Measuring Mechanical Properties of Aluminium Al-aloys

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Mechanical properties and chemical composition of aluminium alloys were investigated by automated ball indentation tests, scanning electron microscopy and energy dispersive X-ray analysis.
In this work, Automated Ball Indentation (ABI) technique was compared with the standard mechanical tests. ABI method is based on the load controlled multiple indentations into a polished surface by a spherical indenter. The indentation depth is progressively increased to a maximum user specified limit with intermediate partial unloading. This technique allows to measure the yield strength, stress-strain curve, strength coefficient and strain hardening exponent.
For all these test materials and conditions, the ABI derived results were in very good agreement with those obtained from conventional standard test methods.

Keywords: Al-alloys, microstructure, mechanical properties, ABI tests

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