

# Testing metals to ASTM and ISO standards



This case study highlights how Vector can test multiple specimen geometries and sizes with its 200 mm field of view when testing metals To ASTM and ISO standards.

Published August 2023

## Challenge

When testing metals to ASTM and ISO standards, it may be necessary to test specimens of different sizes, geometries and gauge lengths. To remain competitive and efficient, a high throughput needs to be maintained by minimising equipment setup for each specimen geometry.

## Standards

Metals are tested according to a variety of national and international standards. These standards ensure consistency and comparability of results obtained from material tests carried out across the world, using different equipment. They ensure that test methods are standardised and reproducible for the reliable evaluation of mechanical properties. This is critical for quality assurance, research and development, material selection and even safety. The effects of testing to these standards can be seen in different industries, including automotive, aerospace, construction and medical.

ASTM<sup>1</sup> and ISO<sup>2</sup> standards for materials tests on metals:

- ASTM E8 and E8M Standard Test Method for Tensile Testing of Metallic Materials
- ISO 6892-1 Tensile Test on Metals at Ambient Temperature
- ASTM E21 Elevated Temperature Tension Test on Metals
- ISO 6892-2 Tensile Test on Metals – Test Method at Elevated Temperature

## Solution

Imetrum's uniaxial extensometer, Vector U200, can test multiple specimen geometries and gauge lengths from 25 to 180 mm. It locks onto and tracks several marking types, meaning a wide range of specimens can be tested. The automated control and simple marking solution, combined with quick setup and simple training requirements, means setting up each test only takes a few seconds.

The accuracy of Vector's measurement technique and operation efficiency improves test reliability to meet the standards required for the tensile testing of metals.

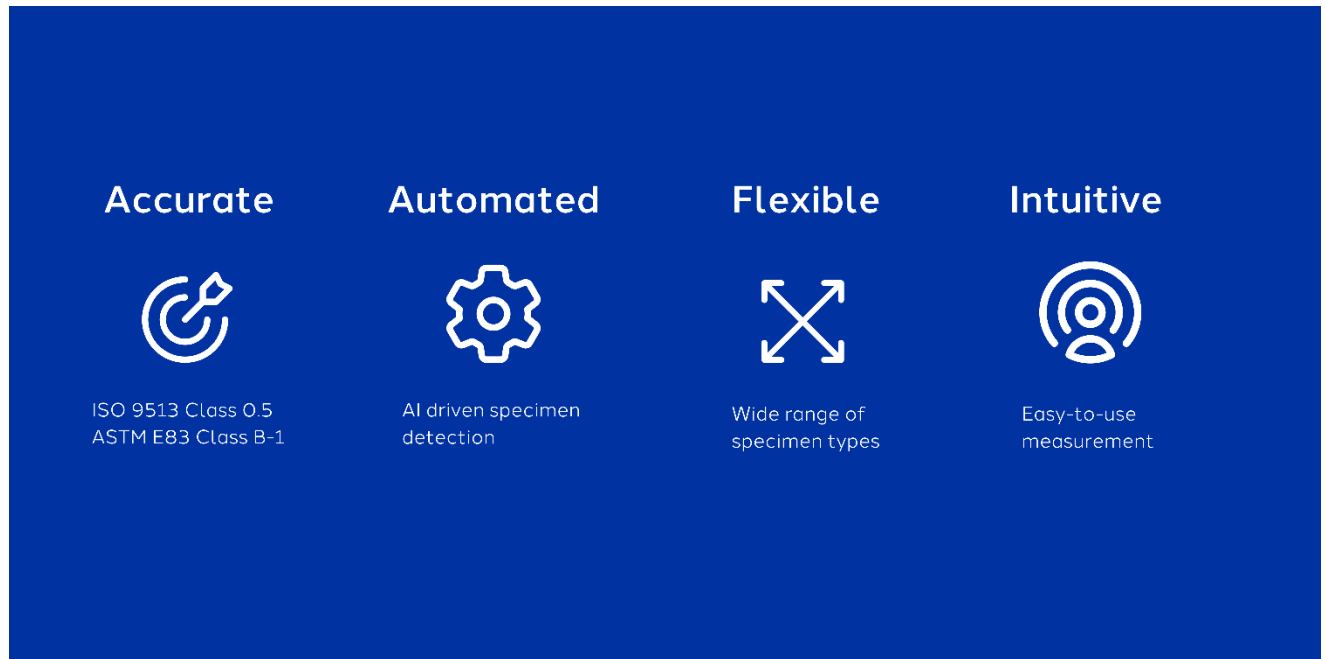
In addition, Vector meets both Class B-1 for the ASTM standard B83 for the accuracy of controlled displacements to a simulated specimen and ISO 9513 Class 0.5 for the static calibration of extensometer systems used in uniaxial testing for all supported gauge lengths.





## Results

A single Vector replaces the need for a suite of clip-on extensometers, and this can significantly reduce inventory costs, equipment setup time and ongoing calibration costs. The automated operation saves time and increases throughput. Tests can also be tested to failure safely as the operator is not required to interact with the specimen or extensometer during the test. Vector will allow you to keep up with your testing requirements and reduce setup changes when alternating between different specimens, grips or test types.

<sup>1</sup> <https://www.astm.org/>

<sup>2</sup> <https://www.iso.org/home.html>



Accurate	Automated	Flexible	Intuitive
			
ISO 9513 Class O.5 ASTM E83 Class B-1	AI driven specimen detection	Wide range of specimen types	Easy-to-use measurement

Visit the website page: <https://www.imetrum.com/case-studies/testing-metals-to-astm-and-iso-standards/>