



High Rate Tensile Test

The high rate tensile test allows tensile tests to be performed at strain rates unobtainable using traditional servo hydraulic machines. Using appropriate specimens strain rates up to 1500/s or more may be achieved.

The test apparatus is fitted in the impact chamber of an Imatek IM10 system. The specimen is held between two sets of grips – the upper set fixed and the lower set free to move up and down. A special striker fixed to the weight carriage of the impact tester strikes the lower jaws and provides the force required to stretch the specimen (usually to failure).

A transducer attached to the upper jaws measures the force on the specimen, and hence the stress.

Specimens may be in the form of sheets or dumbbells, with gauge lengths from 10mm to 100mm.

Cylinder Crush Test

The cylinder crush test combines a highly specialised anvil, a striker and software analysis to investigate the flow stress behaviour of metallic materials. With appropriate selection of sample size strain rates of up to 1500/s can be achieved.

Temperature conditioning of the anvil is offered as an option in order to investigate flow stress under different thermal conditions.

The anvil is designed to disperse the initial shock wave in order to minimise reflections that would disrupt the results.

Typically the test is performed on small specimens (10mm diameter) with a length:diameter ratio of approximately 1. The test provides a uniform strain rate up to a true strain of about 50%.

The use of the Imatek dynamic displacement measurement system is highly recommended.



Charpy V-notch Test



By using the appropriate anvil and striker, in conjunction with a load cell positioned just above the striker, the IM10 can be used to perform instrumented Charpy testing.

The rigidity of the anvil, together with the precise guidance of the IM10 falling weight ensure accurate results. Adjustments are provided on the anvil to ensure the correct impact geometry.

The whole apparatus is usable in Imatek's temperature controlled chamber, enabling tests to be performed at lowered and elevated temperatures, to determine the brittle to ductile transition temperature.

In conjunction with the Impact software the test measures total energy to failure. In addition, because the system is equipped with high-speed instrumentation, values can be obtained for crack initiation energy and crack propagation energy.