



Material Hardness & Tensile Testing Overview

The role of the test centre is to certify that all material specified for each customer order has been manufactured & inspected at Smart Extrusions & tested in accordance with & conforms to the following specifications.

BS EN 575, BS EN 515 & BS EN 755-9

At all stages of the extrusion process, information is recorded. The metal cast number & alloy specifications are logged, the input temperature, exit temperature & cooling rate. Dimensional checks are carried out on the press head & saw before the ageing process. After ageing, the material is tested using the Webster (a simple hand-held indenter-type instrument) & the results recorded for future reference. This procedure covers the requirements of a Certificate of Conformity.

Webster Readings

The alloy mechanical properties chart will give the min/max Webster reading for that material.
(the below Webster readings cover 6060, 6063 & 6063A alloys)

F	condition	no press cooling/no ageing	W = 0
T4	condition	press cooling/no ageing	W = 4 – 5
T5	condition	no press cooling/ageing	W = 9 – 11
T6	condition	press cooling/ageing	W = 10 – 13
6005A alloy	T6 condition	press cooling/ageing	W = 14 – 15
6082 alloy	T6 condition	press cooling/ageing	W = minimum 16

Tensile Testing

In addition, we can also carry out mechanical tensile testing to **BS EN ISO 6892-11:2009**. The tests are carried out at ambient temperature in a controlled environment.

If a tensile test is required by a customer, the aged material is quarantined & a piece is taken to the test centre. A sample of the material is routed to a specific size & shape & loaded into the tensile machine. The test will show the ultimate tensile strength, yield strength & elongation. All the results are compared to the alloy standard **BS EN 755-2** & if passed, will be stamped & released for packing.

A certificate will be produced showing the minimum requirements & test results attained. In addition, the chemical composition of the material used will be stated on the certificate.

Mechanical & Chemical Certificate – BS EN 10204 TYPE 3.1

The frequency of tests depends on the weight per metre of the material:
upto 1kg/m = 1 specimen per 1000kgs
1kg/m upto 5kg/m = 1 specimen per 2000kgs
over 5kg/m = 1 specimen per 3000kgs