SG300 SUBSTANCE GAUGE

Comparison Trials Reporting

MSA
ENGINEERING SYSTEMS

SG300 Comparison Trials

Leather is defined by many different physical properties to ensure that it is fit for the final purpose. One of the key parameters, which will in turn have a profound effect on other properties, is the substrate thickness or substance. The measurement of leather substance has traditionally been carried out using application of a known weight to a defined area and measuring the result in sample thickness. The measured thickness will depend upon such factors as the pressure and time for which it is applied.

(Trials carried out and report written by BLC Leather Technology Centre).

The SG300 Substance Gauge has been developed by MSA in conjunction with BLC Leather Technology Centre. The unit is light weighing 1.3Kg and comprises an anvil arrangement and constant spring force. The SG300 has a screw adjustable spring mechanism which allows it to be adjusted and calibrated based on the criteria of ISO 2589.

The SG300 can be held in one hand (either left or right) leaving the other hand free to insert the material to be checked into the gauge. It can also be used on a bench (with an optional clamp) and can stand upright when not in use. Due to the shape of the SG300, the dial is in line of sight of the operator. Consequently, it gives the optimum reading position and can be read without tilting the instrument and without danger of error due to parallax.

The SG300 has been designed to be as close as possible to the ISO standard. It is important, therefore, to demonstrate the comparability between ISO 2589 and the SG300.

To determine the relationship between 3 testing methods (old and new style SG300 compared with ISO standard) comparison trials were carried out. Samples of leather were collected (41 in total) of varying types and substances. For each sample the substance was determined in triplicate. Where possible, the determinations were carried out in the same location for each sample.

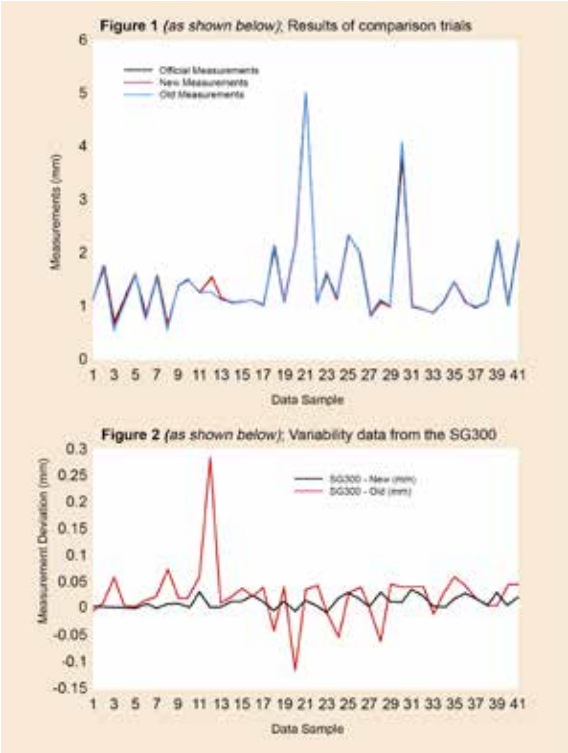

Figure 1 illustrates the results obtained from each leather sample. It is clear that there is very little variation between the 3 evaluation techniques. To try and highlight any variation that may be occurring, Figure 2 shows the difference in the readings obtained where the ISO method has a zero value and the difference in substance gauge readings are plotted against this.

These results clearly show that the result from the new SG300 more closely match the ISO standard than the old style gauge. They show that the new gauge had a maximum variation from the ISO standard of only 0.3mm.

To conclude, these comparison trials have been carried out on a large number of leather samples and, as a result, provide conclusive evidence to indicate that the new SG300 gives comparable results to the ISO 2589 International Standard. It can be used as a simple, fast and reliable alternative to the ISO dead weight laboratory method.

ISO 2589 - Determination of Thickness

An international standard exists for the measurement of leather thickness, ISO 2589. This method is based on IUP/4 of the International Union of Leather Technologists and Chemists Societies (IULTCS), and is intended for the measurement of all leather types.

ISO 2589 describes a test machine including:

Gauge - graduated to read to 0.01mm directly.
Anvil - flat, horizontal surface of a cylinder diameter 10.0mm projecting 3.0mm above the surface of a flat circular platform diameter 50.0mm.
Presser Foot - flat circular diameter 10.0mm (movement normal to the face of the anvil), dead weight loaded with 393g ± 10g (spring force equivalent to 500gf/cm^2). It's direction of movement is normal to the face of the anvil.

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