SG300 COMPARISON TRIALS

TRIALS CARRIED OUT & REPORT WRITTEN BY BLC LEATHER TECHNOLOGY CENTRE

INTRODUCTION

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.

ISO 2589:2002 MEASUREMENT OF THICKNESS

*An international standard exists for the measurement of leather thickness, **ISO 2589:2002**. 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 2589:2002** describes a dial micrometer type gauge which is dead weight loaded, the spring force equivalent to 500gf/cm^2. The presser foot is flat, circular and of diameter 10mm, and its direction of movement is normal to the face of the anvil. The anvil is the flat horizontal surface of a cylinder, also of diameter 10mm. The analogue dial is graduated to read from 0.1mm.*

The new generation **SG300 Substance Gauge** has been developed by **MSA** in conjunction with BLC Leather Technology Centre. The unit is light (weighing 1.3Kg compared with 1.8Kg previously), and comprises a specified anvil arrangement and spring force so it more closely conforms to ISO 2589:2002. The **SG300** can be calibrated through a screw adjustable, constant force, spring mechanism. This allows it to be adjusted, using an electronic load cell, to factory parameters conforming to **ISO 2589:2002**.

It is designed to be held in one hand (either left or right) leaving the other hand free to insert the material to be checked into the gauge. Additionally, the base of the frame has been designed to allow the gauge to be used on a bench (with an optional clamp) or to 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 2589:2002 and the SG300.

To determine the relationship between the 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 for 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 results from the new **SG300** more closely match the ISO standard than the old style gauge. They show that the new gauge has a maximum variation from the ISO standard of only 0.03mm.

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 2589:2002 International Standard. It can be used as a simple, fast and reliable alternative to the ISO dead weight laboratory method.

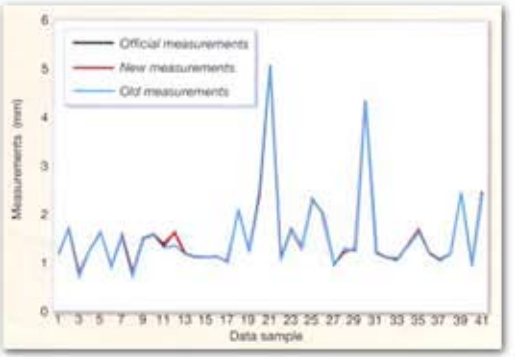

Figure 1: Results of comparison trials

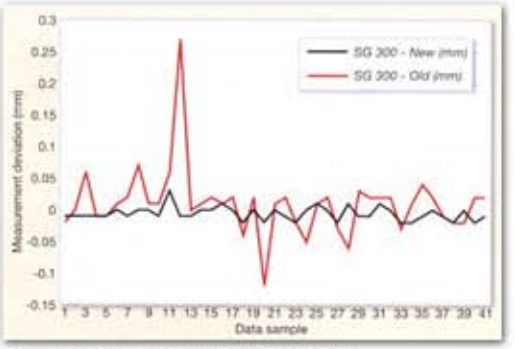

Figure 2: Variability data from the SG300

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