

NOTE ON TOUGHNESS OF SOLE CREPE

From time to time producers of sole crepe have referred to the Institute complaints which have been made by buyers in temperate climates, against the softness of the product. Samples of the supposedly defective rubber have been returned by the buyer and on examination in Malaya have been found to be to all intents and purposes normal sole crepe. The complaint usually made is that the rubber is soft and lacks toughness, or that it possesses no resilience. In some cases where the producer has received an order on the basis of a sample accepted by the buyer, the producer has retained duplicates of the original sample and it has been possible to test these against material returned subsequently by the buyer from rejected consignments.

In testing for resilience the instrument employed at the Institute is a modified form of scleroscope. In the operation of this instrument a small steel weight with a rounded end is released from a fixed height above the sample, falls under its own weight and rebounds vertically. The height of the rebound is measured on a scale and gives an indication of the resilience of the sample. In a typical recent instance in which the buyer had rejected a consignment on the grounds of softness and lack of resilience compared with the original sample, the rejected material and the producer's duplicate of the original sample were each tested in twenty spots by the scleroscope and recorded identical average readings of 68 on the instrument scale. This indicated that, under Malayan conditions, material from the large shipment did not in fact lack resilience when tested against the sample. Observations on these samples are typical of many which have been made from time to time and the reason for the buyers' complaints is not at first obvious.

Some time ago the opportunity arose for personal enquiry and discussion of this matter with brokers who handle large quantities of sole crepe in London, and in the course of these discussions it became plain that the probability of complaints being made against the hardness or resilience of sole crepe was largely bound up with temperature conditions and time of storage in European warehouses before sale to the user. When the demand for sole crepe is brisk and it is being delivered to the user almost straight from the ship, it is common at times for complaints against softness to be numerous; when trade is less good and supplies of sole crepe may be in the warehouses for two or three months before sale, complaints are very infrequent. These experiences provide the clue to the real nature of the users' complaints.

When raw rubber is stored at a low temperature for several weeks, a partial and temporary crystallization is induced in it. It becomes stiff and opaque and not unlike leather in its resistance to bending. The user, who is usually a shoe-maker and who has no means of testing the properties of the commodity, save by feel and appearance, is naturally disposed to favour a rubber which at the time of purchase is opaque and which is tough and resistant to bending. Very few of the buyers appear to realise or to have observed that such a tough rubber rapidly loses its opacity and stiffness in a warm atmosphere and assumes the translucent flexible condition with which all Malayan producers are familiar. Because of the lack of appreciation by buyers that the opacity and apparent toughness or hardness of sole crepe is a purely transitory condition dependent upon temperature, complaints are often made against rubbers which are perfectly satisfactory but which because of not having been stored for some time in a cold place are translucent and flexible at the time of examination. This temperature effect is well-illustrated by further observation made on the two samples of sole crepe under reference. When the two samples had been stored in a refrigerator for two days at 40°F., they both hardened and recorded identical scleroscope readings of 55 as against the earlier value of 68 at Malayan room temperature (85°F). After ten days' storage in the cold, the samples were opaque, could only be bent with difficulty and showed identical scleroscope readings of 41 on the instrument scale. In this instance both pieces of rubber were clearly of good quality and the sole reason for complaint against the rubber from the large consignment was that, whereas the sample had reached the buyer in a tough, opaque, incipiently crystalline condition, the bulk consignment arrived unfortunately in the flexible condition in which it left the hands of the producer.

Producers who receive complaints against softness should not therefore be unduly alarmed and buyers are not justified in complaining on this ground unless they are absolutely satisfied that the grounds for complaint are more substantial than that of the simple temperature effect now described.

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