

HUMIDITY AND STORAGE OF BUTTON LAC.

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Button lac forms but a small part of the total exports of lac. In recent years it has constituted about 4% *i.e.* about 30,000 mds. per annum. It is, however, favoured by certain consumers. It offers three advantages over shellac in that it is slightly cheaper to manufacture, it does not readily "block", and each button can be stamped with the manufacturer's own mark enabling consumers to be certain of the genuine quality of their purchase. This latter point may be of greater importance in the future. Consumers are beginning to realise that certain special lacs may be more suitable to their purpose than T. N. grades. Such lacs in the form of buttons stamped with the manufacturer's mark as a form of guarantee should be very popular.

One of the objections to button lac has been its tendency to develop cracks on storing. This cracking is severely dealt with by the Shippers. No recognised scale of allowance is laid down; but at least one firm invariably refuses to ship any button lac which shows the slightest sign of cracks. There is a certain amount of justice in this for the cracked buttons readily break and the manufacturer's stamp may be disfigured or completely removed.

Manufacturers were interrogated as to the cause of this cracking but could not give satisfactory explanations. It was felt desirable, therefore, that this point should be investigated.

EXPERIMENTAL.

Observations were made from time to time on samples of button lac stored at Namkum, with the following results:

(a) Pure *Schleichera trijuga* (Kusum) buttons did not develop cracks during their first year of storage.

(b) A sample of Kusum buttons which had been stored for 3 years showed signs of cracking.

(c) Buttons of Acacia Catechu (Khair) lac the result of infection with Kusum brood did not develop cracking in a year.

(d) Pure Butea frondosa (Palas) buttons developed cracks fairly quickly; sometimes a few weeks after manufacture. Buttons manufactured from old Palas lacs developed cracks quicker than fresh lacs.

(e) Pure Zizyphus Jujuba (Ber) buttons developed cracks but less quickly than Palas.

(f) Cracks developed most rapidly in the cold weather season.

(g) Cracks did not develop or increase in the rainy season.

It was deduced from these last two observations that the humidity of the atmosphere possibly affected the development of cracks. Further evidence for this deduction is afforded by the fact that cracking does not occur in buttons stored in Calcutta (which has a very humid climate) while cracking is very noticeable in Ranchi (which has an extremely dry climate except during the rains).

Tests were made on the dessication of samples of button lac. The following observations were made on samples kept in a vacuum dessicator :—

(a) Pure Palas buttons developed cracks in two days.

(b) Pure Ber buttons developed cracks in three days.

(c) Pure Kusum buttons were unaffected after a week.

The effect of temperature of drying was a further point investigated. A dessicator was kept at 0°C. in ice. The following observations were made on samples kept in this dessicator :—

(a) Pure Kusum buttons developed cracks in three days.

(b) Pure Palas and Ber buttons were very badly affected and were quite brittle owing to the network of small cracks.

The change in dimensions of the lac produced by drying was measured. Samples were prepared by cutting the buttons into rectangular shaped pieces

about 2 cms. \times 1 cm. \times 0.3 cms.; the edges being rubbed smooth and true with fine emery paper. The lengths of the specimens were measured by a micrometer gauge reading to 1/1000 m.m. After each day of dessication the samples were weighed and measured. The table records typical results obtained.

TABLE I.

Sample.	Weight in grms.	Length in mms.	Treatment.
1. Kusum ...	2.2600	20.125	Original sample.
	2.2524	20.070	After 48 hours drying in dessicator.
	2.2500	20.055	After further 24 hours ,, ,,
	2.2354	20.025	,, ,, 48 ,, ,,
2. Palas ...	2.5981	22.370	Original Sample.
	2.5723	22.345	After 48 hours drying in dessicator.
	2.5630	22.308	After further 24 hours ,, ,,
	2.5594	22.285	,, ,, ,, ,, ,,
	2.5570	22.280	,, ,, ,, ,, ,,
	2.5568	22.280	,, ,, ,, ,, ,,

The progressive diminution in length with loss of weight on drying is clearly indicated.

DISCUSSION.

The strains set up in the material due to the shrinkage produced by loss of water apparently cause the specimen to crack. That Kusum lac does not crack on drying may be explained by its plasticity at room temperatures. It is sufficiently plastic, as is demonstrated by the "Warping" of Kusum buttons, to accommodate the changes in dimensions produced by drying, and thus the setting up of unduly high stresses is avoided. At 0°C., when Kusum lac has lost much of its plasticity, drying does produce cracks.

It is suggested that storage of button lac in dry places should be avoided by despatching material as soon as possible to Calcutta. If upcountry storage

is necessary the buttons should be stored in a moist atmosphere. This may be obtained by having several open vessels of water in the room chosen for storing the buttons and keeping the doors and windows covered with sacks moistened with water.

SUMMARY.

The cause of development of cracks in button lac on storing has been shown to be due to drying. Kusum button are less affected than other lacs. Storing in a moist place is recommended if material cannot be immediately despatched to Calcutta.

Sample	Original weight	Weight after 48 hours drying in desiccator	Weight after further 24 hours
1. Kusum	20.135	20.070	20.045
2. Lalac	22.270	22.245	22.220
3. ...	22.280	22.255	22.230

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