PACKAGING VIS – A – VIS QUALITY CLAIMS

by

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Discolouration due to mould contamination is one of the main reasons for quality claims received for Sri Lanka rubber exports during the past few years. Hence first I wish to discuss in detail as to how the mould spoilage of natural rubber occurs.

The essential reasons for mould contamination on a material are,

(a) Presence of carbohydrates/proteins.

(b) Presence of moisture. (above 1% by wt for NR).

(c) Temperature.

In NR there is about 1% carbohydrates naturally present along with about 3 – 4% by weight of proteins. Hence NR is a very good medium for the growth of mould. Out of these the only parameter that could be controlled in minimising mould contamination of rubber is the moisture content by ensuring proper drying of the rubber.

It has been shown that raw NR is hygroscopic and hence absorbs moisture from the damp atmosphere to increase the moisture content. In the presence of the yellow fraction, consisting mainly of proteins and lipids, moisture intake is much faster than in pure rubber.

Fig 1. shows clearly that at 85% relative humidity, the increase in the moisture content of lace crepe rubber is high and also that increment is proportional to the percentage of yellow fraction present.

Fig 2. indicates that at a higher relative humidity of 90% the increase in the moisture content in all samples of rubber is much higher than in the case of unfractioned crepe rubber. In the yellow fraction, it is over 10 times higher than in the case of the fraction removed and hence least protein containing rubbers.

Fig. 1. *The increase in moisture content of lace crepe Vs time at 85% relative humidity*

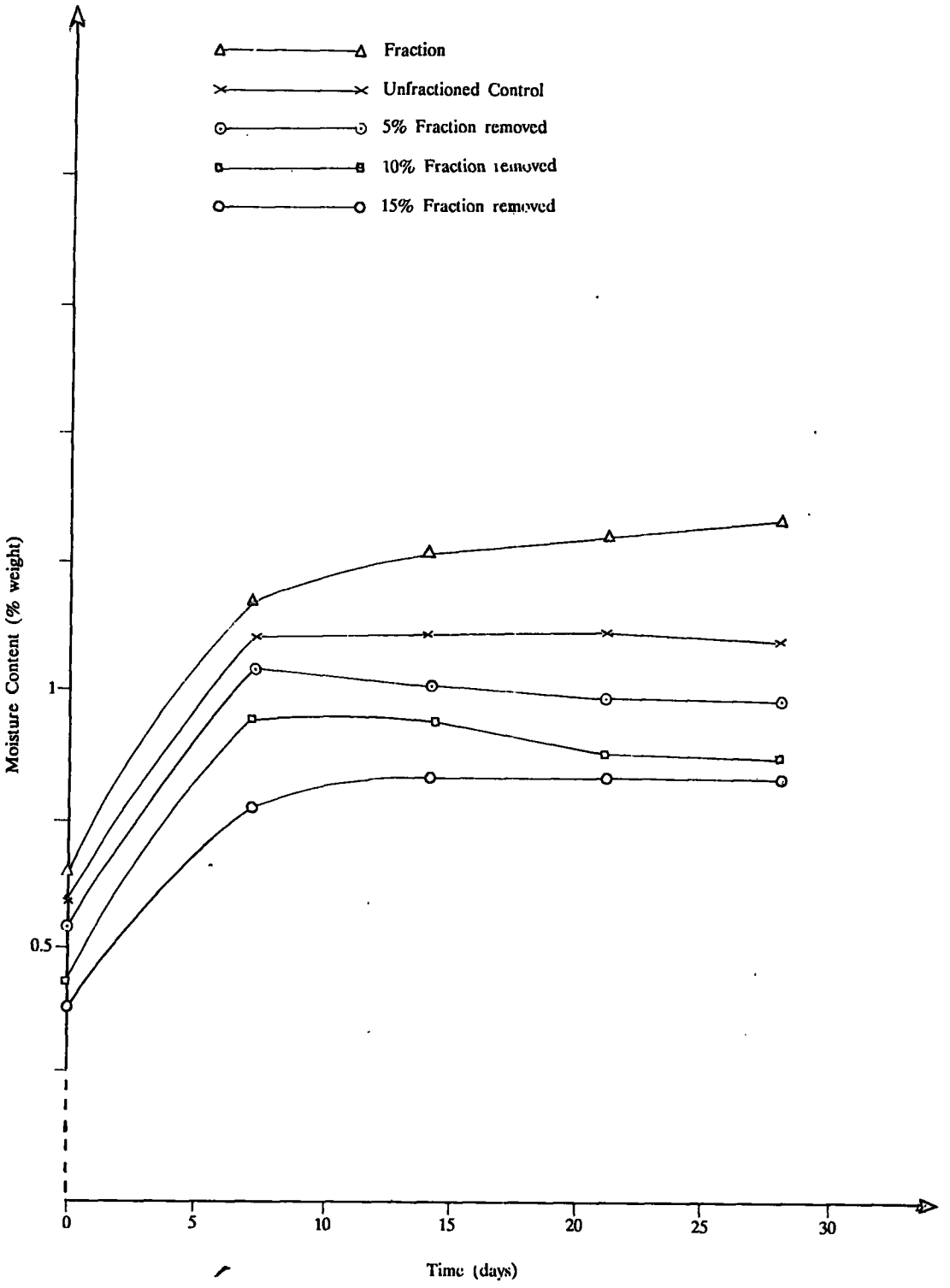
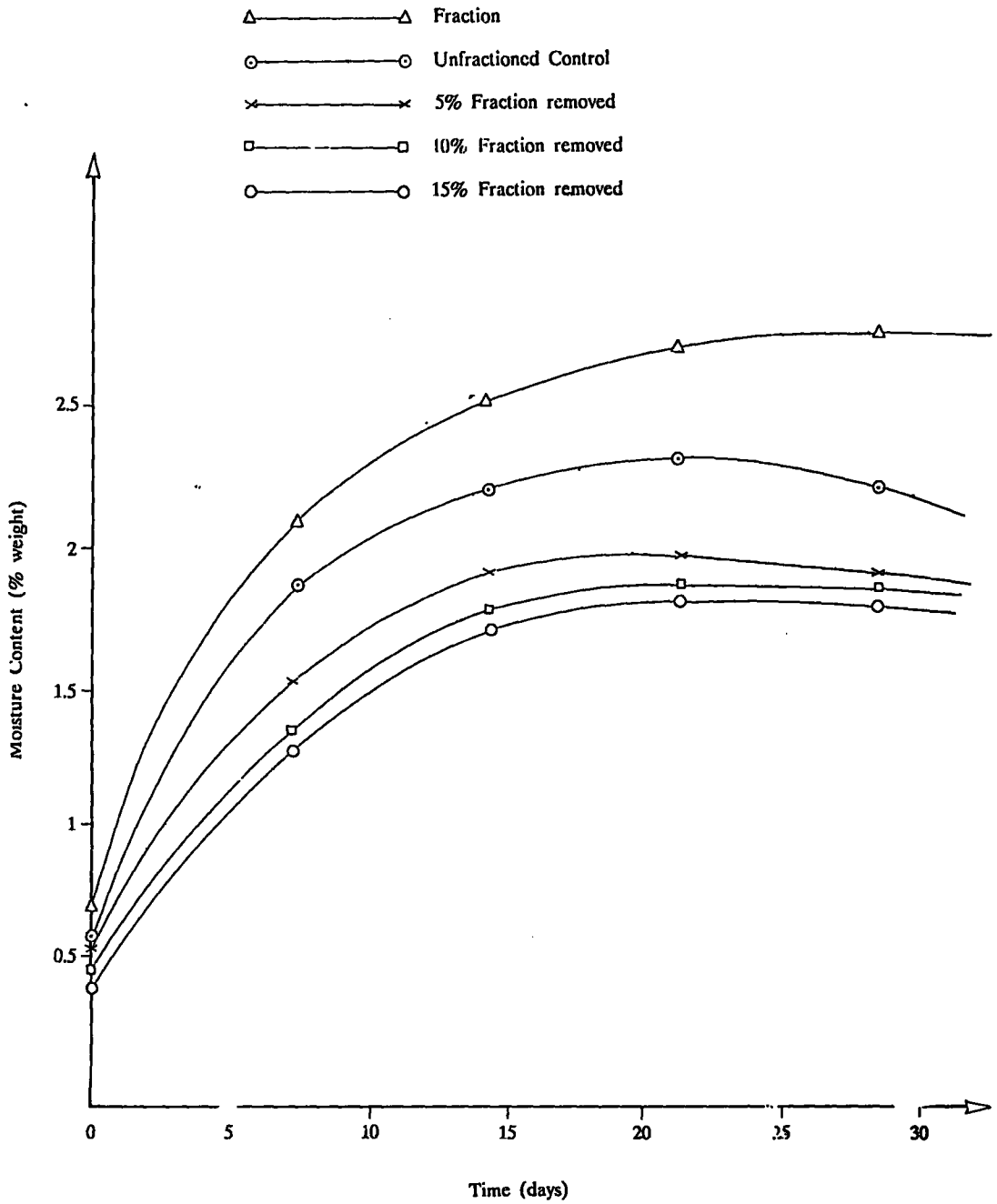


Fig. 2. *The increase in moisture content of lace crepe Vs time at 90% relative humidity*



The average relative humidity (RH) of Sri Lanka is slightly higher than in other South East Asian NR producing countries like Malaysia & Indonesia, Hence from the average RH figures of the 3 countries and from the results of the above experiment, it is clear that the tendency for mould contamination of Sri Lanka rubber is much higher than for the rubbers produced in other South East Asian Countries. Therefore, in Sri Lanka we must take additional precautions to prevent mould contamination on our rubber compared to other South East Asian Countries.

Sri Lanka receives a large number of quality claims due to mould contamination of rubber every year resulting in loss of valuable foreign exchange to the country.

When there is a case of mould spoilage of rubber, especially in the case of sole crepe, normally the blame goes to the factory where the rubber has been produced for not drying their laces properly. However, in a recent survery carried qut by the RRI we have observed that the main reason for mould contamination of sole crepe rubber is the poor quality packing material used in the packing of sole crepe.

According to our findings the moisture levels of freshly sawn albizzia planks used for making sole crepe some times go up to over 25% by weight. Also some of the planks are attacked by grey/black mould even before they are used for packing crepe rubber. Hence, when crepe sheets are packed in such crates, in between sheets of polythene, optimum conditions for mould contamination are provided for the rubber and hence mould contamination is unavoidable.

However instances of using incompletely dried laces for lamination or direct packing, to fulfil urgent orders, have also been observed. We have also observed in our visits to sole crepe factories that some people use too much of teepol sulution as the lubricant for cutting edges of sheets and incerain places even serum water is used for this purpose. All these malpractices make the situation worse.

During my stay in the U. K. on sabbatical leave I had the opportunity to visit some leading consumers and dealers of sole crepe rubber in the UK/Europe.

From the discussions I had with those organisations, the main reason identified for the declining demand for sole crepe in Europe is its very poor presentation than the quality of rubber. Situation is so grave that the major shoe manufacturer in the United Kingdom, the K–Shoes factory made me understand that unless we change our present way of packing and shipping, even the 2.5% consumption at present in UK will decline to zero in time to come. However, if we improve the quality of presentation a 3 fold increase in the consumption of sole crepe in the UK can be expected within the next few years. At present only one type of a shoe made out of sole crepe is used in the UK, known as the NOMAD Desert Boot; or chuckers. In that boot the colour of the water white sole crepe sole is not visible when the shoe is worn, because the rim of the shoe is sprayed with brown or black paint. Hence they are not very concerned about the water white colour of the crepe as long as all the sheets are of uniform colour and hardness. Similarly the hardness of all the sheets in the lot should be uniform. In order to achieve these requirements they want the shipper to supply rubber produced in one single estate without mixing produce of different estates.

This is why they mention the name of the estate from which they want the rubber.

However, under the present auction system for crepe rubber, it is very difficult to do this. In order to solve this problem I feel that at least 40% of state owned JEDB & SPC estates should also enter into forward contracts. Then the shippers will be able to offer fairly large consignments of say 1 to 2 container loads per month of rubber produced in one estate to a buyer. At present when a stock of about 10 t is offered at the auction about 2 or 3 shippers bid for it and therefore the parcel is divided between them.

Albizzia based packing crates are totally unacceptable to the Europeon buyers due to the following reasons and among the dealers and buyers in Europe these soft wood boxes are known as Sri Lankan coffin wood crates.

1. This wood is very soft and fragile and hence the crates get damaged during transit.

2. Disposal of the wood causes pollution problems specially if they are chemically treated.

3. Wood splinters, steel straps, and nails on broken boxes cause a costly health hazzard.

In order to avoid this problem the best solution according to the consumers and dealers is to use "Rubsteel" boxes if plywood boxes used by Malaysians are too expensive for us. Since Rubsteel boxes are no more available in the country, some leading shippers with technical support from the RRI introduced corrugated cardboard crates strapped with polyester bands for sole crepe packing. They arrived at their destination undamaged, did not cause health hazzards and also disposing the empties is very much easier than in the case of wooden crates.

However, now the problem is the cost. Cost of Albizzia crate is only Rs. 37.50, but a corrugated cardboard box costs them Rs. 71.00 because of the import duty on the material. If a duty consession is given for the corrugated cardboard utilised for sole crepe packing only, they are prepared to go for cardboard boxes. If not, this is one place where a government organisation could come to the rescue of the sole crepe industry of Sri Lanka by giving them a grant for using these improved packing material. We, from the RRI, could certify the ammount of corrugated cardboard used for the purpose.

Further they informed me that if Sri Lankan authorities do not take action to eliminate these problems, there is every possibility that Malaysia would start sole crepe production to cater to Europe too. At the moment their products are sold in Australia and Newzeland only. If they start competeing with us in Europe too, we will be in real trouble.

Another small technical problem which has resulted in a poor image for our sole crepe exports is the way of stacking the sole crepe boxes without pallet bases in the container. If they are packed in "broad side on" position they could be rolled on to the fork lift at the unloading

point. But Sri Lankan sole crepe crates are normally stacked in "end side on" position to load 17 t in a 20 ft. container and hence it takes over 4 1/2 hours to unload one container there by increasing the cost.

This problem could be eliminated if the crates are stacked ona pallet base.

Corrugated and pebbly sole crepe

The main problem with these two very attractive forms of sole crepe is that there is no standard shape or dimensions for the grooves on them. Some producers produce corrugated sheets with v–shaped groves while the others produce with u–shaped groves. Depths of these groves also vary from factory to factory and some times in the same factory from one laminator to another.

When the grove pattern on the two soles of a pair of shoes is different that pair will be rejected. This is a serious problem causing a lot of rejections in their production lines because the soles do not match. Hence if action is taken to standardise grove patterns and their dimensions used in sole crepe laminators in Sri Lanka, this problem could be eliminated.

Further, they want special type of crepe soles to achieve a better grip on ice with deep grove patterns like on tyre treads. Some samples of the above type have already been circulated by us to the leading shoe companies for their comments and we are awaiting a feed back. If they are satisfied, arrangements will be made to manufacture them on a large scale, but the manufacturers were not aware of any of these special requirements. According to the consumers in the UK, there are 8 steps involved in the case of sole crepe rubber from the time of arrival in the factory until the shoe is complete. The steps are,

1. Unpacking from crates.
2. Sorting of mould free sheets of the same shade.
3. Splitting up of sheets if the thickness is too much.
4. Roughening for glue application.
5. Glueing.
6. Drying.
7. Fixing.
8. Resorting shoes of similar coloured soles.

But in the case of synthetic composite soles made by injection moulding only a few steps are involved and hence the overall cost is very low.

In the case of RSS there have been quality claims during the last few decades. There again the claims were mainly connected with the poor presentation of RSS rubber than on the quality. The problems of shipping marks rubbing off and the poor quality bale coating powder used in coating bales are as old as the sheet rubber industry of Sri Lanka.

The only marking ink recommonded on talc or kaolin coated 111.1kg. sheet rubber bales.is fine carbon black mixed with the rubber solution in white spirit. These marks are very unstable and the only way to prevent them from rubbing off is by not stacking bales one on top of the other. But according to the present method of shipping bale rubber that is impossible. Hnece if this problem is to be eliminated the present way of shipping RSS in bare backed bales should be completely changed.

Pressing of bales by means of a hydraulic press to get a proper shape and size is also essential according to the green book classification. This will also ensure minimum cargo volume to the rubber. But at present no factory in Sri Lanka uses hydraulic or screw presses for this purpose. If the bales are pressed before loading into the container, 20 t of rubber could be loaded in a 20 ft container. However if they are unpressed, only 17 – 17.5 t goes into a container. This is not important for rubbers sold on FOB terms where the freight cost is met by the buyer. But if the freight payment is by the local shippers, country will lose.

When it comes to unloading at the consumers end, even if the bales are pressed, fork lift cannot be used to unload them and hence a heavy labour cost is involved in unloading them by hand.

In the case of TSR rubber, because they are palletised in crates with the pallet base with provisions for using fork lifts, unloading is simple and cheap.

During the last 3 years we have received quality claims mainly from Japan regarding the micaceous particles appearing on the bale surfaces when local Kaolin based bale coating powders are used. Green book permits the use of both Kaolin, talc or dolamite powder for the purpose as long as 100% of them pass through a 249 /^{u} mesh. But of the two Kaolins available locally, namely Piliyandala clay and Dediawala clay, only the former meets the above specification, but not the latter which has about 2.0% by weight of course particles and mica in it.

Even dolamite powder produced at Katugastota has the problem of coarse particle contamination and hence is not suitable for the purpose according to the "Green book".

One of the ways of eliminating these problems associated with the RSS exports is by pressing them into TSR type 33 1/3 kg bales and shipping in crates like TSR thereby saving Rs. 450 – 600 per tonne on freight.

The best way of packing both TSR and RSS bales according to foreign buyers is by shrink wrapping them on a pallet base. Therefore financial assistance should be given to set up shrink wrapping equipment in Sri Lanka too.

Why Western Europe prefers TSR

Selection of a rubber for an end product is based not only on the market price; but on the total cost to the consumer on equivalent practical processing terms. Following draw backa have been experienced by the consumers of the conventional grades of NR like RSS and crepe.

Table 3. *Common defects of conventional grades*

1. Poor presentation in bare backed bales lead to contamination during transit and higher handling charges to the consumers.

2. Non uniformity in quality within a particular grade and multiplicity of grades, causing problems in products manufacture.

3. Non availability of Technical Information on the quality of Raw Natural Rubber.

An improvement in the way of presentation was therefore necessary for natural rubber as for synthetics. Hence technically specified block rubber was introduced which has many advantageous features.

Table 4. *Advantages of TSR*

1. Good clean presentation in optimum size, easily handled, Polythene wrapped bales.

2. Guaranteed limits for contaminants and certain basic raw rubber properties.

3. Consistancy in technical properties.

4. Production of speciality rubbers such as Cv and Lv for particular purposes.

The assured quality of TSR together with its advantages in handling, storage and processing have led to its ready acceptance by the manufacturing industry specially in the Western Europe with supplies becoming more readily available. More factories are converting to almost exclusive use of this type of rubber where ever possible. Hence the time has come now for Sri Lanka also to accelarate its TSR production to cater to this increasing demand. Until we get a gurantee that latex crepe will fetch a good price and has a future we must be able to convert at least a part of our latex into TSR – L grade which is fetching a good price now.

Table 5. *Rubber prices on 5th January – 1988*

Auction Price	Latex crepe No. 1X	21.51
	No. 1	21.50
	2	21.35
	3	21.30
	4	21.25
	RSS 1	22.00
	2	21.75
	3	21.25
	4	20.75
	5	20.25
	SMR MALAYSIAN PRICE L	23.55
	5	23.30
	20	23.30
	50	21.90
	SSRR SINGAPORE PRICE 20	23.75
	50	23.50

As far as TSR exports are concerned quality claims received are minimal. No claims have been received for mould contaminated TSR wrongly graded TSR or for bad packing etc. If at all a claim comes that is for rain damaged or delayed delivery etc.

But the situation of TSR industry in Sri Lanka at the moment is very grave. The TSR industry is rapidly dying away. Out of 8 TSR factories set up in the country only 2 ar e functioning now. Other 6 are virtually closed down because of the unrealistic scrap price in t he country today. If the TSR factories in the country were to survive, they must be given some kind of an incentive for each kilogram of TSR they produce for export. Including more value added grades such as CV rubbers. We have been requesting this for the last few years. But what happened? Even the Rs. 1 grant given for TSR exports was stopped.

TSR export from Sri Lanka in 1987 has dropped to 6932 t from 12185 t exported in 1986. If no immediate solution is found the production of this grade of rubber which has an increasing demand in the world market will come to a complete stand still. As a country depending on the export of over 80% of her NR production in raw rubber form, this should not be allowed to happen. Then what are we going to do with our NR production? Are we going to produce grades which are not in demand and for which poor prices are paid by the foreign buyers? Are we to convert all oour rubber into finished products. With the gratest effort taken by the Government of Sri Lanka since 1977 to improve rubber based industries in Sri Lanka, we have not been able to increase our NR consumption to over 12%. So can we do it overnight?.