RUBBER.

LATEX PAPER

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Some three or four years ago, considerable interest was aroused in the rubber and paper and pulp world as a result of investigations carried out by Kaye on the addition of latex to pulp for the manufacture of paper.

It was originally suggested by Kaye that the addition of latex to pulp in the manufacture of paper reduced considerably the time of beating required for the manufacture of the pulp and it was considered possible to prepare a cheaper and stronger paper by the addition to the pulp of latex equivalent to 1 to 3 per cent. of rubber on the weight of pulp. Although no information as to cost is available at the moment, about a year ago, when our investigations were commenced, the price of latex paper was about 20 to 30 per cent. higher than that of similar grades of non-latex paper.

Except for (a) sentimental reasons, in respect of firms, estates and others who were interested in the consumption of more rubber and new uses for the commodity or (b) for special purposes in which a stronger or more durable type of paper was required, such as for documents which have to be stored or (c) unless the addition of latex cheapened the cost of manufacture, the use of latex in paper manufacture was not likely to be a success.

The application of latex to newsprint paper would only be successful, if the paper could be produced more cheaply, which does not appear to be the case up to the present. The use of latex paper therefore would be confined to paper required for special purposes, principally for documents which have to be stored. The most desirable property of such a paper is its keeping qualities or non-deterioration on storage. The results of several previous investigations carried out in the Bureau of Standards, United States of America, and by other workers indicate that any superior qualities conferred on paper by the addition of latex to the pulp are lost after the paper has been stored and this is attributed to the resinification of the rubber. Owing to the fact that the amount of latex or rubber originally added to the paper tested was unknown, as also the original resin content, no investigations were carried out by us to determine whether the rubber originally added to the papers in the form of latex was resinified since such an investigation would have been of no value in the absence of such figures. It seems highly probable however that the rubber would be converted into resinous substances during prolonged storage or under accelerated ageing conditions.

In *The Rubber Age* (Volume V. No. 9, November, 1924) published in England, Kaye has replied to various criticisms of latex paper which were based on investigations on latex papers carried out in America, and elsewhere. The figures given in his reply however do not appear convincingly favourable to latex paper when compared to similar results quoted for non-latex papers, especially in regard to durability tests.

The deterioration on storage appears to be not less in the case of the latex papers than in the case of the non-latex papers.

The following tests in all cases show appreciable deterioration in the case of both latex and non-latex papers with no advantage to the former.

The bursting strength in both cases generally increases on storage, which appears somewhat unexpected, although the increases are comparatively as much in favour of the non-latex papers as of the latex papers.

The mean breaking lengths both before and after storage are somewhat in favour of the latex papers, while the breaking strains are slightly in favour of the latex papers. It would appear however that the original tests were carried out in the U. S. A. and the tests on the stored samples were carried out in England. The different conditions may account for the superior results shewn for the samples after storage.

The report contained in this journal on investigations carried out in The Chemical Division of the Department of Agriculture at the request of the Honourable the Chief Secretary to Government deals with various samples of paper received from the Government Printing Department and other samples obtained locally. Although it was not possible in every case to examine comparative samples, *i.e.* papers manufactured in a similar manner and containing similar constituents, apart from latex on rubber content, the results obtained, especially in the accelerated ageing tests, confirm those which have been published by other investigators and shew that, as far as these samples are concerned, the presence of latex in the paper does not appear to render the paper less susceptible to deterioration than papers which contain no latex.

Unfortunately owing to lack of paper testing apparatus it was not possible to carry out complete physical tests on the samples.

In our opinion the application of latex to the manufacture of paper does not appear to hold any very definite promise of success in respect of its utility, either for ordinary purposes or in the case of papers for documents which have to be stored, unless the application of latex lowers the cost of manufacture. The application of latex to pulp in the manufacture of paper does not appear to improve the surface for printing purposes, but it is probable that the demand for latex paper on account of this factor would be limited.

It seems probable however that the application of latex to the manufacture of latex boards for containers and other purposes, in which ordinary paper boards or cardboards are used, offers more promising possibilities. The vulcanisation of such mixtures of rubber (added in the form of latex) and pulp, after conversion into latex board will also probably increase the utility and application of rubber for such purposes.—The Malayan Agricultural Journal, Vol. XIII. No. 3.