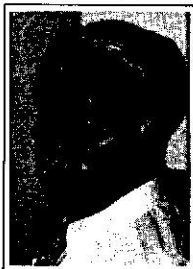


The latex doctor



Harry F. Bader

Differences in lattice performance — synthetic vs natural

Do you think that the performance differences between natural and synthetic cis-polyisoprene latices are entirely due to the protein and lipid content in the natural material that are absent in the synthetic?

Anonymous question at the International Latex Conference held in July 2003 at Akron (Ohio), US.

Performance differences between natural and synthetic cis-polyisoprene latices are somewhat, but not entirely, due to differences in protein and lipid content. I have found the major difference to be due to stabilization.

Fresh synthetic polyisoprene is excessively stable and becomes less so as it ages. Some fresh synthetic polyisoprene is extremely difficult to coagulant-dip. However, with a straight dipping process, good physical properties are obtained.

I believe as we become more experienced in its use and the suppliers become more experienced in its manufacture, synthetic polyisoprene latex will perform as well as natural.

We have seen continued research and patents on attempts to make *hevea brasiliensis* (NR) latex products safe with respect to Type 1 latex allergy. Is this

even possible? Is it not a waste of time?

Anonymous at the Akron Latex Conference

My personal opinion is that this is possible and, therefore, is not a waste of time.

A major question is one of cost. If de-proteinizing produces a costly raw material, the choice is entirely different from what it would be if the de-proteinized latex is, say, 10% more expensive.

There are proposed methods of latex de-proteinizing in work that should meet that cost criterion.

Are gloves and condoms made with prevulcanized latex to prevent disease transmission?

Anonymous at Akron meet

Both gloves and condoms made with prevulcanized latex prevent disease transmission to the same degree as those made from post-vulcanized latex.

This is true of purchased prevulcanized latex and in-house prevulcanized process latex. Chemical and physical properties are equivalent.

The major cause of differences in glove/condom effectiveness is more likely to be variations in process control rather than to whether the latex is pre-vulcanized or not.

Harry F. Bader, Vice-President, Latex Services, Akron Rubber Development Laboratory, Akron, USA, and a world authority on latex, answers questions and doubts of readers on latex and latex products.

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Why can't we have natural latex trees in the USA? Can't we transfer some trees to the US and develop them for future generations?

Anonymous at Akron meet

"Mother Nature", for reasons unknown, has decreed that some trees grow in some areas of the world and not in others. We've found that *hevea brasiliensis* can grow in many places in the world, but not in the US (except in artificially controlled enclosures).

The US does have several native sources of rubber latex. There currently is some effort, both by the US Government and by private industry, to develop those native sources.

Several years ago, I was provided with a small quantity of latex from the guayule bush, which is natural to the south-western part of the US. After a modest amount of experimentation, I produced condoms, medical gloves and the like which meet the ASTM specifications for those products.

Thus far, the US Government or the US private industry has not provided sufficient funding to develop a domestic source of natural latex or rubber.

What is the future of synthetic and natural rubber blends in the dipping industry?

Anonymous at Akron meet

Synthetic/natural rubber and latex blends have been successful in the past and I see no reason why that should not continue in the future.

Some say natural/synthetic blends produce the worst features of both. That simply is not true. For example:

- Blends of nitrile with natural increase the tear propagation resistance of the natural. There is some increase in flex cracking, but that doesn't matter if the product is not being subjected to flexing.
- Blends of neoprene with natural improves oil resistance and

ozone resistance of the natural. There is some loss in tensile strength but, here again, that doesn't matter if the tensile strength is sufficient for product performance.

- Blends of neoprene or nitrile with natural improves the resistance of natural to gas permeation. The loss of 'bounce' is not a noticeable factor.

Care must be exercised to avoid excessive blend percentages which will excessively reduce the good properties of natural latex.

Many importers of powder-free medical examination gloves, particularly nitrile gloves, are having problems with the gloves sticking together in boxes. The gloves are difficult to remove from the boxes. What can be done to eliminate the gloves sticking together without the gloves becoming too slippery on the surface?

Anonymous at Akron meet

Iwould want to examine the specific gloves before giving an opinion. However, there are three problems I have seen in South-East Asian glove plants which would lead to that 'sticking' problem.

- Gloves are undercured. Sometimes, this is purposely done to avoid overcuring during transit to the US.
- Gloves are not sufficiently dried.
- Gloves are packed while still hot from the drying tumblers.

All these will cause both excessive wrinkling and 'sticking'.

Are there identified, new application areas for NR latex? If so, what are they?

Anonymous at Akron meet

This is, of course, an opinion. I believe that unless a new source of natural latex is developed, or a low-cost de-proteinization method is proven to be effective, there will be no new application areas for natural rubber latex.

Rather than new applications, there likely will be a shrinkage of present applications. ■

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