Harry F. Bader

How to spot blooming; getting 'food grade' for gloves; store latex for 10 years!

What is the maximum solubility level of colloidal sulphur, ZnO, ZBEC, TMTD, & ZMBT in the latex compound? Which one of this is more prone to blooming? Can we find out which one is blooming? We could see some kind of a thin white layer, which disappears after heating at 70°C for 1 hour or after rubbing with hand. Is this is due to blooming?

Anonymous

Sulphur is the compound ingredient most likely to bloom. This often occurs when vulcanisation is incomplete and an excess of free sulphur is present in the film. Analysis of the bloom can determine if it is sulphur.

Another just-as-often experienced "bloom" is the first stage of ozone attack. Ozone frosting on light coloured NR latex film is often difficult to see in its initial stage. When you do see it, it seems easy to wipe off.

However, a microscope will reveal the small cracks. I suggest you make an analysis to determine what you have is really a bloom or look at it under a microscope.

We get regular enquiries from our customers whether our latex gloves are tested as 'food grade' or not? We've contacted a few labs in India but none has responded as perhaps there is no specification for food-grade gloves (FGGs) by the Indian Standards Institution. We believe in US, you have many methods to test FGGs. Please let us know about them

Spokesman for a rubber research technical company

The US Code of Federal Regulations (21CFR) refers to food and drugs. Section 177.2600 of 21CFR lists materials, and the concentrations thereof, permitted in products coming in contact with food products. That section will help you find the materials in your compound recipe and indicate if they and their concentrations are acceptable. Also in the section is an extraction procedure and specification for maximum allowable total extraction quantities in distilled water and in Hexane.

Results of the search and the extractions will enable an analytical report to be provided which will certify that your gloves have met the requirements of the section.

Has the furore over latex sensitivity died down and. If so, is it because better natural latex products are being made? Or is it because people with likely latex sensitivities are being identified earlier and redirected to other polymer products?

Anonymous at Latex Conference 2004, Akron, Ohio, US

It seems the furore over NR latex sensitivity has subsided.

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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However, it is still with us and will probably always be with us at some level.

The reasons we are not experiencing so many complaints are many. First, there is more attention being given by manufacturers to proper processing. If that had been done world-wide, say, 20 years ago there probably wouldn't have been the furore.

Secondly, natural latex products (NLPs) have been replaced to a significant degree by synthetic polymers. Thirdly, those who have protein allergies have become aware of NLPs as a source of protein allergic reactions.

What tests would you recommend for "incoming latex", assuming the tank wagon is waiting to be unloaded?

Anonymous at 2004 Akron latex meet, Ohio

First of all your shipment should be accompanied by a "Certificate of Analysis" which provides a full range of information starting with the type of latex and its Lot No. and continuing with a statement of all the testing data for the latex properties listed in ASTM D 1076.

There is not a great deal you can do while the tank wagon is at the door. But, there are a few things you can still do, such as:

- Check the odour – beware of sniffing through the tank wagon opening. Remove some and carefully snuff the latex to see if it is (except for ammonia) odour-free.
- Check the colour after you've sniffed the odour.
- Run mechanical stability.
- Run a chemical sterility (ZOV).

These can be done in 30-45 minutes. It should take that long to get the hoses ready to transfer.

If these few tests do not match the Certificate of Analysis, refuse the delivery.

What are the effects of increased age on raw NRL given appropriate storage conditions?

Anonymous, Akron latex meet

I've had one unique experience which indicates to me that if latex is stored properly and is compounded properly, extended storage problems can be handled.

I'll explain that experience.

In 1941, the owner of International Latex Corporation in Dover, Delaware, US, decided the US would soon become involved in World War II. He had been unsuccessful in convincing the US government to stockpile NR latex.

He decided to make his own stockpile. He built a series of underground wax-coated concrete tanks which would hold two tanker shiploads of latex. The second tanker arrived in Baltimore late in 1941 and when the US entered WW II the underground tanks in Dover were full.

Belatedly the US government decided that NR latex was a strategic material and International Latex Corporation was not permitted to use that latex.

In June 1951, as a new graduate Chemical Engineer I was hired by International Latex Corporation. I became involved in using that latex. In the 10 years, 1941-1951, the latex had been well-maintained. Being underground, there was no problem with either low or high temperatures.

Also each month the tanks were opened one by one. They were agitated to remix the cream and the ammonia content was checked and adjusted. The tanks were resealed and the next month the procedure was repeated.

The use of the latex wasn't all that much of a problem. It worked well in making foam rubber pillows with the Dunlop process using Oakes continuous foam mixers. In fact, it worked better than fresh latex which frequently required adjustment to avoid foam collapse in the moulds.

With dipping, using this 10-year-old latex was somewhat more difficult. However, that too was achieved with some extra stabilisation added to our normal recipe.

My answer is that with proper storage (particularly temperature control) and frequent mixing and ammonia adjustment, even 10-year-old latex can produce a good product.

How do barrier properties compare between nitrile, natural and PVC gloves? What makes one better than another?

Anonymous, Akron latex meet

This is not an easily answered question. I don't believe one can say natural or vinyl or nitrile is a better barrier. It first must be known what the toxic material is. Nothing is best as a barrier against all materials.

To find out which polymer is best for a specific material, I would suggest you search the websites of major glove manufacturers. Another source is ISO 45/SC4. A third source is Burkert *Chemical Resistance Guide*.

There is a further factor. Even when you are using the proper polymer glove for protection against a known material, you may find that one manufacturer's glove is better than the same polymer glove from a second manufacturer. Processing differences and the compound recipe itself can cause variations in barrier properties.

How does precure relate to the final film strength in latex products?

Anonymous, Akron latex meet

A process should be established to give the desired properties when the latex compound is at a specific level of precure. If that precure is different than what it is supposed to be for your process conditions, your product will have inferior properties.

If your GMP requires a precure of 2 and for some reason you are dipping a latex having a 4 precure, your product physical properties, chemical barrier properties, tear strength, permanent set, etc. will be less satisfactory. Overcure is the problem.

If the reverse is true and you are running a 2 precure latex when the process is set for a 4 precure, undercure is the problem. All the properties will be less satisfactory than what they should be. ■