



Harry F. Bader

Use of DTBHQ — Book on technology — Qualifying new latex

We manufacture rubber gloves and other rubber articles. We have obtained your name from *Rubber Asia*. We have been offered an antioxidant DTBHQ (Ditertiary butyl Hydroquinone) for use in rubber gloves as anti-ageing agent. We would like to know whether it is normally used in rubber. If yes, what is the specific application of this product in rubber gloves and other articles. Whether it has additional advantages over conventional antioxidants. Also, from where can we obtain performance evaluation for the same?

We would be obliged if you can inform us about this matter. If you are unable to advise us, please let us know who will be able to help us.

Jayesh Shah,
Indiana Elastomer Pvt. Ltd.

I'm not aware of anyone using DTBHQ in NR latex gloves. It is listed in the catalogues as an inhibitor, and as an agent which would prevent latex polymerisation.

The manufacturer is: Eastman Chemical Products Inc. P.O. Box 431, Kingsport, TN 37662, Telephone: 423-229-2000 Fax: 423-229-1195

They might be able to provide guidance. However, in any case, laboratory trials would be needed to verify either good or bad results.

We are a small scale industry manufacturing surgical gloves, finger cots, etc. We are interested in upgrading the technology in order to produce quality products with minimum rejection.

We request you to give us the details of latest books on latex

technology, equipment and chemicals for the manufacture of dipped latex products, in particular gloves and finger cots.

A.Thipporudraiah,
Proprietor,
Shilpa Enterprises.

For chemicals and equipment, the pages of *Rubber Asia* are an excellent source. If you do not see an advertisement in the current issue contact *Rubber Asia's* office.

For the latest book on latex and latex technology, I suggest Polymer Latexes by D.C. Blackley published by Chapman and Hall India, R. Seshadri, 32 Second Main Road, CIT East, Chennai 600 035, India.

I am an engineer with Hollister Inc. We manufacture latex male external catheters and are interested in qualifying a new latex vendor. Aside from the mechanical properties of the latex, what other testing is required or suggested for qualifying a new latex for our product? What would the FDA want to see tested in a new latex? How much time should we allow for this process?

Brian Mongold,
Hollister Inc.

This is really a question for the FDA. However, based upon GMP systems, changing to a new latex vendor should not be difficult. Three things should be done:

- Ensure the new latex meets the requirements of ASTM D-1076.
- Ensure that it runs in your process.
- Have documentation to cover both of these.

Generally I've found that some

*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.*

Send your questions to:

'The Latex Doctor'
Rubber Asia,
Dhanam House,
Cochin - 682 020,
Kerala, India
Fax: 94-484-317872

process changes are needed. The new latex may be from a different country or even a different continent. It surely will at least be from a different plantation and from a different clone.

Typical changes needed are:

- Change of maturation of your compound.
- Change of % TSC of your compound.
- Change of viscosity of your compound.
- Coagulant change.
- Dwell time change.
- Change of dry and vulcanisation conditions.
- Change of leaching conditions.

The time and cost of making the changes are dependent on the skill of your technical and manufacturing people.

I work at Norfolk Naval Shipyard. I am requesting information on the manufacturing process of latex rubber overshoes. The processes of concern are injection moulding and slush moulding. Can you please provide any information. I have tried Internet only to find injection moulding concerning plastics. As for the slush moulding process, I have not found anything at all.

Michael Powell
Norfolk Naval Shipyard

- Injection moulding of rubber is not unlike the injection moulding of plastics. It is a common process and I would expect you to find information in both the library and on the Internet.
- Injection moulding of latex is extremely difficult since it is 40% or more water. Although it is moulded, it is not normally injection moulded.
- Slush moulding refers to a system where a fully compounded latex is poured into the open top of a warm plaster mould and filled above the product level (top of the boot). It is allowed to stay in the mould for a pre-determined time, depending upon the required thickness. The latex is then poured out and reused for the next mould. Water from the

latex is drawn in the plaster mould and that surface latex becomes coagulated. The plaster mould with the gelled latex is placed in an oven for drying and then moved to higher temperature oven for vulcanisation. After vulcanisation, the part, being elastic, can be pulled from the mould. The mould is reused up to 20-30 cycles when it is broken up, reground and remoulded.

- A similar system can be done with heated metal moulds using a heat sensitive latex compound.
- Slush moulding has been used for a variety of products and from some rubber toys I have recently seen, is being used in South East Asia.

In the testing of rubber films (e.g. latex gloves) for tensile properties viz. tensile strength, modulus and elongation at break, what's the recommended or allowed tolerance (%) between different operators in the same lab and between different labs with reference to ASTM, BS and ISO?

Woon Sung Liang
Revertex Ltd.

D-412 the ASTM specification for tensile testing has a precision and bias statement, which indicates the within laboratory and laboratory to laboratory variations you can expect. With latex films the variations may be greater because of equipment and operator-related problems.

- The thickness gauges must be calibrated to the 22 kPa foot pressure specified in ASTM D 3767.
- The die must be sharp and free of nicks.
- The die must fit the D-412 dimension specification.
- The tensile tester must operate at 20 inches/minute.
- The extensometer must not slip from the test specimen.
- The clamps must not allow the specimen to slip.

Remember, all these will produce lower results. The higher results are the most valid. You can't make the film better than it is. You can, by all the above, make it worse than it is.

I would like to seek guidance from 'The Latex Doctor' in Rubber Asia

as to the present potential of nitrile latex in manufacture of examination and surgical gloves in terms of properties which would make nitrile latex suitable for such applications. I believe Reichhold is the leader in the manufacture of NBR latices for such applications in USA.

Manu Patel,
Director, Polymer Division,
Apar Industries Ltd., Mumbai.

ASTM D 6319-99 is the specification for medical gloves made from nitrile latex. Nitrile is, therefore, suitable for use in examination or surgeon's gloves. I have used nitrile gloves for non-medical purposes and found them to be quite acceptable. Some medical people like them and some do not.

Reichhold Chemical Company is probably the major supplier of nitrile latex in the US. I don't know their international status.

In 1955, I first used nitrile latex from what is now the Reichhold manufacturing plant. I have used other Reichhold nitrile latices in

gloves and other dipped products since the late 1960's. They are not difficult to use. In most cases, the cure system and the process parameters are quite similar to those of natural rubber latex. I have run nitrile successfully on a NR latex dip line.

I'm sure that there will be a market for nitrile medical gloves as long as there is an allergy problem with NR latex medical gloves.

For better process control what are the parameters to be monitored at the leaching stage?

Smith
Peral 101

The parameters to monitor are:

- Water temperature.
- Fresh water input in relation to product input.
- Water turbulence.
- Leaching time
- Water clarity.

The control point for each of these will be different for each dipping system and for each compound. ■

We Offer

MOONEY SHEARING DISC VISCOMETER Developed for the First Time in INDIA

WE ALSO OFFER TECHNICAL CONSULTANCY

RUBBER MODIFIER RESIN

A substitute for Wood Rosin & Petrez Resin.

VIPOL PVC/NBR blended Polymer, economical alternate to Neoprene, Resistant to heat, fire, oil, ozone, weather.

RECLAIM RUBBER Superfine, Fine, Medium.

**SILICONE RUBBER / NITRILE RUBBER / EVA
PRECIPITATED CALCIUM CARBONATE
SULPHUR**

CHEMLOK World leader of metal to rubber bonding agent.

RAEI RELEASE COMPOUND WITH CATALYST
Water repellent for textiles & papers.

METACHEM WATER REPELLANCY COMPOUND
Water repellent for textiles.

METACHEM ANTI CORROSIVE PAINT For any anticorrosive use in tanks, softener & metal surfaces in Chemical Industries.

SPECIALITY RUBBER & CHEMICALS on request.

Matching the very best available in the country

SUB-AGENT OF NOORANI RUBBER MACHINERY COMPANY

For entire Eastern Region for Sale of Machinery.

RAEI POLYMERS & CHEMICALS PVT. LTD.

7, Waterloo Street, Suite No. 5, 1st Floor,
Calcutta-700 069

☎ Fax: (O) (91) (33) 248-4413, 243-0218/19,

☎ : (R) (91) (33) 467-4196/4361

E-mail: akhouri@cal2.vsnl.net.in

Associates:

RAEI POLYMERS & CHEMICALS CO.

RAEI POLYMERS & ADHESIVES CO.

**SERVING THE RUBBER
INDUSTRY SINCE 1966**