American Latex Allergy Association

Vytex NRL

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Created by Nature. Recreated by Science.™ [1]

What is Vytex? NRL?

Vytex? Natural Rubber Latex (NRL) is an eco-friendly latex material that significantly reduces the antigenic proteins found in natural rubber latex. Produced through a novel, patented process, Vytex NRL retains all the positive qualities of latex ? including barrier protection, tensile strength, elasticity, comfort and fit ? with nearly undetectable levels of the proteins that can cause latex allergies. Vytex NRL is exclusively made by Vystar? Corporation.

What is the difference between Vytex NRL and traditional latex?

Vytex NRL is an enhanced version of natural rubber latex and has less than 2 micrograms/dm2 of the antigenic proteins that can cause an allergic response.

Why is Vytex NRL significant?

Vytex NRL is a breakthrough, new material being introduced to the market and can be substituted in thousands of products where traditional latex or synthetic substitutes are used, including rubber gloves, condoms, foam/bedding products, bandages and adhesives, balloons, elastic threads, and more. More than 40,000 products are made with natural rubber latex, offering significant applications for Vytex NRL.

Research has shown that specific proteins in latex can cause allergies in healthcare workers, their patients and the general public. Natural rubber latex contains over 200 proteins, similar to other natural plant materials, of which 13 are known allergens. The Vytex NRL process was created to significantly reduce these known proteins.

Up to 17 percent of healthcare workers and one percent of the general population ? or roughly three million

people ? are allergic to latex, according to the American Latex Allergy Association. Those most at risk are individuals who have repeated contact with latex products, those who have undergone multiple surgeries and children with spina bifida.

What are the benefits of Vytex NRL?

A solution to the growing latex allergy problem Vytex NRL is a solution to the growing latex allergy problem because levels of antigenic proteins are so low they are ?undetectable? in today?s standard protein tests. Products made of Vytex NRL can reduce the exposure to antigenic proteins and could reduce the risk of even developing allergies in the first place.

Retains all the benefits of latex minus the antigenic proteins Vytex NRL retains all the positive characteristics of natural rubber latex, with an undetectable level of allergy-causing proteins:

- superior liquid barrier protection
- tactile sensitivity
- tensile strength
- elasticity
- strength
- comfort
- fit
- ?green? product made from a natural raw material instead of petroleum-based substances

Additionally, Vytex NRL is also biodegradable; in independent tests, latex balloons have been shown to break down at the same rate as an oak leaf.

Figure 1: Vystar Corp. President and CEO Bill Doyle demonstrates the properties of Vytex NRL.

Healthcare workers prefer latex to synthetics Results from focus groups conducted by Vystar found that operating room nurses and other healthcare workers expressed extreme dissatisfaction with gloves made of synthetic substitutes, citing poor elasticity and fit, frequent tearing, odor, and higher cost as drawbacks. They described their ?perfect? glove as a powder-free, ultra low protein natural rubber latex option.

Manufacturing benefits Vytex NRL is easily integrated into most manufacturing processes and can be substituted in any product application where traditional latex or synthetic substitutes are used.

What products can use Vytex NRL?

Figure 2: Rubber ducks made with Vytex NRL.

Vytex NRL can be used in any product made of traditional latex or synthetic substitutes. Vystar is conducting trials with more than 50 manufacturers worldwide where Vytex NRL is substituted for traditional latex or synthetic alternatives in numerous products, including exam and surgical gloves, condoms, foams/bedding products, adhesives and coatings. Alatech Healthcare, LLC, a U.S.-based manufacturer, has submitted two 510(k)s to the Food and Drug Administration for gloves and condoms made with Vytex NRL. Clearance for the condom was awarded in May 2009, and clearance for the glove is expected later this year.

The science behind Vytex NRL

Figure 3: Sap from a rubber tree in Malaysia.

Vytex NRL is made from natural rubber latex. Natural rubber latex comes from the bark of the rubber tree, Hevea brasiliensis. Rubber trees are grown in southeast Asian countries such as Thailand, Malaysia and Vietnam. Natural rubber latex is a cloudy white liquid collected by cutting a thin strip of bark from the tree and allowing the latex to be secreted into a collection cup over a period of several hours. After collection, the latex is treated with a preservative, typically ammonia, to prevent coagulation and is transported to a processing facility for concentrating

and compounding.

The patented protein removal process is achieved by introducing aluminum hydroxide Al(OH)3, a well known protein binding chemical, to the latex source material. Al(OH)3 is an amphoteric substance, meaning it can react as either an acid or base and readily shares electrons with proteins. Under certain conditions, Al(OH)3 produces protein complexes that are removed from the Vytex NRL liquid solution using existing industry practices. Vytex NRL can be used as a standard source material for many product applications and wherever Hevea natural rubber latex is used.

The company has signed a manufacturing agreement with Revertex Malaysia, a leading producer of natural rubber lattices, to produce VytexTM NRL.

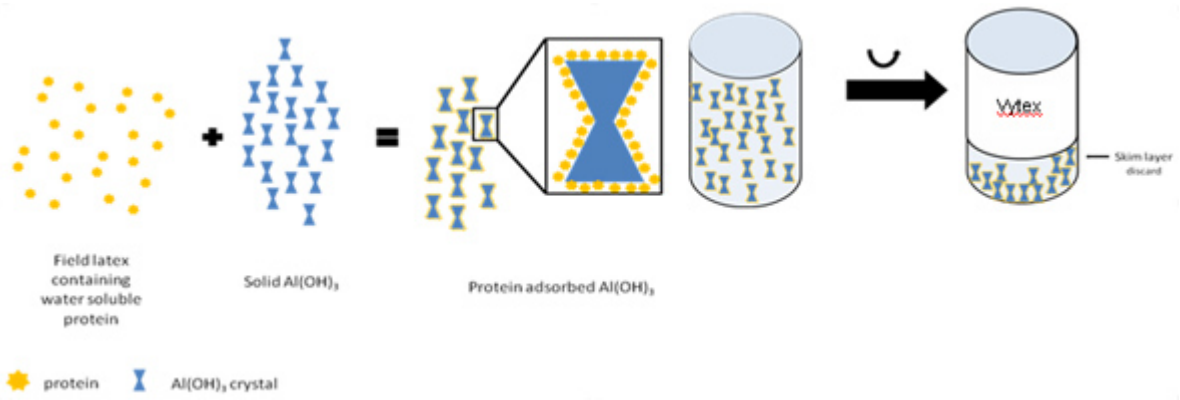

Figure 4: The proteins complexes are removed from the solution by filtration or centrifugation.

How is Vytex NRL tested for protein content?

After the latex is treated, samples are tested to ensure the protein levels are at levels deemed acceptable by standard tests. The most frequently used testing methodologies to measure protein content are the Modified Lowry ASTM D5712-05 and ELISA Inhibition ASTM D6499-03. Both have been performed by Donald Guthrie Foundation for Education Research in Sayre, PA.

Is Vytex NRL safe for use on latex allergic patients/individuals?

Vytex NRL is currently not approved for use by or for latex allergic individuals. An accredited medical study is currently in progress to test Vytex NRL use on hev b latex allergy individuals. Latex allergic individuals should always seek the advice of their physician prior to the use of any natural rubber latex product.

More than 500 sample films and products made with Vytex NRL have been independently tested for protein levels. Overall, Vytex NRL typically has 90% fewer antigenic proteins than Hevea natural rubber latex.

The Modified Lowry test is a chemical analysis test that is recognized as a national standard for measuring total

extractable proteins in NRL (ASTM D5712). The ELISA Inhibition assay is a method used to test for antigenic latex proteins. In both tests, results have consistently shown that Vytex NRL contains virtually ?undetectable? levels.

This is such a new subproduct of latex that Vystar is working with the American Society for Testing and Materials? Natural Rubber Subcommittee to establish a new category of ultralow Hevea protein natural rubber latex that describes the attributes of VytexTM NRL under ASTM guidelines.

Who invented Vytex?

Vytex NRL was invented in 2005 by a global team of scientists, and was the brainchild of Travis Honeycutt, a scientist with more than 100 patents and 30 years? experience in technical development in the industrial and health care markets. The team wanted to solve the latex allergy problem for healthcare workers after learning that many of them were developing debilitating allergic reactions that threatened ? and in some cases ? ended their careers.

About Vystar Corporation
Based in Duluth, Ga., Vystar Corporation is a privately-held biotechnology company and the exclusive creator of VytexTM Natural Rubber Latex (NRL). Vytex NRL is a patented, all natural raw material that significantly reduces antigenic proteins found in natural rubber latex and can be used in over 40,000 products. Vystar holds two U.S. patents, an additional pending application, and multiple international patent filings for VytexTM NRL technology. In 2007, Vystar was named a Top 10 Innovative Technology Company in Georgia by the Technology Association of Georgia (TAG). For more information, visit **www.vytex.com** [1].

Share Your Thoughts: What are your experiences with substitutes for traditional latex products?
Vystar Corporation is conducting a survey on your opinions and experiences with substitutes for traditional latex products. If you or someone close to you has an allergy or sensitivity to latex, please take a few minutes to complete this survey. Your answers will help us provide educational information and develop helpful products to better serve your needs. Thank you in advance for your help.

Click Here to Take the Survey [2]

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