

Latex Glove Production

Latex gloves in general

Natural rubber, also called India rubber or caoutchouc, consists of polymers of the organic compound isoprene, minor impurities of other organic compounds and water. It is harvested mainly in the form of the latex from certain trees. The latex is then refined into rubber ready for commercial processing.

Around 25 million tons of rubber is produced each year, of which 42 percent is natural rubber. Common products manufactured with high end latex include surgeons' gloves, condoms, balloons and other relatively high-value products. Given natural rubber's physical limitations, the process of vulcanization is used to enhance its resistance, elasticity and durability.

Vulcanization

The process of vulcanization was a key advancement in the manufacture of rubber products. During the vulcanization process, latex film is heated where the combination of sulfur, accelerator and heat causes cross-linking of the rubber, providing strength and elasticity to the film. Varying the amount of sulfur and the temperature during vulcanization affects the overall durability of the rubber product.



*Latex gloves . . .
Rubber being collected from a tree.*



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Why the need to measure humidity and temperature?

Given the water content in natural rubber, failing to carefully regulate both the temperature and humidity of the drying process will result in the soft coagulated rubber becoming blistered or porous. When this happens the surface cracks and deforms.

To prevent this damage occurring, the drying process must be consistent and well controlled. Besides maintaining an even temperature with sufficient air circulation within the dryer, the humidity of the air in the dryer must be high enough to prevent the formation of a dry skin on the surface of the rubber before the moisture deeper within the rubber is driven off.

This eliminates any internal stress buildup caused by uneven drying, with less stress-induced cracking thereby reducing product leak test failures. The end result is that higher quality gloves are manufactured with increased production yield.

It is important to note that leak tests are integral to the manufacturing process for latex gloves. Medical grade gloves are subjected to more rigorous testing. To ensure the gloves are of the highest quality, manufacturers test them using defined standards from the American Society for Testing and Materials (ASTM). The U.S. Food and Drug Administration (FDA) regulates these standards.