

# What is Varprene?

## Peristaltic pump hoses used for food, dairy and cosmetic applications

By: Chris Pasquali, CEO Factory Direct Pipeline Products, Inc.

Varprene is a proprietary name for Saint-Gobain Performance Plastics Norprene® A-55-F material, commonly used for food, beverage and other applications involving products manufactured for use in or on the human body. We recently had a customer ask about Varprene, discovered there was no information online and therefore this article will describe Varprene along with the other peristaltic hose pump materials used for similar applications.

### Peristaltic Pumps for Food/Pharmaceutical Applications

The Vector 2000 series peristaltic pump, due to its dry roller design, does not require a lubricant filled case; the only lubrication required is a light coating of silicon grease to minimize the friction between the roller and hose during compression. Other types of peristaltic pumps have a fixed shoe design and require liquid glycerin lubricant to reduce friction and heat due to the compression of the hose. Thus Vector 2000 series peristaltic pumps are inherently better designed for food, dairy, cosmetic and other sensitive fluid applications because the potential for cross contamination with a grease lubricated design is much less than an oil bath.

### Hose Materials Satisfying FDA Criteria

The FDA (Food and Drug Administration) is a government agency responsible for establishing regulations in support of safety concerning drugs, biological products, the food supply, cosmetics and related products. Title 21 CFR (Code of Federal Regulation), Section 177.2600 defines the characteristics of polymers as an "indirect food additive" with processes where rubber articles are used repeatedly. We offer three materials satisfying [Title 21 CFR:177:2600](#), they are Varprene, Pharmed and Natural Rubber with fiber braiding.

### VARPRENE

Varprene is the name used by Wanner Engineering for peristaltic pump hoses made of Saint-Gobain Performance Plastics Norprene® A-55-F material.



The A-55-F formulation of Norprene® is an extruded hose material known for its resiliency and chemical resistance to sanitizers, cleaners, ozone and UV light. Varprene/Norprene® is autoclavable.



While the A-55-F formulation of Norprene® has a temperature range of -75°F to 165°F, that is not the temperature range suggested for use with Vector peristaltic pumps. The low end of the operating temperature range for Varprene when used in Vector peristaltic pumps is -14°F and the maximum temperature is 185°F.

It is important to note that operation of any hose material within 15°F of its' maximum operating temperature necessitates reducing the pump RPM to  $\leq 20$  RPM. The other special consideration with high temperature peristaltic pump applications is that a solid metal inspection port cover replaces the standard clear acrylic inspection window.

Varprene/Norprene® is a homogeneous cream colored, extruded material having smooth inner and outer surfaces. As with all extruded hose materials, we estimate the useful life to equate to 700 to 1000 hours of use if the pump shaft speed is  $\leq 30$  RPM.

The life cycle of extruded hoses are effected by the length of operation.

Peristaltic pumps operated at  $\leq 30$  RPM and at lower pressures may be used continuously with the hose longevity expectation as noted above. When operating at higher pressures or at a higher RPM, the usage should only be intermittent; defined as 1 hour idle after 2 hours of use.

Extruded hoses such as Varprene/Norprene® and Pharmed can only be used for pressures up to 30 PSI. They should also be used with non-abrasive, "clean" fluids and for lower suction lift requirements because extruded materials are softer and prone to damage from hard particles.

### Typical Applications for Varprene Hoses

- Butter
- Cake dough and frosting
- Caramel
- Chocolate
- Cosmetic Creams
- Egg yolks with whites
- Fats
- Flavorings
- Gelatins
- Jams and Preserves
- Milk
- Shampoos
- Wineries
- Yogurt

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### PHARMED®

This is another Saint-Gobain Performance Plastics material having a slightly opaque beige color. The temperature range applicable to Vector peristaltic pump applications is 32°F to 180°F.



As a homogeneous, extruded and autoclavable material, the useful life equates to 700 to 1000 hours of use if the pump shaft speed is  $\leq 30$  RPM.

In addition to satisfying FDA Title 21 CFR:177:2600, Pharmed® is the only Vector pump hose material satisfying [USP Class IV](#) and [NSF](#) criteria.

USP (United States Pharmacopeia) Class IV, as relates to Vector peristaltic pump hoses, represents testing standards to ensure there are no harmful reactions or long-term health effects associated with the hose material.

NSF (National Sanitation Foundation) is an independent testing organization and, as relates to peristaltic hose pump materials, they establish testing and analyze materials as relates to public health protection.

### Typical Applications for Pharmed Hoses

- Face creams
- Latex
- Lotions
- Plasma
- Protein solutions
- Vaccines
- Vaseline

### FIBER BRAIDED NATURAL RUBBER

Natural Rubber is an organic, sustainable polymer of isoprene and obtained from rubber trees. It provides superior abrasion resistance and the addition of a fiber braided layer significantly increases its durability.



The fiber layer increases the operational pressure range to over 100 PSIG depending upon the pump model (hose size). It also doubles the lifecycle, with an expectation the hose will last 1500 to 2000 hours before requiring replacement when operated at  $\leq 30$  RPM. The operating temperature range for Natural Rubber hoses when used in Vector peristaltic pumps is -14°F and the maximum temperature is 185°F.

Fiber braided hoses are stiffer than extruded hoses and

assist with maintaining the circular hose ID, increasing its suction lift capability and fatigue resistance.

### Typical Applications for Natural Rubber Hoses

- Bentonite and carbon slurries
- Animal waste including blood, hair and bone

### Hose Barb Interface with Hoses

Tri-Clamp connections are very common for food, dairy and applications sensitive to contamination and which require frequent cleaning of system components.

Vector peristaltic hose pumps can be supplied with tri-clamp, threaded, barbed or flanged connections to interface with the process piping.



One aspect all hose barb fittings have in common is a barbed interface with the peristaltic hose itself. Between each barb, there are voids, which might be a concern for some sanitary applications. It is not that there is a significant chance of material accumulating within these voids; rather that it is an area that is not exposed to common sanitizing procedures.



To satisfy strict sanitization requirements such as 3A, it requires removing the hose and cleaning the hose and fitting separately, although oftentimes the hoses are discarded after each batch and in such cases, it doesn't matter.

The next time you have a pump application reach out to us using one of our special web based inquiry forms, send an email or call our office; we will put our experience to work for you!

Visit us at <https://fdpp.com> and let us know how we can assist you with your filtration application!

*Chris Pasquali has provided sales and engineering support for Wanner Engineering sealless pump applications since 1991*