

Sanitary Seal Division

610-603-7546



619 FRANKLIN STREET, WEST READING, PA
T: 610-603-7546 F: 610-603-7557 E: INFO@PTIPRO.COM

What makes an O-Ring Food Grade or Food Safe?

The material that an o-ring is made from is the principle determining factor on whether it can be identified as food grade or food safe. Simply put, all the ingredients that go into the manufacturing of the o-ring must be approved by the FDA. This includes elastomers, emulsifiers, plasticizers, fillers, etc. This is important because these ingredients can potentially leach out of the o-ring and into the product being processed. Government regulations place strict limits on their use for extractable products and for use with aqueous foods. Food grade seals must resist bacteria build up as well as the intrusion of chemicals. They must be non-marking and non-toxic as well as non-allergenic.

Typical elastomeric materials that are FDA compliant and use in food safe o-rings include:

EPDM: Ethylene propylene diene monomer food grade o-rings are able to operate over a wide temperature range and are suitable for a broad spectrum of applications. EPDM food grade o-rings are resistant to steam and hot water. They are not recommended for mineral oil, solvents and aromatic hydrocarbons. EPDM is the most popular material for food grade and food safe o-rings

FLUOROCARBON (FKM): Popularly known as Viton[®]*, is a synthetic rubber and fluoropolymer elastomer. Fluorocarbon food grade o-rings are known for their high temperature, chemical and caustic resistance. Fluorocarbon is generally compatible with hydrocarbons, but incompatible with ketones. Generally, is not recommended for hot water applications or steam service. Fluorocarbon food grade o-rings are typically color coded brown.

NITRILE (NBR): Is also known as Buna-N is a general purpose material. Food safe o-rings made from Nitrile are tear resistant and can withstand abrasive treatment. They are suitable for use with water and petroleum oils.

SILICONE: (VMQ): Is a very popular material for food grade/food safe o-rings. It has a very wide operating temperature range and good compression resistance. It resists oxygen, ozone and animal and vegetable oil and greases but have limitations when exposed to concentrated acids and solvents. Silicone food safe o-rings are not recommended for dynamic applications because of their low strength and poor abrasion resistance.

When selecting a food grade o-ring fabricated from a specific material, it is highly recommended that a compatibility chart for that material be checked.

The Sanitary Seal Division of PTI, Inc. offers a full line of food grade o-rings and sanitary gaskets including state of the art metal detectable and x-ray inspectable sealing components.

*Contact us today to speak with us about any of our sanitary sealing products for your applications.
TEL 610-603-7546*

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