

Engineering  
Quality  
Supply Chain  
Assembly  
Aftermarket & Production Kitting  
Vendor Managed Inventory

# FOOD & BEVERAGE

Food & Drug Administration (FDA)  
Food & Beverage (NSF 51)  
Drinking Water - Irrigation (NSF 61)  
3A Sanitary & E3A



**ENGINEERED  
SEAL PRODUCTS®**  
100% Employee-Owned

**espint.com | 319.393.4310**

## SUPPLIER PARTNERS



ESP is supplier agnostic. Meaning we want to provide you with the best-fit option for your application. Whether that be our own developed general purpose material line or from one of our many premier supplier partners.



### Premier Parker STC

For over 50 years, Engineered Seal Products has partnered with Parker Seals. **ESP is proud to be one of the FEW Premier Distributors** to qualify as a "Parker Seal Technology Center (STC)".

- **Proven Engineering Capability**
- **Expert Material & Technical Support**
- **ISO Quality Approval**
- **Strong Financial Track Record**

**FREUDENBERG-NOK**  
INNOVATING TOGETHER

### Preferred Partner

- **Involvement of engineering services**
- **Highest technical seal competence**
- **Efficient & speedy cross-linked processes**
- **High & quick availability assuring a reliable delivery performance**



Engineered Seal Products (ESP) is a proud authorized Chemours VITON™ licensee. This official designation marks our ongoing commitment to delivering the highest-quality sealing solutions to our customers across various industries.

# Common Seal Standards Within The Food & Beverage Industry



## The Food & Drug Administration (FDA)

The Food and Drug Administration has established a list of rubber compounding ingredients which tests have indicated are neither toxic nor carcinogenic. Rubber compounds produced entirely from those ingredients and which also pass the FDA extraction tests are said to “meet the FDA requirements”. The FDA does not approve rubber compounds. It is the responsibility of the manufacturer to compound food grade materials from the FDA list of ingredients and establish whether they pass the necessary extraction requirements.



## National Sanitation Foundation (NSF)

The National Sanitation Foundation, not to be confused with FDA or 3A, develops public health standards and certification programs that help protect the world's food, water, consumer products and environment. The requirements are based on U.S. FDA regulations.

**NSF 51** (also referred to as NSF/ANSI Standard 51) establishes minimum public health and sanitation requirements for materials used in the construction of commercial food equipment.

**NSF 61** (also referred to as NSF/ANSI Standard 61) restricts certain substances from breaching into drinking water at any point in the production process.



## 3-A Sanitary & E-3A

3-A Sanitary Standards have been formulated by the United States Public Health Service, the International Association of Milk Food and Environmental Standards, and the Dairy and Food Industries Supply Association. A similar document, E-3A Sanitary Standards, was later formulated by this same group plus the United States Department of Agriculture and the Institute of American Poultry Industries.

**3-A Standards** are intended for elastomers to be used as product contact surfaces in dairy equipment.

**E-3A standards** are intended for elastomers used as product contact surfaces in egg processing equipment.

The requirements of the two specifications are essentially identical, the intent in each case being to determine whether rubber materials are capable of being cleaned and receiving an effective bactericidal treatment while still maintaining their physical properties after repeated applications of the cleaning process chemicals.

# MATERIALS

## Nitrile (NBR)

Nitrile is suitable for FDA, NSF and 3A because of its excellent abrasion resistance and high tensile strength. Nitrile o-rings are well-suited for oil or fatty contact, as well as harsh environments and are trusted to stay intact over long periods of time. Standard nitrile compounds can withstand extreme temperatures ranging from -34° to +212°F. It is well-versed in material properties, except ozone resistance - which doesn't come into play in a lot of food and beverage applications.

## Ethylene Propylene (EPDM)

Ethylene-propylene is made from odorless and tasteless compounds that can withstand temperatures ranging from -70° to +300°F. When compounded using peroxide curing agents, EPDM offers high temperature resistance reaching +374°F. EPDM is known for its excellent chemical resistance, making it a smart choice for a variety of food and beverage applications.

## Silicone (VMQ)

Silicone is popular in food and drug applications because it does not produce any odor or taste. Silicone can also be effectively sterilized in a cleanroom environment, making it a safe choice for the food industry. When it comes to extreme temperatures, silicone is trusted to remain durable with working temperatures of standard compounds ranging from -65° to +400°F.

## Fluorocarbon (FKM)

Fluorocarbon, also known as Viton®, is an ideal compound for a universal o-ring material. Fluorocarbon is known for its high temperature resistance, chemical resistance, and improved resistance to steam with selective grades. Fluorocarbon o-rings do not absorb water, allowing them to seal effectively without excessive swell. These features make fluorocarbon an excellent choice for FDA grade and NSF 51 food and beverage applications.

## Perfluorinated (FFKM)

Perfluorinated has broad chemical resistance in a large number of harsh chemical environments. Specialty compounds approach PTFE chemical resistance while resisting high temperatures up to 572°F.

# FOOD & BEVERAGE MATERIAL MATRIX

	Brand	Material	Duro	FDA Compliant	3A Compliant	Industry Material Specification
NBR	Engineered Seal Products	<b>ESP-N0417</b>	70	●		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-N1001</b>	70	●		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-N6012</b>	90	●		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-N8018</b>	70	●	●	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class II, EC1935/2004, NSF 61
	Engineered Seal Products	<b>ESP-N6018</b>	70	●	●	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III
	Parker	<b>N1220-70</b>	70	●		N1220-70 is an NSF 51 approved material exhibiting typical physical properties. N1220-70 also meets FDA requirements.
	Freudenberg	<b>75 NBR 430</b>	75	●	●	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class II
	Freudenberg	<b>70 NBR 438</b>	70		●	3A Sanitary Standard 18 Class II
	Freudenberg	<b>85 NBR 436</b>	85	●	●	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class II
	Freudenberg	<b>90 NBR 433</b>	90	●	●	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class II

# CONTINUED - FOOD & BEVERAGE MATERIAL MATRIX

	Brand	Material	Duro	FDA Compliant	3A Compliant	Industry Material Specification
EPDM	Engineered Seal Products	<b>ESP-E1060</b>	70	•		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-E8002</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class IV
	Engineered Seal Products	<b>ESP-E8003</b>	70	•	•	USP Class VI, FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III
	Engineered Seal Products	<b>ESP-E8004</b>	70	•		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-E8005</b>	80	•		FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-E8061</b>	70	•	•	FDA CFR 21 177.2600, 6, 3A Sanitary Standard 18 Class, 2011/65/EU, NSF/ANSI 61
	Engineered Seal Products	<b>ESP-E8062</b>	75	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III
	Engineered Seal Products	<b>ESP-E8063</b>	80	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III
	Engineered Seal Products	<b>ESP-E8064</b>	85	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III
	Parker	<b>E1028-70</b>	70	•	•	FDA CFR 21 177.2600
	Parker	<b>E3609-70</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI
	Freudenberg	<b>60 EPDM 217952</b>	60	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI
	Freudenberg	<b>70 EPDM 291</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III, NSF 51, NSF 61
	Freudenberg	<b>70 EPDM 382</b>	70	•		FDA CFR 21 177.2600
	Freudenberg	<b>70 EPDM 391</b>	70	•		FDA CFR 21 177.2600
	Freudenberg	<b>70 EPDM 38596</b>	70	•		FDA CFR 21 177.2600
	Freudenberg	<b>70 EPDM 217937</b>	70	•		FDA CFR 21 177.2600
	Freudenberg	<b>75 EPDM 386</b>	75	•		FDA CFR 21 177.2600
	Freudenberg	<b>75 EPDM 253356</b>	75	•		FDA CFR 21 177.2600
	Freudenberg	<b>85 EPDM 292</b>	85	•		FDA CFR 21 177.2600
Freudenberg	<b>85 EPDM 302</b>	85	•		FDA CFR 21 177.2600	
VMQ	Engineered Seal Products	<b>ESP-S8000</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard Class IV
	Parker	<b>S1538-55</b>	55	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class IV
	Parker	<b>S0317-60</b>	55	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI
	Parker	<b>S1138-70</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI
	Freudenberg	<b>60 VMQ 117117</b>	60	•		FDA CFR 21 177.2600
	Freudenberg	<b>70 VMQ 117055</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard Class I
	Freudenberg	<b>76 VMQ 176643</b>	76	•		FDA CFR 21 177.2600
	Freudenberg	<b>78 VMQ 166898</b>	78	•		FDA CFR 21 177.2600
FKM	Engineered Seal Products	<b>ESP-V1021</b>	80			FDA CFR 21 177.2600
	Engineered Seal Products	<b>ESP-V1101</b>	75	•		FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class II, NSF51/NSF61
	Engineered Seal Products	<b>ESP-V6100</b>	75	•		FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class I* * 3A D4.6 meets Class II requirements
	Engineered Seal Products	<b>ESP-V8028</b>	75	•		FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class III, NSF 61
	Engineered Seal Products	<b>ESP-V8029</b>	70	•		FDA CFR 21 177.2600, NSF 61
	Engineered Seal Products	<b>ESP-V8038</b>	75	•		FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class I, NSF 61
	Engineered Seal Products	<b>ESP-V6020</b>	80	•		FDA CFR 21 177.2600
	Parker	<b>V0680-70</b>	70	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI, NSF 51
	Parker	<b>V1274-80</b>	80	•	•	FDA CFR 21 177.2600, 3A Sanitary Class VI
	Freudenberg	<b>75 FKM 38269</b>	75	•	•	FDA CFR 21 177.2600, 3A Sanitary Standard 18 Class I
	Freudenberg	<b>75 FKM 239961</b>	75	•		FDA CFR 21 177.2600
	FFKM	Parker	<b>FF200-75</b>	75	•	
Parker		<b>FF350-75</b>	75	•		FDA CFR 21 177.2600
Freudenberg		<b>FF500-75</b>	75	•		FDA CFR 21 177.2600
Freudenberg		<b>75 Simriz® 494</b>	75	•		FDA CFR 21 177.2600
Freudenberg		<b>75 Simriz® 38581</b>	75	•		FDA CFR 21 177.2600

espint.com | 319.393.4310

# PRODUCTS



## Radial Shaft Seals

Radial shaft seals are a reliable and effective solution for sealing rotating shafts in food and beverage applications. Paired with high-quality materials, they meet specific industry requirements and hygienic design standards; well-suited for use in aggressive media or with high temperatures and pressures.

### ADVANTAGES

- **Variable and reliable use in the food and beverage industry**
- **Highly resistant to media and temperatures**
- **Minimal abrasion**
- **Economical to use, as they make secondary seals unnecessary**



## O-Rings

O-rings are an excellent choice for applications with a risk of contamination, as they are made from food-grade materials and are easy to clean. ESP can provide o-rings with oval, rectangular, semicircular, and x-shaped cross-sections. This allows customers to choose the best o-ring for their specific application.

### ADVANTAGES

- **Can be used universally**
- **Available in all dimensions**
- **Available in all types of elastomer**
- **Easy to install and assemble**
- **Good price-performance ratio**
- **Small installation space**



## Bellows

Bellows help protect internal mechanical components from surrounding media – especially in filling machines. When selecting material, along with media compatibility it is important to consider bending fatigue strength.



## Clamp Seals

Radial shaft seals are a reliable and effective solution for sealing rotating shafts in food and beverage applications. Paired with high-quality materials, they meet specific industry requirements and hygienic design standards; well-suited for use in aggressive media or with high temperatures and pressures.



## Mechanical Seals

Mechanical seals are used to seal rotating shafts. They consist of two or more components pressed together to create a seal. Mechanical seals are a good choice for applications with high pressures or temperatures, as they can withstand more wear and tear than o-rings.



## Diaphragm Seals

Mechanical seals are used to seal rotating shafts. They consist of two or more components pressed together to create a seal. Mechanical seals are a good choice for applications with high pressures or temperatures, as they can withstand more wear and tear than o-rings.



## V-Seal Set Packings

V-seal set packings are versatile and used in various applications with translatory or gradual rotational movement. They are suitable for mixers, spindles of regulation valves, and other applications where a seal is required. V-seal set packings are easy to install and replace. It has a long service life and can withstand the rigors of demanding applications.



## Custom Molded Rubber

- Filling head seals and valve seats for beverage systems
- Molded seals for double seat valves and sterile valves
- Profile gaskets for separators
- Frame gaskets for filters
- Joining technology (fittings)



**ENGINEERED  
SEAL PRODUCTS®**  
100% Employee-Owned

**espint.com | 319.393.4310**