

COMPOUNDS



 **RT Dygert**
International

AFLAS® - AG FLUOROPOLYMERS (TFE/P)

Aflas® or TFE/P is a member of a new generation of fluoroelastomers compounded especially to provide unique properties for specific applications. The primary uses for Aflas® are in parts for oil drilling equipment. It can be crosslinked (cured) using a variety of systems, but generally peroxides are used to provide the best all around environmental resistance. A unique property of TFE/P is, that at very low temperatures (down to -54°C) it takes on leathery consistency and remains functional, unlike many other rubbers which can often become brittle and shatter.

COMPOSITION:

Medium density copolymer of tetrafluoroethylene and propylene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation			•	
Low temperature flexibility		•		
Compression Set		•		
Tear resistance			•	
Abrasion resistance	•			
Flame resistance	•			
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Concentrated bases	•			
Dilute acids and bases	•			
Ozone	•			
Weather	•			
Steam		•		
Radiation		•		
Phosphate esters		•		
Oxidation		•		
Esters			•	
Ethers			•	
Aliphatic hydrocarbons			•	
Aromatic hydrocarbons				•
Ketones				•

OPERATING TEMPERATURE:

+25° TO +450°F

BUTYL RUBBER (IIR)

Butyl rubber is a specialty rubber more frequently specified for its physical properties than chemical resistance. It has excellent shock absorption and vibration damping capabilities. Butyl's unusually low gas permeability makes it ideal for vacuum applications, while its high degree of unsaturation make it inherently resistant to atmospheric elements such as ozone and UV radiation. Additionally, butyl is thermally stable and has a relatively high coefficient of friction.

COMPOSITION:

Medium density copolymer of isobutylene and a small amount of isoprene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength			•	
Elongation		•		
Low temperature flexibility	•			
Compression Set		•		
Tear resistance			•	
Abrasion resistance		•		
Flame resistance		•		
Gas permeability	•			

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Ketones		•		
Silicone fluids		•		
Petroleum oils and fuels				•

OPERATING TEMPERATURE:

-40° TO +275°F

CARBOXYLATED NITRILE (XNBR; CNBR)

Carboxylated nitrile, or XNBR, are produced by adding a carboxylic acid side group to nitrile rubber, thereby adding more crosslinking sites than traditional NBR. As a result, solvent swell and abrasion resistance are significantly improved, as well as modulus, tensile strength and tear resistance. However, XNBRs give a higher hardness (up to 12 to 16 durometer points in most recipes) than comparable non-carboxylated NBRs, so care must be taken during the compounding and mixing stages in order to achieve the desired hardness. Water resistance, resilience and some low temperature properties are somewhat diminished.

COMPOSITION:

Medium density terpolymer of acrylonitrile, butadiene, and a diene monomer containing carboxylic acid

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength	•			
Elongation		•		
Low temperature flexibility			•	
Compression Set			•	
Tear resistance		•		
Abrasion resistance	•			
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Petroleum oils and fuels	•			
Silicone lubricants	•			
LP Gas	•			
Solvents		•		
Oxidation		•		
Dilute acids and bases		•		
Water			•	
Steam			•	
Weather			•	
Amines				•
Esters				•
Ethers				•
Aldehydes				•

OPERATING TEMPERATURE:

-30° TO +250°F

CHLOROPRENE RUBBER

(Neoprene®-duPont; CR; polychloroprene)

Chloroprene (commonly known as "neoprene") is one of the oldest synthetic elastomers. Introduced in 1931, it is used in a variety of applications due to its ability to resist both oils and oxidation. The oil resistance, however, depends significantly on the type of oil. Chloroprene has good resistance to naphthenic and paraffinic oils of high molecular weight, but swell excessively in aromatic oils of low molecular weight. Vulcanizates of chloroprene display little significant change after prolonged outdoor exposure. Because of its chlorine content, flame resistance is superior to that of most other rubbers. Some chloroprene vulcanizates, especially O-Rings, sometimes exhibit distortion due to crystallization of the rubber at room temperature, which can be completely reversed by warming the parts in low heat. Chloroprene is especially well suited to rubber-to-metal bonding.

COMPOSITION:

Produced from the chloroprene monomer, a combination of chlorine and butadiene. Medium density.

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility		•		
Compression Set		•		
Tear resistance			•	
Abrasion resistance	•			
Flame resistance		•		
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Dilute acids	•			
Dilute alkalis	•			
Automotive refrigerants	•			
Water		•		
Steam			•	
Aromatic & oxygenated solvents				•

OPERATING TEMPERATURE:

-40° TO +275°F

ETHYLENE ACRYLIC RUBBER

(Vamac®-duPont; AEM)

Ethylene acrylic, or AEM, rubber is generally used in applications requiring a tough rubber that combines good oil resistance, with heat resistance greater than nitrile or chloroprene of a cost well below that of silicone or fluorocarbon rubbers. Good low temperature properties are imparted by the ethylene content, while the acrylate provides a considerable degree of oil resistance. Ethylene Acrylic rubber is highly saturated, and as a result exhibits excellent resistance to ozone and weathering. Ethylene acrylic compounds are well suited for applications requiring continuous exposure to hot (170°C) aliphatic hydrocarbons, including most common automotive lubricants and hydraulic fluids. Water and ethylene glycol resistance is good, but softening can occur after long term exposure above 100° C. AEM's good dampening characteristics make it well suited for vibration mounts, pads, and isolators.

COMPOSITION:

Medium density copolymer of ethylene and methyl acrylate. May also contain a small amount of a third monomer containing carboxylated acid to provide active cure sites in the polymer chain.

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation			•	
Low temperature flexibility		•		
Compression Set		•		
Tear resistance			•	
Abrasion resistance		•		
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Petroleum oils		•		
Automatic transmission fluid		•		
Water			•	
Dilute acids			•	
Dilute Alkalis			•	
Steam				•

OPERATING TEMPERATURE:

-30° TO +350°F

ETHYLENE PROPYLENE RUBBER

(EP; EPDM; Vistalon®-ExxonMobil)

Ethylene-propylene rubber is a low cost, versatile compound that functions well in both low and high operating temperature environments. Moderate to good resistance to a variety of chemicals make it the compound of choice for a variety of applications. EPDM's chemically saturated polymer chain accounts for its superior resistance to degradation. However, use is limited by its incompatibility with petroleum based fluids. EPDM can be cured with sulfur or peroxide, although applications with high heat requirements should use peroxide cured compounds. Peroxide curing also produces vulcanizates with superior compression set than that of the sulfur cures. Reinforcing agents are especially important in ethylene-propylene polymers because it lacks gum strength. Therefore, high tensile and tear properties are achieved through high loading. EPDM is a terpolymer, not to be confused with the copolymer EPM, which can only be peroxide cured, due to its completely saturated polymer backbone.

COMPOSITION:

Low density terpolymer of ethylene, propylene, and a small amount of a diene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility	•			
Compression Set		•		
Tear resistance			•	
Abrasion resistance		•		
Flame resistance		•		
Gas permeability	•			

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Water	•			
Steam	•			
Dilute acids	•			
Dilute alkalis	•			
Oxygenated solvents		•		
Hydraulic fluids		•		
Alcohols		•		
Gasoline				•
Petroleum oils and greases				•

OPERATING TEMPERATURE:

-65° TO +300°F

FLUOROCARBON RUBBER (Viton®-duPont; Dai-El®-Daikin; FKM)

Fluorocarbon (or FKM) rubber is a widely used, premium grade compound especially well suited to applications where prolonged exposure to petroleum oils at high operating temperatures is encountered. Such properties make it especially useful in automotive "under-hood" applications. Additionally FKM is particularly resistant to swell in the highly aromatic, non-leaded, additive loaded gasoline mandated by environmental regulations today. Its low temperature deficiencies can be overcome somewhat by special compounding. Fluorine content is generally in the 66% to 70% range. Fluorocarbon rubber is exceptionally resistant to embrittlement when exposed to high heat over long periods of time; it is considered to be serviceable indefinitely when exposed continuously to 200°C. The cure system of choice for most fluorocarbon compounds is bisphenol, as it provides the best combination of compression set and improved steam and acid resistance. Diamine and peroxide cure systems can also be employed. Fluorocarbon vulcanizates are very resistant to ozone and atmospheric aging.

COMPOSITION:

High density copolymer of vinylidene and hexafluoropropylene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation			•	
Low temperature flexibility				•
Compression Set	•			
Tear resistance			•	
Abrasion resistance		•		
Flame resistance	•			
Gas permeability	•			

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Water	•			
Dilute acids	•			
Dilute alkalis	•			
Petroleum oils	•			
Solvents	•			
Steam			•	
Ketones			•	
Anhydrous ammonia				•

OPERATING TEMPERATURE:

-15° TO +400°F

FLUROSILICONE RUBBER (Silastic®-Dow Corning; FMQ)

Fluorosilicone rubber is an inorganic "hybrid" elastomer which combines the wide temperature range spectrum of silicone with some of the chemical resistance of fluorocarbon rubber. Primary use is in fuel delivery systems. Fluorosilicone rubber offers the best low temperature properties of any oil resistant rubber. Like all compounds based on silicone rubber, fluoro-silicones have relatively low tear strength, abrasion resistance, and tensile strength, and therefore, are generally not suited to dynamic applications.

COMPOSITION:

Low density fluorinated silicone rubber

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength			•	
Elongation			•	
Low temperature flexibility	•			
Compression Set		•		
Tear resistance				•
Abrasion resistance				•
Flame resistance	•			
Gas permeability				•

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Water	•			
Dilute acids	•			
Dilute alkalis	•			
Silicone oils	•			
Hydrocarbon fuels	•			
Petroleum oils	•			
Automotive refrigerants	•			
Steam			•	
Ketones				•

OPERATING TEMPERATURE:

-70° TO +400°F

HIGHLY SATURATED NITRILE (HNBR; HSN; Therban®-Bayer)

Hydrogenation of nitrile rubber removes most of the residual unsaturation in the polymer to make it far less vulnerable to attack by heat, ozone, and oxygen. In fact, due to superior oil and temperature resistance, Highly saturated nitrile can sometimes be substituted for more costly fluorocarbon rubber. It is frequently used in automotive air conditioning systems employing R-134a refrigerants. HNBR can be either peroxide or sulfur cured, depending on the degree of unsaturation achieved by the hydrogenation process, but peroxide is almost always used due to the good heat stability properties of the peroxide crosslinks. It can be compounded for both low and high temperature use.

COMPOSITION:

Formed by hydrogenating the nitrile copolymer of butadiene and acrylonitrile

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility		•		
Compression Set	•			
Tear resistance		•		
Abrasion resistance		•		
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Petroleum oils	•			
Automotive refrigerants	•			
Automatic transmission fluid	•			
Sour crude oil		•		
Oxygenated fuels		•		
Ozone			•	
Weather			•	

OPERATING TEMPERATURE:

-40° TO +300°F

NATURAL RUBBER (NR; Hevea)

Natural rubber, or NR, was the first commercially viable elastomer ever developed, and is still the only non-synthetic rubber in widespread use. In fact, natural rubber currently accounts for almost 40% of the world's elastomer consumption, as it is frequently blended with other rubbers to derive an ideal combination of properties. Derived from a liquid of the Hevea tree, NR latex is a low cost material that may contain relatively high levels of organic and inorganic impurities. It is ideal for applications that require good resistance to abrasion, gouging and cut growth. Also, because it experiences little heat buildup during flexing, it is also commonly specified when shock and dynamic load requirements are deemed critical. Natural rubber is tough, long lasting and can be compounded for service at temperatures as low as -65°F. It is also easily bonded to metal and fabrics.

COMPOSITION:

Coagulated, dried rubber derived from the latex of the *Hevea Brasiliensis* tree

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation	•			
Low temperature flexibility	•			
Compression Set	•			
Tear resistance	•			
Abrasion resistance	•			
Flame resistance				•
Gas permeability			•	

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Water	•			
Air		•		
Oxidation		•		
Alcohol		•		
Dilute acids and bases		•		
Steam			•	
Radiation			•	
Oil				•
Gasoline				•
Hydrocarbon solvents				•
Sunlight				•
Ozone				•

OPERATING TEMPERATURE:

-60° TO +250°F

NITRILE RUBBER (Buna N; NBR; Paracril®-Uniroyal)

On a cost basis, nitrile, or NBR, rubber is the least expensive of the oil resistant elastomers. As a result, nitrile is the one of the most widely used rubber materials due to its combination of low cost, resistance to many chemicals, and good physical properties. The acrylonitrile content of this highly polar elastomer provides excellent oil and gas permeation resistance, which increases as the level of ACN increases. Unfortunately, an increase in the acrylonitrile content compromises low temperature flexibility, and increases compound hardness. Typical ACN content ranges from 18% to 50%. Nitrile should not be exposed to direct sunlight or moderate to high levels of atmospheric ozone, as rapid deterioration will result. However, NBR will accept many antidegradants, most notably PVC, which offer some degree of improvement of these properties. Nitriles are usually sulfur cured, but peroxide curing is also possible, resulting in improved compression set.

COMPOSITION:

Medium density copolymer of butadiene and acrylonitrile

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility		•		
Compression Set		•		
Tear resistance		•		
Abrasion resistance	•			
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Water	•			
Petroleum oil	•			
Silicone lubricants	•			
Dilute acids		•		
Dilute alkalis		•		
Hydraulic fluids		•		
Transmission fluid		•		
Steam			•	
Ozone				•
Weather				•
Ketones				•
Strong acids				•
Brake fluid				•

OPERATING TEMPERATURE:

-40° TO +250°F

POLYACRYLATE RUBBER (Polyacrylic; Hycar®-Goodrich; ACM)

Polyacrylate rubber, or ACM, is a specialty rubber whose primary strength is ability to withstand high heat while retaining oil resistance. It is often the material of choice for applications that involve sulfur bearing lubricants, which are finding increased usage in automotive applications, especially transmission seals. From a performance standpoint, ACM occupies an intermediate position between nitrile and fluorocarbon. In addition, polyacrylates exhibit good damping characteristics, are not highly corrosive to steel, and can be compounded to provide excellent flex life and some degree of flame resistance. However, this acrylic based elastomer does have some limitations. Poor low temperature flexibility limits its usefulness and compression set is not as good as most other compounds. It is also inferior to many other elastomers in strength and water resistance.

COMPOSITION:

Medium density acrylic ester copolymer

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength			•	
Elongation			•	
Low temperature flexibility			•	
Compression Set			•	
Tear resistance			•	
Abrasion resistance		•		
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Sulfur containing oils		•		
Aliphatic solvents		•		
Dilute acids			•	
Dilute alkalis			•	
Water				•
Steam				•

OPERATING TEMPERATURE:

-0° TO +350°F

POLYURETHANE

(AR; EU; Adiprene® Virathan®-Uniroyal)

Polyurethane rubber is notable for its combination of hardness with elasticity, and outstanding abrasion resistance and tear strength. Elastomeric urethane rubber, not to be confused with thermoplastic polyurethane, may be either ether (EU) or ester (AU) base, with the latter being the far more common of the two. It is often referred to as the "millable gum" urethane. The ester based polymer is superior in resistance to abrasion and heat, while the ether based polymer has better flexibility at low temperatures. Polyurethane is a rather expensive material whose use is usually limited to applications that require a combination of its outstanding physical properties. Common end use applications are industrial rolls, O-Rings, caster wheels, gaskets, shoe soles and conveyor belts. Peroxide is the most commonly employed cure system, but sulfur curing is also possible in the extremely complex vulcanization chemistry involved in polyurethanes.

COMPOSITION:

Polyurethane diisocyanate

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength	•			
Elongation		•		
Low temperature flexibility	•			
Compression Set			•	
Tear resistance	•			
Abrasion resistance				
Flame resistance				•
Gas permeability		•		

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Oxidation	•			
Silicone oils	•			
Sunlight		•		
Air		•		
Alcohols		•		
Mineral oil		•		
Ethers			•	
LP gas			•	
Ketones				•
Steam				•
Aldehydes				•
Concentrated acids				•
Concentrated bases				•

OPERATING TEMPERATURE:

-40° TO +180°F

PTFE (Teflon®-duPont)

PTFE is not a rubber compound, but a white thermoplastic resin which can be formed into various shapes by either machining or molding. It is a premium grade material, which is often specified in harsh chemical environments where no rubber material is suitable, as it is impervious to virtually all fluids and gases. PTFE exhibits very low moisture absorption, and can withstand extreme high and low temperatures. It also provides the lowest coefficient of friction of any seal material. One major drawback to using PTFE is a tendency to deformation under a continuous load, a phenomenon commonly known as "creep" or cold flow. Loading PTFE with fillers such as bronze, graphite, glass, or molybdenum disulfide can counteract this behavior substantially. PTFE also has relatively poor elasticity compared to other sealing materials.

COMPOSITION:

Fluorocarbon resin generically known as polytetrafluoroethylene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength	•			
Elongation				•
Low temperature flexibility		•		
Compression Set			•	
Tear resistance	•			
Abrasion resistance	•			
Flame resistance	•			
Gas permeability	•			

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Impervious to most chemicals	•			

OPERATING TEMPERATURE:

-100° TO +500°F

STYRENE-BUTADIENE RUBBER

(SBR; Duradene®-Firestone)

Styrene-butadiene rubber is much like natural rubber in many of its properties, and is one of the lowest cost and highest volume elastomers available. Although its physical properties are somewhat less than natural rubber, SBR is tougher, and slightly more resistant to heat and flex cracking. Much of its usage is in tire treads, especially blended with other polymers. It can readily be substituted for natural rubber in many other applications, thereby achieving significant cost savings. SBR is sometimes referred to as "GR-S" or Government Rubber-Styrene, as its development began as a wartime emergency, necessitated by an interrupted supply of natural rubber. SBR is actually a generic term covering a wide variety of synthetic rubbers differing not only in the styrene-butadiene ratio, but also in the type of polymerization by which they are made.

COMPOSITION:

Low density copolymer of styrene and butadiene

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility		•		
Compression Set			•	
Tear resistance		•		
Abrasion resistance		•		
Flame resistance				•
Gas permeability			•	

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Oxidation		•		
Alcohols		•		
Water		•		
Glycol		•		
Acetone		•		
Steam		•	•	
Weather			•	
Air			•	
Ozone				•
Diester oils				•
Mineral oils				•
Silicone oils				•

OPERATING TEMPERATURE:

-65° TO +225°F

SILICONE RUBBER

(Silastic®-Dow Corning; MQ; VMQ; PMQ)

Silicone is an inorganic rubber whose ability to retain its physical properties at elevated temperatures is superior to most other materials. It is also flexible at very low temperatures; however, its relatively poor tensile, tear strength and abrasion resistance limits use to static applications. These weaknesses can be improved somewhat by reinforcement with fine, high surface area fillers which are compatible chemically with the silicone polymer itself. Silicone does possess extraordinary resistance to oxidation and ozone degradation due to the absence of unsaturated double bonds in the polymer backbone. Since it is fully saturated, only peroxides can be used for hot vulcanization processes. Resistance of silicone vulcanizates to gas permeation is generally considered to be poor, as much as 100 times greater than nitrile or butyl, but it is frequently specified in food and beverage applications, as it does not impart any taste or odor. However, the automotive industry accounts for almost 50% of silicone usage in the U.S. annually.

COMPOSITION:

Medium density inorganic rubber primarily consisting of polymethylsiloxane and variations

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength				•
Elongation	•			
Low temperature flexibility	•			
Compression Set		•		
Tear resistance				•
Abrasion resistance				•
Flame resistance		•		
Gas permeability				•

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Ozone	•			
Weather	•			
Dilute alkalis	•			
Vegetable oils	•			
Dilute acids		•		
Water			•	
Steam			•	
Petroleum oils				•
Ketones				•

OPERATING TEMPERATURE:

-65° TO +450°F

VITON® ETP -duPont (Viton® Extreme™)

Viton® ETP or Viton® Extreme™, is resistant to the same fluids as high fluoroine FKM's such as aliphatic and aromatic hydrocarbons, hydraulic fluids, motor oils, fuels, etc., but is also resistant to strong bases and polar fluids such as potassium hydroxide, ketones, MTBE and complex solvent mixtures. In fact, Viton® ETP has the broadest fluid resistance of any FKM polymer on the market, making it ideal for severe service environments. Although costly, it can frequently be substituted for far more expensive perfluoroelastomers, at a fraction of the cost.

COMPOSITION:

High density terpolymer of ethylene, tetrafluoroethylene, and perfluoromethyl vinyl ether

PHYSICAL PROPERTIES:*

	Excellent	Good	Fair	Poor
Tensile strength		•		
Elongation		•		
Low temperature flexibility			•	
Compression Set		•		
Tear resistance		•		
Abrasion resistance		•		
Flame resistance		•		
Gas permeability	•			

CHEMICAL RESISTANCE:*

	Excellent	Good	Fair	Poor
Concentrated bases	•			
Amines	•			
Polar solvents	•			
Nitric acids	•			
Toluene	•			
KOH	•			
Acetic acid		•		
Acetone		•		
Butyl acetate		•		
Tetrahydrofuran			•	
Ethylene diamine			•	
Water			•	

OPERATING TEMPERATURE:

-10° TO +400°F

SPECIALTY COMPOUNDS ARE LISTED ON THE BACK.

For more information,
call customer service at:
866.RTD.8883
(866.783.8883)

* Excellent, good, fair and poor are intended to serve as general guidelines only. Actual testing in the application environment is always recommended.

SPECIALTY COMPOUNDS

The following is a partial listing of the Specialty Compounds offered by RT/Dygart.

FDA COMPOUNDS

The rubber compounds in the following list all comply with Paragraph 177.2600 of Title 21, Sub-Paragraphs a) through d), Code of Federal Regulations, "Rubber Articles Intended for Repeated Use". It should be noted that the Food and Drug Administration does not actually approve any rubber compounds. Rather it publishes a list of permissible ingredients and the maximum allowable concentration of each. These ingredients are broken down into the following categories: Elastomers, Vulcanization Agents, Accelerators, Retarders, Activators, Antioxidants and Antizoonants, Plasticizers, Fillers, Colors, Lubricants, Emulsifiers, and Miscellaneous. It is the responsibility of the manufacturer, or its compound supplier, to ensure that FDA compounds are formulated according to these guidelines, and are cured under conditions of good manufacturing practice.

Unless otherwise specified, all compounds in the list are black in color and sulfur cured. In addition to these 30 compounds, all RT/Dygart's NSF (National Sanitation Foundation) certified compounds also meet FDA requirements. Finally, nearly all of our silicone compounds are also FDA compliant.

C-7014	70 durometer neoprene
E-5014	50 durometer EPDM
E-6004	60 durometer EPDM, peroxide cured
E-6014	60 durometer EPDM
E-6514	65 durometer EPDM
E-7004	70 durometer EPDM, gray color
E-7007	70 durometer EPDM, odorless and tasteless
E-7009	70 durometer EPDM, peroxide cured, purple color
E-7010	70 durometer EPDM, peroxide cured
E-7014	70 durometer EPDM
E-7018	70 durometer EPDM, internally lubed with PTFE
E-7019	70 durometer EPDM, white color
E-7026	70 durometer EPDM, blue color
E-8004	80 durometer EPDM, peroxide cured
E-9014	90 durometer EPDM
F-6014	60 durometer fluorocarbon
FF-7014	70 durometer fluorocarbon
F-7014	75 durometer fluorocarbon
FB-7014	75 durometer fluorocarbon, brown color
N-5014	50 durometer nitrile
N-6014	60 durometer nitrile
N-7014	70 durometer nitrile
N-7034	70 durometer nitrile for use with milk
N-7041	70 durometer nitrile, white color
N-7044	70 durometer nitrile, internally lubricated
N-7046	70 durometer nitrile, 40% acrylonitrile content
N-7051	70 durometer nitrile, red color
N-7502	75 durometer nitrile
N-8014	80 durometer nitrile
N-9014	90 durometer nitrile

INTERNALLY LUBRICATED COMPOUNDS

For those applications where an external lubricant like RT/Dygart's Seal Kote™ or Seal Lube™ is not desirable (such as automatic feeder bowl assemblies), RT offers the internally lubricated compounds in the table below. Internal lubrication involves the introduction of a lubricating agent into the compound during the mixing stage. The advantage of this type of lubrication is that the lubricant is dispersed throughout the compound, and therefore the vulcanizate, instead of just on the surface. Since all rubber compounds have relatively high coefficients of friction, it is very important to counteract this in the most efficient way possible, especially in dynamic sealing applications.

Different internal lubricants have different effectiveness in reducing COF, but RT's proprietary organic lubricant is by far the most effective. Due to its chemical makeup, it is best suited for compounds where the curing temperature is not too high, such as nitriles and EPDMs. It should be noted, however, that some fluids and solvents can dissolve or leach out the proprietary lubricant, so testing in the actual environment is always recommended.

For two of our most popular internally lubricated compounds, N-7010 and N-7044, a coefficient of friction test report and a case study, respectively, can be obtained by contacting customer service.

E-5002	R.T Proprietary	50 durometer EPDM
E-7011	R.T Proprietary	70 durometer high temp EPDM
E-7018	PTFE	70 durometer EPDM
E-7025	Molybdenum Disulfide	70 durometer EPDM
F-7011	PTFE	75 durometer brown fluorocarbon
N-5002	Molybdenum Disulfide	50 durometer nitrile
N-5005	R.T Proprietary	50 durometer nitrile
N-7010	R.T Proprietary	70 durometer nitrile
N-7025	Molybdenum Disulfide	70 durometer nitrile
N-7044	R.T Proprietary	70 durometer FDA nitrile
N-7045	R.T Proprietary	70 durometer nitrile, blue color
N-7047	R.T Proprietary	70 durometer FDA nitrile, 40% ACN
N-7052	R.T Proprietary	70 durometer nitrile, green color
N-7053	R.T Proprietary	70 durometer nitrile, red color

NSF COMPOUNDS

The National Sanitation Foundation (NSF) is a not-for-profit organizations whose mission is to facilitate of public health and safety standards, and to provide testing services to those standards. Although conformance to these standards is voluntary, in many industries NSF standards have become the de facto benchmark for consumer product acceptability.

In the rubber industry, the most important standard by far, is the "NSF Standard 61: Drinking Water System Components - Health Effects". Rubber compounds submitted to NSF undergo rigorous testing to determine whether any contaminants leach or migrate from the material when in long term contact with drinking water, and if so, if the level of migration is acceptable from a public health viewpoint.

R.T. Enterprises is pleased to present a multitude of NSF Standard 61 certified compounds per the following table. In all cases, these compounds also comply with FDA requirements per CFR21, 177-2600, a-d. For more information about NSF or to check for recent additions to our NSF lineup please go to: www.nsf.org or call our sales department.

E-6006	60 durometer EPDM
E-6502	65 durometer EPDM
E-7013	70 durometer EPDM
E-8002	70 durometer EPDM, peroxide cured
E-8005	80 durometer EPDM
E-8006	80 durometer EPDM, peroxide cured
E-9003	90 durometer EPDM, peroxide cured
E-5007	50 durometer nitrile
N-6010	60 durometer nitrile
N-7027	70 durometer nitrile, high tensile strength
N-7039	70 durometer nitrile
N-7503	75 durometer nitrile
N-8004	80 durometer nitrile
S-6004	60 durometer silicone
S-7004	70 durometer silicone, high tensile strength
S-7008	70 durometer silicone
S-8002	80 durometer silicone

UL COMPOUNDS

Underwriters Laboratories Inc. (UL) is an independent, not-for-profit product safety testing and certification organization. UL has tested products for public safety for more than a century.

Founded in 1894, UL has earned the reputation as a leader in product safety testing and certification within the United States. Recent initiatives have resulted in UL becoming one of the most recognized conformity assessment providers in the world. Today, services provided by UL extend to helping companies achieve global acceptance, whether for an electrical device, a programmable system, or an organization's quality process.

RT/Dygart is pleased to offer the following compounds, which have been tested and recognized under UL's category JMLU2, "Gasket and Seal Materials - Components". All compounds have been found to be suitable for the following end-use applications: 1) manufactured or natural gas; 2) diesel fuel, fuel oil, or lubricating oil; and 3) liquefied petroleum (LP) gas. In addition, compound N-7026 is suitable for use in gate valves in fire protection equipment (see UL 262). To learn more about UL or to see recent additions to our compound listing, please visit www.ul.com.

N-7026	70 durometer nitrile, general purpose
N-8002	80 durometer nitrile, general purpose
N-9004	90 durometer nitrile, general purpose
N-9006	90 durometer nitrile, expanded temperature range

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