



PRODUCT DATA SHEET

Fluorocarbon 75 Durometer O-Ring Cord Stock

High temperature, fuel and chemical resistant extruded cord for spliced rings and custom seals.

Compound designation	TORS FKM-75, legacy TORS compound number V75 CORD
Material type	Bisphenol cured fluorocarbon elastomer, copolymer of vinylidene fluoride and hexafluoropropylene, approx. 66 % fluorine. ISO 1629 designation FKM.
Nominal hardness	75 $\pm$ 5 Shore A. Qualification lot measured 78 Shore A.
Color	Black
Product form	Extruded cord stock, sold by the foot in continuous lengths. Cut and spliced or vulcanized into rings, or used as supplied.
Regulatory status	Not FDA compliant. See Section 8.

1. What this material is

Fluorocarbon elastomer, commonly called FKM, is a copolymer of vinylidene fluoride and hexafluoropropylene. The fluorine content is what drives everything the material does, and this compound runs approx. 66 %, which is the standard commercial chemistry. Those carbon to fluorine bonds are among the strongest in organic chemistry, so heat, oxygen, ozone, and most aggressive fluids have a hard time breaking the backbone apart. The cure system is bisphenol, which is the reason the compression set numbers on this compound are as low as they are. Peroxide cured fluorocarbon handles water, steam, and acid better, but it takes a set faster, and for general sealing work the bisphenol cure is the better trade.

At 75 durometer in cord form, this is the material you reach for when nitrile is out of its depth on temperature or chemistry and you need a size that nobody stocks as a molded ring. Cord stock covers the large diameters, the odd cross sections, and the field repair where a spliced ring gets a machine running today instead of next week. It gives up some strength at the splice compared to a molded ring, and in exchange you get any diameter you want out of a spool.

2. What this material does

The short version: it is the default answer for heat, petroleum, and solvents, and the thing that stops it is cold, not chemistry.

Performance area	How this compound behaves
Heat aging	70 hours at 482 °F (250 °C) moved hardness only +4 points and tensile only -5 %. A nitrile ring is hard and cracked long before that.
Compression set	5.6 % after 22 hours at 392 °F (200 °C) and 32.4 % after 336 hours at the same temperature. That is genuinely good, and it is why this compound holds a static seal through thermal cycling.
Oil and fuel resistance	Volume change in ASTM Reference Fuel C was +4 %. Petroleum oils, diesel, gasoline including aromatic blends, and jet fuel are all normal service.
Chemical resistance	Handles aromatic and chlorinated solvents, mineral acids at moderate temperature, and halogenated fluids that swell nitrile out of the gland. The exceptions are real and are listed in Section 5.
Ozone, UV, weathering	Passes ASTM D1171 with no cracking. The saturated fluorinated backbone has nothing for ozone to attack, so outdoor and long shelf storage are not a concern.
Low temperature	This is the weak spot. TR-10 is +2 °F. It stiffens fast below about +15 °F and stops following a moving surface. See Section 6.
Gas permeability	Low, better than nitrile and far better than silicone. Good choice for gas retention and vacuum service.
Abrasion and wear	Good for a heat resistant compound, roughly comparable to a 70 durometer nitrile. Not in the same conversation as cast urethane for sliding wear.
Tear and cut resistance	Low, roughly a third of nitrile at the same hardness. Cord nicked on a sharp edge during installation will tear from that nick later.
Water and steam	Poor above about 200 °F. Bisphenol cured fluorocarbon hardens and loses sealing force in hot water and steam. EPDM is the right answer there.

3. Typical physical properties

Values are from compound qualification testing on TORS V75 cord stock unless marked class typical. They are offered for engineering reference and are not specification limits. Lot specific results are reported on the Certificate of Conformance supplied with each shipment.

Property	Test method	Value
Hardness	ASTM D2240	78 Shore A (nominal 75 $\pm$ 5)
Tensile strength	ASTM D412	1,934 psi (13.3 MPa)
Elongation at break	ASTM D412	196 %
Modulus at 100 %	ASTM D412	700 $\pm$ 100 psi (4.8 $\pm$ 0.7 MPa) (class typical)

Modulus at 100 %	ASIM D412	/00 to 1,100 psi (4.8 to /.6 MPa), class typical
Tear strength, Die C	ASTM D624	100 to 175 lbf/in, class typical
Compression set, 22 hr at 392 °F (200 °C)	ASTM D395 B	5.6 %
Compression set, 336 hr at 392 °F (200 °C)	ASTM D395 B	32.4 %
Heat aged 70 hr at 482 °F (250 °C), hardness change	ASTM D573	+4 Shore A
Heat aged 70 hr at 482 °F (250 °C), tensile change	ASTM D573	-5 %
Heat aged 70 hr at 482 °F (250 °C), elongation change	ASTM D573	+7 %
Ozone resistance	ASTM D1171	Pass, no cracking
Volume change, Reference Fuel C, 70 hr at 73 °F (23 °C)	ASTM D471	+4 %
Hardness change, Reference Fuel C, 70 hr at 73 °F (23 °C)	ASTM D471	-1 Shore A
Temperature retraction, TR-10	ASTM D1329	+2 °F (-17 °C)
Brittle point, 3 min at -13 °F (-25 °C)	ASTM D2137	Pass, non-brittle
Specific gravity	ASTM D792	1.80 to 1.95, class typical

4. Service temperature

Condition	Range
Continuous service, static, in air or petroleum oil	-10 °F to +400 °F (-23 °C to +204 °C)
Continuous service, dynamic	+10 °F to +400 °F (-12 °C to +204 °C)
Intermittent, short excursion	to +450 °F (+232 °C)
Continuous in hot water or steam	Not recommended above +200 °F (+93 °C)
Temperature retraction, TR-10, ASTM D1329	+2 °F (-17 °C)
Brittle point, ASTM D2137	Non-brittle at -13 °F (-25 °C)

At the top of the range the compound does not fail suddenly, it ages. Above 400 °F you will see hardness climb and elongation drop over time, and the ring eventually takes a set and leaks on the next thermal cycle rather than blowing out. Time at temperature matters as much as the number, so a system that touches 450 °F for a minute on shutdown is fine, and one that sits there is not. At the bottom of the range the compound stiffens well before it gets anywhere near the brittle point. The brittle point test passed at -13 °F, but a ring that survives a cold soak is not the same as a ring that seals during one, and that distinction is where most cold weather leaks come from. Treat +10 °F as the practical dynamic limit and -10 °F as the static limit, and expect a cold start leak that stops once the system warms.

5. Media compatibility

RECOMMENDED Petroleum oils, greases, and hydraulic fluids at high temperature. Diesel, gasoline including high aromatic blends, jet fuel and the JP series. Aliphatic and aromatic hydrocarbons including toluene, xylene, and benzene. Chlorinated hydrocarbons and halogenated solvents. Silicone oils and greases. Diester and polyol ester synthetic lubricants. Mineral acids at moderate temperature. Air to 400 °F, vacuum service, and gas retention.	LIMITED OR CONDITIONAL Methanol, ethanol, and high alcohol fuel blends attack this chemistry, ask us about a Type F grade. Hot water and steam harden bisphenol cured fluorocarbon, tolerable to about 200 °F and short lived above it. Low molecular weight esters and ethers cause swell. Ammonia is tolerable cold and destructive hot. High pressure gas service risks explosive decompression and needs a higher hardness grade and a controlled bleed down rate. Cold service is the real limit, see Section 6.	NOT RECOMMENDED Ketones such as MEK and acetone. Low molecular weight esters. Amines, including ethanolamine, ethylenediamine, and the amine packages in oil field corrosion inhibitors. Hot caustic and strong bases. Phosphate ester hydraulic fluids. Automotive and aircraft brake fluids, DOT 3 and DOT 4. Hydrofluoric and chlorosulfonic acid. Long term steam. Hot anhydrous ammonia.
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6. Low temperature and base attack cautions

Cold is what stops this compound, not heat or chemistry. People buy fluorocarbon for the 400 °F rating and then find out it will not seal on a January morning. Below about +15 °F the compound goes glassy and stops following the sealing surface, and it does that long before the brittle point where it would actually snap. A static seal that is already compressed will usually hold. A dynamic seal, or a static seal that gets cold and then sees a pressure or thermal cycle before it warms up, will leak and then reseal once the machine is up to temperature. That intermittent cold start leak is almost always this, and not a bad ring.	Amines, hot caustic, and strong bases destroy fluorocarbon. Bases pull fluorine off the polymer chain, and the ring turns soft and mushy rather than hard and cracked. The usual surprise is an additive package rather than the main fluid: amine based corrosion inhibitors, amine gas treating, and caustic CIP cleaning cycles all get run past seals that nobody checked. If the ring came out swollen and gummy, look at the chemistry before you look at the temperature.
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Exposure	Guidance
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Static sealing above +10 °F	No concern. Normal service.
Static sealing, -10 °F to +10 °F	Workable if the seal is installed and compressed before it gets cold. Expect higher breakout friction and a possible weep on the first cycle.
Dynamic sealing below +15 °F	Not recommended. Move to a low temperature fluorocarbon grade or to a different family.
Any service below -10 °F	Not recommended in this compound. The brittle point is lower, but sealing is not the same as survival.
Amines, ethanolamine, ethylenediamine	Not recommended at any temperature.
Caustic and strong bases, CIP cleaning	Not recommended. Even short cleaning cycles shorten life measurably.
Hot water and steam above 200 °F	Not recommended in a bisphenol cured grade. Expect hardening and set.

If the application swings cold, ask us about a GLT or GFLT low temperature fluorocarbon. Those grades use a different comonomer and stay flexible to roughly -40 °F while keeping most of the chemical resistance, at a real cost premium. If the problem is amines, caustic, or hot water rather than cold, the answer is a different family: Aflas and FEPM compounds handle bases and amines that eat fluorocarbon, EPDM owns hot water, steam, and brake fluid, and perfluoroelastomer covers the jobs where the chemistry and the temperature are both extreme. Tell us the fluid, the temperature, and whether the seal moves, and we will tell you which one belongs in the gland.

7. Design and installation guidance

Item	Guidance
Gland design	Standard AS568 gland dimensions apply when the cord cross section matches a standard size. For nonstandard sections, size the gland from the actual cord cross section, not from the nearest AS568 table entry.
Squeeze, static	15 to 30 % of cross section. Use the higher end on large diameter spliced rings, since a splice benefits from being held firmly in the gland.
Squeeze, dynamic	10 to 20 % of cross section. Fluorocarbon runs higher friction than nitrile, and over-squeeze in a moving gland generates heat and wear rather than a better seal.
Stretch on installation	Keep ID stretch under 5 %, and under 2 % on a spliced ring. Stretch pulls directly on the splice and is the most common reason a spliced ring lets go.
Gland fill	75 to 85 % at maximum service temperature. Fluorocarbon expands more than the steel around it, so check fill hot rather than at room temperature.
Surface finish, dynamic	8 to 16 microinch Ra on the sliding surface. Rougher than 16 abrades the seal, and this compound does not have the tear strength to shrug that off.
Surface finish, static	32 to 63 microinch Ra. Face seals on as-cast or machined surfaces need the lower end.
Backup rings	Consider above 1,500 psi with standard diametral clearance, and required above 3,000 psi or wherever clearance opens up under pressure.
Lubrication	Silicone grease or silicone oil, or a diester lubricant. Both are compatible. Do not install with brake fluid, phosphate ester fluid, or a ketone based cleaner on the part.
Installation damage	Tear strength is low. Chamfer lead-in edges at 20 degrees, break every sharp corner, and never use a screwdriver or a steel pick to seat the cord. A nick at installation becomes a tear under pressure.
Cutting the cord	Cut square with a sharp blade or a hot knife against a fixture. An angled or ragged cut leaves a leak path that no amount of adhesive or squeeze will close.
Splicing	A cyanoacrylate or vulcanized splice is not the strength equal of a molded ring. Put the splice at the top of the gland away from the pressure side where you can, keep the ring in static service where you can, and step up to a molded or lathe cut ring for dynamic or high pressure work.
Friction	Higher breakout friction than nitrile at the same hardness, and noticeably higher when cold. Size actuators accordingly.

8. Regulatory status

This compound is not FDA compliant.

TORS V75 cord stock is a general industrial compound. It is not formulated or certified to FDA 21 CFR 177.2600, and it is not certified to NSF/ANSI 61, NSF/ANSI 51, USP Class VI, or 3-A Sanitary Standards. Keep it out of food contact, beverage, potable water, dairy, pharmaceutical, and medical device service.

If the application does need a food, water, or pharmaceutical grade, we stock compliant material and can quote it the same day. FDA compliant fluorocarbon is available in cord and molded form when the chemistry and the temperature really do call for a fluoroelastomer, and where they do not, an FDA silicone or a peroxide cured EPDM is usually the cheaper and better answer. Tell us the fluid, the temperature, and which standard your customer is asking for, and we will point you at the one that holds the paperwork you need.

Standard	Status
MIL-R-83248C Type 2, Class 1	Qualification tested to this specification, test report available on request. Note that the specification was cancelled in 2001 and replaced by SAE AMS3216, AMS3218, AMS7259, and AMS7276.
ASTM D2000 line call-out	M6HK710 A1-10 B38 C12 EF31 F15 Z1, where Z1 = 75 ± 5 Shore A

FDA 21 CFR 177.2600	Not compliant
NSF/ANSI/CAN 61, potable water	Not certified
NSF/ANSI 51, food equipment materials	Not certified
USP Class VI	Not tested
3-A Sanitary Standards	Not certified
EC 1935/2004, food contact	Not compliant
RoHS 2011/65/EU	No restricted substances intentionally added
REACH SVHC	No SVHC above 0.1 % w/w to the current candidate list
California Proposition 65	No listed substance intentionally added
Animal derived materials	None used
Natural rubber latex	Contains none

9. Storage, handling, and shelf life

Storage guidance follows SAE ARP5316 and ISO 2230, which are the standards a quality department will want cited in a supplier file.

- Shelf life is unlimited. Fluorocarbon is in the ARP5316 group with no assigned shelf life limit, so cord that has been on the shelf for years is still good material if it was stored properly. Do not scrap it on age alone.
- Store between 40 °F and 100 °F (4 °C and 38 °C). Below 60 °F the cord stiffens and should be allowed to reach room temperature before it is handled or straightened.
- Keep relative humidity below 75 %. Fluorocarbon is not moisture sensitive the way polyester urethane is, but damp storage is bad practice for any sealing stock.
- Keep it out of direct sunlight and away from fluorescent lighting, arc welders, and electric motors. Fluorocarbon resists ozone well, but there is no reason to test that in the stockroom.
- Store in the original sealed bag or in a closed opaque container. Keep it away from solvents, fuels, and cleaning chemicals in the same cabinet.
- Coil the cord loose and lay it flat or hang it on a wide radius. Do not hang cord on a nail, do not hang weight on a coil, and do not store it kinked or under a load, because a set taken in storage will still be there at installation.
- Clean with isopropyl alcohol or warm water and mild detergent, then dry completely. Do not clean with ketones, brake fluid, or chlorinated solvents even though the compound tolerates some of them, because there is no reason to add the exposure.
- Lot number and cure date travel with every shipment, and we keep the traceability on our end whether you ask for it or not.

10. Typical applications

This is the cord that goes into chemical processing equipment, refinery and pipeline service, fuel handling and fuel transfer systems, engine and turbine accessories, hydraulic power units running hot, compressor and vacuum equipment, paint and coating lines running solvents, autoclaves and heated platens, oven doors and heated enclosures, aerospace ground support equipment, and semiconductor and laboratory equipment where a solvent would eat anything cheaper. Cord earns its keep on the large diameter static seals that nobody makes as a stock ring, on tank lids, manway covers, filter housings, heat exchanger doors, and gearbox and machine covers running past 250 °F, and on the emergency field splice that gets a line running again while the molded ring is still on order. Anywhere a nitrile ring is coming out hard, cracked, swollen, or flattened because the fluid or the temperature was more than nitrile could take, this is the swap.

11. What you get from The O-Ring Store

We stock the most common O-Ring sizes, plus the ones our customers ask for and use. Every batch is certified by the Olypsys® O-Ring Measurement System from The O-Ring Store LLC, an ISO 9001:2015 certified distributor.

- Certificate of Conformance with every shipment, no charge and no asking twice.
- Dimensional verification on every lot through the Olypsys® system, reporting actual measured ID, cross section, and out of round rather than a pass or fail stamp.
- Full AS568 size range, plus metric and custom sizes.
- Lot traceability maintained on all material. Cure date and lot number on every bag.
- Technical support on gland design, compound selection, and failure analysis at no charge. Send us the failed part along with the fluid and the temperature, and we will tell you what happened to it.

THE O-RING STORE LLC

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We make getting O-Rings easy!

The information in this data sheet is offered in good faith for engineering reference. Typical values represent the compound class and are not specification limits, guarantees, or warranties of performance. Compatibility, service life, and suitability for any specific application must be verified by the user under actual service conditions. Revision A, September 2026.

