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PFA-Encapsulated FFKM (Teflon® PFR 94) Datasheet

This data sheet covers PFA-encapsulated FFKM seals utilizing a Teflon® PFR 94 perfluoroelastomer core. The PFA jacket provides the wetted chemical and temperature surface, while the FFKM core supplies elastic recovery. Designed for static sealing in aggressive chemical and thermal environments.

Product Overview

- **Construction:** PFA jacket over Teflon® PFR 94 FFKM core
- **Primary Use:** Static O-rings and custom seals
- **Applications:** Semiconductor, pharmaceutical, chemical processing, and aerospace
- **Advantages:** No mold costs • Rapid lead time (≈ 2 weeks) • Unlimited sizes • Superior chemical and thermal performance

Temperature Resistance

Recommended continuous service: –10 °C to 230 °C (core-limited)

PFA jacket maximum service temperature: up to 260 °C (500 °F)

Steam / CIP / SIP: Excellent resistance; suitable for repeated cleaning cycles

Mechanical Properties (Teflon® PFR 94 core)

Property	Typical Value	Units	Test Method
Hardness	79	Shore A	ASTM D2240
Tensile Strength	21.6	MPa	ASTM D412 C
100 % Modulus	15.5	MPa	ASTM D412 C
Elongation @ Break	135	%	ASTM D412 C

Compression Set (70 h @ 200 °C)	21	%	ASTM D395 B
Specific Gravity	2.06	g/cm³	ASTM D792

Note: Values for the encapsulated ring will differ due to the rigid PFA jacket; these figures describe the FFKM core compound only.

Chemical Resistance

Medium Class	Resistance
Inorganic & Organic Acids	Excellent
Alkalis / Amines (at RT)	Excellent
Water / Steam	Excellent
Ketones, Esters, Ethers, Aldehydes, Alcohols	Excellent
Hydrocarbons & Fuels	Excellent
Hot Amines (> 70 °C)	Good (10–30 % swelling)
Fluorinated Solvents	Fair (30–50 % swelling)
Alkali Metals / Elemental Fluorine	Not Recommended

Surface exposure is dominated by the PFA jacket, which provides near-universal chemical inertness except to alkali metals and certain fluorinating agents.

Application Notes

- Intended for **static service** only; not suited for dynamic or abrasive environments.
- Offers improved toughness and temperature resistance vs. FEP-encapsulated designs.
- Available in standard and custom cross-sections; precision-cut or welded loops.
- Traceability and inspection certificates available upon request.

Regulatory & Compliance

- PFR 94 FFKM compound: FDA & USP Class VI capable (when formulated accordingly)
- PFA jacket: compliant with FDA 21 CFR 177.1550
- Manufactured in ISO 9001 environment

References

- 1. Syensqo (Solvay) – Tecnoflon® PFR 94 Technical Data Sheet
- 2. Freudenberg Sealing Technologies – Encapsulated O-ring Design Guide
- 3. Chemours – Teflon™ PFA Properties Bulletin

Disclaimer

All data are typical values and not guaranteed specifications. Suitability for a given application must be verified by the end user. PFA-encapsulated FFKM seals should be used within the lower of the published core or jacket limits.

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