PFAS Quick Reference Guide

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Facts About Fluorochemicals

PFAS

Per- and Polyfluoroalkyl Substances are a group of over 10,000 fluorinated substances, including stable fluoropolymers such as FKM, FFKM, and PTFE which are used as critical seat and seal materials in many Swagelok products. There is only one definition for PFAS, Per- and Polyfluoroalkyl Substances, which includes nearly every substance containing fluorine.

Fluorine has the highest electronegativity of any atom, meaning that it forms the strongest possible bonds in organic molecules (molecules having a carbon backbone). Polymers containing fluorine, such as PTFE, FFKM, and FKM, have extreme chemical and temperature resistance. Due to the unique properties of fluorine, fluoropolymers are irreplaceable without reducing performance.

Research indicates that not all fluorochemicals should be regarded as the same. Not all fluorochemicals have been proven to be hazardous to health, nor do they all bioaccumulate. Fluoropolymers, specifically, have been proven to be of low concern (PLC). Some short chain fluorochemicals (primarily C8) have been linked to health hazards and/or bioaccumulation. Major fluoropolymer manufacturers have voluntarily committed to reduce non-polymeric PFAS emissions (2024: 0.009% to air; 0.001% to water; 2030: 0.003% to air; 0.0006% to water*).

Based on our due diligence, as of October 2025, Swagelok does not directly purchase or use any of the five PFAS chemicals currently regulated by major global regulatory bodies: FPOA, PFOS, HFPO-DA, PFHxS, and PFNA

Technical communities such as Performance Fluoropolymer Partnership (PFP) and Fluoropolymer Products Group (FPG) both advocate for a balanced, science-based approach to regulations that consider essential and non-essential uses to prevent the unintended consequences that the complete ban of all fluorinated substances would have on sectors that rely on them for critical use.

** Manufacturing-Programme-Press-Statement-26-March-2025-.pdf*

Optional Seat and Seal Materials in Swagelok Products

Many Swagelok products have seat and seal options for fluid systems that do not require the elevated chemical and temperature resistance that fluorinated seat and seal materials provide. Due to the absence of fluorine in these seat and seal options, product temperature ratings with these options are typically lower than the standard rating.

Seat and seal materials that are PFAS-free
PEEK
Polyimide (i.e. Vespel®)
UHMWPE
Alloy X-750
Nitrile (i.e. Buna-N, Buna-C)
Ethylene Propylene Rubber
Polychloroprene (i.e. Neoprene)

Seat and seal materials that contain PFAS
PTFE
PFA
PCTFE
FKM (i.e. Viton)
FFKM (i.e. Kalrez®, Simriz®, Perlast®, Chemraz®)

Examples of PFAS-Free Product Options:
Swagelok 60 Series Ball Valve
Non-fluorinated lubricants must be requested. Optional Non-fluorinated seat materials:
- Alloy X-750
- PEEK
- UHMWPE

Optional non-fluorinated flange seal materials:
- Nitrile (i.e. Buna-N, Buna-C)
- Ethylene Propylene Rubber
- Polychloroprene (i.e. Neoprene)
- Note: stem gland is PTFE coated

Swagelok C Series Check Valve
Optional non-fluorinated flange seal materials:
- Nitrile (i.e. Buna-N, Buna-C)
- Ethylene Propylene Rubber
- Polychloroprene (i.e. Neoprene)

Note: the inlet gasket is PTFE coated on valves requiring an inlet gasket

Fluorochemical Regulations

Most countries have their own legal system and laws for governing chemical restrictions, including the 27 member countries of the European Union (EU). Exceptions are anticipated for essential uses.

Country	Legislation	Administered by:
EU	REACH	ECHA
USA	TSCA	EPA
Canada	CEPA	ECCC
Great Britain	UK REACH	HSE
Northern Ireland	REACH (EU)	ECHA
China	Decree 591	State Council
Japan	CSCL	METI, MHLW, MOE

Stockholm Convention – treaty (agreement, not law) to restrict Persistent Organic Pollutants

EPA – Environmental Protection Agency
TSCA – Toxic Substances Control Act
ECHA – European Chemicals Agency
REACH – Regulation, Evaluation, Authorization and Restriction of Chemicals
HSE – Health and Safety Executive
ECCC – Environment and Climate Change Canada
CEPA – Canadian Environmental Protection Act
CSCL – Chemical Substance Control Law
METI – Ministry of Economy, Trade and Industry
MHLW – Ministry of Health, Labour and Welfare
MOE – Ministry of the Environment

Chemicals are regulated in drinking water in many countries. PFOA is no longer used as a processing aid for fluoropolymers in the United States. HFPO-DA is used as a processing aid, but does not become part of the polymer. PFOS is commonly used in textiles and fire-fighting foam, but is being phased out.

Chemical	Chemical Name
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
HFPO-DA	hexafluoropropylene oxide dimer acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid

Contact your authorized Swagelok sales and service center for product selection assistance.

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