

Application Number)	E.2.15 (Petroleum and Mining))
Application Name	PTFE-containing composite packings, gaskets fluorine-based elastomers
Candidate Substance CAS RN to be regulated	9002-84-0
Name of Candidate Substance to be regulated	PTFE
Generic Name of End Product for Application	Plant piping, pumps, valves, heat exchangers, pressure vessels
Generic Name of Part for Application	Seat gaskets, fluororubber O-rings, gland packings
Description of Application (Details) Drawings, Diagrams, Photographs, Videos, etc.	attached
Explanation of Irreplaceable Technology Pictorial Photographic Data, Information on Reference Websites, etc.	Materials that can be used for seal members are selected according to the temperature and fluid. In specifications where fluorine-based materials are used, temperatures of 150°C or higher, resistance to fluid, or purity is required, and they are expensive, but are used because they cannot be substituted with other materials. (VALQUA product catalogs, etc.)
Shipping Volume Information	The amount of raw materials used for this product is 44,823 tons/year, but the amount used only in Japan for the applications is estimated to be 1,470 tons/year. The amount used in one product is <20~50% by weight, which has a huge impact on the industries where it is used. Applications include long piping in chemical plants and petroleum refinery plants, and they are also used inside industrial equipment attached to them. In these industrial plants, production is carried out in a continuous flow from raw material input to final materials, so production would be impossible without even portion of this part. For the domestic production scale for the applications in which PFAS is used: Fuel oil production amount at petroleum refinery plants: 132,589,000 KL/year Ethylene and propylene use amount at petrochemical plants: 11,500 thousand tons/year
Heat	260°C (PTFE), 200°C (fluororubber)

Resistance (Highest Working Temperature)	
Weather Resistance	No influence of direct sunlight
Chemical Resistance	Stable against most chemicals. Slightly affected by molten alkali metals (solutions), high-temperature fluorine, and chlorine trifluoride.
Non- Adhesiveness	Wet resistance (Contact angle with water $\geq 110^\circ$)
Purity	No impurities are eluted (ppb level or less) when in contact with chemicals
PVC	Heat resistance $< 90^\circ\text{C}$
PP	Heat resistance $< 130^\circ\text{C}$
High-Density PE	Heat resistance $< 70^\circ\text{C}$
Silicon Resin	Silicone resin is inferior in solvent resistance, chemical (strong acid and strong alkali) resistance, and water resistance
Silicon Rubber	Silicon rubber is inferior to fluororubber in mechanical strength and solvent resistance when used as a seal member
PEEK (Polyether Ether Ketone)	Heat resistance $< 240^\circ\text{C}$, PEEK is inferior to PTFE in acid resistance. PEEK is basically injection-molded, and cannot be blended with materials
Remarks	Heat resistance https://www.kda1969.com/study/study_pla_compare.htm Chemical resistance https://www.kda1969.com/study/study_pla_chem.htm List of physical properties of rubber https://www.kayo-corp.co.jp/common/pdf/rub_propertylist.pdf