Petroleum and Mining (Annex E.2.15) and applications of fluororesin

The materials used in this product are PTFE (CAS NO:9002-84-0) and PFA (CAS NO:26655-00-5).

Subject to use: General fluororesin processed products (e.g., diaphragms, valves, v-packings, and seals)

Chemical Solution to use: High purity chemicals, oil, water, gases

Use Conditions: High temperature (260°C), high pressure, and cryogenic temperature (–196°C).

Essential conditions: Having resistant to corrosive chemicals and purity
Having no adhesiveness
Non-flammable
Having small dielectric constant
Having surface strength
Flexible even at low temperatures
Stable even at high temperatures
Having Small friction coefficient *1) to *4)

In the petroleum and mining fields, especially in the chemical plant field, PTFE and PFA have excellent features such as purity, chemical resistance, heat resistance, and non-adhesiveness, and therefore have been used in a variety of lines, including chemicals such as strong acids namely hydrochloric acid and nitric acid, strong alkalis, and iodine, petroleum and petrochemical products, various corrosive fluids, organic solvents, and fluids that are averse to contamination.*4)

Here, the Japanese Industrial Standard (JIS B 0100:2013) defines a valve as "a generic term for equipment with a movable mechanism that can open or close a flow path in order to pass, stop, or control a fluid."

For example, in a diaphragm valve, the drive part is completely isolated from the flow path by a diaphragm (membrane), so that there is no leakage of the fluid to the outside and no contamination of the fluid from the outside air. The fluid passage section is streamlined and has no pockets, minimizing fluid accumulation, and is self-cleaning.*5)

The material that satisfies all of the above specification conditions is PTFE/PFA.
PTFE also has chemical resistance and stability at high temperatures.*1)
No other alternatives exist.

References

*1) Technical Information "PFA/PTFE Valves" in Parker Hannifin Japan Ltd。
*2) VALQUA Corporation CATALOGUE No. PA01 "PFA Lined Ball Valve PF2 Type" December 2018
*3) VALQUA Corporation CATALOGUE No. 9101 "VALQUA PRODUCTS" revised in February 2017
*4) "Fluororesin Teflon Practical Handbook" by Chemours-Mitsui Fluoroproducts Co., Ltd.
*5) Product information "Structure and Features of Diaphragm Valves" in Nippon Valve Co., Ltd.

In Japan in 2017, chemical manufacturers with petroleum refining, petrochemical, and general chemical plants accounted for about 60% of the total, and they are the foundation of industry and support the economy.*11)

For example, if other products are substituted for fluororesin in situations where there are no products with physical properties more excellent than fluororesin, they will not be able to withstand corrosive chemicals and leak into the surrounding environment, leading not only to environmental pollution but also to a major accident.*7)

Further, Japan's gross domestic product (GDP) is 548 trillion yen, the EU's GDP is $17.1654 trillion, and the United States' GDP is $18.4226 trillion, and if the world's chemical plants shut down, the economic development and growth of countries around the world are severely impacted.*8) to *10)

Therefore, general fluororesin processed products are essential for socio-economic purposes in applications of fluororesins in petroleum and mining (Annex E.2.15), and we request for regulatory exemption from the subjects of regulations.

References

*7) "Prevention of Accidents at Petrochemical Plants, etc., Chiba General Service Co。Ltd., Ryuichi Hiyama
*6) Japan, Economic and Social Research Institute, Cabinet Office, Government of Japan, National Accounts (GDP Statistics)_Actual Annual GDP for FY2022

*7) Japan Ministry of Foreign Affairs, European Union (EU) (GDP Statistics)_2021

*8) Japan, Ministry of Foreign Affairs, United States of America (USA) (GDP Statistics)_2020

*11) Japan, Ministry of Economy, Trade and Industry, "About the Petrochemical Industry," Document 3-2 (Reference 1)