

Response Suggestions for PFAS Proposal

Zhejiang Green New Materials Co., Ltd. (GNM) greets the five countries that have proposed the ECHA and PFAS control draft. Our company has always made unremitting efforts to comply with domestic and international regulations, and continuously conducts strict self review of the compliance of products exported to the European Union. For a long time, we have supported the ambitious attempts of the European Union to reduce the risks caused by toxic and harmful substances, and have taken sincere practical measures to meet the requirements of EU chemical regulations, including REACH. However, we believe that the PFAS (Perfluoroalkyl and Polyfluoroalkyl Substances) restriction proposal proposed by the five European countries is an excessive measure, as it classifies over 10,000 organic fluorine compounds (PFAS) as persistent substances of concern equivalent to already regulated perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA).

GNM is mainly engaged in the research and development, production, and sales of fluorinated special functional materials. The PTFE raw materials used by our company are included in the scope of PFAS substance restrictions. After communicating with our company's clients, they unanimously believe that PTFE has a series of excellent performance, and there are currently no feasible substitutes for the products produced with it. They hope to permanently waive the exemption for the following reasons:

1. Our company's PTFE powder is made by a special process to achieve a particle size of micrometers. It is mainly used in fields such as lubricants, coatings, inks, etc. to improve its high pressure, high temperature, and friction resistance properties. As PTFE is currently

known as the solid material with the smallest friction coefficient (μ=0.04) can act as a dry lubricant under special circumstances, and there are currently no other materials available to replace it.

2. The PTFE isobaric pipes produced by our company are mainly used for lining chemical pipelines, and their quality fully meets the ASTM F1545 standard. Due to its strong resistance to strong acids and alkalis (with a pH range of 0-14) and high and low temperatures (with a temperature range of -190°C to 260°C), PTFE is irreplaceable in pipelines and related products produced using PTFE in the chemical industry.

In summary, our company sincerely supports the PFAS restriction proposal proposed by the European Union. However, the package control measures for fluoropolymers are not conducive to the stability and development of industries such as lubricants, coatings, inks, and chemicals. PTFE products currently do not have feasible alternatives, so our company hopes to permanently exempt PTFE.

Attachment: 1. The table of Common Plastic Friction Factors

2. The table of Common Plastic Corrosion Resistance

3. The table of Common Plastic Temperature Resistance

4. Customer's Opinion Letter

Zhejiang Green New Materials Co., Ltd.

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Attachment

Table 1 The table of Common Plastic Friction Factors

Serial number	Lower sample □Plastic□	Upper sample			
		Steel		Plastic	
		Static friction coefficient μ_s	Dynamic friction coefficient μ_k	Static friction coefficient μ_s	Dynamic friction coefficient μ_k
1	PTFE	0.1	0.05	0.04	0.04
2	FEP	0.25	0.18	-	-
3	LDPE	0.27	0.26	0.03	0.33
4	HDPE	0.18	0.08-0.12	0.12	0.11
5	POM	0.14	0.13	-	-
6	PVDF	0.33	0.25	-	-
7	PC	0.60	0.53	-	-
8	PET	0.29	0.28	0.27	0.20
9	PA66	0.37	0.34	0.42	0.35
10	PCTFE	0.45	0.33	0.43	0.32
11	PVC	0.45	0.40	0.50	0.40
12	PVDC	0.68	0.45	0.90	0.52

Table 2 The table of Common Plastic Corrosion Resistance

Serial number	Medium	Concentration/%	Temperature/°C	PVC	PP	PVDF	PTFE
1	Ammonia	10	80	×	○	●	●
2	Aqua regia	10	80	×	×	●	●
3	Benzene	Pure	80	×	×	△	●
4	Bleaching solution	20	80	×	×	●	●
5	Boric acid	Saturation	80	×	●	●	●
6	Oxalate	50	80	×	●	●	●
7	Sulfuric acid	98	80	×	×	△	○
8	Sodium hypochlorite	13	40	●	△	●	●
9	Sodium hydroxide	70	80	×	○	×	●

●---excellent ○---good △---ordinary ×---inferior

Table 3 The table of Common Plastic Temperature Resistance

Serial number	Plastic name	Density /g/cm ³	Temperature resistance/°C
1	PVC (Hard)	1.30~1.58	-40~60
2	PVC (Soft)	1.16~1.35	-40~60
3	CPVC	1.45~1.65	-40~95
4	HDPE	0.941~0.960	-70~70
5	LDPE	0.91~0.925	-70~60
6	PP	0.89~0.91	-35~120
7	ABS	1.02~1.09	-40~80

8	PVDF	1.76	-20□140
9	PTFE	2.1□2.2	-190□260
10	NR	0.90□0.95	-55□70
11	NBR	0.96□1.20	-10□120