Feedback on PFAS Proposal (Hongdu New Materials)

Section 1: Personal Information (omitted)

Section 2: Organization Information (Company Profile)

Jiangxi Hongdu New Material Technology Co., LTD., founded in 2021, is committed to the basic research and product promotion of fluorine chemistry, fluorine chemical industry, fluorine materials and their related or cross fields, and the introduction of foreign excellent chemical products, committed to providing customers with high-quality products and professional product supporting solutions.

At the same time, the company is currently focusing on the sales of high-end fluorine materials, committed to the development of the field of clean energy, striving to be a first-class supplier of fluorine products in China, and establishing a three-dimensional sales model of the whole industrial chain, cross-industry and multi-purpose.At present, the company's planned products are mainly applied in the field of lithium new energy and photovoltaic new energy, of which PVDF adhesive has been widely used in the positive electrode materials of lithium batteries.

The company has established a good long-term strategic

cooperative relationship with a number of well-known domestic brands, university laboratories, research and development institutions, and production bases, and built a huge production capacity system. The company adheres to the development concept of customer-centric and committed to continuously creating value for customers, perceiving responsibility, high-quality returns, and win-win cooperation!

Section 3: General information

Para 1 (Beginning)

On behalf of Jiangxi Hongdu New Material Technology Co., LTD., we would like to say hello to the 5 countries proposed in the ECHA and PFAS control draft.We have been making unremitting efforts to comply with domestic and international regulations, and continue to conduct strict self-review of products exported to the EU for compliance. We have long supported ambitious attempts by the EU to reduce the risks caused by toxic and hazardous substances and to take practical measures in good faith to meet the requirements of EU chemicals regulations, including REACH. However, we believe that the PFAS limit proposed by five European countries is an excessive measure, as it restricts more than 10,000 organic

fluorinated compounds (PFAS), similar to the persistent substances PFOS and PFOA that are already regulated.

Para 2 (Elaboration)

Jiangxi Hongdu New Material Technology Co., Ltd. is a main fluorine-containing materials enterprise.The company's products are mainly from fluorite production of hydrogen fluoride (AHF), difluoro-chloromethane (F22) and other basic raw materials, to the production of tetrafluoroethylene, vinylidene fluoride, perfluoropropylene and other fluorine containing fine chemicals, further synthesis of fluorine resin, fluorine rubber and organic fluorine materials molding and processing complete industry chain.Products are widely used in batteries, semiconductors, coatings, inks, composite materials, silicone, cosmetics, paper, adhesives, pharmaceutical intermediates, printing and dyeing textile, leather, special lubricating oil grease, special engineering plastics, food additives and other fields.Among them, the fluorine-containing fine chemicals and polymer materials we produce are widely used in the field of refrigerants and lithium battery binders, showing very excellent application performance, and it is difficult to achieve perfect replacement in the same economy and technology. The

proposal of the EU5 countries conflicts with the existing policies, does not conform to the development law of market economy, and is unreasonable in its own logic.At the same time, it will also hinder social progress and scientific and technological development, so we suggest that the legislative body supplement and improve the problems in the bill, and provide an exemption for the company's products using PVDF as a lithium battery binder.

Para 3 (Conclusion)

In the use of PVDF materials for lithium-ion batteries, PVDF mainly realizes the necessary chemical resistance, mechanical strength, biocompatibility, and unique piezoelectric properties.In particular, PVDF is one of the few materials that can simultaneously meet several extremely demanding performance requirements in the preparation of lithium-ion battery slurries, and there is currently insufficient evidence of foreseeable harm from PVDF.At present, the alternatives that exist on the market and are mentioned in the draft cannot be replaced (completely), and even if they can be replaced, they cannot be applied on a large scale in a short time, because the evaluation cycle of raw material substitution is very long.

Para 4 (supplementary sentence)

Please refer to Section IV/V of Annex for detailed discussion, physical property comparison data and citations.

Section Ⅲ Specific Information Questions (Questions 1 to 10 Optional)

Q.1: (final) product area/use (ref: Table.8, Annex XV pp.80~114)

The key components of the battery raw materials, mainly lithium ion battery binder, diaphragm and other purposes.

Q2: Emissions at each stage of manufacturing/use/waste

According to the production data of the company, the emissions in the manufacturing stage are about 1900 kgce/t, and the use stage does not produce emissions, on the contrary, the promotion of battery energy storage is conducive to reducing carbon emissions, taking new energy vehicles as an example, the carbon emissions reduced during the whole life cycle are reduced by more than 40% compared with fuel vehicles.The waste stage, such as power batteries can be recycled, downgraded and reused as energy storage batteries. PVDF waste resin that has lost its use value can also be recycled through green recycling technology, and there are many companies engaged in plastic recycling that can achieve PVDF recycling.

Question 3: Incineration treatment related

Q4: Impact on the recycling industry

Q5: PFAS usage and emissions for extended (derogation) applications

Q6: Limit information on alternatives and socio-economic impacts for uses omitted or not carefully explored in the draft

Q7: Information on alternatives and socio-economic implications of reconsidering extended use after soliciting comments

Q8: Information on alternatives and socio-economic impacts for other specific uses

Q9: Possibility of substances excluded in the draft restriction (paragraph 1) to decompose into specific subgroups of substances (additional information)

Q10: Information about PFAS analysis methods

Section IV: The attached information can be disclosed

1. The proposed restrictions are in conflict with the European and international Rules Agreement, and the restrictive measures on PVDF will hinder the implementation of the European Green Deal

PFASs, which repels water and oil, resists heat, chemicals, and

does not absorb light, has been widely used in water repellents, surface treatments, emulsifiers, fire extinguishers, coatings, and a wide range of industrial applications such as semiconductors, automobiles, and batteries.PVDF has high strength, high flux, high corrosion resistance and excellent piezoelectric properties, so it is widely used in electronics, acoustics, radio engineering, medicine, pharmaceutical, petrochemical, chemical, metallurgy, food, paper, textile and nuclear industry and other fields.

The PVDF is also crucial to the European Green Deal.Horizon Europe, for example, funds research and innovation in the transport sector, including batteries, the biobased sector and the built environment, all of which are inextricably linked to PVDF applications, many of which are considered "essential uses".Therefore, we believe that the proposed blanket restriction on all PFAS, including PVDF, is in clear conflict with the European Green Deal and would essentially hinder the achievement of the European Green Deal objectives.

2. The proposed restrictions would severely and disproportionately impede international trade

If the proposed restrictions are implemented as currently announced, trade in basic commodities using PVDF will be considerably restricted and supply chains around the world will be severely disrupted.

We believe that even if the development of alternative products has begun, it will require a long period of repeated testing and evaluation, and will take a considerable time to promote and implement.In addition, for some application areas of PVDF, there is no substitute for products, and a large number of basic theoretical research and tests must be carried out in the future to promote research and development and eventually application, and even a 12-year grace period may not be enough to confirm their availability.

Furthermore, the serious and disproportionate negative impact of the proposed restrictions on international trade may also violate the principle of proportionality under Article 68(1).In particular:

(1) Article 68 (1) of the Agreement states that any restriction decision shall take into account "the socio-economic impact of the restriction, including the availability of alternatives".The proposed restrictions on PVDF will significantly limit the development of some areas.

(b) as referred to in Annex XV, i) limit the impact on the industry (e.g. manufacturers and importers) and the commercial impact on all other participants in the supply chain, including the impact on investment, operating costs and innovation;ii) the wider impact on trade, competition and economic development;iii) alternative risk management measures capable of meeting the objectives of the proposed limits, and iv) the availability of suitable and viable alternatives.The proposed restrictions do not take due account of these factors of socio-economic impact and do not balance the relationship between international trade and industrial development and the results of the proposed implementation.

(3) Proposes a comprehensive protocol to limit the use of all PFAS substances (beyond some transitional specific uses/applications), which goes far beyond the currently necessary environmental and human health objectives, and does not imply that draconian measures to control the potential risks posed by some PFAS will avoid risks to human health or the environment,There is a need for more rigorous supporting material in this regard. In particular, the proposed restriction fails to provide a substantive assessment of the "availability of alternatives", including: i)

identified alternative products whose risks and benefits to the substance to be restricted must be compared in order to determine the impact of replacement on that application area;ii) Where no alternative product is available, the risks of continued use of the substance to be restricted should be compared with the socio-economic consequences of no longer using the product, so as to weigh scientifically.

In view of the above, we recommend that the EU limit the scope of the restriction to that which is necessary for the objective of contributing to the social economy of the EU.In this regard, we also hope that if the restrictions remain unchanged, the EU should consider a "review clause" to extend the transition period in the event that no appropriate alternative has been developed for the designated review date.

3. The proposal fails to identify the hazards of PVDF and its congeners

The proposed article 68 (1) provides that a substance may be restricted only if it poses an unacceptable risk to human health or the environment.

The provision must positively demonstrate this unacceptable

risk by complying with the conditions of Annex XV by conducting a risk assessment that is achievable in Annex XIII (and by cross-referencing Annexes I and XIII).But as the proposed restriction itself acknowledges, it covers about 10,000 substances with very different physical, chemical, and biological properties and behaviors.This broad definition does not take into account the specific, distinct characteristics of individual PFAS or subgroups of PFAS and is therefore not suitable for regulatory risk management purposes.In light of the chemical hazards and risks of the substances in question, it is necessary to carefully re-examine the appropriateness of uniform regulations on PFAS.In particular, PVDF should be excluded from current regulations because they are highly stable materials with no concern for biological concentrations or toxicological effects.

4. The proposed restriction fails to meet the prerequisite (precautionary) principle of REACH: it must be based on the fact that the substance poses an unacceptable risk.

Article 68 (1) requires positive proof that an unacceptable risk "exists".Therefore, this condition is not used as a tool for judging scientific uncertainty, it is a prerequisite. As a result, this PFAS limit

is largely based on scientific uncertainty (32 pages, the vast majority of PFAS lack toxicological data;For most PFASs, there is not enough data to adequately assess their effects on human health and the environment (page 13);For most PFASs, there is no or no data available on bioaccumulation behaviour (28 pages), which does not meet the requirement of proving unacceptable risk under Article 68 (1).

Before taking preventive measures, a scientific risk assessment must first be carried out, which consists of four steps, namely hazard identification, hazard characterization, exposure assessment and risk characterization. In our opinion, these four steps were not followed in the PVDF restriction proposal.The alleged harm of PVDF has not been established, and likewise, the actual release of PVDF is very small.These factors are based on unsubstantiated assumptions. In the absence of reliable information on hazards and exposures, there is no basis for describing risks and therefore no scientific risk assessment required for the application of the precautionary principle.

Preventive measures must be based on potential benefit restrictions that are proportional, non-discriminatory, and consistent with similar measures.In our view, proposing PFAS restrictions

could prove to be disproportionate and not the least restrictive measure that would solve any PFAS related problem because: i) overgeneralize and restrict all applications of the entire PFAS;ii) it does not adequately assess the risks and suitability of purportedly available alternatives;iii) It does not (adequately) assess the socio-economic impact of such broad restrictions on so-called "vital benefits."

(5) The proposed restriction would restrict substances that do not violate REACH, contrary to Article 68 (1)

Article 68 (1) provides that substances that pose an unacceptable risk to human health or the environment may be restricted.Accordingly, the restriction in article 68 (1) shall identify the substance to be restricted.Annex XV, section 3 of the agreement also provides that the restriction "shall include the properties of the substance".This identification should be chemically specific, including name, identification number, molecular and structural formulas, etc. In fact, REACH defines a "substance" as "a chemical element and its compounds" (Article 3(1) REACH).This is also clearly reflected in the European Chemicals Agency's (ECHA) guidelines for the preparation of Annex 15 dossiers (108 pages),

which state that restrictive proposals must provide "details of the substance (name, CAS, EC number, registration number (if any), molecular formula, structural formula, purity and impurities)".

PVDF is a material with heat resistance, weather resistance, chemical resistance, water resistance, lubricity and unique optical/electrical properties.It has become an indispensable material in the energy field (fuel cells, lithium-ion batteries), semiconductor field (clean parts, etched gases), electrical and electronic communication field (wire casing, liquid crystal materials), transportation field (automobiles, airplanes, railways), medical treatment and many other fields.If absolute control of PVDF is proposed, it will adversely affect the development and progress of society.In light of the chemical hazards and risks of the substances in question, it is necessary to carefully re-examine the appropriateness of uniform regulations on PFAS.In particular, PVDF should be excluded from current regulations because they are highly stable materials with no concern for biological concentrations or toxicological effects.

6. The proposed restriction on PVDF would have an adverse impact on social progress

For example, in the field of biomedicine, PVDF separation membrane can be used to remove proteins, pathogens, pyrogen or colloids and other macromolecular substances, widely used in antibody preparation and hemodialysis, other alternative products are affected by its basic structure, basically can not achieve a good replacement;[][]In biomedicine (biomedical research), PVDF has proven to be a very desirable and stable material (minimal tissue reaction, no capillary and core, with perfect antithrombotic effect) and is often used in gynecology (obstetrics), general surgery (orthopaedic, cardiovascular, plastic and reconstructive) and other fields.

For example, in electronic/radio engineering, PVDF electronic components are used as dielectric and insulating materials for wires (light weight, good flexibility, high heat transfer resistance coefficient).Unique piezoelectric properties enable the material to respond to and influence electric and/or magnetic fields.In the field of lithium-ion electrodes, PVDF does not react with electrolytes and lithium, so it is in great demand in the production of complex electrodes for lithium-ion batteries, and its membrane material has good chemical resistance, mechanical strength, adequate aperture

and interruption characteristics and heat resistance, and can also be used as a diaphragm for lithium-ion batteries.The piezoelectric properties of PVDF are also widely used in the manufacture of tactile sensor arrays, low-cost strain gauges, and lightweight sound transducers.The piezoelectric PVDF plate was used in the "Venice Burnie Student Dust Counter" on the New Horizons space probe to measure the dust density of the outer solar system.

At the same time, there are a number of noteworthy potential applications for PVDF.For example, there is currently no ideal material for anterior abdominal wall plastic surgery, which makes finding the best polymer for anterior abdominal wall surgical reconstruction a difficult task. One of the most promising materials in this regard is polyvinylidene fluoride (PVDF).Unlike polypropylene, PVDF monofilaments do not contain stabilizers and plasticizers and do not undergo hydrolysis under the action of tissue fluids, which explains their greater biocompatibility and resistance to environmental factors in the body during implantation, and their good biocompatibility with human tissues.For example, in view of the low energy density of lithium ion, short service life, narrow operating temperature range, high cost and safe use, replacing liquid

organic electrolyte with solid electrolyte or gel electrolyte is an effective solution to solve the above problems.Compared to inorganic electrolytes, PVDF-based solid electrolytes have high interface impedance and high density of good wettability with electrodes and less inactive mass is introduced, resulting in better cycle life and energy density output.At the same time, excellent elasticity and plasticity also means good interface contact and processing properties, as well as certain mechanical properties.

Therefore, the proposed restriction on PVDF would also greatly limit developments in areas such as biomedicine and energy, with adverse effects on social progress.We demand that in order to ensure the good development and progress of human society, the bill should exclude PVDF from the scope of PFAS.

Reference:

1:Barbara Hetal. Integrated Environmental Assessment and Management, Vol. 14 (3), pp. 316-334.

https://setac.onlinelibrary. willy. Com/doi/full / 10.1002 / ieam. 4035

2:Stephen K et al, Integrated Environmental Assessment and Management, Vol. 19 (2), pp. 326-354

https://setac.onlinelibrary. willy.Com/doi 10.1002 / ieam. 4646

3: German Environment Agency, Reducing Chemical input to water bodies - Trifluoroacetate (TFA) as a persistent and mobile Substance from Multiple sources, 2021 4: Norwegian Environment Agency, Environmental and Health Effects Study of HFO refrigerants, 2017

4. The king dizzy. PVDF binder application in the lithium ion battery research [D]. Fudan university, 2013. The DOI: 10.7666 / d.Y. 2702196.

5. Lu H H. Modified PVDF binder and its application in lithium-ion batteries [J].[2023-08-05].

6. Zeng Tao. Application of polyacrylic acid binder in the positive electrode of lithium-ion battery [D].Central south university, 2013. DOI: 10.7666 / d.y. 2422054.

7. Peng Libo, Ye Chengxi, Tong Qingsong, et al.Research progress on the application of modified PVDF or alternative PVDF binders in lithium batteries [J].Material review, 2021, 35 (5) : 7. DOI: 10.11896 / CLDB. 19090009.