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Draft agenda points and questions – meeting with PPE companies (protective clothing)

Introduction

PPE can include items such as safety helmets, gloves, eye protection, hazmat suits, high-visibility clothing, safety footwear, safety harnesses, ear plugs, ear defenders and respiratory protective equipment (RPE). This document focuses on protective clothing.

Agenda point 1 - Critical properties (performance) for protective clothing

Questions

1. Please describe quantitatively critical properties (performance) for protective clothing, see table 1, in the form of comparable measurements / studies between performance for fluorochemistry and alternative non fluorochemistry?
   Answer; the alternatives that are available on the market as replacement for C6 treatment are not able to meet the demands of water penetration resistance after pre-treatment with fuel and oil that are in the standard for EN 343; pre-treatment of fuel and oil paragraph 5.5 and testing according to 4.2. We need the treatment in order to certify the garments at the moment.

2. Are these data available to us?

Agenda point 2 – Standards for protective clothing need for PFAS

Questions and remarks

3. Are there comparable quantitative test results between fluorochemistry and non-fluorochemistry available to us performed with the test standards listed in table 1 (*or others, please specify*)?
4. Please indicate which quantitative measurement results/limits are acceptable for your markets for the test methods listed in table 1 below (*or others, please specify*).

Table 1: *Critical properties (performance) vs Standards for protective clothing (CEN/TC 162)*

Critical properties (performance)	**Standards for protective clothing (CEN/TC 162)**
Electrostatics	EN 1149 series[1] Alligo: We manufacture products certified according to EN

[1] EN 1149 series, https://standards.cen.eu/dyn/www/f?p=204:105:0:::::

Critical properties (performance)	Standards for protective clothing (CEN/TC 162)
	1149-5. Most often in combination with other product standards such as EN ISO 14116, EN ISO 11612, EN ISO 11611, EN ISO 20471 and EN/IEC 61482-2. To our knowledge PFAS is not needed for EN 1149-5 alone. PPE Risk Category II for EN 1149-5 alone.
Liquid chemicals	EN 13034:2005+A1:2009[9] Alligo: We manufacture products certified according to EN 13034. Always in combination with other product standards such as EN ISO 11612, EN ISO 11611, EN ISO 20471 and EN/IEC 61482-2 etc. To our knowledge PFAS is needed to meet requirements of EN ISO 6530 (referred to in EN 13034), *Liquid repellency* and *Resistance to penetration by liquids* (H_2SO_4, 30% (aqueous); NaOH, 10% (aqueous); o-Xylene, undiluted; Butan-1-ol, undiluted). PPE Risk Category III for EN 13034 alone. EN 14605:2005+A1:2009[2] Alligo: Products certified according to EN 14605 are available in our assortment, sourced from external suppliers. At the moment we are not a manufacturer of products certified according to EN 14605. EN 16523-1:2015+A1:2018[3] Alligo: Included in EN ISO 374-1. Products certified according to EN ISO 374-1 are available in our assortment, sourced from external suppliers. At the moment we are not a manufacturer of products certified according to EN ISO 374-1.
Protection against chemicals	EN ISO 17491-3, -4:2008[4] Alligo: We are not a manufacturer of products certified according to EN 17491-3. EN ISO 17491-4:2008[5] Alligo: We are not a manufacturer of products certified according to EN 17491-4. EN ISO 19918:2017/A1:2021[6] Alligo: We are not a manufacturer of products certified according to EN 19918. EN ISO 6530:2005[7]

[2] EN 14605:2005+A1:2009, https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:32983,6143&cs=1868F123B185CBECCA30C484231EB9233

[3] EN 16523-1:2015+A1:2018
https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:67114,6143&cs=1753CA3DD9D58A4835043F014216B2C1A

[4] EN ISO 17491-3, -2008
https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:23098,6143&cs=12D3A8D6D32D899469296826BC259C835

[5] EN ISO 17491-4:2008
https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:23099,6143&cs=10D51599070E9BD60C8715CAEBF4C7841

[6] EN ISO 19918:2017/A1:2021
https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:70836,6143&cs=1F09ABC9AAD96F9554D60B9F78952CF49

[7] EN ISO 6530:2005
https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT,FSP_ORG_ID:6778,6143&cs=10DC0A31382F43CA906841B78380B3F27

Critical properties (performance)	Standards for protective clothing (CEN/TC 162)
	Alligo: See EN 13034.
Liquid and gaseous chemicals, including aerosols and solid particles	EN 464:1994[8] Alligo: We are not a manufacturer of products certified according to EN 464.
Against rain	EN 343:2019[9] Alligo: We manufacture products certified according to EN 343. Often in combination with EN 342, EN ISO 20471, EN ISO 11612 etc. To our knowledge PFAS is needed to meet requirements of *Water penetration resistance* (EN 20811) after *Pre-treatment with fuel and oil* (ISO 1817) included in EN 343. PPE Risk Category I for EN 343 alone.
Splashes of molten metal	EN 348:1992[10] Alligo: We are not a manufacturer of products certified according to EN 348.
For firefighting activities	EN 469:2020[11] Alligo[12]We are not a manufacturer of products certified according to EN 469.
High visibility	EN ISO 20471:2013[13] Alligo: We manufacture products certified according to EN ISO 20471. Most often in combination with one or more standards: EN 342, EN 343, EN 1149-5, EN ISO 14116, EN ISO 11612, EN ISO 11611, EN 13034, EN/IEC 61482-2. To our knowledge PFAS is not needed to meet requirements of EN ISO 20471 but added for soil and oil repellency – to keep the fluorescent fabric highly visible for a longer period of time. PPE Risk Category II for EN ISO 20471 alone.
Use, care and maintenance	CEN/TR 14560:2018[14] CEN/TR 15419:2017[15] CEN/TR 17330:2019[16] Alligo: These are Technical Reports. Guidance, not requirements.

[8] EN 464:1994, https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:6659,6143&cs=165B04976C33240ACD0DD3E668DD67408

[9] EN 343:2019, https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:63371,6143&cs=1B18C11D02C518D1B6A214EAC88838727

[10] EN 348:1992 https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:6616,6143&cs=147CE63961DE2AC855BCE710EC70E8A6D

[11] EN 469:2020, https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:63013,6143&cs=1468ACE394F638F27BB45A2E03DFBDEC2

[12]

[13] EN ISO 20471:2013 https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:30182,6143&cs=1ECA362937B4D0E8B641C9F80D8E88876

[14] CEN/TR 14560:2018 https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:66982,6143&cs=17067BF89BD9A0B10910D342106B34226

[15] CEN/TR 15419:2017 https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:65002,6143&cs=18D38E936501A138A7C0EB6CFFDB7E8FB

[16] CEN/TR 17330:2019 https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT,FSP_ORG_ID:39246,6143&cs=1557EDC845AD3EF1A19867E8E23C7F2EA

Critical properties (performance)	Standards for protective clothing (CEN/TC 162)
Others?	

Addition to whether a specific standard requires a PFAS treatment to meet the requirements in the standard: It is common for us to combine two or more PPE standards in one garment. For example, we combine EN 13034 with EN 1149-5, EN ISO 20471, EN ISO 11611, EN ISO 11612 and IEC 61482-2 in one style/collection.

Agenda point 3 - Potential alternatives to PFAS

In the ongoing restriction work of PFAS in EU/EEA, a range of non-fluorinated alternatives to PFAS have been identified

- Hyperbranched functionalized polymers (dendric polyurethanes)
- Paraffins (hydrocarbons)
- Waxes (fatty acid esters)
- Silicones (polydimethylsiloxanes abbr. PDMS)
- Polymeric compounds such as non-fluorinated (meth)acrylates
- Plasma treatment
- Graphene structures
- Other?

Questions

5. For these above listed non fluorinated alternatives (and possibly other) to fluorochemistry, what are the biggest specific challenges to phase in those non fluorinated alternatives that may be feasible for your applications? Answer: To get hold of the material for testing. It is not available at the moment for us. We are unable to obtain information about new treatments which will answer our questions regarding which chemistry is being used and what substance will be applied to our products as well as reliable testing and documentation confirming that the alternatives are safe and effective. We are very hesitant to substitute our current treatment when we cannot be confident of what the alternative is.

6. Have you evaluated other fluorochemicals / materials as substitutes for the currently used fluorochemistry? If so, please specify this chemistry. Answer: NO, we have been in contact with a company that have a fluorochemical which is said to be PFAS, the release of PFAS to the environment after washing is said to very low and therefore safer than current PFAS. We have very little information besides this. We have also heard about a new fluorochemical which is said to not be PFAS but the product is not on the market yet and we have very little information available to us and do not know what the chemistry looks like.

Agenda point 4 – Quantities of PFAS in protective clothing

Questions

7. What are the quantities of PFAS[17] used in protective clothing applications in the EEA?

[17] PFAS here defined as having the following structural formula: X-(-CF2-)n-X' with n equal to or larger than 1 and X, X' not being H (thus including X-CF3), meaning fluorinated substances that contain at least one aliphatic

Answer; see attached file

8. Annex I of the PPE regulation[18] (EU 2016/425) divides PPEs into three risk categories. What share of the quantities of PFAS are used in the three risk categories, respectively?
   Answer; see attached file

Risk Category I: EN 343
Risk Category II: EN 342, EN 1149-5, EN ISO 20471, EN ISO 14116, EN ISO 11611, EN ISO 11612
Risk Category III: EN ISO 11612 (for highest levels B3, C3-C4, E3), EN 13034, EN /IEC 61482-2

9. Do you apply industrial re-impregnation of PFAS in your products?
   Answer; see attached file.
10. If so, what quantities of PFAS are used for industrial re-impregnation of your products?

Agenda point 5 – Emissions and waste management

Questions

11. How are your PFAS containing protective clothing dealt with at end-of-life? Answer: Combustion (Förbränning)
12. What are the quantities of emissions of PFAS from reimpregnation of your products?
13. What are the quantities of emissions of PFAS from protective clothing in the waste phase?
14. What measures can be taken to minimize the emissions from the waste phase? What are the costs associated with these measures?

Invited PPE companies/associations
European Safety Federation
European Textile Service Association (ETSA)
Elis
Blåkläder
Fristads
Swedol
Swedish Armed Forces Materiel Administration (FMV)
Tranemo textil

carbon atom that is both, saturated and fully fluorinated, i.e. any chemical with at least one perfluorinated methyl group (-CF3) or at least one perfluorinated methylene group (-CF2-), –), including branched fluoroalkyl groups and substances containing ether linkages, fluoropolymers and side chain fluorinated polymers.

[18] EU 2016/425, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R0425