MEETING WITH THE EUROPEAN COMMISSION
ON PFHXA, C8 / C9-C14

6 MARCH 2023
Agenda

1. Introduction to Archroma
2. C6 telomerisation / production process
3. PFHxA restriction
4. C8 and C9-C14 thresholds in C6 transported intermediates
5. All PFAS restriction
INTRODUCTION TO ARCHROMA
A global leader in specialty chemicals across the textile, paper and emulsions sectors

Brand & Performance Textile Specialties (BPT)
Global leader in textile chemicals and dyes

Packaging & Paper Specialties (PP)
Leading provider of colorants, optical brightening agents, process and surface chemicals

Coatings, Adhesives & Sealants (CAS)
Leading provider of specialty emulsions to paints, adhesives, construction and the textile, leather and paper sectors
A global player, part of the SK Capital team …

Archroma
- 3000 employees
- USD 1.3 (CHF 1.2) billion annual revenue

SK Capital group (without Archroma)
- 5000 employees
- USD 6 (CHF 5.7) billion annual sales

... committed to sustainability & innovation

Archroma
- is a signatory company of the US EPA PFOA Stewardship Programme and as such honoured the commitment to phase out PFOA and C8 production by the end of 2015.
- commits to Responsible Care, to Product Stewardship as a Global responsibility. We have implemented systems and processes ensuring 100% regulatory compliance.

Acryltech acrylics, Inc.
- Acrylic sheeting

ASCEND Performance Materials
- Nylon 6,6 resin, fiber and intermediate chemicals

CALABRIAN
- Sulfur dioxide and related derivatives

Radiopharma, Inc.
- Radiopharmaceutical products

TPC Group
- C4 and C3 hydrocarbons

Former Chemtura antioxidants and UV stabilizers
C6 TELOMERISATION / PRODUCTION PROCESS
C6 production under Strictly Controlled Conditions (SCC)

All steps of C6 production take place under strictly controlled conditions

Main SCC Components
  o Full compliance with REACH registration requirements & ECHA Guidance on intermediates
  o Isolated intermediates, closed off and sealed telomerisation process
  o Production units linked by closed pipes
  o Production staff: supervised, trained and skilled
  o Tanks between the units for buffering
  o Ongoing monitoring & continuous improvement

All units emissions are handled with adsorption, incineration or waste water technology

Waste disposal of fluorine containing products executed by a specialized waste incineration company

All procedures are well documented and most of them are controlled by a process control system
Emissions preventing measures (Air/Water)

**Waste Water**
- Wastewater emissions only occur during production of chemically reactive products.
  - emissions are monitored
- Wastewater emissions are post-treated by an industrial on-site WWTP
- Sludge of the WWTP is treated on-site by high temperature incineration
- The WWTP is used by another company engaged in the production of fluorinated substances
- Archroma is continuously improving its technology and expects to further reduce its C6 emissions in the near future

**Air**
- Air emissions of off gases stemming from the closed-system process are incinerated.
RESTRICTION PROPOSAL ON PFHXA, ITS SALTS AND RELATED SUBSTANCES
C6 fluorinated substances have unique properties for textile applications:

- **Long-lasting combination of water, oil and dirt repellence** – this combination is due to the stability of the F-C bond and can currently not be achieved with any other treatment than C6.
- **Unparalleled durability** allowing for a high functionality over time

- **C6 fluorinated substances are used in high performance professional and industrial sectors**
- **C6 is required to pass technical standards and ensure a high level of performance / safety** for various sectors, e.g. ISO 14419 (oil), AATC 130 (stain / soil), EN 24920 (Spray Test)

- **The MIDWOR-LIFE analysis, co-funded by the EU, assessed that fluorine free alternatives in textiles only offer a similar level of protection with the singular property of water repellency. The use of silicone (PBT) would encourage “regrettable substitution”**.

- **Archroma offers fluorine-free products for limited basic and medium-quality outdoor articles and is investing in R&D to identify suitable alternatives to C6.**
# Archroma’s Supported Derogations

<table>
<thead>
<tr>
<th>Application</th>
<th>SEAC</th>
<th>Archroma</th>
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</thead>
<tbody>
<tr>
<td><strong>Personal Protective Equipment (PPE)</strong></td>
<td>Paragraph 8 (b).</td>
<td>Supports the PPE derogation as proposed by SEAC.</td>
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<td><strong>PPE</strong> to protect users against risks as specified in Regulation</td>
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<td>EU/2016/425, Annex I, Risk Category III (a) substances and mixtures</td>
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<td>which are hazardous to health, (c) harmful biological agents, (d)</td>
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<td>ionizing radiation, (e) high-temperature environments, (f) low-</td>
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<td>temperature environments, (h) electric shock and live working, (l)</td>
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<td>bullet wounds or knife stab.</td>
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<td><strong>PPE for armed forces and law / order enforcement</strong></td>
<td>Paragraph 8 (c).</td>
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<td>**PPE specifically designed for armed forces and in the maintenance</td>
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<td>of law and order against the risk categories listed in paragraph 8</td>
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<td>(b) and protective clothing specifically designed for armed forces</td>
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<td>and in the maintenance of law and order or other emergency response</td>
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<td>workers**</td>
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| Medical devices & textiles   | Paragraph 8 (f).  
Medical devices as specified in Regulation 2017/745;  
woven, knitted and nonwoven medical textiles as specified in Regulation 2017/745 with a minimum performance requirement of >20 cm hydrostatic head according to EN 13795; in vitro diagnostic medical devices as specified in Regulation 2017/746 as well as parts thereof | Archroma supports the derogation as proposed by SEAC.                     |
| Filtration media             | Paragraph 8 (i).  
Filtration and separation media used in high performance air and liquid applications that require a combination of water- and oil repellency for filters used in industrial settings or by professionals | Archroma supports the derogation as proposed by SEAC.                     |
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<td>Technical textiles used in transport</td>
<td>Paragraph 8 (f).</td>
<td>High performance technical textiles used for NVH (noise, vibration, harshness) insulation and engine ignition protection in means of transport and non-road mobile machinery.</td>
</tr>
<tr>
<td>Textiles: apparel, home textiles, technical textiles not covered by point 9e (e.g. outdoor upholstery, automotive)</td>
<td>None</td>
<td>Fabric upholstery for professional uses</td>
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</table>
C6 fluorinated substances for technical textiles provide **sound and heat isolation** in automotive – this includes, but is not exclusive to, the engine bay, firewall, wheelhouse and water shields.

- **Long-lasting combination of water, oil, petrol and diesel** – this combination contributes to the flame-retardant system and works, through repellence, to prevent the build-up of flammable deposits/liquids in the substrate’s lattice.

- **Only C6 side-chain fluorinated polymers can provide the appropriate surface tension able to repel both gasoline and water** (and pass the 15 min drop test).
  - 15 min drop test: with Fluorocarbon, 1 mL drop (oil/petrol/diesel/water) stays for more than 15 min on the surface. Without Fluorocarbon, there is an immediate absorption into the fabric.

- **All the alternatives** tested, e.g. waxes, plasma deposition, plasma etching, lamination, can only provide water repellency, which would lead to the accumulation of flammable liquids (e.g. kerosene, diesel fractions) in the engine, putting passenger safety at risk.

- C6 is required to pass **technical standards** e.g. ISO 14419 (oil, level 3 or 4 required), PV 3922 – Planar Fabrics and Molded Parts: oil and water repellent behaviour (Volkswagen / Audi), Fiat 50496/01 – Water and oil repellent properties of occupant compartment trim fabrics and ensure a **high level of performance / safety**.
High performance technical textiles in transport and NRMM

Archroma’s proposed derogation wording: High performance technical textiles used for NVH (noise, vibration, harshness) insulation and engine ignition protection in means of transport and NRMM.

- The term high-performance has been used in the Report on the use of PFAS in TULAC (Textiles, Upholstery, Leather, Apparel and Carpets) in the context of the all PFAS restriction. High-performance is defined as multiple technical functions, including:
  - Water repellence;
  - Oil repellence;
  - Stain-resistance/soil protection; and
  - Flame retardancy
- Based on our knowledge, these properties can be measured according to the following list of standards:
  - ISO 4920 / AATCC 22: Water repellency
  - AATCC 118 / ISO 14419: Oil repellency
  - AATCC 130: Stain resistance / soil protection
- Regarding technical textiles, the European Economic and Social Committee on Growth Driver Technical Textiles included the following definition in its Opinion on Growth Driver Technical Textiles:
  “Textile fibres, materials and support materials meeting technical rather than aesthetic criteria, even if, for certain markets, both types of criteria are met. Technical textiles bring a functional answer to a wide range of specific requirements: lightness, resistance, reinforcement, filtration, fire-retardancy, conductivity, insulation, flexibility, absorption and so on”
- The derogation wording should be extended to all means of transport, e.g. cars, commercial vehicles, aircrafts, fork-lifts, excavators, etc. in line with the definitions provided in Directive 2011/65/EU and to NRMM.
Fabric upholstery for professional uses

C6 fluorinated substances for upholstery textiles allow to:
- Obtain **repellency against contaminants** such as bodily fluids (blood, sweat, mucous) and stains, that could otherwise lead to fertile propagation of unsafe microorganisms.
- Ensure **durability** and **longer lifespan**.

- The protective function of an upholstery fabric is at minimum tested by the following accepted industry tests:
  - **Dynamic Water Repellency – Spray Test (AATCC 22 - EN ISO 4920)**
    - Rating: 0 – 100, Minimum accepted rating for protected upholstery: 80
    - Water Alcohol Repellency Test (AATCC 193) gives indication to protective function against waterborne and polar soils and stains
      - Rating 0-8, Minimum accepted rating for protected upholstery: 6
  - **Oil Repellency Test (AATCC 118)** gives indication to protective function against oily stains and non-polar soils and stains
    - Rating 0-8, Minimum accepted rating for protected upholstery: 6

- Hydrophobic Silicone, Waxes and Paraffins, Polyacrylates, Polyurethanes, Melamine Derivatives, Zinc, Aluminium and Zirconium compounds have been tested and can **only provide water repellency**.
- They also **increase burn and flammability behaviour** of the treated upholstery and would require additional flame retardants to fulfil legal flammability requirements (EN 1021 – 1/2)
C6 TRANSPORTED INTERMEDIATES
General Concerns for C6 intermediate production in EU

- The resulting C6 SFPs would be compliant with the EU thresholds.
- If transport is not allowed:
  - Increased reliance on non-EU producers with likely no SCC during production process
  - The only alternative treatment would be incineration in the EU

- We see a possible contradiction if a C8 intermediate could benefit from exempted uses under the C8 restriction, while a C6 intermediate exceeding the thresholds could not
- Similar rationale applies to C9-C14 restriction
Review of thresholds for PFOA / C9-C14 and PFOA / C9-C14 -related substances in C6 transported intermediates

- In order to limit the applicability of these thresholds, we would suggest it applies only to intermediates that are transported for the purpose to reduce the concentration of PFOA- and C9-C14- related substances below the limit of
  → Similar approach as for PTFE micropowders that are transported for the purpose of reducing the concentration of PFOA

- At the same time, based on its most recent analytical results, Archroma recommends lowering the threshold for PFOA and PFOA related substances in C6 transported intermediates to

- **Analytical tests for C9-C14 are ongoing.** Archroma will propose a lower threshold for C9-C14 as soon as the analytical results become available.
RESTRICTION PROPOSAL ON ALL PFAS, ITS SALTS AND RELATED SUBSTANCES
All PFAS

Interplay of the PFHxA restriction with the universal PFAS restriction

C6 intermediates

Analytical methods & false positive cases
CONTACT: