DBDPE “IS” SVHC – Supply Chain Implications

Textile Flame Retardants Academic and Industrial Application Seminar

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12/12/2025, Shenzhen - China

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CTF2000 FLAMAWAY GROUP — ZELE - BELGIUM

Texchem FLAMAWAY GROUP — ROCHDALE - UK

CTF GMBH 2000 FLAMAWAY GROUP — KAARST - GERMANY

FLAMAWAY CHINA — SIP, JIANGSU - CHINA

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Agenda

A) Company & Market(s)

B) DBDPE "IS" SVHC - Supply Chain Implications

I) Legal (EU Reach)

-2008-'12 - Other [BrFR's] listed SVHC - Lessons from the past…

-2023 - ECHA's Regulatory Strategy for FR's

-2025 - DBDPE - Update (SVHC Process)

-Implications EU Reach = Communication obligations EU/EEA

1 Flamaway (formulator) - adapt SDS, section 3!

2 Supply Chain - communication min. 'name' if > 0.1% w/w

3 SCIP - Substances of Concern In articles as such or in complex objects (Products) - Waste Directive

II) Non-legal (Worldwide market needs)

-2009 - Responsible Use of Chemicals – VECAP principles

-Impact Oeko-Tex

-Impact ZDHC = None (ZDHC only for halogen free FR's)

III) Substitution DBDPE? Case by case!

C) Conclusion

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Flamaway Group
Belgium (HQ), China, Germany, UK

- Development & production of **FLame Retardant formulations** for textile industry (**80%** of the activity of the Flamaway Group)
- Chemical plants ISO9001:2015 & ISO14001:2015 certified
- Member of **Essenscia**, Brussels since 2007; Member of **Pinfa (Cefic)**, Brussels since 2016
- Close relationship with **BSEF, Oeko-Tex** Zürich, **Centexbel** and **ZDHC** Zürich
- Global sales: EU, UK, Turkey, Asia, South-America, Australia,…
- In EU: 1 of the 6 main suppliers

Flamaway Group	2006	2024	Evolution
Turnover (€)	± 8,4 million	± 35 million	x 4
Volume (tonnes)	± 6.500	± 13.500	x 2
Employees	± 15	± 50	x 3
R&D/Lab	± 4	± 16	x 4




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Customers and Markets

- **Home & Contract Textiles** (1. upholstery; 2. bedding – mattress ticking,…; 3. decoration – window, ceiling,…)
- Construction & Outdoor (building & construction, tenting,…)
- Transportation (automotive, aviation,…)
- Apparel (PPE, Military,…)
- **Textile FR Industry = Complex (legal & non legal requirements) & challenging (R&D, time to market, FR legislation) industry**

flamaway®
a registered trademark of CTF2000

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Other [BrFR's] listed SVHC's 2008-'12

Lessons from the past…

- **SVHC listing of HBCD (2008) and Deca-BDE (2012)**

Flame Retardant [FR]	Name	SVHC (< PBT/vPvB)	Note
Brominated [BrFR]	HBCD	2008	@ECHA PPT CTF2 November 2017
Aromatic Brominated [BrFR]	Deca-BDE	2012	

- **Lessons learned < ECHA presentation 2017 – Experiences in substitution**

!!!!!!!! *Substitution starts with **SVHC listing**, before authorization [Annex XIV]
*Substitution involves **complete supply chain**
*Substitution often from one [BrFR] to another [BrFR], though not always
*Substitution/phase-out quite quickly (< 2-3 years 100% phased out)
*Substitution = 'Case by Case !' & 'neither smooth, cheap or sure !'
*Substitution = Time and money consuming

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ECHA's Regulatory Strategy for FR's

Which FR's are relevant ? Released March 2023

- About "Halogen Containing [BrFR] and [ClFR]"

Flame Retardant [FR]	ECHA's Regulatory Strategy for FR's → Restrictions??
Aromatic Brominated [BrFR] Eg DBDPE!	ECHA proposes "a wide and generic RESTRICTION" (under Reach) for all aromatic brominated FRs (with conditions), but with further preparatory work needed (eg about waste) before a restriction dossier is developed.
Aliphatic Brominated [BrFR]	calls for more data on aliphatic brominated FR's (HH & ENV hazards seem more diverse compared to aromatic BrFR's), which will be reassessed with possible RESTRICTION processes not before 2025.
Chlorinated [ClFR]	Chlorinated FR's are considered to be already RESTRICTED or regulatory measures are already initiated.

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ECHA's Regulatory Strategy for FR's

Which FR's are relevant ? Released March 2023

- About "Halogen Free Flame Retardants", [PIN-FR] (Phosphorus, Inorganic and Nitrogen flame retardants) – Pinfa, sector group of Cefic (CTF2000 is member)
  → ECHA mentions in some cases "NO REGULATORY ACTION"

Flame Retardant [FR]	ECHA's Regulatory Strategy for FR's → Restrictions??
Some organophosphorus [PIN-FR]	ECHA calls for more data on some organophosphorus FR's. When more data is available (expected 2024), these groups will be reassessed with possible RESTRICTION processes not before 2025.
Some organophosphorus/ several groups of [PIN-FR]	The ECHA Strategy identifies several groups of PIN FR's as requiring NO REGULATORY ACTION, or as of no significant hazard based on current information, eg inorganic phosphorus FR's, but this also counts for some organic phosphorus FR's
Inorganic [PIN-FR]	For inorganic phosphorus FR's, NO REGULATORY ACTION needed: phosphates, polyphosphates, inorganic phosphinates, inorganic phosphonates and phosphorus. Other inorganic FRs as ATH there is no suggestion of risk.

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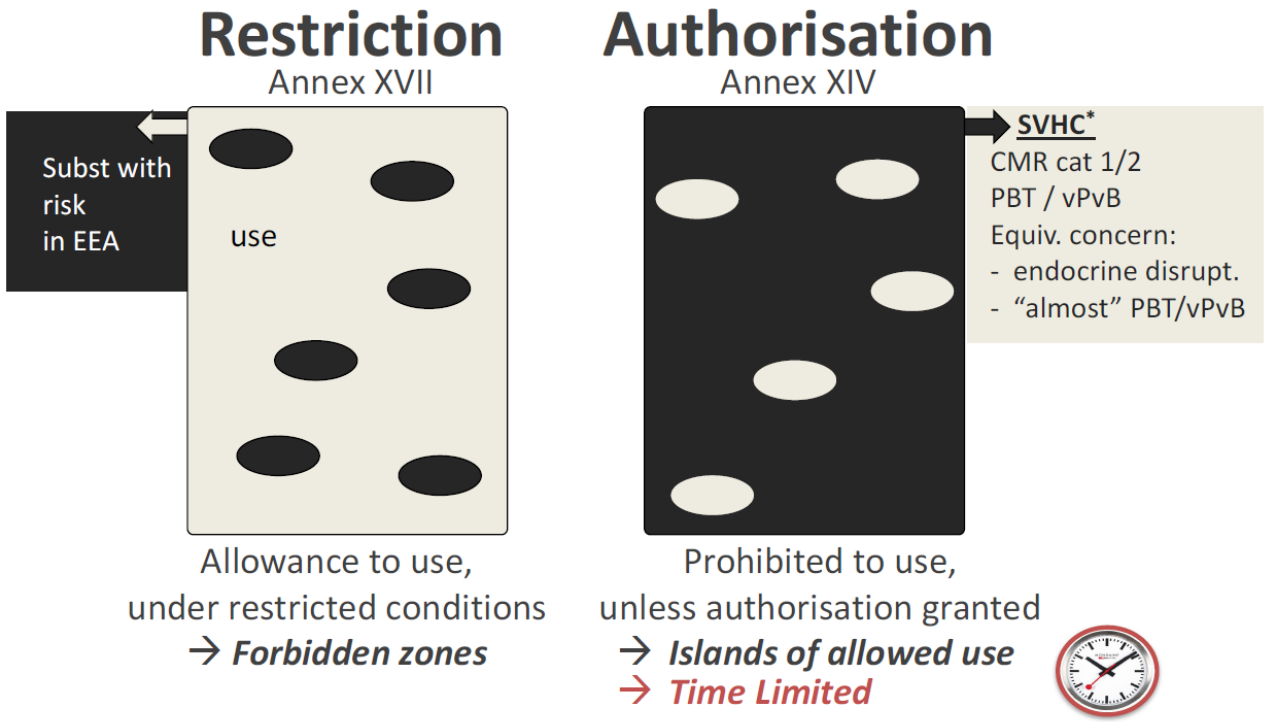
ECHA FR Strategy for Aromatic [BrFR's]

What's the meaning of 'wide & generic restriction'? See 'black zone'



*SVHC: **S**ubstances of **V**ery **H**igh **C**oncern

- It's obvious that the ultimate future goal of "ECHA's FR Strategy 2023" was to make the 'forbidden zone' (= black zone) that big for Aromatic [BrFR's], that in practice they could not be used anymore at all... !!

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ECHA FR Strategy for Aromatic [BrFR's]

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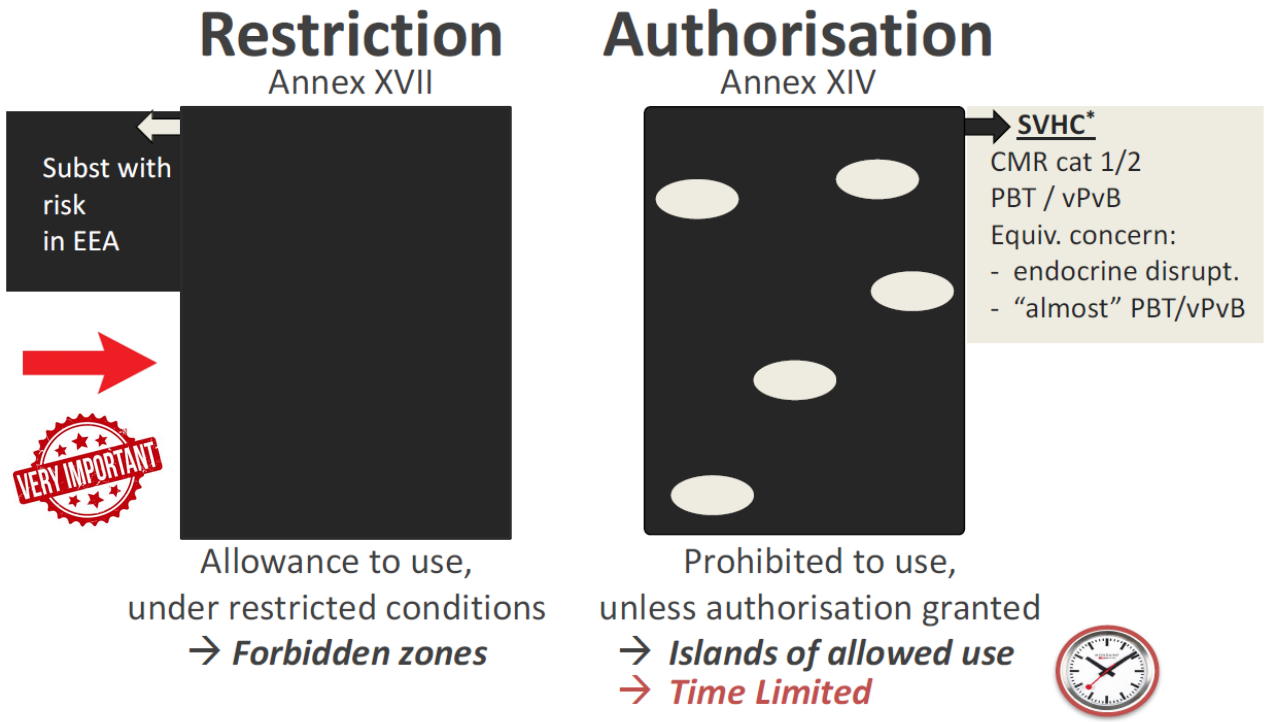

*SVHC: **S**ubstances of **V**ery **H**igh **C**oncern

- Future goal of "ECHA's FR Strategy 2023" for a 'wide & generic restriction' for Aromatic [BrFR's] would have looked like this... !!

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DBDPE - Update (SVHC Process)?

An overview (DBDPE = CAS 84852-53-9, an Aromatic [BrFR])

- On **May 28, 2025**, the European Chemical Agency **(ECHA) announced** the receipt of **an intention** from the **Swedish** Competent Authority to submit an Annex XV dossier proposing the identification of 1,1'-(ethane-1,2-diyl)bis[pentabromobenzene] (**DBDPE**) (EC 284-366-9, CAS 84852-53-9) as a Substance of Very High Concern (**SVHC**).
- To facilitate the potential identification of DBDPE as an SVHC, **ECHA announced** plans to initiate an **SVHC consultation process**. The process was launched on **June 27**, 2025, with a deadline of **August 11**, 2025, for comments. **BSEF**, the International Bromine Council, collaborated to submit scientific comments for the open consultation. **Flamaway Group as DU has been involved in communication to MS.**

- The **member state committee** meeting MSC91 on **October 9**, 2025, **decided unanimously** to make **DBDPE an SVHC,** despite of all scientific evidence and witness provided by BSEF and an external expert. This was very unfortunate, but was **a fact**.

- **Implication? SVHC listing** of DBDPE **November 5th 2025**. Despite SVHC listing, DBDPE and/or DBDPE containing formulations **can and will still be placed on the market!! Potential (future) restrictions not expected first years to come!!**

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EU/EEA Legal communication obligations

An overview

- **Step 1 - Flamaway Group - SDS update (by CTF2000 NV):** Flamaway Group **updates its SDS's** (especially section 3, mentioning DBDPE, from… till… %);
- **Step 2 – EU/EEA Supply Chain - communicating minimum the name:** articles (eg 'treated textiles') containing DBDPE in a concentration greater than 0.1% (weight/weight); As a minimum the name of the substance in question (=**Decabromodiphenyl ethane**) has to be **communicated**.
- See link ECHA: https://echa.europa.eu/regulations/reach/candidate-list-substances-in-articles/communication-in-the-supply-chain; Directly after a substance is included in the Candidate List, suppliers of articles which contain such a substance in a concentration above 0.1% (weight by weight) have to provide enough information to allow the safe use of the article to the recipients of the article. In this case, recipients are **industrial or professional users and distributors**, but not consumers. As a minimum the name of the substance in question has to be communicated.

Consumers can request similar information. The supplier of the article has to provide this information within 45 days, free of charge.

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EU/EEA Legal communication obligations

An overview

- **Step 3 – EU/EEA Supply Chain – SCIP obligation:** See link ECHA: https://echa.europa.eu/scip; SCIP is the database for information on **S**ubstances of **C**oncern **I**n articles as such or in complex objects (**P**roducts) established under the Waste Framework Directive (WFD).
- *"Companies supplying articles containing substances of very high concern (SVHCs) on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market have to submit information on these articles to ECHA, as from 5 January 2021. The **SCIP** database ensures that the information on articles containing Candidate List substances is available throughout the whole lifecycle of products and materials, including at the waste stage. The information in the database is then made available to waste operators and consumers."*
- **Note:** ECHA notification of DBDPE for our customers is not necessary, following the exemption mentioned on the ECHA website (DBDPE is already Reach registered in EU for its use as flame retardant)

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Responsible Use of Chemicals

VECAP principles – Certification in 2009, Cefic Award in 2015

- VECAP (Voluntary Emissions Control Action Programme)
- Minimization of emissions of [BrFR] ➔ VECAP (Voluntary by Industry)
  - [BrFR] Producer
  - **[BrFR] Formulator (CTF2000 NV): 1st Certified Formulator worldwide '09**
  - [BrFR] Textile Coater
  - Example Best Practice (still in use 'TODAY'): Reuse of concentrate of Water Purification System (as component in commercial product: 'Addiflam MKS')

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Market certification 1: Oeko-Tex

Oeko-Tex List of Accepted Chemical Products

OEKO TEX® STANDARD 100

- Standard 100 by Oeko-Tex®

*one of the world's best-known labels for textiles tested for harmful substances (in principle, for all textile articles in every stage of processing)

*The OEKO-TEX® laboratory tests include around 100 test parameters and take into account the intended use of the textiles. The more intensive the *skin contact* of a textile product, the stricter the limit values for each product class.

Product class I: Articles for babies and toddlers (eg underwear, bed linen, socks,…)
Product class II: Articles used close to (direct contact with) the skin (eg underwear, bed linen, socks…)
Product class III: Articles used away from (no direct contact with) the skin (eg jackets, coats,…)

Product class IV: (Decoration) Materials (eg upholstery, curtain, tablecloth,…) → [BrFR /Sb2O3] only here!

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Market certification 1: Oeko-Tex

List contains [BrFR] / Sb (class IV) and [PIN] formulations

OEKO TEX® STANDARD 100

- General philosophy = FR (formulations) not allowed for standard 100, unless listed on the Oeko-Tex 'List of Accepted Products'
- To achieve a class level for Standard 100, you need an FR formulation of minimum the same class
- See: https://www.oeko-tex.com/en/apply-here/active-chemical-products

[FR] Formulation	CTF2 Oeko-Tex formulations	Class	Limitation
[BrFR]-Formulation Note! DBDPE currently allowed	11 (33 %)	IV	Annex 4 Std 100: Because of the use of Sb2O3 as synergist, **limited to class IV** [only class IV has no limit of Sb as extractable (heavy) metal]
[PIN-FR]-Formulation	22 (67 %)	IV I-IV	/

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Implications DBDPE as SVHC for Oeko-Tex?

Oeko-Tex – List of ACP's and Standard 100

- At this moment it is **not 100% clear/decided** what will happen exactly (and when), but **it's clear it won't be 'business as usual'**. We describe a very realistic scenario after a first communication with Oeko-Tex: The listing of DBDPE might/will be followed by an inclusion of DBDPE in the Oeko-Tex RSL (Restricted Substances List), which means DBDPE will be maximum allowed for 0.1% (weight/weight). A next update of the RSL is to be expected **April or June 2026 to become effective**.
- An inclusion of DBDPE in the Oeko-Tex RSL with a maximum of 0.1% (w/w) DBDPE will have 2 important implications, expected **April or June 2026 to become effective** :

  1)For the **Oeko-Tex list of Accepted Products** containing DBDPE

  2)For **Standard 100-certification** of articles treated with DBDPE-formulations

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Implications DBDPE as SVHC for Oeko-Tex?

Expected April or June 2026 to become effective

OEKO TEX® STANDARD 100

- 1) Implications for the **Oeko-Tex list of Accepted Products** = list of Oeko-Tex approved Flame Retardants, see https://www.oeko-tex.com/en/apply-here/active-chemical-products

→ This list of (all) Class IV Flame Retardants containing DBDPE will no longer be usable in practice **for OEKO-TEX** (**Which products?** Tip: See section 3 of your SDS; if it contains antimony trioxide,…)

→ (Most) probably Oeko-Tex will even remove these products (11 or 33% for CTF2000/Flamaway Group) from the list

- 2) Implications for **Standard 100-certification** of articles treated with DBDPE-formulations

→ The Standard 100 certificates containing DBDPE would be **valid until they have to be renewed** (so a **maximum** of 1 year transition time, **latest** around May 2027).

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Ø ZDHC
Zero Discharge of Hazardous Chemicals

Market certification 2: ZDHC

No compliancy possible with halogenated FR's

- ZDHC – Roadmap to Zero programme: paving the way for sustainable chemicals management within the apparel / fashion / textile industry (worldwide initiative of > 160 stakeholders, started in 2011), see https://www.roadmaptozero.com/
- ZDHC – MRSL Manufacturing Restricted Substances List (currently version 3.1); lists eg Halogenated FR's (both [BrFR] & [ClFR]), Sb, PFAS,… → Not allowed!

*Formulation Limit MRSL (eg CTF2000) - These limits ban intentional use while allowing for reasonable expected manufacturing impurities.

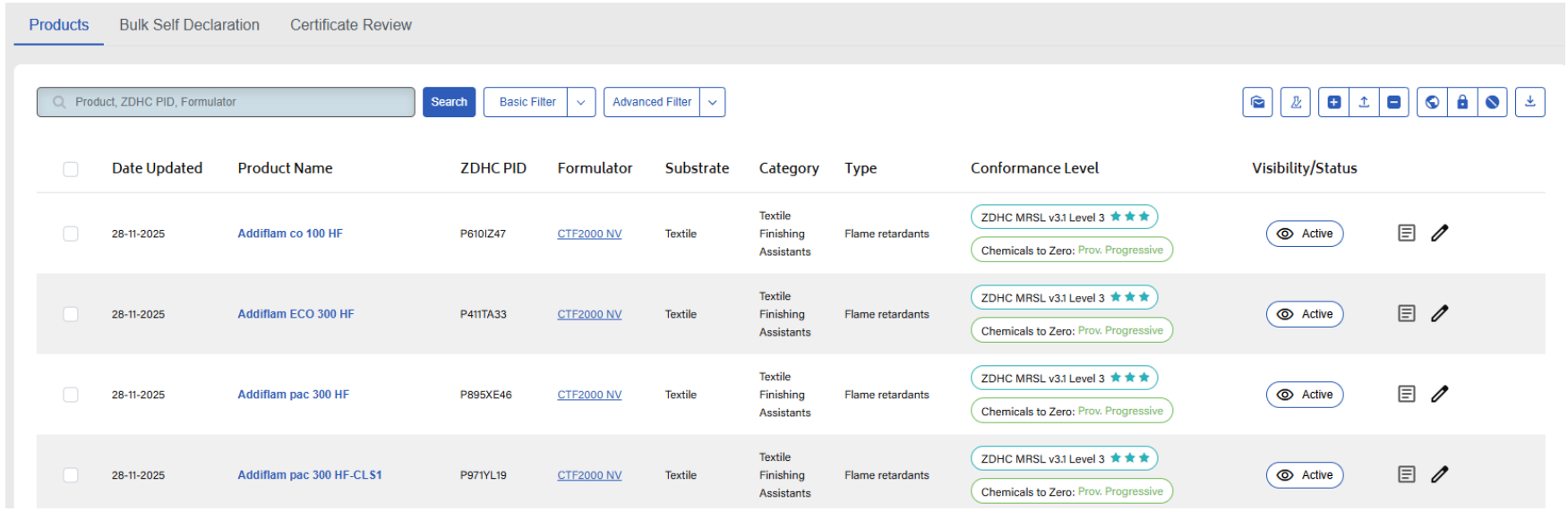
*Supplier Guidance MRSL (Customers CTF2000) - No intentional use in facilities that process raw materials and manufacture finished products.

[FR] Formulation	CTF2 ZDHC formulations	Limitation
[BrFR]-Formulation [ClFR]-Formulation	0	ZDHC MRSL … Halogenated Flame Retardants 'NOT ALLOWED in ZDHC'
[PIN-FR]-Formulation	12 (100 %)	/

Market certification 2: ZDHC

Eco-PassPort as a means to achieve ZDHC compliancy

- ZDHC: There are (as formulator) different ways to achieve ZDHC-compliancy (eg Bluesign, tests @ lab, Oeko-Tex Eco-PP,…).
- CTF2000 NV has chosen for Eco-PassPort, because it is part of a (well known) Oeko-Tex system @ CTF2000 NV. The Eco-PassPort has to be renewed yearly @ Centexbel → yearly update Eco-PP on the ZDHC Gateway (a supply chain platform). Beneath: Printscreen with selection of some ZDHC approved products;



Date Updated	Product Name	ZDHC PID	Formulator	Substrate	Category	Type	Conformance Level	Visibility/Status
28-11-2025	Addiflam co 100 HF	P610IZ47	CTF2000 NV	Textile	Textile Finishing Assistants	Flame retardants	ZDHC MRSL v3.1 Level 3 ★★★ Chemicals to Zero: Prov. Progressive	Active
28-11-2025	Addiflam ECO 300 HF	P411TA33	CTF2000 NV	Textile	Textile Finishing Assistants	Flame retardants	ZDHC MRSL v3.1 Level 3 ★★★ Chemicals to Zero: Prov. Progressive	Active
28-11-2025	Addiflam pac 300 HF	P895XE46	CTF2000 NV	Textile	Textile Finishing Assistants	Flame retardants	ZDHC MRSL v3.1 Level 3 ★★★ Chemicals to Zero: Prov. Progressive	Active
28-11-2025	Addiflam pac 300 HF-CLS1	P971YL19	CTF2000 NV	Textile	Textile Finishing Assistants	Flame retardants	ZDHC MRSL v3.1 Level 3 ★★★ Chemicals to Zero: Prov. Progressive	Active

Implications DBDPE as SVHC?

ZDHC & GRS

- **None (easy)!** ZDHC does not allow halogenated FR's, so **no DBDPE is used** !
- Eco-Passport of Centexbel is recently renewed, and updated on the ZDHC Gateway.
- **CTF2000 NV** has achieved since October 2024 the **highest level for ZDHC**, which is **ZDHC Level 3; ZDHC Level 3** (Plant level): What does it mean?
  - Level 1 = CAS screening and analytical verification + Self Asssessment
  - Level 2 = Level 1 + On-site visit
  - Level 3 = Level 2 + Chemical Hazard Assessment (CHA)
- **Note:** GRS 4.0 (Section D, Chemical requirements, p34); Exclusion of chemicals dangerous to HH and/or ENV by Reach, H codes (Table A) or non-compliant with ZDHC MRSL, **so SVHC listing of DBDPE has no direct GRS implications, as DBDPE already wasn't ZDHC MRSL compliant.**

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Substitution of DBDPE ?

Substitution easy? ‘Case by Case !’ & ‘neither smooth, cheap or sure !’

H_2O + FR

Water-based polymer
- Polymer A, B, C…

Others
…

Additives
- O
- P
- Q
- R
- S
- …

Change ONE component = Change COMPLETE formulation!

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Substitution of DBDPE ?

Future Possibilities (theoretically… see Remark!)

- (LT) Sustainable = In line with "ECHA FR Strategy 2023" → no Aromatic [BrFR];
  Note: polymeric [BrFR] remain an option
- [PIN-FR] formulations (if) in line with ECHA FR Strategy
- [Bio-FR]?
  *__Short term__: less or not usable in the short term. A lot of R&D is going on (see literature) eg about derivatives of phytic acid, chitosan, lignin, … at different universities & worldwide high level technological institutions. However, often/still at low TIER/TRL (Technology Readiness Level) level; **Flamaway is also involved** in some long term R&D projects with several partners.
  *__Long term__: within X years, widely commercially available
- **Remark: "The proof of the pudding is in the eating!" – Case by Case! Flamaway Group will help you further!**
- This DBDPE substitution will become **more complex** than former substitutions!

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Conclusion

- **DBDPE "IS" SVHC – Supply Chain Implications**

*DBDPE is included since 05/11/2025 on the Candidate list of Substances of Very High Concern

*Please evaluate the consequences for your own product portfolio / supply chain

*Legal compliancy (in EU/EEA): supply chain will have to comply with the legal communication obligations

***If** Oeko-Tex is important for your supply chain, you'll have to adapt your Oeko-Tex listed FR in the relative 'short term', as your Standard 100 certificate will become invalid latest within approximately 1,5 y.

***If** Oeko-Tex isn't important for your supply chain, you will be able to use DBDPE in EU/EEA still for several years. However, keep in mind your use will end too in EU/EEA in the coming future.

*If ZDHC is important for your supply chain, you can have a good night's sleep. This means your product doesn't (shouldn't) contain DBDPE anyway.

*Flamaway Group **has been, is and will remain** a **strong partner in sustainability!**

*Long term Experiences with R&D, substitution, regulatory affairs and sustainable market needs (Oeko-Tex, ZDHC, …)

*An excellent experienced team of technical sales & lab managers to guide you further!

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Q&A

- Many thanks for your attention!

- In case of further questions:

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