Welcome to

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ORGANIZED BY ATA



Chemical Regulations Reshaping the Textile Industry

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Huber Advanced Materials

HUBER ADVANCED MATERIALS

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Regulations are reshaping textile innovation

CIRCULARITY REGULATIONS

U.S. state and EU laws
Producer responsibility
Waste diversion and ecodesign

PERFORMANCE MATERIALS

Medical-device and flame-retardant textiles must meet additional end-use standards



TEXTILE DESIGN & INNOVATION

CHEMICAL RULES & RESTRICTIONS

PFAS and flame retardants
Other restricted chemicals
U.S. states, TSCA and REACH

OTHER DRIVERS

Voluntary programs can also influence design: recycling partnerships and recycled-content standards

Agenda

01 Regulatory pressure

02 Chemical pressure

03 PFAS restrictions

04 Circularity pressure

05 Design pressure



REGULATORY PRESSURE

01 United States + European Union



TSCA delays slow innovation

New Chemicals Program: statutory timing versus review outcomes

90 days

Statutory review period

Basic review period established under TSCA

>1 year

Review time for most cases

Some reviews reportedly extend beyond 2 years

~70%

Restricted or withdrawn

Since 2016: ~1,200 restricted and ~500 withdrawn of ~2,500 submissions

WHY THE CLOCK EXTENDS

1. **Risk determination**
2. **Information gaps**
3. **Negotiated controls**

Long reviews can still end with restrictions

Source: EPA New Chemicals Program statistics

How EU Chemicals Policy Reaches Textiles

From policy to controls and textile decisions

POLICY DIRECTION

European Green Deal

Climate neutrality, circularity and zero pollution

CHEMICALS STRATEGY

Chemicals Strategy for Sustainability

Harmful chemical groups and safer alternatives

LEGAL FRAMEWORK

EU REACH

Framework for binding chemical controls

REACH MECHANISMS

SUBSTANCES OF VERY HIGH CONCERN (SVHC)

High-hazard flag and phase-out pressure

GROUPING

Related chemicals assessed together

AUTHORIZATION & RESTRICTION

Limits or bans

Policy sets direction. Legal scope determines potential impact.

Textile impact



WHAT CHANGES IN PRACTICE

Chemical data • Material selection
Substitution • Market access

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CHEMICALS PRESSURE

02 State regulations + Flame retardants + other restricted substances



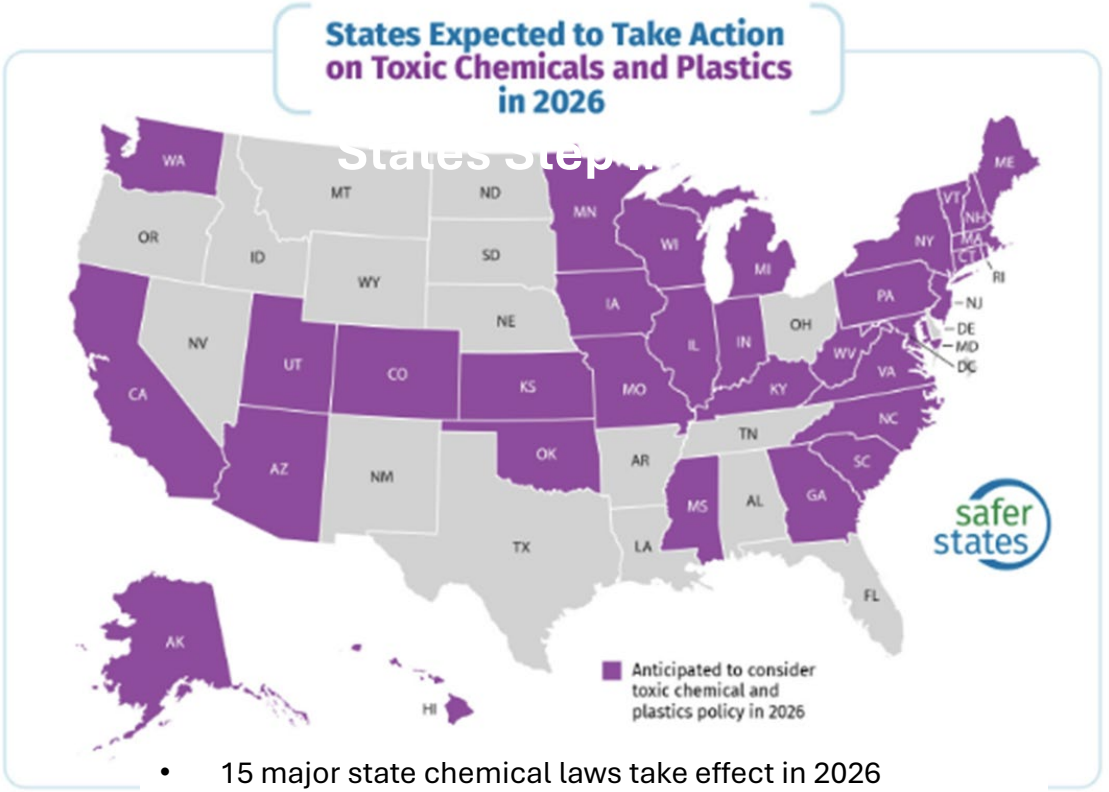
Federal Rollbacks → State-Level Regulation: A Fragmented U.S. Landscape

As federal chemical regulation stalls or retreats, U.S. states are stepping in

Federal Action Stalls/Retreats

- Slower TSCA processes
- Lacking, delayed or rescinded PFAS actions
- Regulatory uncertainty for industry

Policy Vacuum



- 15 major state chemical laws take effect in 2026
- 33 states considering 275+ chemical & plastics policies

Companies must navigate overlapping federal and state requirements.

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https://www.saferstates.org/press-room/expansive-pfas-protections-take-effect-in-2026-as-states-lead-on-chemical-safety/

State flame-retardant restrictions in textiles

WASHINGTON

Ban: 1 Jul 2017
Products: Children's products, residential upholstered furniture.
FR Restrictions: TDCPP, TCEP, decaBDE, HBCD, additive TBBPA. >1,000 ppm in any component.

CALIFORNIA

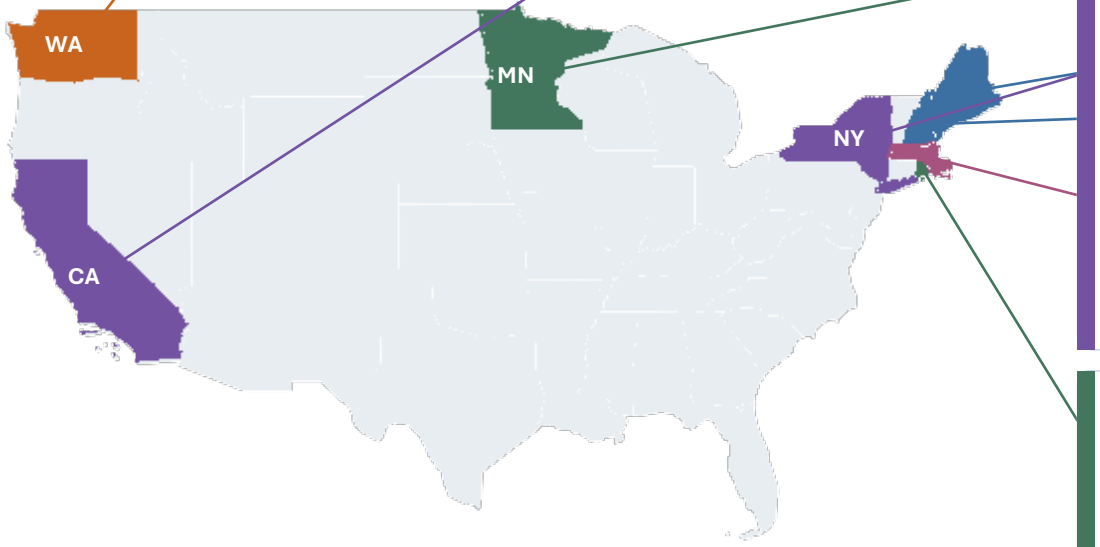
Ban: 1 Jan 2020
Products: Juvenile products, upholstered furniture, mattress foam.
FR Restrictions: Halogenated, P-/N-based, ATO nanoscale + listed FRs/synergists. >1,000 ppm.

MINNESOTA

Ban: 1 Jul 2021 / 2022 (mfr. / retail)
Products: Children's products, residential upholstered furniture/textiles, mattresses.
FR Restrictions: Organohalogenated FRs. >1,000 ppm.

MAINE

Ban: 1 Jan 2019
Products: New residential upholstered furniture, coverings and cushioning.
FR Restrictions: Any chemical FR. >0.1%.



NEW YORK

Ban: 1 Dec 2024 / 2025*
Products: Upholstered furniture, mattresses. *Replacement components: 2025.
FR Restrictions: Halogenated, P-/N-based, nanoscale.

NEW HAMPSHIRE

Ban: 3 Sep 2019
Products: Residential upholstery coverings and cushioning.
FR Restrictions: Any chemical FR. >0.1%.

MASSACHUSETTS

Ban: 31 Dec 2021**
Products: Bedding, carpets, window treatments, children's goods, residential upholstery.
FR Restrictions: 11 named FRs and synergists including chloro- and bromo-FRs, ATO. >1,000 ppm.

RHODE ISLAND

Ban: 1 Jan 2020
Products: Residential upholstered furniture/bedding.
FR Restrictions: Non-polymeric organohalogen FRs. ≥1,000 ppm.

P-/N-based = organophosphorus / organonitrogen.
**MA: pre-31 Dec 2021 inventory exempt. Rules: 9 May 2025.
Selected bans. Exemptions and fire-performance rules apply.

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Beyond PFAS: state chemical duties for textiles

Reporting, exposure warnings and restrictions are different duties.

State / program	Covered scope	Main duty
California Proposition 65	Listed-chemical exposure from textile components	WARNINGS Where exposure requires them
Washington Children's Safe Products Act	Children's clothing and footwear	LIMITS + ANNUAL REPORTING Check state and federal scope
Oregon Toxic-Free Kids Act	Covered children's textiles above thresholds	REPORTING + TARGETED REMOVAL Removal or waiver for certain products
Vermont Chemical Disclosure Program	Listed chemicals in accessible components of children's products	DISCLOSURE Above applicable thresholds

Supplier chemical data supports accurate disclosure and reporting.

Selected enacted programs, reviewed 20 Oct 2026. Scope, thresholds and exemptions vary. Separate flame-retardant restrictions also apply.

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PFAS RESTRICTIONS

03

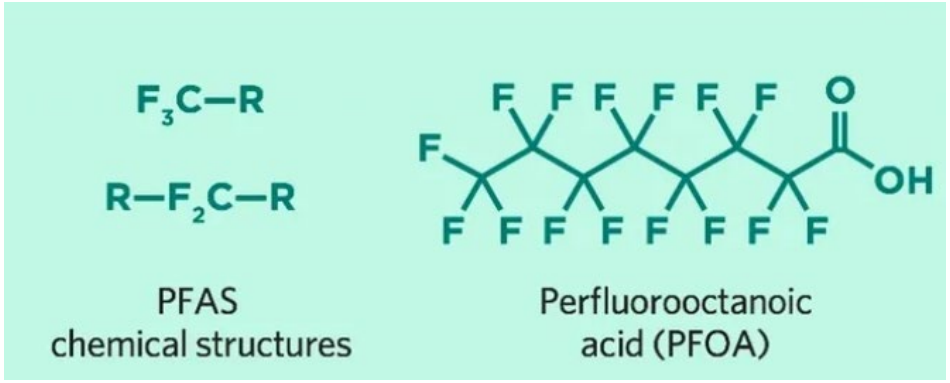
State restrictions + federal reporting + European Union proposals



What is PFAS?

Per- and polyfluoroalkyl substances





Strong carbon–fluorine bonds contribute to persistence

Why PFAS are used in textiles

- Repellency – oil, water and stains (outerwear, upholstery, carpet)
- Durability – strong carbon–fluorine bond withstands wear and washing
- Heat and chemical resistance – protective and industrial fabrics

Why regulators focus on PFAS

- Extreme persistence: do not readily break down
- Some PFAS accumulate in the environment and people
- Certain PFAS pose health and environmental risks

PFAS illustrate where chemical regulation is heading:

Class-based, product-focused and lifecycle-driven

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PFAS at the Federal Level in the US

Currently - no regulation at the Federal level for PFAS (as a category); select PFAS are regulated

There is a one-time PFAS reporting rule: its start date is final; revisions to its scope are still pending

Reporting scope	The 2023 TSCA rule covers manufacture/import during 2011–2022, including articles, R&D, by-products, impurities, etc.
April 2026 Final rule	Moved the reporting start date: now scheduled to open 31 Jan 2027 or 60 days after the revised rule takes effect, whichever is earlier.
Proposed changes	**NOT YET FINAL**. Proposed Nov 2025: exemptions such as R&D, impurities, imported articles remain pending. Estimated to finalize early 2027

TSCA §8(a)(7) / 40 CFR Part 705 / Status reviewed 16 Oct 2026



State PFAS requirements at a glance

WASHINGTON

2026: indoor furnishings

2027: apparel and accessories

Reporting starts Jan 2027

MINNESOTA

2025: indoor textile furnishings

Intentionally added PFAS

Report: 15 Sep 2026

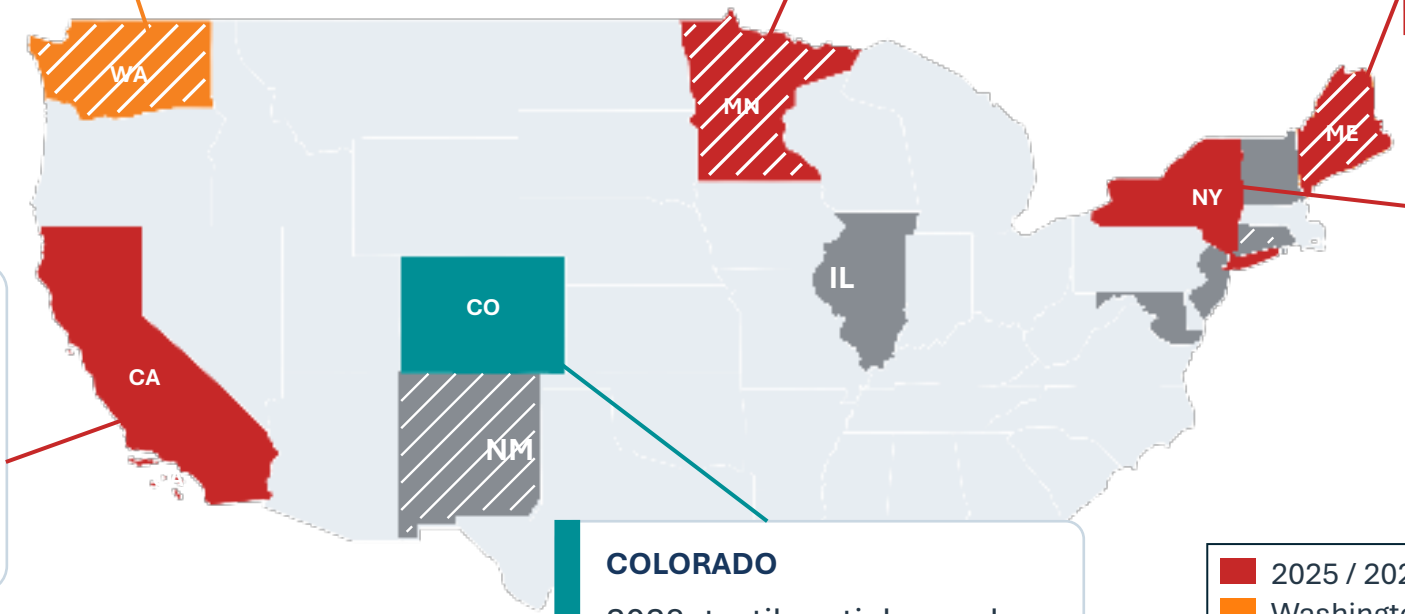
Approved extension: 14 Dec 2026

MAINE

2026: textiles and upholstered furniture

Intentionally added PFAS

Reporting: approved unavoidable uses only



CALIFORNIA

2025: textile articles

Severe-wet apparel: disclosure, then 2028 ban

NEW YORK

2025: apparel with intentionally added PFAS

2028: severe-wet outdoor apparel

COLORADO

2028: textile articles and severe-wet outdoor apparel

- 2025 / 2026 textile bans
- Washington phase-in
- Colorado textile ban: 2028
- Additional laws: dates vary
- Reporting / notification*

Selected restrictions. Exceptions apply.

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Updated PFAS Restriction Proposal in the EU

Proposed derogations, not enacted exemptions. Eligibility depends on the exact use and conditions.

FEB 2023
Original universal PFAS proposal

AUG 2025
Amended proposal

2026
Committee review
SEAC opinion expected end-2026*

THEREAFTER*
Commission proposal and Member State vote

POTENTIAL IMPACT ON TEXTILE PRODUCTS

- Professional PPE: proposed 12-year derogation + 18-month transition. Qualifying use and certification required.
- Recycled textiles: proposed 12-year derogation + transition. Traceability conditions apply.
- Technical textiles: continued-use options under review. No blanket exemption.
- Consumer apparel, footwear and camping: no specific derogation proposed. General 18-month transition.

Existing substance-specific PFAS (PFHxA, PFOS, PFOA) restrictions already apply

*Future timing is estimated

CIRCULARITY PRESSURE

04

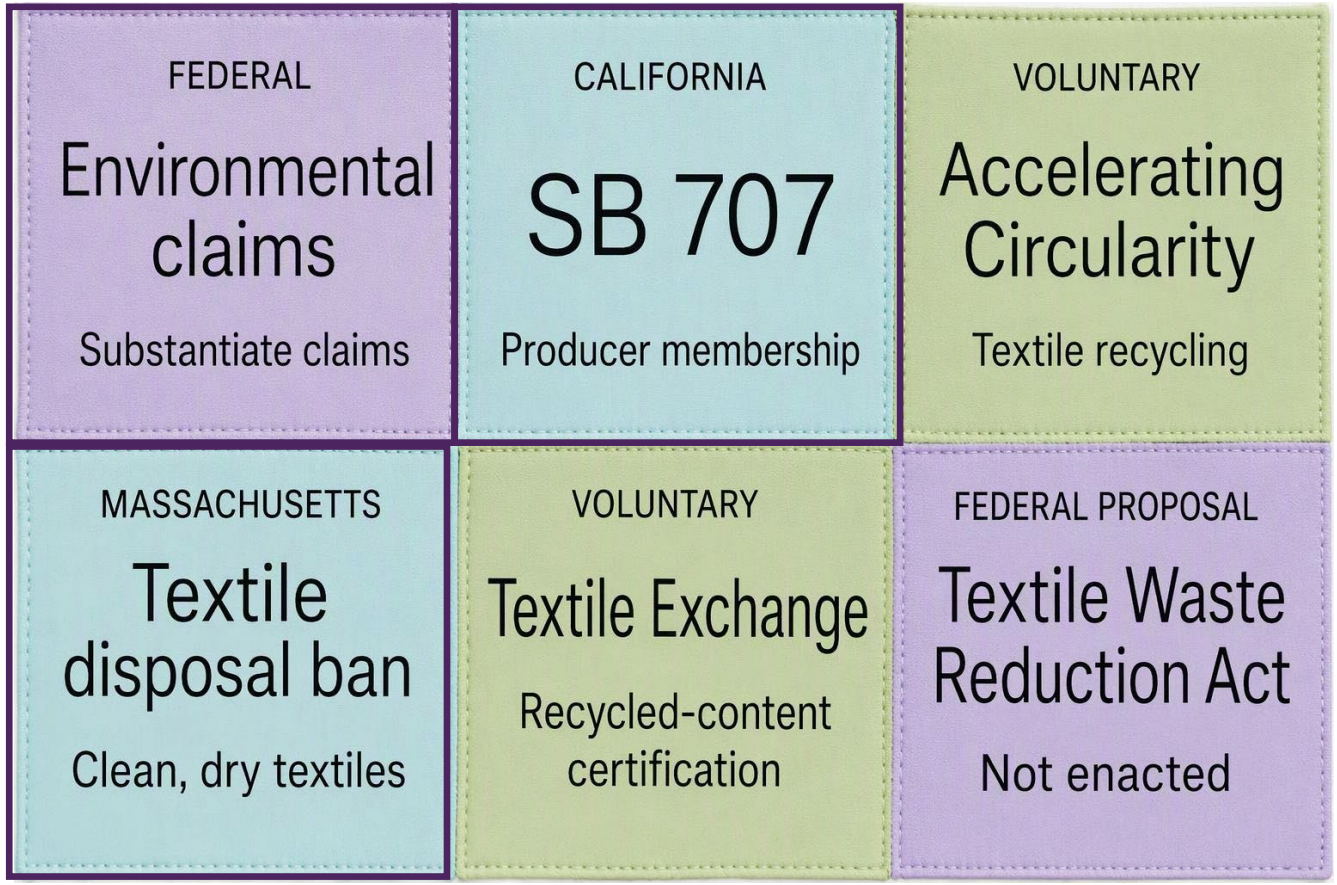
Ecodesign for Sustainable Products Regulation

Extended producer responsibility

Recycled feedstocks + recyclability



U.S. textile circularity is a patchwork



OUTLINED = CURRENT REQUIREMENTS

Environmental claims

Substantiate recycled-content and recyclability claims under the FTC Act.

California SB 707

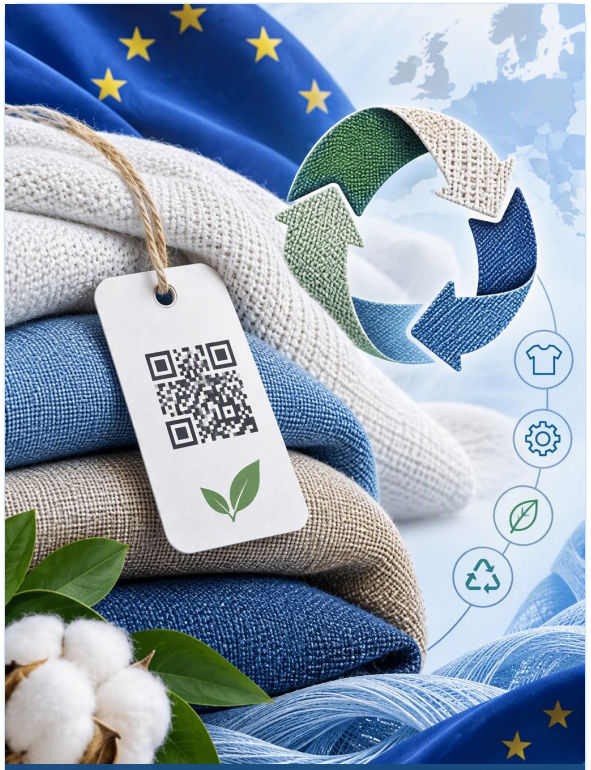
Covered producers: Landbell USA membership was due 1 July 2026.

Massachusetts disposal ban

Effective 1 November 2022.
Clean, dry textiles. Exclusions apply.

Unoutlined patches: proposed or voluntary.

EU Circularity Regulations for Textiles



THE DIRECTION OF TRAVEL

Design for longevity.
Track what products contain.
Finance their end of life.

1 EU Strategy for Sustainable and Circular Textiles

2030 vision: durable • repairable • recyclable • more recycled fibres • fewer hazardous substances

Waste Framework Directive

Common textile EPR rules. Member States implement national schemes.

ESPR: product design

Framework in force. Future textile rules will define ecodesign and DPP requirements.

Textile EPR

Producer-funded collection, sorting, reuse and recycling through national schemes.

Prepare registration, annual volume data and fees. Schemes due 17 Apr 2028. Registration format due 17 Apr 2027.

Digital Product Passport

Traceable composition and lifecycle information through a digital data carrier.

Textile delegated act planned for 2027. Exact data fields and application date remain TBD.

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DESIGN PRESSURE

05 Fire performance + durability + product requirements



Performance requirements shape material choices

Textile chemistry must be qualified against the finished product's end use

01 FIRE PERFORMANCE

U.S. product standards

- Apparel and carpets
- Mattresses and furniture
- End-use fire testing

Requalify after material changes

02 MEDICAL BARRIERS

Healthcare textiles

- FDA regulates medical devices
- Barrier level and intended use
- Evidence for product claims
- Finished-gown construction

Match barrier level to intended use

03 CHEMICAL RESISTANCE

Protective textiles

- Liquid penetration
- Chemical permeation
- Actual exposure conditions
- Seams and construction

Specify the actual chemical exposure

04 DURABILITY & END USE

Lifecycle performance

- Service life
- Cleaning / laundering cycles
- Abrasion and flexing
- Final-system performance

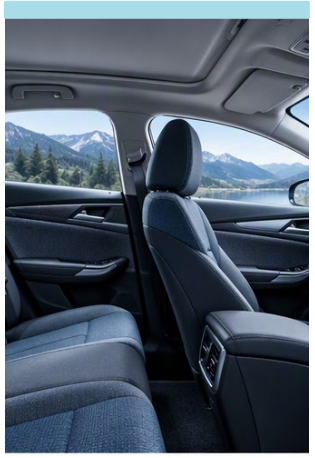
Validate the complete material system

Design for chemical compliance, circularity and finished-product performance together.

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Standards may vary for the same material – dependent on final product application

– *FR Standards in PVC-Laminated Fabrics*



Automotive interiors

FMVSS 302



Textile vertical flame test

ASTM D6413



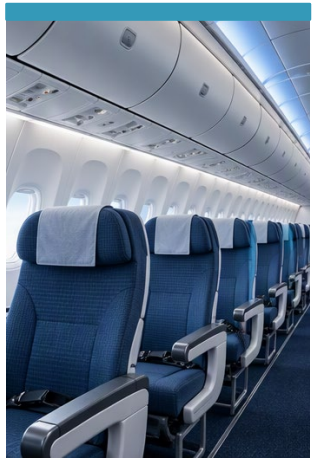
Camping & military shelters

CPAI-84



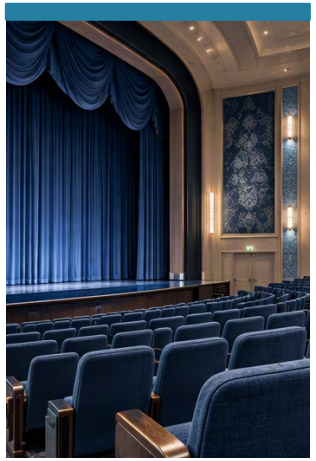
Textiles & films

NFPA 701



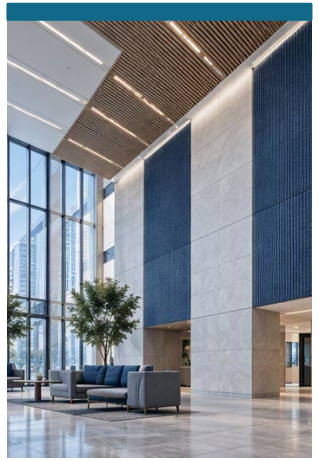
Aircraft interiors

14 CFR 25.853



Public-assembly Textiles in CA

CSFM TITLE 19



Building interior finish materials

ASTM E84 / UL 723

LEAST STRINGENT — INCREASING FR STRINGENCY — MOST STRINGENT

Seven applications, seven FR standards: complexity slows innovation

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SUMMARY

Regulatory readiness shapes textile material choices

Market requirements differ

Product scope and destination determine which rules apply.

Chemistry and performance must align

Restricted substances, fire performance and durability need joint review.

Circularity is part of compliance

ESPR and EPR link design, recovery and producer responsibility.

Integrated textile compliance by design supports long-term market access.

Thank you!

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APPENDIX

Market-access checklist

California requirements and EPR

EU chemical groups

State PFAS reference tables

Performance standards and acronyms



Four actions for textile market access



1. **Define market requirements**

   Classify end use and destination before material selection.

2. **Qualify chemistry and suppliers**

   Check TSCA status, supplier evidence and recycled-feedstock chemical history.

3. **Gate commercial release**

   Confirm performance and compliance through testing and approvals.

4. **Maintain control after launch**

   Assign owners for changes, traceability and recovery claims.

REGULATORY, R&D, PROCUREMENT AND PRODUCT MANAGEMENT

Recommended operating model, not a statutory checklist

California: multiple rules, one textile product

Requirements can overlap. Applicability depends on the product and end use.



PFAS IN TEXTILES

AB 1817

PFAS restrictions

Certificates + alternatives

PROPOSITION 65

EXPOSURE WARNINGS

Assess listed-chemical exposure

Warnings where required

SAFER CONSUMER PRODUCTS

DTSC PRIORITY PRODUCTS

PFAS treatments + carpets

Notification / alternatives review

FRs + HOME FURNISHINGS

AB 2998 / TB 117-2013

FR restrictions and fire performance

Labeling and records

TEXTILE CIRCULARITY / EPR

SB 707

Producer membership + funding

Collection, reuse and recycling

PRODUCT-SPECIFIC RULES

ADDITIONAL OVERLAYS

Children’s goods, bedding, carpets

Scope-specific duties

One product can trigger multiple obligations.

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California textile EPR: producer duties

Covered products	Apparel and listed household/business textiles. Check producer status and exclusions.
PRO selected	CalRecycle approved Landbell USA on 27 Feb 2026.
Joining deadline	Membership deadline was 1 July 2026. Confirm registration status.
Implementation	Rulemaking and needs assessment continue. Prepare product data and budgets.

Responsible Textile Recovery Act of 2024 / SB 707 / Status reviewed 16 Oct 2026



EU CHEMICALS STRATEGY

Group-based controls may affect textile finishes, additives, colorants and flame-retardant systems.

EU chemical groups relevant to textiles

Illustrative examples. Scope depends on classification, use and final rules.

01	**PFAS**	**Fluorotelomer finishes, fluorinated polymers, PTFE membranes** Water, oil, stain and chemical resistance	**SEAC opinion expected end-2026. EC proposal follows. Implementation TBD.**
02	**Aromatic brominated flame retardants**	**DBDPE, TBPH, BTBPE, legacy PBDEs and HBCDD** FR back-coatings, technical textiles, recycled inputs	**Certain non-polymeric ABFRs: restriction dossier due December 2026.**
03	**Skin sensitizers**	**Disperse/reactive dyes, isothiazolinones** Colorants, printing and wet-processing formulations	**Group-based assessment. Restriction timing TBD.**
04	**Endocrine disruptors**	**Selected phthalates, bisphenols, triphenyl phosphate** Coatings, plasticized layers, prints and additives	**Hazard-based controls expanding. Timing varies by substance.**
05	**CMR and persistent groups**	**Azo dyes releasing aromatic amines, formaldehyde, PBT/vPvB, PMT/vPvM** Dyes, easy-care finishes, residues and additives	**Existing REACH controls and continued group-based action.**

Implications: reformulation, supplier disclosure, testing and requalification.

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State PFAS textile requirements (1 of 2)

Enacted laws and adopted rules as of October 2026. Effective dates vary by product.

State	Status	Effective dates	Covered textile products	Reporting and other duties
California	Enacted	1 Jan 2025 1 Jan 2028	Textile articles, including apparel (2025). Severe-wet outdoor apparel (2028).	Compliance certificate to sellers. Severe-wet apparel: PFAS disclosure from 2025.
Colorado	Enacted	1 Jan 2024 2025 / 2028	Carpets and fabric treatments (2024). Indoor furnishings (2025). Textile articles (2028).	Severe-wet apparel: PFAS disclosure from 2025. No routine textile-product filing identified.
Connecticut	Enacted	1 Jul 2026 1 Jan 2028	Apparel, carpets/rugs, fabric treatments, textile furnishings and upholstered furniture.	Notification and labeling from Jul 2026. Covered-product bans from Jan 2028.
Illinois	Enacted	1 Jan 2032	Intimate apparel, including underwear, sleepwear, loungewear and socks.	No routine filing identified under this restriction. Scope is narrower than all apparel.
Maine	Enacted	1 Jan 2023 1 Jan 2026	Carpets and fabric treatments (2023). Textile articles and upholstered furniture (2026).	Reporting and fee for approved currently unavoidable uses (CUUs). General reporting repealed.
Maryland	Enacted	1 Jan 2024	Rugs and carpets. Older enacted restriction included for completeness.	Maintain compliance certification and provide on request. No annual product report.
Minnesota	Enacted	1 Jan 2025	Carpets/rugs, fabric treatments, textile furnishings and upholstered furniture.	Initial report Sep 15, 2026. Approved extension: Dec 14. Annual updates follow.

Selected restrictions. Certification, disclosure and other duties may still apply where no routine filing is listed. Sources in notes.

State PFAS textile requirements (2 of 2)

Enacted laws and adopted rules as of October 2026. Effective dates vary by product.

State	Status	Effective dates	Covered textile products	Reporting and other duties
New Hampshire	Enacted	1 Jan 2027	Carpets/rugs, textile treatments, textile furnishings and upholstered furniture.	Compliance certificate on request within 30 days. No routine annual filing.
New Jersey	Enacted	12 Jan 2028	Carpets and fabric treatments. Not a general apparel ban.	No registration or reporting requirement under this product restriction.
New Mexico	Enacted	1 Jan 2028	Textiles, fabric treatments, carpets/rugs and upholstered furniture. Exemptions include certain fluoropolymers.	PFAS product reporting begins in 2027. Labeling also applies, subject to exemptions.
New York	Enacted	1 Jan 2025 31 Dec 2026 1 Jan 2028	Apparel (2025), carpets (Dec 2026), severe-wet outdoor apparel (2028). PPE exclusions apply.	No routine apparel filing. Obtain supplier assurance. Separate carpet EPR obligations apply.
Rhode Island	Enacted	1 Jan 2027 1 Jan 2029	Textile articles, carpets/rugs, fabric treatments and firefighting PPE (2027). Artificial turf (2029).	Certification on request. Severe-wet apparel in 2029 requires “Made with PFAS chemicals” disclosure.
Vermont	Enacted	1 Jan 2026	Textiles/textile articles, residential carpets/rugs and aftermarket stain/water-resistant treatments.	Compliance certificate on request within 60 days. Product-specific exemptions apply.
Washington	Adopted rule	1 Jan 2025 2026 / 2027	Carpets/treatments (2025). Indoor furnishings (2026). Apparel/accessories (2027).	Annual reporting for designated categories. New categories: first report Jan 31, 2027.

Selected restrictions. Certification, disclosure and other duties may still apply where no routine filing is listed. Sources in notes.

Performance standards: reference

Textile chemistry must be qualified against the finished product's end use

01 FIRE PERFORMANCE

U.S. product standards

- 16 CFR 1610 Apparel
- 16 CFR 1630/1631 Carpets
- 16 CFR 1632/1633 Mattresses
- 16 CFR 1640 Upholstered furniture

Requalify after material changes

02 MEDICAL BARRIERS

Healthcare textiles

- FDA device classification
- AAMI PB70 barrier level
- Performance evidence for claims
- Finished-gown configuration

Match barrier level to intended use

03 CHEMICAL RESISTANCE

Protective textiles

- ASTM F903 Liquid penetration
- ASTM F739 Permeation
- EN 13034 Limited splash
- Test seams and final construction

Specify the actual chemical exposure

04 DURABILITY & END USE

Lifecycle performance

- Service life
- Cleaning and laundering
- Abrasion and flexing
- Final-system performance

Validate the complete material system

DESIGN RULE **Qualify chemical compliance and finished-product performance together.**

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Acronyms and abbreviations

AAMI Association for the Advancement of Medical Instrumentation
AB Assembly Bill
ABFRs Aromatic brominated flame retardants
ASTM ASTM International (formerly American Society for Testing and Materials)
BTBPE 1,2-Bis(2,4,6-tribromophenoxy)ethane
CFR Code of Federal Regulations
CHCC Chemicals of High Concern to Children
CMR Carcinogenic, mutagenic or toxic to reproduction
CSPA Children's Safe Products Act
CUU(s) Currently unavoidable use(s)
DBDPE Decabromodiphenyl ethane
DPP Digital Product Passport
DTSC Department of Toxic Substances Control
EC European Commission
ECHA European Chemicals Agency
EN European Standard
EPA Environmental Protection Agency
EPR Extended producer responsibility
ESPR Ecodesign for Sustainable Products Regulation
EU / EU-27 European Union / its 27 Member States
FDA Food and Drug Administration
FR(s) Flame retardant(s)
FTC Federal Trade Commission
H.R. House of Representatives bill
HBCDD Hexabromocyclododecane
NVH Noise, vibration and harshness
PBDEs Polybrominated diphenyl ethers
PBT Persistent, bioaccumulative and toxic
PFAS Per- and polyfluoroalkyl substances
Ph.D. Doctor of Philosophy
PMT Persistent, mobile and toxic
PPE Personal protective equipment
ppm Parts per million
PRO Producer responsibility organization
PTFE Polytetrafluoroethylene
R&D Research and development
RAC Committee for Risk Assessment
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals
SB Senate Bill
SEAC Committee for Socio-economic Analysis
TB Technical Bulletin
TBD To be determined
TBPH Bis(2-ethylhexyl) tetrabromophthalate
TSCA Toxic Substances Control Act
TULAC Textiles, upholstery, leather, apparel and carpets
U.S. / USA United States / United States of America
vPvB Very persistent and very bioaccumulative
vPvM Very persistent and very mobile

State abbreviations: CA California, CO Colorado, IL Illinois, MA Massachusetts, ME Maine, MN Minnesota, NM New Mexico, NY New York, WA Washington. Chemical symbols: Br bromine, Cl chlorine, P phosphorus, N nitrogen.

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