

# Free Fly Apparel Restricted Substances List (RSL) 2024



## Our Responsibility

We started with a love for the outdoors, and it's our responsibility to help protect it. We're continuously discovering and innovating new ways to make the ultimate comfortable gear through our ongoing process for a sustainable future.





# About Free Fly Apparel

## Our Story

We're a family-owned apparel company that stands for comfort and freedom. We believe that life's best moments are spent outside doing the things you love, so we made it our mission to empower your most comfortable life outdoors.

Growing up on the water in Montana, we knew that the outdoor industry had a big problem: performance apparel was too complicated and too uncomfortable. That's how the idea of Free Fly Apparel was born

After years of researching fabric blends, we landed on natural Bamboo apparel that flowed with us through our day. We quit our jobs together and built a new kind of family business where we could focus on what matters — adventures outside with family and friends.

Welcome to the fam,  
Austin, Jenna, Tanner



“At Free Fly, we work hard to ensure our products are chemical free. We channel our expertise into making the outdoors seriously fun and safe to our customer.”

**Sterling Boyd, CEO**

## **The RSL**

This Restricted Substances List (RSL) provides details of chemicals and other potentially harmful substances that are restricted by Free Fly Apparel, and allowable chemical limits for products placed on the market.

Free Fly Apparel RSL applies to all materials, components and finished products manufactured and sold under the name of any of the Free Fly Apparel whether sourced directly, indirectly by sourcing agent or by brands' licensee partners, unless communicated otherwise in writing.

All materials, components and finished products manufactured for Free Fly Apparel must comply with the requirements in this document no later than 90 days after the release date and must also comply with all applicable legislation.

## Alignment with the AFIRM RSL

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The Apparel and Footwear International RSL Management (AFIRM) Group, is an apparel and footwear industry body whose aim is to reduce the use and impact of harmful substances in apparel and footwear supply chains.

One of its areas of focus, is to create an industry-wide RSL to provide an aligned approach to managing restricted substances across the largely shared global supply chains of member brands.

Based on the collaborative effort of more than 30 brands, the AFIRM RSL reduces the large number of complicated and sometimes contradictory brand RSLs, while simplifying the approach and accelerating efforts to reduce chemical hazards.

Free Fly Apparel has aligned with the AFIRM RSL and suppliers should ensure that all components in Free Fly Apparel's products are compliant.

The AFIRM RSL is available at:  
<https://afirm-group.com/afirm-rsl/>

### Packaging

Free Fly Apparel has adopted the AFIRM Packaging RSL and suppliers should ensure that packaging for all Free Fly Apparel's products are compliant.

The AFIRM Packaging RSL is available at:

<https://afirm-group.com/packaging-restricted-%20substance-list/>



## Supplier's Responsibility

It is the supplier's responsibility to comply with this RSL and all relevant legislation, thereby avoiding the use of harmful or illegal chemicals in the making of Free Fly Apparel's products. The requirement to comply with this RSL and all relevant legislation is included in, or additional to, all legal partnership agreements relating to the manufacture of Free Fly Apparel's product lines .

1 Free Fly expects suppliers to be able to provide evidence that materials, components or finished products supplied meet the RSL

Free Fly reserves the right to request that suppliers test against the RSL at any time.

All testing must be performed on production-ready materials and must be performed at a 3<sup>rd</sup> party Laboratory.

Test results are valid for one year from the RSL test report date unless otherwise stated.

2 Suppliers must declare if any material is unable to meet RSL for further discussion with Free Fly.

Free Fly will assess any failure against the RSL standards individually and take appropriate action.

Suppliers may be required to remediate products, remake products or replace affected components at their own cost.

Responsibility for testing and associated costs lies with the supplier.

3 Suppliers may be required to provide access to Free Fly representatives to visit any locations used in the production of materials, components, finished products or packaging for Free Fly Apparel's products.

Certifications will be accepted in lieu of chemical testing as follows:

- The supplier can provide a copy of a **bluesign**® certificate for the production facility where the material Free Fly Apparel's product was made or,
- The supplier can provide a copy of the Standard 100 by **Oeko-tex**® certificate for the fabric or trim item.

## Recommended Testing Matrix

In the apparel and footwear supply chain, certain types of fibres and materials are more likely to contain restricted substances than others. AFIRM recommends the following approach to testing, giving guidance to suppliers about the likelihood of presence of substances in a certain material. This matrix was developed by AFIRM using knowledge of industry standard RSL testing approaches and their broader understanding of supply chain operations across their brand members.

Chemicals assigned a Level 1 in materials should be viewed as the minimum amount of testing required to satisfy AFIRM member requirements, and chemicals assigned a Level 2 are recommended for additional testing and may be required at brand discretion.



### Rating

### Description



Red indicates higher risk, and that testing is required



Orange indicates a lower risk, and that testing is recommended



Blank indicates no risk, that the substance is not anticipated to be present in the material. **No testing required.**

## Testing Matrix

Substance	Textiles			synthetic coated fabrics	Natural Leather	Natural Material	Metal	Other	Feather & Down	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber								Coatings / Printings	Glue
	Natural Fibres	Synthetic Fibres	Nat. / Syn. Blend Fibres	synthetic coated fabrics	Natural Leather	Natural Materials - Inc. horns, bones, cork, wood, paper and straw	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feather & Down	EVA Material	PU Foams	All other PU & TPU	Rubber Excludes Latex and Silicon Rubbers	Polycarbonate	ABS	PVC	All other foams, plastics & polymers	Coatings & Printings	Glue
Acetophenone										2									
2-Phenyl-2-propanol										2									
pH value	1	1	1	1	1														
Alkylphenol (AP)	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1
Alkylphenol Ethoxylates (APEOs)	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1
Azo-amines and Arylamine salts	1A	1A	1A	1A	1A	1A			1A									1	
Bisphenols		1	1	1	1					2	2	2	2	1	2	2	2		
Short-chain chlorinated Paraffins (SCCP, C10-C13)				2J	1					2	2	1	1	2	2	1	2		
Medium-chain chlorinated Paraffins (MCCP, C14-C17)				2J	1					2	2	1	1	2	2	1	2		
Chlorophenols (PCP, TeCP, TriCP)	2	2	2		2														
Chlorinated Benzenes and Toluenes		2	2	2															
Dimethylfumarate (DMFu) (Material treated with anti-moulding agent)					2														
Dyes, Forbidden and Disperse		1A	1A	1A														2	
Dyes, Navy Blue		2	2																
Flame Retardants (Material treated with flame retarding agent)	2B																		
Fluorinated Greenhouse Gases																			



## Testing Matrix

Substance	Textiles			synthetic coated fabrics	Natural Leather	Natural Material	Metal	Other	Feather & Down	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber								Coatings / Printings	Glue
	Natural Fibres	Synthetic Fibres	Nat. / Syn. Blend Fibres	synthetic coated fabrics	Natural Leather	Natural Materials - Inc. horns, bones, cork, wood, paper and straw	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feather & Down	EVA Material	PU Foams	All other PU & TPU	Rubber Excludes Latex and Silicon Rubbers	Polycarbonate	ABS	PVC	All other foams, plastics & polymers	Coatings & Printings	Glue
Formaldehyde	1	1	1	2	1	1C							2					1	1
Chromium VI (Cr VI)	2D	2E			1														
Heavy Metals - Extractable	1	1	1	2	1		2F			2	2	2	2	2	2	2	2	2	
Nickel Release (Direct & Prolong Skin Contact)							1												
Heavy Metals - Total digestion	2G		2G	1	2		1	1H		1	1	1	1	1	1	1	1	1	2
Monomer - Free Styrene				1J									2K		2	1		1J	
Monomer - Vinyl Chloride				1J									2K		2	1		1J	
N-Nitrosamine													2						
Organotin Compounds		2	2	1	2						1	1	1			1	1	1	1
Ortho-phenylphenol	2	2	2	2	2													2	
Ozone Depleting Substances (Refer EC No. 1005/2009)																			
Fluorine Screening - as PFAS indicator (Material treated with water/oil/stain repelling agent or contaminaton is suspected)	1L																		
Per- and Polyfluoroalkyl Substances (PFAS) - Target analysis (Material treated with water/oil/stain repelling agent or contaminaton is suspected)	1L																		
Pesticides, Agricultural																			
Phthalates				1						1	1	1	1	2	2	1	1	1	1
Polycyclic Aromatic Hydrocarbons (PAHs)				2						1M	1M	1M	1			1M	1M	1M	1M

## Testing Matrix

Substance	Textiles			synthetic coated fabrics	Natural Leather	Natural Material	Metal	Other	Feather & Down	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber								Coatings / Printings	Glue
	Natural Fibres	Synthetic Fibres	Nat. / Syn. Blend Fibres	synthetic coated fabrics	Natural Leather	Natural Materials - Inc. horns, bones, cork, wood, paper and straw	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feather & Down	EVA Material	PU Foams	All other PU & TPU	Rubber Excludes Latex and Silicon Rubbers	Polycarbonate	ABS	PVC	All other foams, plastics & polymers	Coatings & Printings	Glue
Quinoline		2	2																
Solvents (DMFa)				1							1	1						1N	1N
Solvents (DMAC and NMP)				1							2	2					2	2	2
Solvents (Formamide)										2								2	
UV inhibitor / Stabilizers										2	2	2	2	2	2	2	2		
Volatile Organic Compounds (VOCs)				2						2	2	2	2	2	2	2	2	2	1

### Note:

**Level 1 = Higher risk. Testing required.**

A Level 1 for dyed/colored materials

B Level 2 only if Flame Retardants use or contamination is suspected

C Level 1 for Wood, Paper, and Straw materials

**Blank = Lowest risk. Not anticipated in material**

**Level 2 = Lower risk. Testing recommended and may be required at brand discretion**

D Level 2 for Wool materials

E Level 2 if extractable Chrome above 1 ppm

F Copper is exempt from restriction limits in Metal parts

G Level 2 for plant-based fibers; N/A for animal-based fibers

H Level 1 for Cadmium and Lead only; Crystal is exempt for Lead

J Level 1 for PVC materials. Otherwise, Level 2

K Level 2 for styrene/ Butadiene Rubbers (SBRs) only

L Level 1 if material treated with water/oil/stain repelling agent or contamination is suspected

M Level 1 if Rubber or black Polymeric materials, otherwise level 2

N Level 1 for PU- and PVC-based materials

## Testing Method, Requirement and Reporting Limit

Substance	Test Method	Reporting Limit	Requirement
Acetophenone	Extraction in acetone, sonication for 30 min. 60°C degree, analysis by GC/MS	25 mg/kg	50 mg/kg
2-Phenyl-2-propanol		25 mg/kg	50 mg/kg
pH value	Textile and synthetic coated fabrics: EN ISO 3071:2020 Leather: EN ISO 4045:2018	NA	Textile: 4.0 - 7.5 Leather: 3.2 - 4.5 (Chrome-tanned) Leather: 3.5 - 7.0 (Non-chrome-tanned)
Alkylphenol (AP)	Textiles and Leather: EN ISO 21084:2019 Polymers and all other materials: Extraction with THF, sonication at 70C for 60min, analysis by EN ISO 21084:2019	3 mg/kg (total of NP +OP)	Total APs: 10 mg/kg Total APs +APEOs: 100 mg/kg
Alkylphenol Ethoxylates (APEOs)	All materials except leather: EN ISO 18254-1:2016 with determination of APEO using LC/MS or LC/MS/MS; Leather: EN ISO 18218-1:2015 with quantification according to EN ISO 18254-1:2016	20 mg/kg (total of NPEOs+OPEOSs)	
Azo-amines and Arylamine salts	All material except leather: EN ISO 14362-1:2017; EN ISO 14362-3:2017 Leather: EN ISO 17234-1:2020; EN ISO 17234-2:2011	5 mg/kg	20 mg/kg (Each)
Bisphenols	Extraction with THF, sonication at 60C for 60min, analysis with LC/MS	Bisphenol A: 0.1 ppm for individual samples; 1 ppm for composite samples other Bisphenols: 1 mg/kg (each)	Bisphenol A:1 mg/kg (items intended to come in contact with the mouth) other Bisphenols: information only
Short-chain chlorinated Paraffins (SCCP, C10-C13)	Leather: ISO 18219-1:2021 (SCCP) ISO 18219-2:2021 (MCCP)	100 mg/kg	1000 mg/kg
Medium-chain chlorinated Paraffins (MCCP, C14-C17)	Textiles and all other materials: ISO 22818:2021 (SCCP + MCCP)	100 mg/kg	1000 mg/kg
Chlorophenols (PCP, TeCP, TriCP)	All materials: DIN 50009:2021	0.5 mg/kg (Each)	0.5 mg/kg (Each)
Chlorinated Benzenes and Toluenes	All materials: EN 17137:2018	Others: 0.2 mg/kg 1,2-DCB: 1 mg/kg	1 mg/kg (Sum) (Except 1,2-Dichlorobenzene) 1,2-Dichlorobenzene: 10 mg/kg
Dimethylfumarate (DMFu) (Material treated with anti-moulding agent)	All materials: ISO 16186:2021	0.05 mg/kg	0.1 mg/kg
Dyes, Forbidden and Disperse	All materials: DIN 54231:2022	15 mg/kg (Each)	30 mg/kg (Each)
Dyes, Navy Blue	All materials: DIN 54231:2022	15 mg/kg (Each)	30 mg/kg (Each)
Flame Retardants (Material treated with flame retarding agent)	EN ISO 17881-1:2016 EN ISO 17881-2:2016	5 mg/kg (Each)	10 mg/kg (Each)
Fluorinated Greenhouse Gases	Thermal desorption / SPME, analysis by GC/MS	0.1 mg/kg (Each)	0.1 mg/kg (Each)
Formaldehyde	All materials except leather: EN ISO 14184-1:2011; Leather: EN ISO 17226-2:2019 with EN ISO 17226-1:2021 confirmation, alternatively EN ISO 17226-1:2021 can be used on its own	16 mg/kg	Babies: 16 mg/kg Adults and Children: 75 mg/kg
Chromium VI (Cr VI)	EN ISO 17075-1:2017 with aging, EN ISO 17075-2:2017 with aging for confirmation (Aging condition: ISO 10195:2018 Method A2)	3 mg/kg	Leather: 3 mg/kg

## Testing Method, Requirement and Reporting Limit

Substance	Test Method	Reporting Limit	Requirement	
Heavy Metals - Extractable				
Antimony (Sb)	All materials except Leather: DIN EN 16711-2:2016; Leather: DIN EN ISO 17072-1:2019;	3 mg/kg	30 mg/kg	
Arsenic (As)		0.1 mg/kg	0.2 mg/kg	
Barium (Ba)		100 mg/kg	1000 mg/kg	
Cadmium (Cd)		0.05 mg/kg	0.1 mg/kg	
Chromium (Cr)		0.5 mg/kg	Textile: 1 mg/kg (Babies); 2 mg/kg (Adults/Children) (Leather: refer to AFIRM RSL Additional information)	
Chromium VI (Cr VI) (Non-leather)		0.5 mg/kg	Textile: 1 mg/kg	
Cobalt (Co)		Cr VI: Textile: DIN EN 16711-2 with ISO 17075-1:2017 if Cr is detected	0.5 mg/kg	Children / babies: 1 mg/kg Adults: 4 mg/kg
Copper (Cu)		5 mg/kg	Children / babies: 25 mg/kg Adults: 50 mg/kg	
Lead (Pb)		0.2 mg/kg	Children / babies: 0.2 mg/kg Adults: 1 mg/kg	
Mercury (Hg)		0.02 ng/kg	0.02 mg/kg	
Nickel (Ni)	0.1 mg/kg	1 mg/kg		
Selenium (Se)	50 mg/kg	500 mg/kg		
Nickel Release (Direct & Prolong Skin Contact)	Others with prolonged skin contact: EN 12472:2020; EN 1811:2011+A1:2015, Eyewear frames: EN 16128:2015	Prolong skin contact/ Eyewear frames: 0.5 ug/cm <sup>2</sup> /week Pierced part: 0.2 ug/cm <sup>2</sup> /week	Prolonged skin contact: 0.5 ug/cm <sup>2</sup> /week Pierced part: 0.2 ug/cm <sup>2</sup> /week Eyewear frames: 0.5 ug/cm <sup>2</sup> /week	
Heavy Metals - Total digestion				
Arsenic (As)	All materials except leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2019	10 mg/kg	100 mg/kg	
Cadmium (Cd)		5 mg/kg	40 mg/kg	
Mercury (Hg)		0.1 mg/kg	0.5 mg/kg	
Lead (Pb)	Metal: CPSC-CH-E1001-08.3 Non-metal: CPSC-CH-E1002-08.3 Surface coating: CPSC-CH-E1003-09.1	10 mg/kg	90 mg/kg	
Monomer - Free Styrene	Extraction in methanol GC/MS, sonication at 60oC for 60 mins	50 mg/kg	500 mg/kg	
Monomer - Vinyl Chloride	EN ISO 6401:2008	1 mg/kg	1 mg/kg	
N-Nitrosamine	EN ISO 19577:2019 with LC-MS-MS verification if positive	0.5 mg/kg (Each)	0.5 mg/kg (Each)	
Organotin Compounds	All materials: CEN ISO/TS 16179:2012 or EN ISO 22744-1:2020	0.1 mg/kg (Each)	DBT / DOT / MbT / TCyT / TMT / TOT / TPT: 1 mg/kg (Each)  TBT / TPHT: 0.5 mg/kg (Each)	
Ortho-phenylphenol	All materials: DIN 50009:2021	100 mg/kg	1000 mg/kg	
Ozone Depleting Substances (Refer EC No. 1005/2009)	GC/MS Headspace 120C for 45 min	5 mg/kg	5 mg/kg	
Fluorine Screening - as PFAS indicator (Material treated with water/oil/stain repelling agent or contaminaton is suspected)	EN 14582:2016	50 mg/kg	100 mg/kg by 2025 50 mg/kg by 2027	

## Testing Method, Requirement and Reporting Limit

Substance	Test Method	Reporting Limit	Requirement
Per- and Polyfluoroalkyl Substances (PFAS) - Target analysis (Material treated with water/oil/stain repelling agent or contaminaton is suspected)	All materials: EN ISO 23702-1:2018	PFOS and related substances: 1 ug/m <sup>2</sup> (total) PFOA and its salts: 25 ppb (total) PFOA-related substances: 1000 ppb (total) PFHxS and its salts: 25 ppb (total) PFHxS-related substances:1000 ppb (total) C9-C14 PFCAs and its salt: 25 ppb (total) C9-C14 PFCA-related substances: 260 ppb (total) Other PFCAs: 100 ppb (total)	PFOS and related substances: 1 ug/m <sup>2</sup> (total) PFOA and its salts: 25 ppb (total) PFOA-related substances:1000 ppb (total) PFHxS and its salts: 25 ppb (total) PFHxS-related substances:1000 ppb (total) C9-C14 PFCAs and its salt: 25 ppb (total) C9-C14 PFCA-related substances: 260 ppb (total) Other PFCAs: information only
Pesticides, Agricultural	ISO 15193 / DIN 38407 F2 or EPA 8081 / EPA 8151A or BVL L 00.00-34:2010-09	0.5 mg/kg (Each)	0.5 mg/kg (Each)
Phthalates	Sample extraction: CPSC-CH-C1001-09.4 Measurement: Textile: EN ISO 14389:2022; calculating the ratio of print and textile	50 mg/kg (Each)	500 mg/kg (Each) 1000 mg/kg (Sum)
Polycyclic Aromatic Hydrocarbons (PAHs)	All materials: AfPS GS 2019:01 PAK	0.2 mg/kg (Each)	10 mg/kg (Sum) Restricted PAH: Child Care Article: 0.5 mg/kg (Each) Others: 1 mg/kg (Each)
Quinoline	DIN 54231:2022	10 mg/kg	50 mg/kg
Solvents (DMFa)	Textiles: EN 17131:2019	50 mg/kg	500 mg/kg
Solvents (DMAC and NMP)	All other materials:	50 mg/kg (each)	1000 mg/kg (each)
Solvents (Formamide)	ISO16189:2021	50 mg/kg	1000 mg/kg
UV inhibitor / Stabilizers	ISO 24040 with Extraction in THF, analysis by GC-MS	100 mg/kg (each)	1000 mg/kg (each) (Drometrizole): information only
Volatile Organic Compounds (VOCs)	For gernal VOC screening: GC-MS headspace 120 degrees C, 45 min	Benzene: 5 mg/kg Others: 20 mg/kg (each)	Benzene: 5 mg/kg Others: 1000 mg/kg (Sum)



## The Consumer Product safety Improvement Act (CPSIA)

The US Consumer Product Safety Improvement (CPSIA) Act 2008 introduced a raft of regulatory changes for manufacturers, importers, private labelers and distributors of consumer goods.

Certain consumer products on sale in the US must now be accompanied by a General Conformity Certificate certifying that tests have shown the products meet applicable safety rules. But there are more stringent rules for a variety of children's products, including:

- Mandatory third-party testing and certification from an accredited laboratory
- Restrictions on lead use in substrate materials
- Lower levels of lead in paint and surface coatings
- Lower limits or bans for certain phthalates

All suppliers should ensure all Free Fly children's products must be tested and certified as "safe" before they can be distributed.

For more information and resources on CPSIA visit:

<https://www.cpsc.gov/Regulations-Laws--Standards/Statutes/The-Consumer-Product-Safety-Improvement-Act>



## Manufacturing Chemistry Guidance

In order to ensure compliance with the RSL and minimize the chemical risks to workers and the environment in manufacturing, it is strongly recommended suppliers make use of the systems outlined on the next page, to screen for compliant formulations.

### **AFIRM Chemical Information Sheets**

AFIRM member brands have produced a comprehensive set of educational materials advising suppliers about best practices for chemical management. Each chemical information sheet covers a chemical or class of chemicals, giving an overview of the substance(s), where they are likely to be found in the material process and how to maintain compliance with the AFIRM RSL. The complete library of chemical information sheets is available on the [AFIRM website at http://afirm-group.com/information-sheets](http://afirm-group.com/information-sheets)

For more information on the AFIRM Group visit [www.afirm-group.com](http://www.afirm-group.com)



## Additional external resources to provide suppliers with guidance on best practice chemical compliance

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### bluesign®

The bluesign® bluefinder is an online database of bluesign® approved chemicals which can be used to screen for suitable chemistry.

For more information visit [www.bluesign.com](http://www.bluesign.com)



### ZDHC manufacturing Restricted Substances List (MRSL)

Zero Discharge of Hazardous Chemicals (ZDHC) is promoting a harmonized approach to managing chemicals during the processing of raw materials within the apparel and footwear supply chain through their MRSL. Free Fly encourages its supply chain to contact their chemical suppliers and communicate the ZDHC MRSL standard to them.

Chemical suppliers should be able to confirm which of their products meet this standard.

A copy of the most current ZDHC MRSL can be downloaded from the ZDHC website [www.roadmaptozero.com](http://www.roadmaptozero.com)



### OEKO-TEX®

The OEKO-TEX® Eco-Passport system certifies chemical formulations for compliance against the OEKO-TEX® RSL and MSRL. This certification can be used to screen chemical formulations.

For more information visit [www.oeko-tex.com](http://www.oeko-tex.com)



