



# ファーストリテイリング 製造時制限物質リスト (MRSL)

-Version 2024-

## 改訂履歴

バージョン	改訂内容	発効日
2013	初版	01/04/2013
2014	年度更新	01/01/2014
2015	年度更新	05/15/2015
2015	追加更新	16/11/2015
2016	年度更新	25/04/2016
2017	年度更新	26/04/2017
2018	年度更新	25/07/2018
2019	ZDHC MRSL 反映に伴う大幅改訂	10/05/2019
2020	ZDHC MRSL v2.0 反映に伴う改訂	29/05/2020
2021	年度更新	31/05/2021
2023	ZDHC MRSL v3.1 反映に伴う改訂	31/05/2023
2024	ZDHC MRSL v3.1 反映に伴う改訂	31/05/2024

## 前バージョンからの変更点

全ての変更点は ZDHC MRSL v3.1 反映に伴うものです。

変更項目	項目追加	基準値変更	現行基準値	改定内容
3c. Other Flame retardants	●			ZDHC V3.1 に合わせて新規追加
13. PAHs		●	leather: 200 mg/kg Textile & Plastics: Sum: 200 mg/kg	ZDHC V3.1 に合わせて Sum の基準値に except BaP を追記 Naphthalene
		●	Sum: 200 mg/kg	ZDHC V3.1 に合わせて Leather: Sum except BaP&Naphthalene: 200 mg/kg 、 Textile & Polymers: Sum except BaP: 200 mg/kg に変更 Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Indeno[1,2,3-cd]pyrene

			Benzo[ghi]perylene Benzo-[a]-anthracene(BaA) Chrysene(CHR) Dibenzo-[a,h]-anthracene (DBAhA) Benzo-[b]-fluoranthene(BbFA) Benzo-[k]-fluoranthene(BkFA) Benzo-[e]-pyrene(BeP) Benzo-[j]-fluoranthene(BjFA)
	●	Sum: 200 mg/kg	ZDHC V3.1 に合わせて Sum:200mg/kg を 20mg/kg に変更
14. Pesticides	●	250 mg/kg	ZDHC V3.1 に合わせて 1000 mg/kg に変更 Borate, zinc salt

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## はじめに

ファーストリテイリングは 2013 年、商品や生産プロセスにおける有害化学物質の排出をゼロにすることにコミットしました。このコミットメントを遂行するために、ファーストリテイリングは未然防止<sup>1</sup>と予防原則<sup>2</sup>に基づき、有害化学物質の排出ゼロを目指し、お客様、工場従業員、調達パートナー、および自然環境を守ります。

当社は、最終商品に含まれる可能性のある物質だけでなく、サプライチェーンにおける生産工程および関連プロセスの中で潜在的に使用され、環境中に排出される有害化学物質に対処することが非常に重要であると認識しています。このアプローチに従い、ファーストリテイリングは、有害化学物質として識別され、生産工程で使用され、環境中に排出される可能性のある物質の基準値と制限を定義する製造時制限物質リスト（MRSL：Manufacturing Restricted Substances List）を作成しました。

## 方法論

ファーストリテイリング MRSL の目的は、アパレルおよびフットウェアのサプライチェーン内の素材の加工工程における化学物質を管理するために、調和のとれたアプローチをサプライヤーに提供することです。本 MRSL は、生産工程での意図的な使用を禁止する優先化学物質を明記したリストであり、市販の化学用品中の各物質の許容される限界濃度を明示しています。

ファーストリテイリングは、2019 年に ZDHC グループに加入し、業界標準との整合性を高めるために、ZDHC MRSL の要求事項をすべて取り入れた MRSL を設定しました。さらに、ファーストリテイリング MRSL には、業界の専門家による評価に基づき、Oeko-Tex 100 や AFIRM など、ZDHC 以外の基準に沿った追加の物質も含まれています。

ファーストリテイリング MRSL は、素材サプライヤー、ならびにアパレルやフットウェアの製造に関わる下請け

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1 未然防止は、解決策がエンドオブパイプの対策やリスク管理ではなく、発生源での使用の廃絶に重点が置かれるべきであることを意味します。危険有害ではない化学物質への代替、または必要であれば製品の設計そのものや化学物質が機能的に必要なかどうか、といった再評価を通して、化学物質を使わない代替案を見つけることが求められます。

2 予防原則は、物質（または活動）と悪影響の因果関係について決定的な科学的証拠が示されるのを待たずに、予防的措置を取ることを意味します。いくつかの有害化学物質はそれを受け入れる側の環境によって無害にすることはできないため（すなわち、「環境的に許容される」/「安全な」使用または排出レベルがない）、完全な科学的根拠がなくても、潜在的に重大または不可逆的な悪影響の防止が必要である、という仮定に基づきます。

業者や工場に伝達されます。また、当社は、リスト上の物質が化学品中に定められた限度を超えて存在しないよう、素材サプライヤーや工場が、化学品サプライヤーと適切なコミュニケーションをとることを期待しています。

## 適用範囲

テキスタイル、アパレル、フットウェアの素材、皮革、ゴム、フォーム、接着剤、附属/副資材を加工する工場施設における製造。

## 用語の定義

### 化学物質:

化学物質とは、自然状態で存在する、もしくは製造工程で得られる化学元素およびその化合物です。

### 化学品:

化学品は、いくつかの化学物質からなる化学品サプライヤー独自の調合物で、サプライヤー自身の商品名のもと購入可能なものです。

### 有害化学物質:

有害化学物質とは、本質的に有害な特性を示すものを意味し、難分解性で高蓄積性および毒性を有する物質（PBT）、極めて難分解性、高い生体蓄積性を有する物質（vPvB）、発がん性、変異原性、または生殖毒性を有する物質（CMR）、内分泌攪乱化学物質（ED）、または他の同等の懸念を有する物質が含まれます。これらは地域で規制または制限されているものだけに限りません。

### 意図的使用の禁止 (No intentional use) :

意図的使用の禁止とは、MRSL に記載された化学物質または物質のグループが、素材または商品の製造において、特定の機能または効果を達成するために使用されてはならないことを示します。化学品中には製造中に生じる不純物が存在するため、制限物質の残留が微量であれば許容されます。基準値を超える制限物質を含む化学品は、ファーストリテイリング MRSL に準拠していないことになります。

**CAS (Chemical Abstracts Service) Number:**

化学物質の識別番号。ファーストリテイリング MRSL 上の化学物質は通常 CAS Number とともに記載されますが、個別の識別番号をすべてリストすることが実用的ではない物質群については、CAS Number を表示しない場合もあります。

**附属/副資材:**

包装資材を除く、全ての製品取付け資材類（縫製糸、ボタン、芯地、裏地、ファスナー、ネーム、ケアラベル等）。

# 一般要求事項

## Chapter 1: MRSL

- “in Manufacturing”のグループ  
このグループの化学物質については、素材の加工および最終製品の製造を行う工場施設における意図的使用を禁止しています。
- “in Chemical Formulations”のグループ  
このグループの化学物質については、化学品サプライヤーから購入する化学品中の濃度を基準値以下に制限しています。これらの限界値は意図的使用を禁止するものです。製造中に生じることが合理的に予期される不純物があっても、責任ある化学物質製造によって一貫して限界値を達成可能な場合は許容されます。

ZDHC MRSL の欄に“Yes”と表示されている物質は、“in Manufacturing” か “in Chemical Formulations” に関わらず、ZDHC MRSL と同じ要求内容の対象となります。

各制限物質に関する詳細情報とガイダンスは、[ZDHC MRSL](#) から入手できます。どのような化学品に含まれるか、どのような工程で使用されるか、なぜ制限されているのか、より安全な代替物質は何か、といった情報が含まれます。

## Chapter 2: MRSL 候補リスト

MRSLへの追加が提案されており、収載のための基準を満たすものの、安全な代替物質/技術が十分なスケールでまだ確立されていない物質のリストです。候補リストを明示することで、代替の技術革新が促進されます。

## Chapter 3: アーカイブされた物質

業界で現在も使用されているという確たる証拠はないものの、過去には使用されていた明確な証拠がある物質です。



## Chapter 1: MRSL

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
<b>1. AP / APEO</b>				
Octylphenol (OP)	Various including 27193-28-8 140-66-9 1806-26-4 85771-77-3	No intentional use	100 mg/kg	yes
Nonylphenol (NP)	Various including 25154-52-3 104-40-5 84852-15-3 11066-49-2	No intentional use	100 mg/kg	yes
Octylphenoethoxylates, n=2 to n= 16	Various, including 68987-90-6 9036-19-5 9002-93-1	No intentional use	250 mg/kg	yes
Nonylphenoethoxylates, n=2 to n=16	Various including 9016-45-9 26027-38-3 37205-87-1 68412-54-4 127087-87-0	No intentional use	250 mg/kg	yes
<b>2. Phthalates (ortho-phthalates)</b>				
Butyl benzyl Phthalate (BBP)	85-68-7	No intentional use	Sum: 250 mg/kg	yes
Di-n-butyl Phthalate (DBP)	84-74-2	No intentional use	Sum: 250 mg/kg	yes
Bis(2-ethylhexyl) Phthalate (DEHP)	117-81-7	No intentional use	Sum: 250 mg/kg	yes
Di-n-octyl Phthalate (DnOP)	117-84-0	No intentional use	Sum: 250 mg/kg	yes
Di-iso-nonyl Phthalate (DINP)	28553-12-0	No intentional use	Sum: 250 mg/kg	yes
Di-iso-decyl Phthalate (DIDP)	26761-40-0	No intentional use	Sum: 250 mg/kg	yes
Dimethyl phthalate (DMP)	131-11-3	No intentional use	1000 mg/kg*	
Diethyl Phthalate (DEP)	84-66-2	No intentional use	Sum: 250 mg/kg	yes
Di-n-propyl Phthalate (DPrP)	131-16-8	No intentional use	Sum: 250 mg/kg	yes
Di-iso-butyl Phthalate (DIBP)	84-69-5	No intentional use	Sum: 250 mg/kg	yes
Di-cyclohexyl Phthalate (DCHP)	84-61-7	No intentional use	Sum: 250 mg/kg	yes
Di-n-hexyl phthalate (DnHP / DHEXP)	84-75-3	No intentional use	Sum: 250 mg/kg	yes
D-inonyl Phthalate (DNP)	84-76-4	No intentional use	Sum: 250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
Di-iso-octyl Phthalate (DIOP)	27554-26-3	No intentional use	Sum: 250 mg/kg	yes
Bis(methylglycol) phthalate (DMEP)	117-82-8	No intentional use	Sum: 250 mg/kg	yes
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4	No intentional use	Sum: 250 mg/kg	yes
Di-iso-heptyl Phthalate (1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (DIHpP)	71888-89-6	No intentional use	Sum: 250 mg/kg	yes
Di-n-pentylphthalate (DnPP/DPENP)	131-18-0	No intentional use	Sum: 250 mg/kg	yes
Diisopentylphthalate (DiPP)	605-50-5	No intentional use	Sum: 250 mg/kg	yes
N-pentyl-isopentyl phthalate (nPiPP)	776297-69-9	No intentional use	Sum: 250 mg/kg	yes
1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear standard	84777-06-0	No intentional use	Sum: 250 mg/kg	yes
Di-hexyl Phthalate, branched and linear (DHxP)	68515-50-4	No intentional use	Sum: 250 mg/kg	yes
Di-iso-hexyl Phthalate (DIHxP)	71850-09-4	No intentional use	Sum: 250 mg/kg	yes
1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	68515-51-5 / 68648-93-1	No intentional use	1000 mg/kg*	
<b>3a. Brominated Flame retardants</b>				
Polybrominated biphenyls (PBBs)	59536-65-1 various	No intentional use	250 mg/kg	yes
Monobromo biphenyls (MonoBB)	26264-10-8, 2052-07-5, 2113-57-7, 92-66-0 various	No intentional use	250 mg/kg	yes
Dibromo biphenyls (DiBB)	13029-09-9, 92-86-4, 59080-32-9, various	No intentional use	250 mg/kg	yes
Tribromo biphenyls (TriBB)	51202-79-0, various	No intentional use	250 mg/kg	yes
Tetrabromo bipenyls (TetraBB)	60044-24-8, 60044-25-9, various	No intentional use	250 mg/kg	yes
Pentabromo biphenyls (PentaBB)	67888-96-4, 59080-39-6, various	No intentional use	250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Hexabromo biphenyls (HexaBB)	59080-40-9, 36355-01-8, various	No intentional use	250 mg/kg	yes
Heptabromo biphenyls (HeptaBB)	-	No intentional use	250 mg/kg	yes
Octabromo biphenyls (OctaBB)	27858-07-7, 61288-13-9, various	No intentional use	250 mg/kg	yes
Nonabromo biphenyls (NonaBB)	27753-52-2, 69278-62-2 119264-62-9, 119264-63-0, various	No intentional use	250 mg/kg	yes
Decabromo biphenyls (DecaBB)	13654-09-6	No intentional use	250 mg/kg	yes
Tris(2,3-Dibromopropyl)-Phosphate (TRIS)	126-72-7	No intentional use	250 mg/kg	yes
Polybrominated diphenyl ethers (PBDEs)	various	No intentional use	1000 mg/kg*	
Monobromo diphenyl ethers (MonoBDE)	various	No intentional use	250 mg/kg	yes
Dibromo diphenyl ethers (DiBDE)	various	No intentional use	1000 mg/kg*	
Tribromo diphenyl ethers (TriBDE)	various	No intentional use	250 mg/kg	yes
Tetrabromo diphenyl ethers (TetraBDE)	40088-47-9	No intentional use	250 mg/kg	yes
Pentabromo diphenyl ethers (PentaBDE)	32534-81-9	No intentional use	250 mg/kg	yes
Hexabromo diphenyl ethers (HexaBDE)	36483-60-0	No intentional use	250 mg/kg	yes
Heptabromo diphenyl ethers (HeptaBDE)	68928-80-3	No intentional use	250 mg/kg	yes
Octabromo diphenyl ethers (OctaBDE)	32536-52-0	No intentional use	250 mg/kg	yes
Nonabromo diphenyl ethers (NonaBDE)	63936-56-1	No intentional use	250 mg/kg	yes
Decabromo diphenyl ethers (DecaBDE)	1163-19-5	No intentional use	250 mg/kg	yes
Tetrabromo-bisphenol A (TBBPA)	79-94-7	No intentional use	250 mg/kg	yes
Bis(2,3-dibromopropyl)phosphate (BIS / BDBPP)	5412-25-9	No intentional use	250 mg/kg	yes
Hexabromocyclododecane (HBCDD)	134237-50-6, 134237-51-7, 134237-52-8, 25637-99-4, 3194-55-6	No intentional use	250 mg/kg	yes
2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	3296-90-0	No intentional use	250 mg/kg	yes
Tetrabromobisphenol A bis(dibromopropyl ether)	21850-44-2	No intentional use	250 mg/kg	yes
<b>3b. –Phosphorus Flame retardants</b>				
Tris (2-Chloroethyl) Phosphate (TCEP)	115-96-8	No intentional use	250 mg/kg	yes
Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8	No intentional use	250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
Tris(1-aziridinyl)phosphine oxide (TEPA)	545-55-1	No intentional use	250 mg/kg	yes
Tris(1-chloro-2-propyl) phosphate (TCPP)	13674-84-5	No intentional use	250 mg/kg	yes
Trixylyl phosphate (TXP)	25155-23-1	No intentional use	Sum: 250 mg/kg	yes
Trimethyl phosphate	512-56-1	No intentional use	Sum: 250 mg/kg	yes
Tri-o-cresyl phosphate (TOCP)	78-30-8	No intentional use	Sum: 250 mg/kg	yes
<b>3c. Other Flame retardants</b>				
Diboron trioxide	1303-86-2	No intentional use	250 mg/kg	yes
Boric acid	10043-35-3, 11113-50-1	No intentional use	250 mg/kg	yes
Disodium Tetraborate, anhydrous	1303-96-4, 1330-43-4, 12179-04-3, 215-540-4 (EINECS No., not CAS No.)	No intentional use	250 mg/kg	yes
Tetraboron disodium heptaoxide, hydrate	12267-73-1	No intentional use	250 mg/kg	yes
Disodium octaborate	12008-41-2	No intentional use	250 mg/kg	yes
Zinc borate salts	1332-07-6	No intentional use	250 mg/kg	yes
<b>4a. Azo dyes</b>				
4-Aminobiphenyl	92-67-1	No intentional use	150 mg/kg	yes
Benzidine	92-87-5	No intentional use	150 mg/kg	yes
4-Chloro-o-toluidine	95-69-2	No intentional use	150 mg/kg	yes
2-Naphtylamine	91-59-8	No intentional use	150 mg/kg	yes
o-Aminoazotoluene	97-56-3	No intentional use	150 mg/kg	yes
5-Nitro-o-toluidine	99-55-8	No intentional use	150 mg/kg	yes
4-Chloroaniline	106-47-8	No intentional use	150 mg/kg	yes
2,4-Diaminoanisole	615-05-4	No intentional use	150 mg/kg	yes
4,4'-Diaminodiphenylmethane	101-77-9	No intentional use	150 mg/kg	yes
3,3'-Dichlorobenzidine	91-94-1	No intentional use	150 mg/kg	yes
3,3'-Dimethoxybenzidine	119-90-4	No intentional use	150 mg/kg	yes
3,3'-Dimethylbenzidine	119-93-7	No intentional use	150 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
3,3'-Dimethyl-4,4'-diaminodiphenylmethane	838-88-0	No intentional use	150 mg/kg	yes
p-Cresidine	120-71-8	No intentional use	150 mg/kg	yes
4,4'-Methylene-bis-(2-chloroaniline)	101-14-4	No intentional use	150 mg/kg	yes
4,4'-Oxydianiline	101-80-4	No intentional use	150 mg/kg	yes
4,4'-Thiodianiline	139-65-1	No intentional use	150 mg/kg	yes
o-Toluidine	95-53-4	No intentional use	150 mg/kg	yes
2,4-Toluenediamine	95-80-7	No intentional use	150 mg/kg	yes
2,4,5-Trimethylaniline	137-17-7	No intentional use	150 mg/kg	yes
o-Anisidine	90-04-0	No intentional use	150 mg/kg	yes
Aminoazobenzene	60-09-3	No intentional use	150 mg/kg	yes
2,4-Xylidine	95-68-1	No intentional use	150 mg/kg	yes
2,6-Xylidine	87-62-7	No intentional use	150 mg/kg	yes
Aniline	62-53-3	No intentional use	Indigo 2000 mg/kg Other dyes 500 mg/kg Not Applicable for polymer	yes
4-chloro-o-toluidinium chloride	3165-93-3	No intentional use	150 mg/kg	yes
2-Naphthylammoniumacetate	553-00-4	No intentional use	150 mg/kg	yes
4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisoole sulphate	39156-41-7	No intentional use	150 mg/kg	yes
2,4,5-trimethylaniline hydrochloride	21436-97-5	No intentional use	150 mg/kg	yes
<b>4d. Disperse &amp; Carcinogenic Dyes</b>				
Acid Red 26	3761-53-3	No intentional use	Textile&leather: 250 mg/kg	yes
Acid Red 114	6459-94-5	No intentional use	1000 mg/kg*	
Acid Violet 49	1694-09-3	No intentional use	Textile&Leather: 250 mg/kg	yes
Basic Blue 26	2580-56-5	No intentional use	Textile: 250 mg/kg	yes
Basic Green 4 (malachite green chloride)	569-64-2	No intentional use	Textile: 250 mg/kg	yes
Basic Green 4 (malachite green oxalate)	2437-29-8	No intentional use	Textile: 250 mg/kg	yes
Basic Green 4 (malachite green)	10309-95-2	No intentional use	Textile: 250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Basic Green 4 leuco base (Leucomalachite green, N,N,N',N'-tetramethyl-4,4'-benzylidenedianiline)	129-73-7	No intentional use	Textile: 250 mg/kg	yes
Basic Red 9	569-61-9	No intentional use	Textile: 250 mg/kg	yes
Basic Violet 3	548-62-9	No intentional use	Textile: 250 mg/kg	yes
Basic Violet 14	632-99-5	No intentional use	Textile: 250 mg/kg	yes
Direct Black 38	1937-37-7	No intentional use	Textile&leather: 250 mg/kg	yes
Direct Blue 6	2602-46-2	No intentional use	Textile&leather: 250 mg/kg	yes
Direct Blue 15	2429-74-5	No intentional use	1000 mg/kg*	
Direct Brown 95	16071-86-6	No intentional use	1000 mg/kg*	
Direct Red 28	573-58-0	No intentional use	Textile&leather: 250 mg/kg	yes
Disperse Blue 1	2475-45-8	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 3	2475-46-9	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 7	3179-90-6	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 26	3860-63-7	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 35	12222-75-2, 56524-77-7, 56524-76-6	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 102	12222-97-8	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 106	12223-01-7	No intentional use	Textile: 250 mg/kg	yes
Disperse Blue 124	61951-51-7	No intentional use	Textile: 250 mg/kg	yes
Disperse Brown 1	23355-64-8	No intentional use	Textile: 250 mg/kg	yes
Disperse Orange 1	2581-69-3	No intentional use	Textile: 250 mg/kg	yes
Disperse Orange 3	730-40-5	No intentional use	Textile: 250 mg/kg	yes
Disperse Orange 11	82-28-0	No intentional use	Textile: 250 mg/kg	yes
Disperse Orange 37/59/76	13301-61-6, 12223-33-5, 51811-42-8	No intentional use	Textile: 250 mg/kg	yes
Disperse Orange 149	85136-74-9	No intentional use	1000 mg/kg*	
Disperse Red 1	2872-52-8	No intentional use	Textile: 250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
Disperse Red 11	2872-48-2	No intentional use	Textile: 250 mg/kg	yes
Disperse Red 17	3179-89-3	No intentional use	Textile: 250 mg/kg	yes
Disperse Red 151	61968-47-6	No intentional use	1000 mg/kg*	
Disperse Yellow 1	119-15-3	No intentional use	Textile: 250 mg/kg	yes
Disperse Yellow 3	2832-40-8	No intentional use	Textile: 250 mg/kg	yes
Disperse Yellow 9	6373-73-5	No intentional use	Textile: 250 mg/kg	yes
Disperse Yellow 23	6250-23-3	No intentional use	1000 mg/kg*	
Disperse Yellow 39	12236-29-2	No intentional use	Textile: 250 mg/kg	yes
Disperse Yellow 49	54824-37-2	No intentional use	Textile: 250 mg/kg	yes
Disperse Yellow 56	54077-16-6	No intentional use	1000 mg/kg*	
Pigment Red 104 (Lead chromate molybdate sulphate red)	12656-85-8	No intentional use	1000 mg/kg*	
Pigment Yellow 34 (Lead sulfochromate yellow)	1344-37-2	No intentional use	1000 mg/kg*	
<b>5. Organotin Compounds</b>				
Dibutyltin, DBT	H based: 1002-53-5, Cl based: 683-18-1	No intentional use	20 mg/kg 100 mg/kg for PU based thickeners	yes
Dimethyltin, DMT	Cl based: 753-73-1	No intentional use	5 mg/kg	yes
Diocetyl tin, DOT	H based: 94410-05-6, Cl based: 3542-36-7	No intentional use	5 mg/kg	yes
Diphenyltin, DPHT	H based: 1011-95-6, 6381-06-2 Cl based: 1135-99-5	No intentional use	5 mg/kg	yes
Dipropyltin, DPT	Various	No intentional use	5 mg/kg	yes
Monobutyltin, MBT	H based: 78763-54-9, Cl based: 1118-46-3	No intentional use	5 mg/kg	yes
Monomethyltin, MMT	Various, including 993-16-8	No intentional use	5 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Monooctyltin, MOT	H based: 15231-57-9, Cl based: 3091-25-6	No intentional use	5 mg/kg	yes
Monophenyltin, MPhT	Cl based: 1124-19-2	No intentional use	5 mg/kg	yes
Tetrabutyltin, TeBT	1461-25-2	No intentional use	1 mg/kg	yes
Tetraethyltin, TeET	597-64-8	No intentional use	1 mg/kg	yes
Tetraoctyltin, TeOT	Various	No intentional use	1 mg/kg	yes
Tributyltin, TBT	H based 36643-28-4, Cl complex: 56573-85-4, Cl based: 1461-22-9	No intentional use	5 mg/kg	yes
Tricyclohexyltin, TCyHT	H based: 6056-50-4 Cl based: 3091-32-5	No intentional use	1 mg/kg	yes
Trimethyltin, TMT	Cl based: 1066-45-1	No intentional use	5 mg/kg	yes
Trioctyltin, TOT	-	No intentional use	5 mg/kg	yes
Triphenyltin, TPhT	H based: 892-20-6, Cl based: 639-58-7 ion: 668-34-8	No intentional use	5 mg/kg	yes
Tripropyltin, TPT	H based: 761-44-4 Cl based: 2279-76-7	No intentional use	1 mg/kg	yes
<b>6a. PFCs</b>				
Perfluorooctanoic acid (PFOA) and its salts	335-67-1	No intentional use	PFOA = 0.025 mg/kg PFOA-related substances = 1 mg/kg	yes
PFOA-related substances	various	No intentional use	1 mg/kg	yes
2-Perfluorooctylethanol (8:2 FTOH)	678-39-7	No intentional use	1 mg/kg	yes
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)	27905-45-9	No intentional use	1000 mg/kg*	—
Perfluorooctane sulfonate (PFOS)	1763-23-1	No intentional use	2 mg/kg	yes



Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Perfluorooctane sulfonamide (PFOSA)	754-91-6	No intentional use	1000 mg/kg*	—
Perfluorooctane sulfonfluoride (PFOSF)	307-35-7	No intentional use	1000 mg/kg*	—
N-Methylperfluoro-1-octanesulfonamide (N-Me-FOSA)	31506-32-8	No intentional use	1000 mg/kg*	—
N-Ethylperfluoro-1-octanesulfonamide (N-Et-FOSA)	4151-50-2	No intentional use	1000 mg/kg*	—
2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol (N-Me-FOSE)	24448-09-7	No intentional use	1000 mg/kg*	—
2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-Et-FOSE)	1691-99-2	No intentional use	1000 mg/kg*	—
Perfluorononanoic acid (PFNA)	375-95-1	No intentional use	1000 mg/kg*	—
Perfluorododecanoic acid (PFDA)	335-76-2	No intentional use	1 mg/kg	yes
Henicosafuoroundecanoic acid (PFUdA / PFUnA)	2058-94-8	No intentional use	1000 mg/kg*	—
Tricosafuorododecanoic acid PFDoDA	307-55-1	No intentional use	1000 mg/kg*	—
Pentacosafuorotridecanoic acid (PFTTrDA)	72629-94-8	No intentional use	1000 mg/kg*	—
Heptacosafuorotetradecanoic acid (PFTeDA)	376-06-7	No intentional use	1000 mg/kg*	—
Perfluor+B268:K290+B277:D290o-3,7-dimethyloctanoic Acid (PF-3,7-DMOA)	172155-07-6	No intentional use	1000 mg/kg*	—
Perfluorodecane sulfonic acid (PFDS)	335-77-3	No intentional use	1 mg/kg	yes
1H,1H,2H,2H-Perfluorododecylacrylate (10:2 FTA)	17741-60-5	No intentional use	1000 mg/kg*	—
1H,1H,2H,2H-Perfluoro -1-dodecanol (10:2 FTOH)	865-86-1	No intentional use	1 mg/kg	yes
2H,2H,3H,3H-Perfluoroundecanoic Acid (H4PFUnA)	34598-33-9	No intentional use	1000 mg/kg*	—
Perfluorohexane sulfonate (PFHxS)	355-46-4	No intentional use	1 mg/kg	yes
Perfluorobutanoic acid (PFBA)	375-22-4+C384	No intentional use	1 mg/kg	yes
Perfluorobutane sulfonate (PFBS)	375-73-5	No intentional use	1 mg/kg	yes
Perfluoropentane Acid (PFPeA)	2706-90-3	No intentional use	1000 mg/kg*	yes

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
Perfluorohexanoic acid (PFHxA)	307-24-4	No intentional use	PFHxA = 0.025 mg/kg PFHxA-related substances = 1 mg/kg	yes
Perfluoroheptanoic acid (PFHpA)	375-85-9	No intentional use	1000 mg/kg*	—
Perfluoroheptanoic acid, sodium salt (PFHpA-Na)	20109-59-5	No intentional use	1 mg/kg	
Perfluoroheptane Sulfonate (PFHpS)	375-92-8	No intentional use	1000 mg/kg*	—
7H-Dodecanefluoroheptane Acid (7HPFHpA)	1546-95-8	No intentional use	1000 mg/kg*	—
Perfluorooctanesulphonic acid 1H,1H,2H,2H (H4PFOS; 6:2)	27619-97-2	No intentional use	1000 mg/kg*	—
1H,1H,2H,2H-Perfluorooctylacrylate (6:2 FTA)	17527-29-6	No intentional use	1000 mg/kg*	—
1H,1H,2H,2H-Perfluoro-1-hexanol (4:2 FTOH)	2043-47-2	No intentional use	1 mg/kg	yes
1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH)	647-42-7	No intentional use	1 mg/kg	yes
<b>6b. PFAS</b>				
Total Organic Fluorine - As PFAS indicator	7782-41-4	No intentional use	Quantification limit: 50 mg/kg	yes
<b>7. COC (Chlorobenzenes/Chlorotoluenes)</b>				
Chlorobenzene	108-90-7	No intentional use	Sum: 200 mg/kg	yes
Dichlorobenzenes	Various include 25321-22-6	No intentional use	Sum: 200 mg/kg	yes
1,2-Dichlorobenzene	95-50-1	No intentional use	500mg/kg	yes
1,3-Dichlorobenzene	541-73-1	No intentional use	Sum: 200 mg/kg	yes
1,4-Dichlorobenzene	106-46-7	No intentional use	Sum: 200 mg/kg	yes
Trichlorobenzenes	Various include 12002-48-1	No intentional use	Sum of substances2 : 200 mg/kg	yes
1,2,3-Trichlorobenzene,	87-61-6	No intentional use	Sum of substances2 : 200 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
1,2,4-Trichlorobenzene	120-82-1	No intentional use	Sum of substances2 : 200 mg/kg	yes
1,3,5-Trichlorobenzene,	108-70-3	No intentional use	Sum of substances2 : 200 mg/kg	yes
Tetrachlorobenzenes	Various include 12408-10-5	No intentional use	Sum of substances2 : 200 mg/kg	yes
1,2,3,4-Tetrachlorobenzene	634-66-2	No intentional use	Sum of substances2 : 200 mg/kg	yes
1,2,3,5-Tetrachlorobenzene	634-90-2	No intentional use	Sum of substances2 : 200 mg/kg	yes
1,2,4,5-Tetrachlorobenzene	95-94-3	No intentional use	Sum of substances2 : 200 mg/kg	yes
Pentachlorobenzene	608-93-5	No intentional use	Sum: 200 mg/kg	yes
Hexachlorobenzene	118-74-1	No intentional use	Sum: 200 mg/kg	yes
Chlorotoluene	Various include 25168-05-2	No intentional use	Sum: 200 mg/kg	yes
2-Chlorotoluene	95-49-8	No intentional use	Sum: 200 mg/kg	yes
3-Chlorotoluene	108-41-8	No intentional use	Sum: 200 mg/kg	yes
4-Chlorotoluene	106-43-4	No intentional use	Sum: 200 mg/kg	yes
Dichlorotoluene	Various include "29797-40-8	No intentional use	Sum: 200 mg/kg	yes
2,3-Dichlorotoluene	32768-54-0	No intentional use	Sum: 200 mg/kg	yes
2,4-Dichlorotoluene	95-73-8	No intentional use	Sum: 200 mg/kg	yes
2,5-Dichlorotoluene	19398-61-9	No intentional use	Sum: 200 mg/kg	yes
2,6-Dichlorotoluene	118-69-4	No intentional use	Sum: 200 mg/kg	yes
3,4-Dichlorotoluene	95-75-0	No intentional use	Sum: 200 mg/kg	yes
3,5-dichlorotoluene	25186-47-4	No intentional use	Sum of substances2 : 200 mg/kg Each: 10 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Trichlorotoluene	various	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,3,6-Trichlorotoluene	2077-46-5	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,4,5-Trichlorotoluene	6639-30-1	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,3,4-trichlorotoluene	7359-72-0	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,4,6-trichlorotoluene	23749-65-7	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
3,4,5-trichlorotoluene	21472-86-6	No intentional use	Sum of substances2 : 200 mg/kg Each: 10 mg/kg	yes
Tetrachlorotoluene	various	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,3,4,5-tetrachlorotoluene	76057-12-0	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,3,5,6-tetrachlorotoluene	1006-31-1	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
2,3,4,6-tetrachlorotoluene	875-40-1	No intentional use	Sum: 200 mg/kg Each: 10 mg/kg	yes
Pentachlorotoluene	877-11-2	No intentional use	Sum: 200 mg/kg	yes
<b>8a. Halogenated solvents / VOCs</b>				
1,2-Dichloroethane	107-06-2	No intentional use	5 mg/kg	yes
1,1-Dichloroethene	75-35-4	No intentional use	1000 mg/kg*	
Methylene chloride	75-09-2	No intentional use	5 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Trichloromethane (Chloroform)	67-66-3	No intentional use	1000 mg/kg*	
1,1,1-Trichloroethane	71-55-6	No intentional use	1000 mg/kg*	
Carbon tetrachloride	56-23-5	No intentional use	1000 mg/kg*	
Trichloroethene (Trichloroethylene)	79-01-6	No intentional use	40 mg/kg	yes
1,1,2-Trichloroethane	79-00-5	No intentional use	1000 mg/kg*	
1,1,1,2-Tetrachloroethane	630-20-6	No intentional use	1000 mg/kg*	
Tetrachloroethene (PERC)	127-18-4	No intentional use	5 mg/kg	yes
1,1,2,2-Tetrachloroethane	79-34-5	No intentional use	1000 mg/kg*	
Pentachloroethane	76-01-7	No intentional use	1000 mg/kg*	
1,2,3-trichloropropane	96-18-4	No intentional use	1000 mg/kg*	
Benzylchloride	100-44-7	No intentional use	50 mg/kg and 100 mg/kg for dyes	yes
2-(2-methoxyethoxy)-ethanol	111-77-3	No intentional use	1000 mg/kg*	yes (Candidate)
<b>8b. Other Solvents</b>				
Benzene	71-43-2	No intentional use	50 mg/kg	yes
N,N-dimethylformamide (N,N-DMF) / DMFa	68-12-2	No intentional use	1000 mg/kg	yes
N,N-dimethylacetamide (N,N-DMAC)	127-19-5	No intentional use	1000 mg/kg	yes
1-methyl-2-pyrrolidone (NMP)	872-50-4	No intentional use	1000 mg/kg	yes
Toluene	108-88-3	No intentional use	500 mg/kg	yes
Ethylbenzene	100-41-4	No intentional use	1000 mg/kg*	—
Xylene	1330-20-7 (all isomers) 95-47-6, 106-42-3, 108-38-3	No intentional use	500 mg/kg	yes
Styrene	100-42-5	No intentional use	1000 mg/kg*	
Cresol (all isomers)	1319-77-3	No intentional use	500 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
o-cresol	95-48-7	No intentional use	500 mg/kg	yes
m-cresol	108-39-4	No intentional use	500 mg/kg	yes
p-cresol	106-44-5	No intentional use	500 mg/kg	yes
Formamide	75-12-7	No intentional use	1000 mg/kg*	
Carbon disulphide	75-15-0	No intentional use	1000 mg/kg*	
Acetophenone	98-86-2	No intentional use	1000 mg/kg*	
2-Phenyl-2-Propanol	617-94-7	No intentional use	1000 mg/kg*	
N-Ethyl-2-pyrrolidone; 1-Ethyl-2-pyrrolidinone (NEP)	2687-91-4	No intentional use	1000 mg/kg	yes
<b>9. Chlorinated Phenols</b>				
Pentachlorophenol (PCP), its salts and compounds	87-86-5	No intentional use	5 mg/kg	yes
Tetrachlorophenol (TeCP)	25167-83-3	No intentional use	Sum of TeCP: 15 mg/kg	yes
2,3,4,5-Tetrachlorophenol	4901-51-3	No intentional use	Sum of TeCP: 15 mg/kg	yes
2,3,4,6-Tetrachlorophenol	58-90-2	No intentional use	Sum of TeCP: 15 mg/kg	yes
2,3,5,6-Tetrachlorophenol	935-95-5	No intentional use	Sum of TeCP: 15 mg/kg	yes
Trichlorophenol (TriCP)	various	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,3,4-Trichlorophenol	15950-66-0	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,3,5-Trichlorophenol	933-78-8	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,3,6-Trichlorophenol	933-75-5	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,4,5-Trichlorophenol	95-95-4	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,4,6-Trichlorophenol	88-06-2	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
3,4,5-Trichlorophenol	609-19-8	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
DiChlorophenol (DiCP)	various	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,3-Dichlorophenol	576-24-9	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,4-Dichlorophenol	120-83-2	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,5-Dichlorophenol	583-78-8	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2,6-Dichlorophenol	87-65-0	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
3,4-Dichlorophenol	95-77-2	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
3,5-Dichlorophenol	591-35-5	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
Mono Chlorophenol	various	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
2-Chlorophenol	95-57-8	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
3-Chlorophenol	108-43-0	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
4-Chlorophenol	106-48-9	No intentional use	Sum of TriCP, DCP, MonoCP: 50 mg/kg	yes
<b>10. Chlorinated Paraffins (SCCP / MCCP)</b>				
Short Chain Chlorinated Paraffins (SCCP) with C10 –C13	85535-84-8	No intentional use	250 mg/kg	yes
Medium Chain Chlorinated Paraffins (MCCP) with C14 –C17	85535-85-9	No intentional use	250 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
<b>11a. Heavy Metals</b>				
<b>Total Heavy metal - (Non-Jewelry)</b>				
Total Cadmium, Cd	7440-43-9	No intentional use	Others: 20 mg/kg Pigment: 50 mg/kg	yes
Total Lead, Pb	7439-92-1	No intentional use	100 mg/kg	yes
Total Mercury, Hg	7439-97-6	No intentional use	Others: 4 mg/kg Pigment: 25 mg/kg	yes
Total Cobalt, Co	7440-48-4	No intentional use	500 mg/kg	yes
Total Nickel, Ni	7440-02-0	No intentional use	250 mg/kg	yes
Total Antimony, Sb	7440-36-0	No intentional use	Dye: 50 mg/kg Pigment: 250 mg/kg	yes
Total Arsenic, As	7440-38-2	No intentional use	50 mg/kg	yes
Total Copper, Cu	7440-50-8	No intentional use	250 mg/kg	yes
Total Chromium, Cr	7440-47-3	No intentional use	100 mg/kg	yes
Total Silver (Ag)	7440-22-4	No intentional use	100 mg/kg	yes
Total Barium	7440-39-3	No intentional use	100 mg/kg	yes
Total Selenium	7782-49-2	No intentional use	Dye: 20 mg/kg Pigment: 100 mg/kg	yes
Total Tin	7440-31-5	No intentional use	250 mg/kg	yes
<b>Extractable HM (Non-Jewelry)</b>				
Extractable Chromium (VI), CrVI	18540-29-9	No intentional use	10 mg/kg	yes
<b>12. Glycols</b>				
Bis(2-methoxyethyl)-ether;	111-96-6	No intentional use	50 mg/kg	yes
2-methoxyethanol;	109-86-4	No intentional use	50 mg/kg	yes
2-methoxyethylacetate;	110-49-6	No intentional use	50 mg/kg	yes



Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Ethylene glycol dimethyl ether / 1,2-dimethoxyethane	110-71-4	No intentional use	50 mg/kg	yes
2-ethoxyethanol;	110-80-5	No intentional use	50 mg/kg	yes
2-ethoxyethyl acetate;	111-15-9	No intentional use	50 mg/kg	yes
2-methoxypropylacetate;	70657-70-4	No intentional use	Textile: 50 mg/kg Leather: 50 mg/kg, 1000 mg/kg (finishing formulations) Not Applicable for polymer	yes
2-methoxypropanol	1589-47-5	Textile&polymers: No intentional use Leather: candidate	Textile & polymers: ~50 mg/kg Leather: candidate	yes
1,2-bis(2-methoxyethoxy)ethane Triethylene glycol dimethyl ether (TEGDME)	112-49-2	No intentional use	50 mg/kg	yes
<b>13. PAHs</b>				
Naphthalene	91-20-3	No intentional use	leather: 200 mg/kg Textile & Plastics: <b>Sum except BaP: 200 mg/kg</b>	yes
Acenaphthylene	208-96-8	No intentional use	<b>Sum: 200 mg/kg</b> Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Acenaphthene	83-32-9	No intentional use	<b>Sum: 200 mg/kg</b> Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Fluorene	86-73-7	No intentional use	<b>Sum: 200 mg/kg</b> Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Phenanthrene	1985/1/8	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Anthracene	120-12-7	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Fluoranthene	206-44-0	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Pyrene	129-00-0	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Indeno[1,2,3-cd]pyrene	193-39-5	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo[ghi]perylene	191-24-2	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo-[a]-anthracene(BaA)	56-55-3	No intentional use	20 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Chrysene(CHR)	218-01-9	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
Benzo-[a]-pyrene (BaP)	50-32-8	No intentional use	Sum: 200 mg/kg 20 mg/kg	yes
Dibenzo-[a,h]-anthracene (DBAhA)	53-70-3	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo-[b]-fluoranthene(BbFA)	205-99-2	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo-[k]-fluoranthene(BkFA)	207-08-9	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo-[e]-pyrene(BeP)	192-97-2	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Benzo-[j]-fluoranthene(BjFA)	205-82-3	No intentional use	Sum: 200 mg/kg Leather: Sum except BaP&Naphthalene: 200 mg/kg Textile & Polymers: Sum except BaP: 200 mg/kg	yes
Cyclopenta[c,d]pyrene	27208-37-3	No intentional use	1000 mg/kg*	
Dibenzo-[a,e]pyrene	192-65-4	No intentional use	1000 mg/kg*	
Dibenzo-[a,h]pyrene	189-64-0	No intentional use	1000 mg/kg*	
Dibenzo-[a,i]pyrene	189-55-9	No intentional use	1000 mg/kg*	
Dibenzo-[a,l]pyrene	191-30-0	No intentional use	1000 mg/kg*	
1-Methylpyrene	2381-21-7	No intentional use	1000 mg/kg*	
<b>14. Pesticides</b>				

Parameter	CAS Number	FR MRSL v2024 Requirements		ZDHC MRSL v3.1
		in Manufacturing	in Chemical formulations	
AEEA [2-(2-aminoethylamino)ethanol]	111-41-1	No intentional use	100 mg/kg	yes
Borate, zinc salt	12767-90-7	No intentional use	250 mg/kg 1000 mg/kg	yes for CAS No.: 1332-07-6
Permethrin	52645-53-1	No intentional use	250 mg/kg (Exemption for mentioned processes)	yes
Silica (particles of respirable size)	14464-46-1	No intentional use	No use of Sand Blasting	yes
Thiourea	62-56-6	No intentional use	1000 mg/kg	yes
Triclosan	3380-34-5	No intentional use	250 mg/kg	yes
<b>17. Others</b>				
Diazene-1,2-dicarboxamide [C,C'-azodi(formamide), ADCA]	123-77-3	No intentional use	1000 mg/kg	yes
Dimethyl Fumarate (DMFU)	624-49-7	No intentional use	10 mg/kg	yes
o-Phenylphenol (OPP)	90-43-7	Textile: No intentional use Leather: Use is permitted for chemical preservation for transportation and storage of raw hides as well as tanned semi-finished products (wet-white, wet- blue). Chemical preservation of coated or uncoated finished leather shall not be permitted.	Textile: 5000 mg/kg	yes
Bisphenol-A	80-05-7	No intentional use	100 mg/kg No restriction on polymer	yes
Quinoline	91-22-5	No intentional use	1000 mg/kg	yes
Perboric acid, sodium salt	Multiple, including 11138-47-9,	No intentional use	1000 mg/kg	yes

Parameter	CAS Number	FR MRSL v2024		ZDHC MRSL v3.1
		Requirements		
		in Manufacturing	in Chemical formulations	
	15120-21-5, 7632-04-04, 16940-66-2, 13517-20-9, 125022-34-6, 90568-23-3			
Titanium dioxide particles have aerodynamic diameter $\leq 10 \mu\text{m}$ .	13463-67-7	No intentional use	1% (w/w) of TiO <sub>2</sub> particles have aerodynamic diameter $\leq 10 \mu\text{m}$ . (Liquid mixtures or emulsions or pastes containing TiO <sub>2</sub> , having proper GHS/CLP classification, are allowed for use.)	yes
<b>20. UV stabilizers</b>				
2-(2-hydroxy-3,5-di-tert-butylphenyl)-benzotriazole (UV 320)	3846-71-7	No intentional use	1000 mg/kg	yes
2-(2-hydroxy-3,5-di-t-butylphenyl)-5-chlorobenzotriazol (UV 327)	3864-99-1	No intentional use	1000 mg/kg	yes
2-(2-hydroxy-3-sec-butyl-5-tert-butylphenyl)benzotriazole (UV 350)	36437-37-3	No intentional use	1000 mg/kg	yes
2-(2-hydroxy-3,5-di-tert-pentylphenyl)benzotriazole (UV 328)	25973-55-1	No intentional use	1000 mg/kg	yes
<b>23. Siloxanes</b>				
Octamethylcyclotetrasiloxane (D4)	556-67-2	No intentional use	1000 mg/kg	yes
Decamethylcyclopentasiloxane (D5)	541-02-6	No intentional use	1000 mg/kg	yes
Dodecamethylcyclohexasiloxane (D6)	540-97-6	No intentional use	1000 mg/kg	yes

\*FR MRSL への収載基準を満たしてはいるものの、最終的な基準値を設定するにはさらなる情報を必要とする物質の暫定基準値です。

## Chapter 2: MRSL 候補リスト

Parameter	CAS Number	FR MRSL v2023	ZDHC MRSL v3.1
		Intent	
<b>8a. Halogenated solvents / VOCs</b>			
2-(2-methoxyethoxy)-ethanol	111-77-3	In Version 3 of the ZDHC MRSL, it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMRs). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation to workplace safety, air emissions, RSL compliance and downstream concerns.	Yes (Candidate)
Methanol	67-56-1		Yes (Candidate)
<b>15. Formaldehyde</b>			
Formaldehyde	50-00-0	The deliberate use of formaldehyde or inclusion of formaldehyde in formulations is not permitted. In Version 3 of the ZDHC MRSL, it is intended to place restrictions on the maximum permitted levels of formaldehyde in formulations. The use, presence, and generation of formaldehyde is a complex subject and studies are required to determine appropriate levels.	Yes (Candidate)
<b>17. Others</b>			
Phenol	108-95-2	ZDHC is looking for safe limits for phenol as a contaminant in textile chemical formulations.	Yes (Candidate)

### Chapter 3: アーカイブされた物質

Parameter	CAS Number	ZDHC MRSL v3.1
<b>4c. Navy Blue</b>		
Navy Blue	1. CAS # 118685-33-9; 2. Not Allocated	Yes (Archived)
<b>4d. Disperse &amp; Carcinogenic Dyes</b>		
Basic Yellow 2/ Solvent yellow 34 (hydrochloride and free base)	60-11-7	Yes (Archived)
Basic Yellow 2	2465-27-2 492-80-8	Yes (Archived)
D&C Red No. 19	81-88-9	Yes (Archived)
<b>8a. Halogenated solvents / VOCs</b>		
Bis(chloromethyl)ether	542-88-1	Yes (Archived)

## 追加要求事項

上記の表で要求されている特定の有害化学物質のほかに、生産においてファーストリテイリングが必要とするいくつかの追加要求事項があります。これらには、アスベスト、PVC 材料に関する制限等が含まれます。以下のセクションで詳細を説明します。

### 1. アスベスト

アスベストの使用は、多くの国や地域において、発がん物質として国内法で禁止されています。アスベストは、スレート、断熱材および保温材に使用されており、アスベスト粒子が人体によって吸入された場合に、肺線維症、悪性中皮腫および肺がんの根本的原因となる可能性があることがわかっています。アスベストが施設内で使用されると、従業員や周囲の環境に深刻な健康影響を与える可能性があります。アスベストは非常に危険な物質であるため、有資格の専門家による調査および処理が必要です。アスベストを含む材料が確認された場合、以下の対策を講じる必要があります。

- 使用されているアスベストの場所を記録し、適切かつ目に見えるようにマークする必要があります。その後の悪影響を防ぐための対策を講じる必要があります。
- 処分が完了するまで潜在的な悪影響をチェックするための目視検査を行ってください。
- アスベストの認知度を高め、アスベストの悪影響が見つかった場合の対応策を習得するために、従業員は訓練を受けなければなりません。
- 廃棄は関連法に従って行わなければなりません。
- 悪影響を起こすアスベストは、資格のある業者によって修理されなければなりません。

### 2. PVC 素材

ファーストリテイリングは、すべての FR 商品（コンポーネントを含む）での PVC 素材の使用を禁止しています。PVC は広く使用されている熱可塑性ポリマーであり、それは可塑剤の添加によってより柔軟性をもたせることができます。最も広く使用されている可塑剤はフタル酸エステル類です。アパレル業界では、PVC 素材は一般にコート、ジャケット、エプロン、バッグに使用されています。ファーストリテイリングは、以下の理由により PVC 素材を禁止しています。



- 多くのフタル酸エステル類は生殖毒性があることが知られており、先天性異常またはホルモンレベルの変化を引き起こす可能性があります。2013年のファーストリテイリングのコミットメントにおいても、フタル酸エステル類は 11 の優先的に廃絶すべき有害化学物質のうちのひとつです。
- 塩化ビニル製造の副産物として、また家庭ごみ中の廃 PVC の焼却によって、ダイオキシンが生成されると言われています。

## Appendix 1. 想定される使用用途

Chemical Group	Potential Uses in Apparel and Footwear Textile Processing
1. APs / APEOs	<p>APEOs can be used as or found in: Detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifier/dispersing agents for dyes and prints, impregnating agents, degumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings.</p>
2. Phthalates (ortho-Phthalates)	<p>Esters of ortho-phthalic acid (phthalates) are a class of organic compounds commonly added to plastics to increase flexibility. They sometimes are used to facilitate moulding of plastic by decreasing its melting temperature. Phthalates can be found in:</p> <ul style="list-style-type: none"> <li>• Flexible plastic components (e.g., PVC)</li> <li>• Print pastes</li> <li>• Adhesives</li> <li>• Plastic buttons</li> <li>• Plastic sleeveings</li> <li>• Polymeric coatings</li> </ul>
3a. Brominated Flame Retardants 3b. Chlorinated Flame Retardants	<p>Flame retardant chemicals are rarely used to meet flammability requirements in children's clothing and adult products. They should no longer be used in apparel and footwear.</p>
4a. Azo Dyes	<p>Azo dyes and pigments are colourants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds. Thousands of azo dyes exist, but only those that degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for dyeing of textiles.</p>
4b. Navy Blue	<p>Navy Blue colourants are regulated and should no longer be used for dyeing of textiles.</p>
4c. Disperse & Carcinogenic Dyes	<p>Most of Carcinogenic dyes are regulated and should no longer be used for dyeing of textiles.  Disperse dyes are a class of water-insoluble dyes that penetrate the fibre system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre</p>

Chemical Group	Potential Uses in Apparel and Footwear Textile Processing
	(e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and should no longer be used for dyeing of textiles.
<b>5. Organotin Compounds</b>	Organotins are a class of chemicals combining tin and organics such as butyl and phenyl groups. Organotins are predominantly found in the environment as antifoulants in marine paints, but they can also be used as biocides (e.g., antibacterials), catalysts in plastic and glue production and heat stabilisers in plastics/rubber. In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.
<b>6. PFCs</b>	Durable water, oil and stain repellent finishes and soil release finishes (fluorinated polymers) based on long-chain technology are banned from intentional use. Long-chain compounds according to the Organisation for Economic Co-operation and Development (OECD) definition ( <a href="https://www.oecd.org/ehs/pfc/">https://www.oecd.org/ehs/pfc/</a> ) are based on long-chain perfluorocarboxylic acids (C8 and higher) and on long-chain perfluoroalkyl sulfonates (C6 and higher). The main contaminants of this technology include: Perfluoroalkyl sulfonates (PFSAs) with carbon chain lengths C6 and higher (e.g., PFOS, perfluorooctane sulfonate) Perfluorocarboxylic acids with carbon chain lengths C8 and higher (e.g., PFOA, perfluorooctanoic acid) PFOA and PFOS may be present as unintended by-products in long-chain commercial water, oil and stain repellent agents. PFOA also may be in use for polymers like polytetrafluoroethylene (PTFE).
<b>7. COC (Chlorobenzenes/Chlorotoluenes)</b>	Chlorobenzenes and chlorotoluenes (chlorinated aromatic hydrocarbons) can be used as carriers in the dyeing process of polyester or wool/polyester fibres. They can also be used as solvents.
<b>8a. Halogenated Solvents / VOCs</b>	In apparel and footwear, solvents are used as finishing/cleaning and printing agents, for dissolving and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations).
<b>8b. Other Solvents</b>	These volatile organic compounds should not be used in textile auxiliary chemical preparations. They are associated with solvent-based processes like solvent-based polyurethane coatings and glues/adhesives. They should not be used for any kind of facility cleaning or spot cleaning.
<b>9. Chlorinated Phenols / OPP</b>	Chlorophenols are poly chlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) have been used in the past to prevent mould when storing / transporting, raw hides and leather. They are now regulated and should not be used.

Chemical Group	Potential Uses in Apparel and Footwear Textile Processing
<b>10. Chlorinated Paraffins (SCCP / MCCP)</b>	Short-chain chlorinated paraffins can be found as contaminants within long-chain chlorinated paraffins and sulfo-chlorinated paraffins, used as fat liquoring agents.
<b>11. Heavy Metals</b>	<ul style="list-style-type: none"> <li>• Arsenic and its compounds can be used in some preservatives, pesticides and defoliants for cotton. It is also associated with synthetic fibres, paints, inks, trims and plastics.</li> <li>• Cadmium compounds are found in or used as: pigments (particularly red, orange, yellow and green), a stabilizer for PVC plastic and in fertilisers, biocides and paints (e.g., surface paints on zippers and buttons).</li> <li>• Mercury compounds can be present in pesticides and can be found as contamination in caustic soda (NaOH). Mercury compounds may be used in paints (e.g., surface paints on zippers and buttons).</li> <li>• In apparel and footwear, lead may be associated with plastics, paints, inks, pigments and surface coatings.</li> <li>• Although typically associated with leather tanning, chromium VI also may be used in the dyeing of wool (after the chroming process).</li> </ul>
<b>12. Glycols</b>	In apparel and footwear, glycols have a wide range of uses including as solvents for finishing/cleaning, printing agents, and dissolving and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations).
<b>13. PAHs</b>	Polycyclic aromatic hydrocarbons (PAHs) are natural components of crude oil and are a common residue from oil refining. PAHs have a characteristic smell similar to the smell of car tires or asphalt. Oil residues containing PAHs are added to rubber and plastics as a softener or extender and may be found in rubber, plastics, lacquers and coatings. PAHs are often found in the outsoles of footwear and in printing pastes of screen prints. PAHs can be present as impurities in Carbon Black. They also may be formed from thermal decomposition of recycled materials during reprocessing.