

SG Mark for Low-Pollutant Materials and Medical Products

Version 01/2021



Responsibility for Consumer Health

Chemical products are indispensable in the production and processing of materials – today and in the foreseeable future.

Consumers generally regard leathers and furs as natural products. However, anybody who ventures to delve into the details of leather and fur production will soon discover that leathers and furs acquire their desired properties through tanning, finishing, and dyeing. These processes depend upon the use of chemicals. And chemicals are also used in the processing, storage, and transport of leathers, furs, and products made from these materials.

There are textiles made from a wide variety of basic materials, from natural materials such as cotton or linen to synthetic textiles such as polyester. All of these materials require various chemicals for the processing steps required in each case until the finished end product with the desired properties is available.

Plastics and adhesives are mostly made purely synthetically. The variety of available plastic or adhesive types is immense, and the use of chemicals also differs enormously. There are plastics or adhesives that need contain only a few additives, while others require a large number of aids for technological purposes.

Clearly, chemical substances may only be used in such a way that they pose no hazard to human health or the environment. In the interests of consumer and environmental protection, it is important that materials are produced properly and with due care and that suitable auxiliary agents and environmentally friendly materials are used in production and processing. This high quality standard should be assured and certified by independent inspections.

SG Mark Supports Responsible Manufacturers

Manufacturers and dealers of leather products such as footwear, leather goods, leather clothing, and materials for their production should be totally familiar with, and exercise responsible control over, the supply chain of their goods.

Labelling the products with the SG Mark (where SG stands for “Schadstoffgeprüft”, meaning “tested for hazardous compounds”) provides ideal support for these aims. The mark testifies to a degree of care exercised during production and distribution which goes beyond legal requirements. Only those products which satisfy the stringent limit values and pollutant parameters listed in the SG catalogue of test criteria are awarded the SG Mark. The SG limit values generally lie far below statutory levels. The mark indicates that according to our present knowledge no health hazards are to be expected. And that gives the consumer – and also the manufacturer – confidence.

The SG Mark is awarded exclusively by the Test and Research Institute Pirmasens, PFI. The Institute was founded about 65 years ago for product testing, research, and certification for the footwear industry and its suppliers and offers a unique treasure house of industry-specific know-how.

Strictest Test Criteria

The catalogue of SG test criteria was developed by experts on the basis of the latest scientific findings. Precisely which tests are performed on a particular leather or fur product will depend upon the materials in question, upon the auxiliary substances used in its production, and upon the production process. The tests ensure reliable detection of relevant hazardous substances. The SG test criteria cover all product-relevant requirements from REACH Annex XVII, and the most relevant SVHC Candidates.

The test results are supplemented by appropriate documentation provided by the product supplier concerning the raw materials used and the production process. Consistently high product quality is assured by the product manufacturer's quality control regime.

Annual random checks are performed by PFI on products and materials which have been awarded the SG Mark.

Requirements

The SG Mark can only be awarded if a company has been ISO 9001 certified or audited by our PFI experts. For the consumer, the presence of the SG Mark on a product communicates a message of particular care taken by the manufacturer. It means that e.g.

- dyes which can release carcinogenic amines,
- carcinogenic and allergenic dyes,
- chromium VI compounds, and
- organotin compounds

cannot be detected and that

- the amount of soluble heavy metals with a hazardous or sensitizing action meets strict limit values,
- no banned short-chain chloroparaffins (C₁₀-C₁₃) are present and
- no substances of very high concern (SVHC) are present in inadmissible concentrations.

Articles intended for use by small children are subject to particularly stringent requirements.

Further information

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Test criteria for the SG Mark
Version 01/2021

Parameter	Components ^[1] made from leather, fur Limits for adults/children ^[3]	Components ^[1] made from textiles Limits for adults/children ^[3]	Components ^[1] made from leather fibre board (lefa) ^[2] Limits for adults/children ^[3]	Components ^[1] made from cardboard, paper, wood, cellulose, cork Limits for adults/children ^[3]	Adhesives ^[4] Limits for adults/children ^[3]	Test method
Odour	max. 3 ^[4]	max. 3 ^[4]	max. 3 ^[4]	max. 3 ^[4]	max. 3 ^[4]	SNV 195651:1968
Flame-retardant finish	nu	nu	nu	nu	-	Declaration of manufacturer; if necessary XRF screening
Colour fastness: Colour fastness to rubbing ^[5] - Staining	at least grey scale grade 3	at least grey scale grade 4	at least grey scale grade 3	at least grey scale grade 3	-	Leather, lefa: DIN EN ISO 11640:2018 100 cycles dry rubbing, as well as 50 cycles rubbing with sweat solution (according to DIN EN ISO 11641:2013) Textile / other materials: DIN EN ISO105-X12:2016 dry rubbing and rubbing with acidic and alkaline sweat solution: 10 cycles each according to DIN EN ISO 105-E04:2013
Colour fastness: Colour fastness to perspiration ^[5] - Staining	at least grey scale grade 3	at least grey scale grade 4	at least grey scale grade 3	at least grey scale grade 3	-	Leather, lefa: DIN EN ISO 11641:2013 Textile / other materials: DIN EN ISO 105-E04:2013
pH-value of aqueous extract	3.5 – 7.0 ^[6]	4.5 – 7.5	3.5 – 7.0	4.5 – 7.5	-	Leather, lefa: DIN EN ISO 4045:2018 Textile / other materials: DIN EN ISO 3071:2006
Formaldehyde (free and released by partial hydrolysis)	75 mg/kg / 20 mg/kg	75 mg/kg ¹ / 20 mg/kg	75 mg/kg / 20 mg/kg	75 mg/kg / 20 mg/kg	75 mg/kg / 20 mg/kg	Leather, lefa: DIN EN ISO 17226:2019 Textile / other materials: DIN EN ISO 14184-1:2011 Wood: EN 717-3:2005
Pentachlorophenol (PCP) Tetrachlorophenols (TeCP) (each isomer) Trichlorophenols (TriCP) (each isomer) Dichlorophenols (DiCP) (each Isomer) Monochlorophenols (MCP) (each Isomer)	0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg	0.5 / 0.05 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg	0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg	0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg	0.5 mg/kg ^[9] 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg 0.5 mg/kg	According to prDIN EN ISO 17070:2015 prDIN 5009:2019

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Pesticides ^[10] (sum)	1 mg/kg	1 mg/kg	1 mg/kg	1 mg/kg	-	Declaration of manufacturer; if necessary test according to DFG S19
Wood preservatives ^[11] (sum)	-	-	-	1 mg/kg (wood only)	-	Declaration of manufacturer; if necessary test according to DFG S19
Tributyl tin compounds (TBT/TBTO) Dibutyl tin compounds (DBT) Monobutyl tin compounds (MBT) Triphenyl tin compounds (TPT) Dioctyl tin compounds (DOT)	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	DIN CEN ISO/TS 16179; DIN SPEC 91179:2012
Banned azo dyes	nd ^[19]	nd ^[19]	nd ^[19]	nd ^[19]	nd ^[19]	Leather, lefa: pr DIN EN ISO 17234-1:2019 DIN EN ISO 17234-2:2011 (4-Aminoazobenzene) Textile / PES / other materials: DIN EN 14362-1:2017, DIN EN 14362-3:2017 (4-Aminoazobenzene)
Carcinogenic and allergenic dyes ^[12]	-	nd ^[20]	-	-	-	DIN 54231:2005
Polycyclic aromatic hydrocarbons 18 PAH EPA/EU ^[13] 8 PAH EU ^[13]	∑ 10 mg/kg ^[14] 0.2 mg/kg each	∑ 10 mg/kg ^[14] 0.2 mg/kg each	∑ 10 mg/kg ^[14] 0.2 mg/kg each	∑ 10 mg/kg ^[14] 0.2 mg/kg each	∑ 10 mg/kg ^[14] 0.2 mg/kg each	AfPS GS 2014:01 PAK
Preservatives ^[15] - 2-(thiocyanomethylthio)-benzothiazole (TCMTB) - 4-chloro-3-methylphenol (PCMC, CMK) - 2-phenylphenol (OPP) - 2-octylisothiazol-3(2H)-one (OIT)	300 mg/kg 300 mg/kg 750 mg/kg 100 mg/kg	100 mg/kg	300 mg/kg 300 mg/kg 750 mg/kg 100 mg/kg	-	-	According to pr DIN EN ISO 13365:1 2019

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Chromium VI (soluble)	nn ^[21]	nd ^[21]	nn ^[21]	nd ^[21]	-	According to DIN EN ISO 17075:2017
Chromium VI (soluble) after aging	nd ^[21]	-	nd ^[21]	-	-	According to DIN EN ISO 17075:2017 Aging procedure: ISO 10195:2018
soluble mineral tanning agents (Al, Cr, Ti, Zr total)	∑ 200 mg/kg / ∑ 50 mg/kg	-	∑ 200 mg/kg / ∑ 50 mg/kg	-	-	DIN EN ISO 17072-1:2011
Other heavy metals (soluble): Antimony Arsenic Cadmium Chromium, total (incl. Chromium VI) Cobalt Copper Lead Mercury Nickel Barium Selen	5.0 mg/kg 0.2 mg/kg 0.1 mg/kg - 1.0 mg/kg 50 mg/kg 0.8 mg/kg 0.02 mg/kg 4.0 mg/kg 100 mg/kg 100 mg/kg	5.0 mg/kg 0.2 mg/kg 0.1 mg/kg 1.0 mg/kg 1.0 mg/kg 50 mg/kg 0.8 mg/kg 0.02 mg/kg 4.0 mg/kg 100 mg/kg 100 mg/kg	0.2 mg/kg 0.1 mg/kg - 1.0 mg/kg 50 mg/kg 0.8 mg/kg 0.02 mg/kg 4.0 mg/kg 100 mg/kg 100 mg/kg	0.2 mg/kg 0.1 mg/kg 1.0 mg/kg 50 mg/kg 0.8 mg/kg 0.02 mg/kg 4.0 mg/kg 100 mg/kg 100 mg/kg	-	Leather, lefa: DIN EN ISO 17072-1:2019 Textile / other materials: DIN EN 16711-2:2016
Chlorinated paraffins ^[16] (SCCP and MCCP)	nd ^[22]	nd ^[22]	nd ^[22]	nd ^[22]	-	According to DIN EN ISO 18219:2016
Alkylphenols (NP and OP) ^[17]	30 mg/kg each	30 mg/kg each	30 mg/kg each	30 mg/kg each	30 mg/kg each	EN ISO 21084:2019
Alkylphenol ethoxylates (NPEO and OPEO) ^[17]	100 mg/kg each	100 mg/kg each	100 mg/kg each	100 mg/kg each	100 mg/kg each	Leather, lefa: DIN EN ISO 18218:2015 Textile / other materials: DIN EN ISO 18254:2016
Heptylphenole (HpP) pPentylphenole (PeP)	100 mg/kg each	100 mg/kg each	100 mg/kg each	100 mg/kg each	100 mg/kg each	EN ISO 21084:2019

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Dimethyl fumarate	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg	DIN CEN ISO/TS 16186; DIN SPEC 53280:2012
Triclosan	50 mg/kg	50 mg/kg	50 mg/kg	50 mg/kg	50 mg/kg	According to DIN EN ISO 13365:2011
1-Methyl-2-pyrrolidone (NMP)	500 mg/kg	-	500 mg/kg	-	500 mg/kg	prDIN EN ISO 19070:2014
Chlorinated Benzoles and Toluenes [23]	-	1 mg/kg	-	-	-	EN 17137: 2018
Quinoline	-	50 mg/kg	-	-	-	DIN 54231:2005
PFC ^[17] for water-, oil- and dirt-repellent materials	1 µg/m ² each (coated) 25 µg/kg each (non coated)	1 µg/m ²	1 µg/m ² each (coated) 25 µg/kg each (non coated)	-	-	acc. EN ISO 23702-1:2019
Isothiazolines/ Isothiazolinones ^[24]	5 mg/kg	-	5 mg/kg	-	5 mg/kg	Solvent extraction, HPLC

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Parameter	Components ^[1] made from plastics/ caoutchouc/ artificial leather/ polymer coating	Test method
	Limits for adults/children ^[3]	
Odour	max. 3 ^[4]	SNV 195651:1968
Flame-retardant finish	nu	Declaration of manufacturer; if necessary XRF screening
Colour fastness: to rubbing ^[5]	At least grey scale grade 4 ^[8]	DIN EN ISO 105-X12: 2016 10x dry and 10x with acidic and alkaline sweat solution according to DIN EN ISO 105-E04:2013
Colour fastness: to perspiration acidic and alkaline ^[5]	At least grey scale grade 4 ^[8]	DIN EN ISO 105-E04:2013
Global migration ^[8]	10 mg/dm ²	EN 1186 ff. 2002
Solvent residues in EVA - 2-Phenyl-2-propanol - Acetophenone	10 mg/kg 10 mg/kg	Headspace GC-MS
2-Mercaptobenzothiazole (2-MBT) in caoutchouc, latex	100 mg/kg ^[7] 10 mg/kg ^[8] / 10 mg/kg	acc to prEN ISO 13365-1:2019
Nitrosamines in caoutchouc, latex ^[8]	1.0 µg/dm ²	According to DIN EN 12868:1999 (migration 24 h, 40 °C, without boiling out)
Banned azo dyes	nd ^[19]	Declaration of manufacturer; if necessary additional test according to DIN EN 14362-1:2017 DIN EN ISO 14362-3:2017 (4-Aminoazobenzene)
Lead	50 mg/kg	DIN EN 16711-1:2016
Cadmium	50 mg/kg	DIN EN 16711-1:2016
Arsenic	50 mg/kg	DIN EN 16711-1:2016
Mercury	50 mg/kg	DIN EN 16711-1:2016
Dimethylformamide in synthetic leather, polymer coatings	100 mg/kg ^[7] 30 mg/kg ^[8] / 30 mg/kg	DIN CEN ISO/TS 16189; DIN SPEC 52411:2013
Formamide in EVA	100 mg/kg	According to DIN CEN ISO/TS 16189; DIN SPEC 52411:2013
Chlorinated paraffins ^[16] (SCCP and MCCP)	nd ^[22]	According to DIN EN ISO 18219:2016

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	Limits for adults/children ^[3]	
Tributyl tin compounds (TBT/TBTO) Dibutyl tin compounds (DBT) Monobutyl tin compounds (MBT) Triphenyl tin compounds (TPT) Diocetyl tin compounds (DOT))	0.025 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg	DIN CEN ISO/TS 16179; DIN SPEC 91179:2012
Polycyclic aromatic hydrocarbons 18 PAH EPA/EU ^[13] 8 PAH EU ^[13]	Σ 10 mg/kg ^[14] 0.2 mg/kg	AfPS GS 2014:01 PAK
Phthalates ^[18] in softened plastics	Σ 500 mg/kg	ISO 14389:2014
Nonylphenol (NP) Octylphenol (OP)	30 mg/kg 30 mg/kg	EN ISO 21084:2019
Octamethylcyclotetrasiloxan (D4) Decamethylcyclopentasiloxan (D5) Dodecamethylcyclohexasiloxan (D6) for silicone or silicone coatings	500 mg/kg	Solvent extraction, GC/MS

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	Limit for adults/children ^[3]	
Nickel release	negative	CR 12471:2002, rubbing test before and after removal of a polymer coating or 13093:2017-09, EN 12474:2009
Cadmium, lead	50 mg/kg for each metal	DIN EN 16711-1:2016 (ASTM E 1645)

Footnotes

- [1] A manufacturer's declaration is required assuring that no SVHC included in the Candidate List (http://echa.europa.eu/chem_data/candidate_list_table_en.asp) are present in the product to be certified (> 1000 mg/kg)
- [2] For covered leather fibre board materials (lefa) without direct skin contact; the limits for leather apply to leather fibre board materials coming into direct contact with the skin
- [3] Children younger than 36 months, generally up to shoe size 27
- [4] 1= odourless; 2= weak; 3= distinct, tolerable; 4= extremely unpleasant; 5= intolerable
- [5] Grade 1 on the grey scale = very extensive crocking, Grade 5 on the grey scale = no crocking
- [6] A max. pH value of 8.0 is permitted for chamois leather
- [7] For materials not coming into direct contact with the skin
- [8] In cases of expected direct skin contact
- [9] In cured film
- [10] DDT, lindane, aldrin dieldrin, methoxychlor, DDD, DDE, heptachlor, heptachlor epoxide, HCH (a,b,d,e), malathion, mirex, parathion(-ethyl), permethrin in furs and wool
- [11] Lindane, dichlofluanid, pentachloroanisole, endosulfan, permethrin, chlorothalonil, tolylfluanid
- [12] Carcinogenic dyes: Acid red 26, Basic red 9, Basic violet 14, Direct black 38, Direct blue 6, Direct red 28, Disperse blue 1, Disperse orange 11, Disperse yellow 3, Basic Violet 3
Allergenic dyes: Disperse blue 1, Disperse blue 3, Disperse blue 7, Disperse blue 26, Disperse blue 35, Disperse blue 102, Disperse blue 106, Disperse blue 124, Disperse brown 1, Disperse orange 1, Disperse orange 3, Disperse orange 37/76, Disperse Orange 149, Disperse red 1, Disperse red 11, Disperse red 17, Disperse yellow 1, Disperse yellow 3, Disperse yellow 9, Disperse Yellow 23, Disperse yellow 39, Disperse yellow 49
- [13] 16 PAH listed by the US EPA: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenzo[a,h]anthracene, benzo[g,h,i]perylene, indeno[1,2,3-cd]pyrene and 8 EU-PAH listed in Directive 2005/69/EC: benzo[a]pyrene, benzo[e]pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene
- [14] PAH contents below 0.2 mg/kg are not considered in summation
- [15] Additional manufacturer's declaration required concerning preservation method and preservatives used
- [16] Short-chain chloroparaffins C10–C13 and medium-chain chloroparaffins C14–C17, additional manufacturer's declaration required concerning non-use of the chloroparaffins
- [17] In addition to analysis, a manufacturer's declaration is required concerning non-use of the substances
Perfluorooctansulfonate (PFOS), Perfluorooctane sulfonate-x (salt or an alcohol) detected as PFOS (PFOS-X), Perfluorooctane sulfonamide (PFOSA), N-Ethylperfluorooctane-1-sulfonamide (N-Et-FOSA), N-Methylheptadecafluorooctane-sulphonamide (N-Me-FOSA), N-Ethyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide (N-Et-FOSE), N-Methyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide (N-Me-FOSE), Heptadecafluorooctanesulfonyl fluoride (POSF), Pentadecafluorooctanoic acid (PFOA) and salts (detected as PFOA), Ammonium pentadecafluorooctanoate (APFO detected as PFOA), 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS), Methyl perfluorooctanoate (Me-PFOA), Ethyl perfluorooctanoate (Et-PFOA), 2-Perfluorooctylethanol (8:2 FTOH), 1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA), 1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)
- [18] Diisononylphthalate (DINP), Di-n-octylphthalate (DNOP), Diethylhexylphthalate (DEHP), Diisodecylphthalate (DIDP), Benzylbutylphthalate (BBP), Di-n-butylphthalate (DBP), Diisobutylphthalate (DIBP), Di-(2-methoxyethyl)-phthalate (DMEP), Di-n-hexylphthalate (DNHP), 1,2-Benzoldicarbonacidester, di-C7-11-branched and linear Alkylesters (DHNU), 1,2-Benzoldicarbonacidester di-C6-8-branched Alkylester, C7-rich (DIHP), Di-n-pentylphthalate (DPP), Diisopentylphthalate (DIPP), n-Penty-isopentylphthalate (PIPP), Di-cyclo-hexylphthalate (DcHP), 1,2-Benzodicarbonic acid dipentylester branched and linear, 1,2-Benzodicarbonic acid, Di-C6-10-alkylester; 1,2-Benzodicarbonic acid, mixed Decyl-, Hexyl- and Octyldiester with ≥ 0.3% Dihexylphthalate, 1,2-Benzodicarbonic acid, Dihexylester, branched and linear, 1,2-Benzodicarbonic acid, Dipentylester, branched and linear
- [19] 20 mg/kg per amine component
- [20] 1 mg/l (= 15 mg/kg) per dye
- [21] 3 mg/kg
- [22] 500 mg/kg
- [23] 2-Chlortoluol, 3-Chlortoluol, 4-Chlortoluol, 2,3-Dichlortoluol, 2,4-Dichlortoluol, 2,5-Dichlortoluol, 2,6-Dichlortoluol, 3,4-Dichlortoluol, 2,3,6-Trichlortoluol, 2,4,5-Trichlortoluol, 2,3,4,5-Tetrachlortoluol, 2,3,4,6-Tetrachlortoluol, Pentachlortoluol, 4-Chlorbenzotrithlorid / aaa4-Tetrachlortoluol, 1,3-Dichlorbenzol, 1,4-Dichlorbenzol, 1,2,3-Trichlorbenzol, 1,2,4-Trichlorbenzol, 1,3,5-Trichlorbenzol, 1,2,3,4-Tetrachlorbenzol, 1,2,3,5-Tetrachlorbenzol, 1,2,4,5-Tetrachlorbenzol, Pentachlorbenzol, Hexachlorbenzol, 1,2-Dichlorbenzol
- [24] 1,2-Benzisothiazol-3-one (BIT), 2-Methyl-4-isothiazolin-3-one (MIT), 5-Chlor-2-methyl-4-isothiazolin-3-one (CIT)
- nd not detectable (<LOD)
- nu not used (manufacturer's declaration)
- LOD limit of detection