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# POSITIVE *list*

OHYOUNG Reactive dyes  
for the Oeko-Tex® Standard 100



OHYOUNG

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## 1. Environmental requirements

There is a global trend in which 'sustainable environmental conservation' is enacted or enhanced by local governments to safeguard consumers' rights. As more and more agreements are made between countries, each country and each corporate are strongly requested to observe its social responsibility in its activities.

## 2. Definition

### 2.1. Definition of the Oeko-Tex® standard 100

The Oeko-Tex® Standard 100 is an independent testing and certification system for textile raw materials, intermediate and end products at all stages of production. Examples for items eligible for certification: Raw and dyed/finished yarns, raw and dyed/finished fabrics and knits, ready-made articles (all types of clothing, domestic and household textiles, bed linen, terry cloth items, textile toys and more.)

### 2.2. Definition of the Detox Campaign

The following, expanded criteria catalogue as per *Appendix 6* and the accompanying *Appendix 7* are only used within the context of a STANDARD 100 by Oeko-Tex® certification process if expressly requested by the applicant in the application. This catalogue specially has been developed for companies who are particularly focused on the **Detox Campaign** and it offers these companies assistance if they want to take this approach (or must take this approach due to specific customer requirements).

The tightening of the limit values in comparison with the requirements in Appendix 4 for many parameters/substances did not take place from a viewpoint of human ecological aspects but considering Point 3.7.5 of this standard. For more information, see 'Appendix 6 / 7' on pages 4-16.

## 3. Values which OHYOUNG can provide on our business with customers

As a member of global leading dyestuff companies, OHYOUNG is ready to meet the requirements suggested by Oeko-Tex® association and share its values with our customers. During the years, OHYOUNG has accumulated its capability of how to detect harmful substances by proper investment on our lab and how to control these harmful substances in production. With our years of experience and expertise in business with textile industry, we can support our customers on how to better meet their ecological requirements by providing our eco-friendly products and technical information related.

## 4. Oeko-Tex® standard 100 criteria

The current Oeko-Tex® Standard 100 divides articles in to four product classes, according to article type, degree of contact with the skin and age of the end users:

- Class I (for babies): Products for babies (up to the age of 36 months) <sup>(1)</sup>
- Class II (with skin contact): Products with direct skin contact
  - Articles in direct contact with the skin are those which enter in contact with it during their normal use, such as underwear, shirts trousers, socks, footwear liners and sheets, among others
- Class III (without skin contact): Products without direct skin contact
  - Articles without direct contact with the skin are those which are worn with only a little part of their surface in direct contact with the skin (e.g. stuffings, etc.)
- Class IV (decoration material)
  - All articles including initial products and accessories which are used for decoration such as table cloths, wall coverings, furnishing fabrics and curtains.

(1) Excludes : Leather clothing

Oeko-Tex® Standard 100 testing for harmful substances always focus on the actual use of the textile. The more intensive the skin contact of a product, the stricter the human ecological requirements to be met.

The following is a brief description of the criteria on an informational basis.

#### 4.1. Formaldehyde

Formaldehyde (CAS No. 50-00-0) is a volatile chemical widely used in the textile and leather industries as: (a) preservative for vegetable and animal raw materials; (b) anti-wrinkling and anti-shrinking agent for cotton products; (c) dyeing and printing fixative, and (d) leather tanning agent.

Oeko-Tex® Standard 100 acceptable limits are below;

Unit : mg/kg				
Substance	Appendix 4 / 5 / 6 / 7			
	Class I	Class II	Class III	Class IV
Formaldehyde	No detection <sup>(2)</sup>	75	150	300

(2) No detection : n.d corresponds according to Japanese Law 112 test method with an absorbance unit less than 0.05 resp. < 16 mg/kg

#### Analysis method:

Textiles : Japanese Norm 112 (JIS L 1041)

Formaldehyde test is performed as given by the Japanese law “Harmful Substance – Containing House-hold Products Control Law No. 112”. According to this method the content of free and partially releaseable formaldehyde is integrally determined in aqueous extract using the acetylaceton method by means of a spectrophotometer.

OHYOUNG dyes listed in the Annex contain no formaldehyde, or, at worst, very low levels, which definitely cannot result in the Oeko-Tex® Standard 100 limits being exceeded.

#### 4.2. Heavy metals

The residual heavy metals in textiles, such as Cr(Chromium), Ni(Nickel), Hg(Mercury), Pb(Lead) and Cd(Cadmium), Sb(Antimony), As(Arsenic), and Cu(Copper) need to be limited. Heavy metals in textile wastewater leads to a major environmental problem, and are a potential danger to human health when present on textiles. Furthermore, the presence of some metals influences the production of textiles. Heavy metals are often used as oxidizing agents, as metal complex dyes, dye stripping agents, fastness improvers, and finishers. Heavy metals may be absorbed by the body when one sweats. So heavy metals can be extracted by perspiration and affect perspiration fastness. Once the chromatic heavy metals of textiles were extracted, the color of textile was shallow, and the perspiration color fastness is easily failed.

#### Antimony

Antimony (CAS No.: 7440-36-0) is a “heavy metal” that is used in the manufacture of flame-proofing compounds, paint, semiconductor devices, and ceramic products.

#### Arsenic

Arsenic (CAS No.: 7440-38-2) is a “heavy metal”, combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds. Organic arsenic compounds are used as pesticides, primarily on cotton plants.

#### Lead

Lead (CAS No.: 7439-92-1) is a “heavy metal” that is used as: (1) metal; (2) alloy for the production of accessories; and (3) pigment..

#### Cadmium

Cadmium (CAS No.: 7440-43-9) is a “heavy metal” that is used in pigments, corrosion resistant plating on steel and

### Chromium and Chromium(VI)

Chromium (CAS No.: 7440-47-3) is a “heavy metal” that can be present as pure metal or as Chromium compounds and/or complexes such as salts and dyes. Chromium VI, as hexavalent chromium, is harmful to humans. It is known to be carcinogenic and has other undesirable effects on health.

Chromium can be found in textile and leather products, due to its presence in the composition of dyestuff and chemical auxiliaries used in the textile and leather industries, such as:

- a) Dyestuff for Wool, Silk and Polyamide (Nylon) textiles especially for dark shades.
- b) Dyeing fixative agents and other dyeing additives for after-treatments in order to improve colour fastness specially for dark shades.

### Cobalt

Cobalt (CAS No.: 7440-48-4) is used as Cobalt-based blue pigment and metal in wear-resistant and high-strength alloys for the production of accessories.

### Copper

Copper (CAS No.: 7440-50-8) is a “heavy metal”, an integral part of the dye molecule as the metal complex dyes in the blue, turquoise, green and grey dyes for high light fastness.

### Nickel

Nickel (CAS No.: 7440-02-0) is a “heavy metal” that can be used as: (1) a brightening agent for metallic parts, and (2) an antioxidizing agent. In textile, Nickel can be present mainly in shiny metallic parts and accessories.

### Mercury

Mercury (CAS No.: 7439-97-6) is a “heavy metal” that can be found in the solid, liquid or gas states (in organic or inorganic compounds).

Oeko-Tex<sup>®</sup> Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5				Appendix 6 / 7			
	Class I	Class II	Class III	Class IV	Class I	Class II	Class III	Class IV
Sb Antimony	30.0	30.0	30.0	-	30.0	30.0	30.0	30.0
As Arsenic	0.2	1.0	1.0	1.0	0.2	0.2	0.2	0.2
Pb Lead	0.2	1.0 <sup>(3)</sup>	1.0 <sup>(3)</sup>	1.0 <sup>(3)</sup>	0.2	0.2 <sup>(3)</sup>	0.2 <sup>(3)</sup>	0.2 <sup>(3)</sup>
Cd Cadmium	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cr Chromium (Total)	1.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0
Cr (VI) Chromium (VI)	< 0.5							
Co Cobalt	1.0	4.0	4.0	4.0	1.0	1.0	1.0	1.0
Cu Copper	25.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>	25.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>	50.0 <sup>(4)</sup>
Ni Nickel <sup>(5)</sup>	1.0 <sup>(6)</sup>	4.0 <sup>(7)</sup>	4.0 <sup>(7)</sup>	4.0 <sup>(7)</sup>	1.0 <sup>(6)</sup>	1.0 <sup>(7)</sup>	1.0 <sup>(7)</sup>	1.0 <sup>(7)</sup>
Hg Mercury	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Zn Zinc	-				750	750	750	750
Mn Manganese	-				90.0	90.0	90.0	90.0

(3) No requirement for accessories made from glass

(4) No requirement for accessories and yarns made from inorganic materials, respecting the requirements regarding biological active products

(5) Including the requirement by EC-Regulation 1907/2006

(6) For metallic accessories and metallized surfaces 0.5 mg/kg

(7) For metallic accessories and metallized surfaces 1.0 mg/kg



**Analysis method:**

Textiles : The quantitative determination of the heavy metal components extracted according to ISO 105-E04, is performed by ICP or spectrophotometry.  
(Heavy metals: ICP-MS Analysis)

**4.3. Pesticides**

Pesticides are used in the cultivation of natural plant fibers like cotton to combat insects, and also as a moth protection agent during storage. Herbicides are weed-eradication and defoliant chemicals. They can be absorbed by the fibers and might remain in the final product. Most of them can be removed during subsequent wet processing. Pesticides and herbicide residues are rated slightly to strongly toxic and are sometimes easily assimilated through the skin. The Oeko-Tex® Standard 100 sets stringent limits for the pesticide content of native fibers.

OHYOUNG dyes listed in the Annex do not contain any of the pesticides banned by the Oeko-Tex® Standard 100.

**4.4. Chlorinated phenols**

: Pentachlorophenol (PCP) and Tetrachlorophenols (TeCP), Trichlorophenols (TrCP), Dichlorophenols (DCP), Monochlorophenols (MCP)

Phenols PCP (CAS No. : 87-86-5) and TeCP (CAS No. : 25167-83-3), TrCP(CAS No.25267-82-2) are polychlorinated compounds that act as: (1) preservatives for vegetable and animal raw materials and (2) insecticides. Pentachlorophenol (PCP) is a disinfectant, a fungicide, and an extremely effective preservative for wood. PCP is also sometimes used to stabilize printing pastes and sizing agent of starch type. Teterachlorophenols (TeCP), Trichlorophenols (TrCP) are an insecticide and a bactericide and are used as a preservative for latex, wood, and leather. Chlorinated phenols may also occur as impurities deriving from raw materials or solvents or unintentional by products in chemical synthesis.

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
PCP	0.05	0.5	0.05	0.25
TeCP, Sum	0.05	0.5	0.05	0.25
TrCP, Sum	0.2	2.0	0.2	1.0
DCP, Sum	0.5	3.0	0.5	1.0
MCP, Sum	0.5	3.0	0.5	1.0

**Analysis method:**

Textiles : German Method, §64LFGB BVL B 82.02.8

OHYOUNG dyes listed in the Annex do not contain PCP, TeCP, TrCP,DCP and MCP banned by the Oeko-Tex® Standard 100.

**4.5. Phthalates**

Phthalates are the most popular plasticizers used to soften Polyvinyl Chloride (PVC). Other applications include Polyurethane (PU) and printing inks. Some studies have shown that under simulated mouthing conditions, softened PVC might release phthalates in quantities considered to cause potentially hazardous effects in baby. Various countries across the globe have restricted phthalate use in childcare products through legislation such as the U.S. Consumer Product Safety Improvement Act (CPSIA) and the EU REACH Regulation.

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : [w-%]

Substance	Individual listings	Cas Number	Appendix 4 / 5		Appendix 6 / 7
			Class I - III	Class IV	Class I - IV
Phthalates	BBP Benzylbutylphthalate	85-68-7	Sum 0.05	Sum 0.10	Sum 0.025
	DBP Dibutylphthalate	84-74-2			
	DEP Di-ethylphthalate	84-66-2			
	DEHP Di-(2-ethylhexyl)-phthalate	117-81-7			
	DMEP Di-(2-methoxyethyl)-phthalate	117-82-8			
	DIHP Di-C6-8-branched alkylphthalates, C7 rich	71888-89-6			
	DHNP Di-C7-11-branched and linear alkylphthalates	68515-42-4			
	DCHP Di-cyclohexylphthalate	84-61-7			
	DHxP Di-hexylphthalate, branched and linear	68515-50-4			
	DIBP Di-iso-butylphthalate	84-69-5			
	DIHxP Di-iso-hexylphthalate	71850-09-4			
	DIDP Di-iso-decylphthalate	26761-40-0, 68515-49-1			
	DIOP Di-iso-octylphthalate	27554-26-3			
	DPrP Di-n-propylphthalate	131-16-8			
	DHP Di-n-hexylphthalate	84-75-3			
	DNOP Di-n-octylphthalate	117-84-0			
	DNP Di-n-nonylphthalate	84-76-4			
	DPP Di-pentylphthalate (n-, iso-, or mixed)	131-18-0, 605-50-5 776297-69-9, 84777-06-0			
	1,2-Benzenedicarboxylic acid, di-C6-10 alkyl esters	68515-51-5			
	1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters	68648-93-1			
DINP Di-iso-nonylphthalate	28553-12-0, 68515-48-0		-		

#### Analysis method:

The determination of content Phthalates is performed by extraction of Textile material with an organic solvent. The extract is analysed by GC/MS. Entry 51/52 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC).

OHYOUNG dyes listed in the Annex do not contain any of phthalates banned by the Oeko-Tex<sup>®</sup> Standard 100.

#### 4.6. Organic tin compounds

Organic tin compounds contain at least one bond between the tin and carbon atoms. Most of these compound are used in three major textile applications: PVC Heat Stabilizers, catalysts and Biocides.

Substance	Individual listings					
Organic tin compounds	DBT	Dibutyltin	MMT	Monomethyltin	TCyHT	Tricyclohexyltin
	DMT	Dimethyltin	MOT	Monooctyltin	TMT	Trimethyltin
	DOT	Diocetyl tin	MPhT	Monophenyltin	TOT	Triocetyl tin
	DPhT	Diphenyltin	TeBT	Tetrabutyltin	TPhT	Triphenyltin
	DPT	Diphenyltin	TeET	Tetraethyltin	TPT	Tripropyltin
	MBT	Monobutyltin	TBT	Tributyltin		

Oeko-Tex<sup>®</sup> Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
TBT, TPhT	0.5	1.0	0.5	0.5
DBT, DMT, DOT, DPhT, DPT, MBT, MMT, MOT, MPhT, TeBT, TeET, TCyHT, TMT, TOT, TPT	1.0	2.0	0.5	0.5

OHYOUNG dyes listed in the Annex do not contain Organic tin compounds banned by the Oeko-Tex<sup>®</sup> Standard 100.

#### 4.7. Ortho-phenylphenol(OPP)

OPP is used as a preservatives for vegetable and animal raw materials and insecticides.

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
OPP	10.0	25.0	10.0	10.0

OHYOUNG dyes listed in the Annex do not contain OPP banned by the Oeko-Tex® Standard 100.

#### 4.8. Arylamines

Arylamines are chemical substances, harmful for human health, that can be part of the structure of some dyes – Azo Dyes – and which, under certain conditions, can be released from them and absorbed by the human body through the action of sweat and/or spit.

the Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
Arylamines	< 20	< 20	< 20	< 20
Arylamine salt	< 20	< 20	< 20	< 20
Aniline	< 20	< 50	< 20	< 20

Particularly, there is a high risk of finding Arylamines in dyestuff, such as: Reactive and direct dyes for cellulose fibers in very intense black shades. A intermediate, p-base ester used as reactive group in reactive dyes can release 4-chloroaniline and reactive black dyes with high p-base ester share.

Azo dyes are banned, which through cleavage of one or more azo bonds could form any of the twenty-four aromatic amines listed in Table 1 in concentrations above 20 ppm in the finished articles or in their dyed parts.

Table 1

Substance	Individual listings	Cas Number
Arylamines	4-Aminobiphenyl	92-67-1
	Benzidine	92-87-5
	4-Chloro-o-toluidine	95-69-2
	2-Naphthylamine	91-59-8
	o-Aminoazotoluene	97-56-3
	2-Amino-4-nitrotoluene	99-55-8
	4-Chloroaniline	106-47-8
	2,4-Diaminoanisole	615-05-4
	4,4'-Diaminodiphenylmethane	101-77-9
	3,3'-Dichlorobenzidine	91-94-1
	3,3'-Dimetoxybenzidine	119-90-4
	3,3'-Dimethylbenzidine	119-93-7
	4,4'-Methylenedi-o-toluidine	838-88-0
	p-Cresidine (6-Methoxy-m-toluidine)	120-71-8
	4,4'-Methylene-bis-(2-chloroaniline)	101-14-4
	4,4'-Oxydianiline	101-80-4
	4,4'-Thiodianiline	139-65-1
	o-Toluidine	95-53-4
	2,4-Toluyldiamine	95-80-7
	2,4,5-Trimethylaniline	137-17-7
	o-Anisidine(2-Methoxy aniline)	90-04-0
4-Aminoazobenzene	60-09-3	
2,4-Xylidine	95-68-1	
2,6-Xylidine	87-62-7	



Substance	Individual listings	Cas Number
Arylamines salt	4-Chloro-o-toluidinium chloride	3165-93-3
	2,4,5-Trimethylaniline hydrochloride	21436-97-5
	2-Naphthylammoniumacetate	553-00-4
	2,4-Diaminoanisole sulphate	39156-41-7

#### Analysis method:

EN 14362-1: Textiles- Methods for determination of certain aromatic amines derived from azo colorants. Part 1: Detection of use of certain azo colorants accessible with and without extracting the fibres.

EN 14362-3: Textiles- Methods for determination of certain aromatic amines derived from azo colorants. Part 3: Detection of use of certain azo colorants which may release 4-aminoazobenzene.

What is meant by a false positive result?

This is simply when a listed amine is detected under the conditions of the analytical test but no banned azo dye is present in the consumer good. The amine is an artifact of the test procedure, resulting from chemical reactions other than azo cleavage. Lots of examples have been reported from market.

About reactive dyes, a representative "false positive" is mentioned in the official test methods (EN 14362) is the release of 2-naphthylamine from Tobias acid containing dyestuffs. The certain colorants whose structures contain the amines but not azo bound can cause the false-positive detection of a banned amine. The use of certain azo colorants (Table 1) cannot be reliably ascertained without a different amine detection test or additional information, e.g. the chemical structure or the colorants used.

OHYOUNG has used purified intermediates and OHYOUNG dyes listed in the Annex cannot release the prohibited arylamines listed in Table 1.

#### 4.9. Benzene

Benzene (C<sub>6</sub>H<sub>6</sub>), simplest organic, aromatic hydrocarbon and parent compound of numerous important aromatic compounds. It is highly toxic and is a known carcinogen.

Oeko-Tex<sup>®</sup> Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
Benzene	< 5.0	< 5.0	< 5.0	< 5.0

OHYOUNG dyes listed in the Annex do not contain any of Benzene banned by the Oeko-Tex<sup>®</sup> Standard 100.

Substance	Individual listing	Cas Number
Benzene	Benzene	71-43-2

#### 4.10. Quinoline

Quinoline has been used in the manufacture of dyes and is currently produced as a by-product of naphthalene and is detected in dye dispersants.

Oeko-Tex<sup>®</sup> Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5 / 6 / 7	
	Class I	Class II - IV
Quinoline	50	50

Substance	Individual listing	Cas Number
Quinoline	Quinoline	91-22-5

#### 4.11. Short-Chain Chlorinated Paraffins

Short Chain Chlorinated Paraffins (SCCPs, CAS No. 85535-84-8) are chemical substances mainly used in the leather industry as a greasing agent for use after the tanning process and also as flame-resistant and plasticizers. SCCPs include all individual chemicals or mixtures that contain :  $C_xH_{(2x-y+2)}Cl_y$ , where  $x = 10-13$ ;  $y=3-12$ ; and the average chlorine content ranges from approximately 40 to 70 percent with the limiting molecular formulas set at  $C^{10}H^{19}Cl^3$  and  $C^{13}H^{16}Cl^{12}$ .

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
SCCPs	50	50	50	50

OHYOUNG dyes listed in the Annex do not contain any of SCCPs banned by the Oeko-Tex® Standard 100.

#### 4.12. Dimethyl Fumarate

Dimethyl Fumarate(DMFu) is a chemical substance traditionally used for consumer products, such as leather furniture and footwear, to prevent mold fungus that can cause deterioration during transport and storage in humid climates. DMFu is often used in desiccant sachets, which can be placed within the product or in its packaging. Over time, the chemical evaporates and impregnates the product, protecting it against molds.

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5 / 6 / 7	
	Class I	Class II - IV
DMFu	0.1	0.1

#### 4.13. Carcinogenic dyestuffs

Dyestuffs which have been classified as carcinogenic may not be used to dye Oeko-Tex® Standard 100 compliant textiles.

Substance	C.I. Generic Name	C.I. Structure No.	Cas Number
Carcinogenic dyestuffs	C.I. Acid Red 26	C.I. 16 150	3761-53-3
	C.I. Basic Blue 26 (with $\geq 0.1\%$ Michler's ketone or base)		2580-56-5
	C.I. Basic Red 9	C.I. 42 500	569-61-9
	C.I. Basic Violet 3 (with $\geq 0.1\%$ Michler's ketone or base)		548-62-9
	C.I. Basic Violet 14	C.I. 42 510	632-99-5
	C.I. Direct Black 38	C.I. 30 235	1937-37-7
	C.I. Direct Blue 6	C.I. 22 610	2602-46-2
	C.I. Direct Red 28	C.I. 22 120	573-58-0
	C.I. Disperse Blue 1	C.I. 64 500	2475-45-8
	C.I. Disperse Orange 11	C.I. 60 700	82-28-0
	C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8
	C.I. Pigment Red 104	C.I. 77 605	12656-85-8
	C.I. Pigment Yellow 34	C.I. 77 603	1344-37-2
	C.I. Solvent Yellow 1 (4-Aminoazobenzene / Anilic Yellow)	C.I. 11100	
	C.I. Solvent Yellow 3 (o-Aminoazotoluene / o-Aminoazotoluol)		
	C.I. Direct Brown 95		
	C.I. Direct Blue 15		
C.I. Acid Red 114			

OHYOUNG dyes listed in the Annex do not contain any of carcinogenic dyestuffs banned by the Oeko-Tex® Standard 100.

#### 4.14 Allergenic dyestuffs

Azo dyes are synthetic dyes having an azo group (-N=N-) in the structure. Polyamide or cellulose acetate dyed with disperse dyes often has only moderate wet fastness. This means that an allergenic dyestuff can migrate onto the skin at point where clothing is tightly fitting or where sweating is prevalent, leading to allergic reaction in rare cases.

Substance	C.I. Generic Name	C.I. Structure No.	Cas Number
Allergenic dyestuffs	C.I. Disperse Blue 1	C.I. 64 500	2475-45-8
	C.I. Disperse Blue 3	C.I. 61 505	2475-46-9
	C.I. Disperse Blue 7	C.I. 62 500	3179-90-6
	C.I. Disperse Blue 26	C.I. 63 305	
	C.I. Disperse Blue 35		12222-75-2
	C.I. Disperse Blue 102		12222-97-8
	C.I. Disperse Blue 106		12223-01-7
	C.I. Disperse Blue 124		61951-51-7
	C.I. Disperse Brown 1		23355-64-8
	C.I. Disperse Orange 1	C.I. 11 080	2581-69-3
	C.I. Disperse Orange 3	C.I. 11 005	730-40-5
	C.I. Disperse Orange 37(=59/=76)	C.I. 11 132	
	C.I. Disperse Orange 59	C.I. 11 132	
	C.I. Disperse Orange 76	C.I. 11 132	
	C.I. Disperse Red 1	C.I. 11 110	2872-52-8
	C.I. Disperse Red 11	C.I. 62 015	2872-48-2
	C.I. Disperse Red 17	C.I. 11 210	3179-89-3
	C.I. Disperse Yellow 1	C.I. 10 345	119-15-3
	C.I. Disperse Yellow 3	C.I. 11 855	2832-40-8
	C.I. Disperse Yellow 9	C.I. 10 375	6373-73-5
C.I. Disperse Yellow 39			
C.I. Disperse Yellow 49			

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Substance	Class I	Class II - IV
Allergenic dyestuffs	50	20

#### Analysis method:

Textiles : DIN 54231

OHYOUNG dyes listed in the Annex do not contain any of allergenic dyestuffs banned by the Oeko-Tex® Standard 100.

#### 4.15. Chlorinated benzenes and toluenes

Chlorinated benzenes and toluenes are chemical substances used in several dyeing processes of polyester fibers at temperatures lower than 120 degrees centigrade.

Substance	Individual listings	Cas Number
Chlorinated benzenes and toluenes	Chlorobenzene	108-80-7
	Dichlorobenzenes	95-50-1 106-46-7 541-73-1
	Trichlorobenzenes	87-61-6 120-82-1 180-70-3
	Tetrachlorobenzenes	95-94-3 634-66-2 634-90-2
	Pentachlorobenzene	608-93-5
	Hexachlorobenzene	118-74-1
	Chlorotoluenes	95-49-8 106-43-4
	Dichlorotoluenes	95-73-8 95-75-0 118-69-4
	Trichlorotoluenes	98-07-7 2077-46-5
	Tetrachlorotoluenes	2136-89-2 5216-25-1
	Pentachlorotoluene	877-11-2

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Appendix 4 / 5 / 6 / 7		
Substance	Class I	Class II - IV
Chlorinated benzenes and toluenes, Sum	1.0	1.0

**Analysis method:**

Textiles: DIN 54232

OHYOUNG dyes listed in the Annex do not contain chlorinated benzenes or toluenes banned by the Oeko-Tex® Standard 100.

**4.16. Polycyclic aromatic hydrocarbons (PAHs)**

Polycyclic aromatic hydrocarbons(PAHs), also known as poly-aromatic hydrocarbon, are fused aromatic rings and organic materials and are produced by fuel burning. PAHs are found in oil, coal, cooked food and in trace amounts on surfactants.

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

			Appendix 4 / 5		Appendix 6 / 7	
Substance	Individual listings	Cas Number	Class I	Class II -IV	Class I	Class II -IV
	Sum of all PAHs		sum 5.0	sum 10.0	sum 5.0	sum 10.0
Polycyclic aromatic hydrocarbons	Benzo[a]pyrene	50-32-8	0.5	1.0	0.5	1.0
	Benzo[e]pyrene	192-97-2				
	Benzo[a]anthracene	56-55-3				
	Chrysene	218-01-9				
	Benzo[b]fluoranthene	205-99-2				
	Benzo[j]fluoranthene	205-82-3				
	Benzo[k]fluoranthene	207-08-9				
	Dibenzo[a,h]anthracene	53-70-3				
	Acenaphthene	83-32-9	-	-	-	-
	Acenaphthylene	208-96-8				
	Anthracene	120-12-7				
	Benzo[ghi]perylene	191-24-2				
	Cyclopenta[c,d]pyrene	27208-37-3				
	Dibenzo[a,e]pyrene	192-65-4				
	Dibenzo[a,h]pyrene	189-64-0				
	Dibenzo[a,i]pyrene	189-55-9				
	Dibenzo[a,l]pyrene	191-30-0				
	Fluoranthene	206-44-0				
	Fluorene	86-73-7				
Indeno[1,2,3-cd]pyrene	193-39-5					
1-Methylpyrene	2381-21-7					
Naphthalene	91-20-3	-	-	2.0	2.0	
Phenanthrene	85-01-8	-	-	-	-	
Pyrene	129-00-00	-	-	-	-	

**Analysis method:**

The determination of content of Polycyclic aromatic hydrocarbons(PAHs) is performed by extraction of textile material with an organic solvent. The extract is analysed by GC/MS.

OHYOUNG dyes listed in the Annex do not contain PAHs banned by the Oeko-Tex® Standard 100.

#### 4.17. Flame retardant products

Flame retardant products are chemical substances that are added to textile. Brominated flame retardants (BFRs) such as polybrominated diphenyl ethers (PBDEs) are not strongly bound to the host polymer and can release from the plastic and become environmental contaminants. PBDEs are most commonly found in polyurethane foam products (like couches and upholstered chairs, futons, pillows, children’s car seats and carpet padding, among many others), but are also in electronics equipments.

Flame retardant products are generally banned for Product Class I to IV with exception accepted by Oeko-Tex (see current list at [www.oeko-tex.com](http://www.oeko-tex.com)).

\*Appendix 4 / 5 : 21 Individuals, Appendix 6 / 7 : 28 Individuals

Substance	Individual listings	Cas Number	Appendix 4 / 5	Appendix 6 / 7	
Flame Retardants	BBMP	2,2-bis(bromomethyl)-1,3-propanediol	3296-90-0	●	●
	BIS	Bis-(2,3-dibromopropyl)phosphate	5412-25-9	●	●
		Boric acid	10043-35-3, 11113-50-1	●	●
	decaBDE	Decabromodiphenylether	1163-19-5	●	●
		Diboron trioxide	1303-86-2	●	●
		Disodium tetraborate, anhydrous	1303-96-4, 1330-43-4, 12179-04-3	●	●
	heptaBDE	Heptabromodiphenylether	various	●	●
	HBCDD	Hexabromocyclododecane	25637-99-4	●	●
	hexaBDE	Hexabromodiphenylether	36483-60-0	●	●
	octaBDE	Octabromodiphenylether	32536-52-0	●	●
	penta BDE	Pentabromodiphenylether	32534-81-9	●	●
	PBB	Polybrominated biphenyles	59536-65-1	●	●
	SCCP	Short chain chlorinated paraffins (C10-C13)	85535-84-8	●	●
		Tetraboron disodium heptaoxide, hydrate	12267-73-1	●	●
	TBBPA	Tetrabromobisphenol A	79-94-7	●	●
	tetraBDE	Tetrabromodiphenylether	various	●	●
	TRIS	Tri-(2,3-dibromopropyl)-phosphate	126-72-7	●	●
	TCEP	Tris-(2-chloroethyl)phosphate	115-96-8	●	●
	TDCPP	Tris-(1,3-dichloro-2-propyl)phosphate	13674-87-8	●	●
	TEPA	Tris-(aziridiny)-phosphinoxide	545-55-1	●	●
TXP	Trixylylphosphate	25155-23-1	●	●	
	nonaBDE	Nonabromodiphenylether	63936-56-1		●
	triBDE	Tribromodiphenylether	various		●
	diBDE	Dibromodiphenylether	various		●
	monoBDE	Monobromodiphenylether	various	-	●
	Sb203	Antimony trioxide	1309-64-4		●
	Sb205	Antimony pentoxide	1314-60-9		●
		Tri-o-cresyl phosphate	78-30-8		●

OHYOUNG dyes listed in the Annex do not contain Flame retardant products banned by the Oeko-Tex® Standard 100.

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
Flame Retardants	none (≤ 10.0mg/kg each)		none (≤ 10.0mg/kg each, for SCCP ≤ 50.0mg/kg)	

#### 4.18. Alkylphenols (AP) and Alkylphenoethoxylates (APEO)

NP/OP are called Alkylphenols(AP) and NPEOs/OPEOs are included in the group of non-ionic surfactants called Alkylphenoethoxylates(APEOs). APEOs are commonly used a detergents, dispersing and wetting agent in the textiles production process.



Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Unit : mg/kg

Substance	Appendix 4 / 5		Appendix 6 / 7	
	Class I	Class II - IV	Class I	Class II - IV
OP, NP, HpP, PeP, Sum	<10.0	<10.0	<5.0	<5.0
OP,NP,OP(EO), NP(EO),HpP, PeP, Sum	<100.0	<100.0	<50.0	<50.0

**Analysis method:**

The determination of content of Alkylphenols (AP) and Alkylphenoethoxylates (APEO) is performed by extraction of Textile material with an organic solvent. The extract is analysed by LC/MS.

OHYOUNG dyes listed in the Annex do not contain Alkylphenols (AP) and Alkylphenoethoxylates (APEO) banned by the Oeko-Tex® Standard 100.

**4.19. PFC's (Per- and polyfluorinated Compounds)**

PFC's (Per- and polyfluorinated Compounds) are found water and soil repellents based on fluorocarbons in smallest quantities as by products when manufacturing fluorine-containing impregnating agents.

Substance	Individual listings	Cas Number	
PFC's	PFOS	Perfluorooctane sulfonic acid and sulfonates	1763-23-1, et.al.
	PFOSA	Perfluorooctane sulfonamide	754-91-6
	PFOSF/POSF	Perfluorooctane sulfonfluoride	307-35-7
	N-Me-FOSA	N-Methyl perfluorooctane sulfonamide	31506-32-8
	N-Et-FOSA	N-Ethyl perfluorooctane sulfonamide	4151-50-2
	N-Me-FOSE	N-Methyl perfluorooctane sulfonamide	24448-09-7
	N-Et-FOSE	N-Ethyl perfluorooctane sulfonamide ethanol	1691-99-2
	PFHpA	Perfluoroheptanoic acid and salts	375-85-9, et. al.
	PFOA	Perfluorooctanoic acid and salts	335-67-1, et. al.
	PFNA	Perfluorononanoic acid and salts	375-95-1, et. al.
	PFDA	Perfluorodecanoic acid and salts	335-76-2, et. al.
	PFUdA	Henicosafuoroundecanoic acid and salts	2058-94-8, et. al.
	PFDoA	Tricosafuorododecanoic acid and salts	307-55-1, et. al.
	PFTTrDA	Pentacosafuorotridecanoic acid and salts	72629-94-8, et. al.
	PFTeDA	Heptacosafuorotetradecanoic acid and salts	376-06-7, et. al.
	PFBA	Perfluorobutanoic acid and salts	375-22-4, et. al.
	PFPeA	Perfluoropentanoic acid and salts	2706-90-3, et. al.
	PFHxA	Perfluorohexanoic acid and salts	307-24-4, et. al.
	PF-3,7-DMOA	Perfluoro(3,7-dimethyloctanoic acid) and salts	172155-07-6, et. al.
	PEBS	Perfluorobutane sulfonic acid and salts	375-73-5, 59933-66-3, et.al.
	PFHxS	Perfluorohexane sulfonic acid and salts	355-46-4, et. al.
	PFHpS	Perfluoroheptane sulfonic acid and salts	375-92-8, et. al.
	PFDS	Henicosafuorodecane sulfonic acid and salts	335-77-3, et. al.
	7HPFHpA	7H-Perfluoro heptanoic acid and salts	1546-95-8, et. al.
	4HPFUnA	2H,2H,3H,3H-Perfluoroundecanoic acid and salts	34598-33-9, et. al.
	1H,1H,2H,2H-PFOS	1H,1H,2H,2H-Perfluorooctane sulfonic acid and salts	27619-97-2, et. al.
	4:2 FTOH	1H,1H,2H,2H-Perfluoro-1-hexanol	2043-47-2
	6:2 FTOH	1H,1H,2H,2H-Perfluoro-1-octanol	647-42-7
8:2 FTOH	1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7	
10:2 FTOH	1H,1H,2H,2H-Perfluoro-1-dodecanol	865-86-1	
6:2 FTA	1H,1H,2H,2H-Perfluorooctyl acrylate	17527-29-6	
8:2 FTA	1H,1H,2H,2H-Perfluorodecyl acrylate	27905-45-9	
10:2 FTA	1H,1H,2H,2H-Perfluorododecyl acrylate	17741-60-5	

Oeko-Tex® Standard 100 acceptable limits for textiles are below;

Substance	Appendix 4 / 5			Appendix 6 / 7	
	Class I	Class II – III	Class IV	Class I	Class II – IV
PFOS, PFOSA, PFOSF, N-Me-FOSA, N-Et-FOSA, N-Me-FOSE, N-Et-FOSE ;Sum [ $\mu\text{g}/\text{m}^2$ ]	<1.0	<1.0	<1.0	<1.0	<1.0
PFOA [ $\mu\text{g}/\text{m}^2$ ]	<1.0	<1.0	<1.0	<1.0	<1.0
PFHpA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFNA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFDA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFUdA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFDoA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFTTrDA [mg/kg]	0.05	0.1	0.5	0.025	0.025
PFTeDA [mg/kg]	0.05	0.1	0.5	0.025	0.025
Further Perfluorinated carboxylic acids, each [mg/kg]	0.05	-	-	0.025	0.025
Perfluorinated sulfonic acids, each [mg/kg]	0.05	-	-	0.025	0.025
Partially fluorinated carboxylic/sulfonic acids, each [mg/kg]	0.05	-	-	0.025	0.025
Partially fluorinated linear alcohols, each [mg/kg]	0.05	-	-	0.25	0.25
Esters of fluorinated alcohols with acrylic acid, each [mg/kg]	0.05	-	-	0.25	0.25

OHYOUNG dyes listed in the Annex do not contain any of PFC's legally banned under European Directive – Directives 76/769/EEC and 2006/122/EC.

## 4.20. Colour Fastness

Colour fastness is a term used in the dyeing of textile materials, meaning resistance of the material's colour to fading or running.

The Colour Fastness evaluates the colour resistance as: 1) "colour change" – variation on colour intensity, 2) "colour staining" – staining of a white standard probe, ranging both index from 1 (worst fastness) to 5 (best fastness). The light fastness is categorized from 1 to 8.

Dyestuffs have their own fastness characteristics, excluding the dyestuff itself, color fastness is affected by below parameters.

- Application of dyeing processes
- Type and quality of the substrate (in particular mixed fabrics)
- Rinsing degree of the fabric
- Color depth, color combination
- Pre-treatment process
- After-treatment process

This means that it is practically impossible to give general guarantees that a dyestuff will comply to the required color fastness specification (see Table 2).

### Colour fastness in water

This is the index which evaluates the resistance of the colour of any type of textile to a process of soaking in soft water and later rest.

Test method : ISO 105 – E01

### Colour fastness in Perspiration

This is the index which evaluates the resistance of the colour of any type of textile to acid and alkali sweat (human perspiration).

Test method : ISO 105 – E04

### Colour fastness in Rubbing

This is the index which evaluates the resistance of the colour of any type of textile to the aggression made by continuous rubbing with other fabric (wet and dry fabric).

Test method : ISO 105 – X12

### Colour fastness in Saliva

This is the index which evaluates the resistance of the colour of any type of textile artificial and simulated saliva.

Test method : §64 LFGB, BVL B 82.10-1

Oeko-Tex® Standard 100 acceptable color fastness (staining) for textiles are below;

Table 2

	Appendix 4 / 5 / 6 / 7			
	Class I	Class II	Class III	Class IV
Colour Fastness to Water	3 - 4	3	3	3
Colour Fastness to Perspiration	3 - 4	3 - 4	3 - 4	3 - 4
Colour Fastness to Rubbing <sup>(11)</sup> <sup>(12)</sup>	4	4	4	4
Colour Fastness to Saliva	fast	-	-	-

(11) No requirements for 'wash-out' - articles

(12) For pigment, vat or sulfur colorants a minimum grade of color fastness to rubbing of 3 (dry) is acceptable

## 5. How to use it

This list is the responsibility of our customers to determine that their use of OHYOUNG dyes is safe and technically suitable for their application against the Oeko-Tex<sup>®</sup> Standard 100.

The following traffic light was made to help customers' easy and simple selection of products.

- Green : Recommended
- Yellow : Suitable with limitation indicated by footnotes
- Red : Not recommended for the Oeko-Tex<sup>®</sup> Standard 100

The information contained in this 'Positive list' are based on our current knowledge, experience and current status of technology as generally applied in the industry, and assessed under well-established test methods and on dye application tests performed under standard lab conditions.

In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests to ensure that the finished textile article conforms to Oeko-Tex<sup>®</sup> Standard 100 requirements.

## 6. ANNEX

\*Appendix 4 / 5 : Oeko-Tex Standard 100 \*Appendix 6 / 7 : Detox Campaign

Reactive dyes for textile dyeing	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
<b>Suncion H-E</b>					
Suncion Yellow H-E6GN		●	●	●	●
Suncion Yellow H-E4G		●	●	●	●
Suncion Yellow H-E4RN		●	●	●	●
Suncion Orange H-ER		●	●	●	●
Suncion Red H-E3B		● 2	●	● 2	●
Suncion Red H-E7B		● 2	●	● 2	●
Suncion Turquoise Blue H-A	Cu	● 1,2,4	●	● 1,2,4	●
Suncion Blue H-EGN 125% (1PEBGN2)		● 2	●	● 2	●
Suncion Blue H-ERD 125%	Cu	● 1,5	●	● 1,5	●
Suncion Green H-E4BD		●	●	●	●
Suncion Navy Blue H-ER 150%		● 2	●	● 2	●
Suncion Black H-EM		● 2	●	● 2	●
<b>Suncion H-EL</b>					
Suncion Yellow H-EL		●	●	●	●
Suncion Red H-EGL		● 2	●	● 2	●
Suncion Crimson H-EL		● 2	●	● 2	●
Suncion Navy Blue H-ELN		● 2	●	● 2	●

1. Extractable heavy metal should be tested.
2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.
4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.
5. Recommended 3.0% o.w.f.(o.w.p.) and 30g/l of dyeing concentration is not exceeded.



	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
Reactive dyes for textile dyeing	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
<b>Suncion P</b>					
Suncion Yellow P-6G		●	●	●	●
Suncion Yellow P-4G		●	●	●	●
Suncion G/Yellow P-2RN pwd.		●	●	●	●
Suncion G/Yellow P-2RN liq.		●	●	●	●
Suncion Yellow P-3R		●	●	●	●
Suncion Orange P-2R		●	●	●	●
Suncion Red P-2B		●	●	●	●
Suncion Red P-BN liq.		●	●	●	●
Suncion Red P-4B		●	●	●	●
Suncion Violet P-3R	Cu	● 1,4	●	● 1,4	●
Suncion Brown P-6R 150%		●	●	●	●
Suncion Blue P-3RC pwd.		●	●	●	●
Suncion Blue P-3R liq.		●	●	●	●
Suncion Turquoise Blue P-GL	Cu	● 1,2,4	●	● 1,2,4	●
Suncion Navy Blue P-2R		●	●	●	●
Suncion Navy Blue P-NG liq.		●	●	●	●
Suncion Black P-GR 150%		●	●	●	●
<b>Sunfron SN</b>					
Sunfron Yellow SN-2R		●	●	●	●
Sunfron Orange SN-R		●	●	●	●
Sunfron Red SN-R		●	●	●	●
Sunfron Red SN-2BL		●	●	●	●
Sunfron Blue SN-R	Cu	● 1,4	●	● 1,4	●
Sunfron Dark Blue SN-R	Cu	● 1,5	●	● 1,5	●
Sunfron Navy Blue SN-GN 150%		●	●	●	●

1. Extractable heavy metal should be tested.

2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.

4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.

5. Recommended 3.0% o.w.f.(o.w.p.) and 30g/l of dyeing concentration is not exceeded.

Reactive dyes for textile dyeing	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
<b>Sunfix SPR</b>					
Sunfix Yellow SPR		●	●	●	●
Sunfix Red SPR		●	●	●	●
Sunfix Red SPR-F		●	●	●	●
Sunfix Blue SPR	Cu	● 1,2,4	●	● 1,2,4	●
Sunfix Blue SPR-F	Cu	● 1,2,4	●	● 1,2,4	●
<b>Sunfix SPD</b>					
Sunfix Yellow SPD conc.		●	●	●	●
Sunfix Red SPD conc.		●	●	●	●
Sunfix Blue SPD conc.	Cu	● 1,7	●	● 1,7	●
Sunfix Navy Blue SPD conc.		●	●	●	●
<b>Sunfix EX</b>					
Sunfix Yellow EX		●	●	●	●
Sunfix Red EX		●	●	●	●
Sunfix Blue EX		●	●	●	●
Sunfix Navy Blue EX		●	●	●	●
<b>Sunfix Special</b>					
Sunfix Navy Blue SBF spec.		●	●	●	●
<b>Sunfix FE-A</b>					
Sunfix Red FE-6BA		●	●	●	●
Sunfix Royal Blue FE-FR		●	●	●	●
Sunfix Navy Blue FE-BNA		●	●	●	●

1. Extractable heavy metal should be tested.
2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.
4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.
7. Recommended 5.0% o.w.f.(o.w.p.) and 50g/l of dyeing concentration is not exceeded.

	<i>Appendix 4 / 5 / 6 / 7</i>	<i>Appendix 4 / 5</i>		<i>Appendix 6 / 7</i>	
Reactive dyes for textile dyeing	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
<b>Sunfix HP</b>					
Sunfix Yellow HP		●	●	●	●
Sunfix Yellow Brown HP		●	●	●	●
Sunfix Orange HP		●	●	●	●
Sunfix Red HP		●	●	●	●
Sunfix Red HP-2B		●	●	●	●
Sunfix Cardinal HP		●	●	●	●
Sunfix Blue HP		● 1,5	●	● 1,5	●
Sunfix Space HP		●	●	●	●
Sunfix Forest HP		●	●	●	●
Sunfix Navy Blue HP		●	●	●	●
Sunfix Black HPN		●	●	●	●
<b>Sunfix MF-D</b>					
Sunfix Orange MF-D		●	●	●	●
Sunfix Red MF-GD conc.		● 2	●	● 2	●
Sunfix Red MF-3G		● 2	●	● 2	●
Sunfix Red MF-2BS		●	●	●	●
Sunfix Red MF-SB		●	●	●	●
Sunfix Navy Blue MF-D		●	●	●	●
Sunfix Navy Blue MF-GD		●	●	●	●
Sunfix Navy Blue MF-RD	Cu	● 1,7	●	● 1,7	●
<b>Sunfix SS</b>					
Sunfix Yellow SS		●	●	●	●
Sunfix Yellow SS conc.		●	●	●	●
Sunfix Yellow SSR		●	●	●	●
Sunfix Orange SS		●	●	●	●
Sunfix Red SSN		●	●	●	●
Sunfix Red SS-2B		● 2	●	● 2	●
Sunfix Deep Red SS		● 2	●	● 2	●
Sunfix Dark Blue SS	Cu	● 1,7	●	● 1,7	●
Sunfix Navy Blue SS		●	●	●	●

1. Extractable heavy metal should be tested.

2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.

5. Recommended 3.0% o.w.f.(o.w.p.) and 30g/l of dyeing concentration is not exceeded.

7. Recommended 5.0% o.w.f.(o.w.p.) and 50g/l of dyeing concentration is not exceeded.

Reactive dyes for textile dyeing	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
Sunfix					
Sunfix Yellow S3R 150%		●	●	●	●
Sunfix Red S3B 150%		●	●	●	●
Sunfix Navy Blue SB		●	●	●	●
Sunfix Yellow S4GL		●	●	●	●
Sunfix Yellow S4GL 200%		●	●	●	●
Sunfix Orange S2R 150%		● 2	●	● 2	●
Sunfix Orange S2RN		●	●	●	●
Sunfix Scarlet S2G 150%		●	●	●	●
Sunfix Red S2B		●	●	●	●
Sunfix Red SBS 150%		●	●	●	●
Sunfix Ruby S3B		●	●	●	●
Sunfix Violet S5R		●	●	●	●
Sunfix Blue SF-RL 200% (2PSBSF4)		●	●	●	●
Sunfix Blue SSR (2PSBSR3)		●	●	●	●
Sunfix Blue SBR	Cu	● 1,2,4	●	● 1,2,4	●
Sunfix Olive IC	Cu	● 1,4	●	● 1,4	●
Sunfix Green S4B		●	●	●	●
Sunfix Navy Blue SGN		●	●	●	●
Sunfix Navy Blue SB conc.		●	●	●	●
Sunfix Night S-R		●	●	●	●

1. Extractable heavy metal should be tested.

2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.

4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.

	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
Reactive dyes for textile dyeing	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
<b>Sunfron C</b>					
Sunfron Yellow C-4G		●	●	●	●
Sunfron Yellow C-RG		●	●	●	●
Sunfron Orange C-R		●	●	●	●
Sunfron Red C-2G		●	●	●	●
Sunfron Red C-2BL		●	●	●	●
Sunfron Blue C-R	Cu	● 1,4	●	● 1,4	●
Sunfron Navy Blue C-R	Cu	● 1,8	●	● 1,8	●
<b>Sunfix MF-CN</b>					
Sunfix Yellow MF-CN		●	●	●	●
Sunfix Orange MF-CN		●	●	●	●
Sunfix Red MF-CN		●	●	●	●
Sunfix Deep Red MF-CN		● 2	●	● 2	●
Sunfix Blue MF-CN	Cu	● 1,7	●	● 1,7	●
Sunfix Navy Blue MF-CN		●	●	●	●
<b>Sunzol GRB</b>					
Sunzol G/Yellow GRB		●	●	●	●
Sunzol Ultra Yellow GRBN		●	●	●	●
Sunzol Red GRB		●	●	●	●
Sunzol Ultra Red GRB		●	●	●	●
Sunzol Blue GRB	Cu	● 1,7	●	● 1,7	●
Sunzol Navy Blue GRB		●	●	●	●

1. Extractable heavy metal should be tested.
2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.
4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.
7. Recommended 5.0% o.w.f.(o.w.p.) and 50g/l of dyeing concentration is not exceeded.
8. Recommended 6.0% o.w.f.(o.w.p.) and 60g/l of dyeing concentration is not exceeded.



Reactive dyes for textile dyeing	Appendix 4 / 5 / 6 / 7	Appendix 4 / 5		Appendix 6 / 7	
	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
Sunzol					
Sunzol Yellow GR		●	●	●	●
Sunzol G/Yellow 2RN 150%		●	●	●	●
Sunzol Orange 3R		●	●	●	●
Sunzol Red BB 150%		●	●	●	●
Sunzol Red F3B		●	●	●	●
Sunzol Red RB 133%		●	●	●	●
Sunzol Violet 5R	Cu	● 1,4	●	● 1,4	●
Sunzol Green 6B	Ni	●	●	●	●
Sunzol Turquoise Blue G 133%	Cu	● 1,2,6	●	● 1,2,6	●
Sunzol Turquoise Blue G 165%	Cu	● 1,2,5	●	● 1,2,5	●
Sunzol Turquoise Blue G 266%	Cu	● 1,2,4	●	● 1,2,4	●
Sunzol Blue RS		●	●	●	●
Sunzol Blue RS 150%		●	●	●	●
Sunzol Blue BB 133%	Cu	● 1,4	●	● 1,4	●
Sunzol Navy Blue GG		●	●	●	●
Sunzol Grey RL	Cu	● 1,2,5	●	● 1,2,5	●
Sunzol Black B		●	●	●	●
Sunzol Black B 133%		●	●	●	●
Sunzol Black B 150%		●	●	●	●

1. Extractable heavy metal should be tested.
2. A cationic fixing agent is generally recommended to achieve fastness requirements for saliva and perspiration of baby wear.
4. Recommended 2.0% o.w.f.(o.w.p.) and 20g/l of dyeing concentration is not exceeded.
5. Recommended 3.0% o.w.f.(o.w.p.) and 30g/l of dyeing concentration is not exceeded.
6. Recommended 4.0% o.w.f.(o.w.p.) and 40g/l of dyeing concentration is not exceeded.
7. Recommended 5.0% o.w.f.(o.w.p.) and 50g/l of dyeing concentration is not exceeded.

	<i>Appendix 4 / 5 / 6 / 7</i>	<i>Appendix 4 / 5</i>		<i>Appendix 6 / 7</i>	
Reactive dyes for textile dyeing	Remark	Class I (for babies)	Class II – IV (other Textiles)	Class I (for babies)	Class II – IV (other Textiles)
Sunzol Black					
Sunzol Black AF		●	●	●	●
Sunzol Black FS		●	●	●	●
Sunzol Black DN conc.		●	●	●	●
Sunzol Black GN conc.		●	●	●	●
Sunzol Black RN conc.		●	●	●	●
Sunzol Black BN conc.		●	●	●	●
Sunzol Black MT conc.		●	●	●	●
Sunzol Black WN conc.		●	●	●	●
Sunzol Black EXF		●	●	●	●
Sunzol Black EXPR		●	●	●	●
Sunzol Black SW		●	●	●	●
Sunzol Black CNG liq.		●	●	●	●
Sunzol Black CNN liq.		●	●	●	●
Sunzol Black CNR liq.		●	●	●	●
Sunzol Black FXB liq.		●	●	●	●
Sunzol Black FSL liq.		●	●	●	●
Sunzol Black NWR liq.		●	●	●	●
Sunzol Black NWRS liq.		●	●	●	●
Sunzol Black NWS liq.		●	●	●	●
Sunzol Black YSW liq.		●	●	●	●
Sunzol Black ON 400 liq.		●	●	●	●

OHYOUNG Inc. was founded in 1981 as synthetic dyes specialist for the textile industry. Over the past three decades, our exclusive technological innovations in the field of reactive dyes for textiles make us a leading provider of products and services for the global textile industry.

In order to usher in a more sustainable future, we need to constantly find new solutions to protect natural environments and resources better. OHYOUNG has thus launched the Integrated Environmental Information Management System in order to ensure a better management and organization of information on the Company's environment-affecting activities. OHYOUNG has acquired Environmental Product Certificates like GOTS and Bluesign as part of its efforts to reduce the environmental impact of its products. OHYOUNG is also working hard to meet the demands of international environmental regulations, the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

**Disclaimer :**

This information does not absolve the user from making their own tests controls to ensure that the finished textile article confirms to the requirements of the specified standards.

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This information and technical advice were prepared very carefully, however complete guarantee can not be given considering various different conditions of dyeing. Our advice does not release you from obligation to check its validity and to test our products to their suitability for the intended processes and uses. If you have any queries, kindly contact your local OHYOUNG Inc.

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