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GNA  
RESTRICTED  
SUBSTANCES  
LIST  
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**JULY 2018 | VERSION 1.2**

CHEMICAL RESTRICTIONS & PHYSICAL  
PROPERTIES FOR COMPONENTS USED  
IN GNA TEXTILE INKS

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## INTRODUCTION

All materials manufactured for GNA printed textiles must comply with the requirements in this document

### GNA - ULTIMATE COMPLIANCE ASSURANCE FOR TEXTILE PRINTING INKS

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#### AIMS of GNA:

- To be the strictest Restricted Substances List (RSL) for printing inks within the textile industry globally; so that compliance with GNA means compliance with all major brand's RSL's, and Eco-passport, with a single test
- For the RSL to exceed the strictest global legislation
- To ensure targeted substances are limited or eliminated
- To remove the need to disclose the full product formulations to the accreditation body
- To reduce testing costs by removing the need to test against multiple RSL's



## INTRODUCTION

All materials manufactured for GNA printed textiles must comply with the requirements in this document

### GNA - ULTIMATE COMPLIANCE ASSURANCE FOR TEXTILE PRINTING INKS

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#### WHY IS GNA FOCUSED ON PRINTING INKS ONLY?

- Printing Inks for Textiles are an area of high compliance risk for many brand owners; GNA aims to address that risk with a simple, yet comprehensive RSL and process.



## INTRODUCTION

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## GNA - ULTIMATE COMPLIANCE ASSURANCE FOR TEXTILE PRINTING INKS

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### DEFINITIONS:

- GNA Textiles are any textile printed with GNA approved textile printing inks
- A textile printing ink is defined as a mixture of various components to make a product suitable for application to textiles using particular printing techniques, usually, but not restricted, to screen printing and rotary screen printing. Usually the textile printing ink is designed to decorate colored areas onto the textile
- For the purposes of the GNA RSL, a textile printing ink is defined as a mixture of a base, pigments and auxiliaries. The final product applied to the textile must comply to the GNA standard



## INTRODUCTION

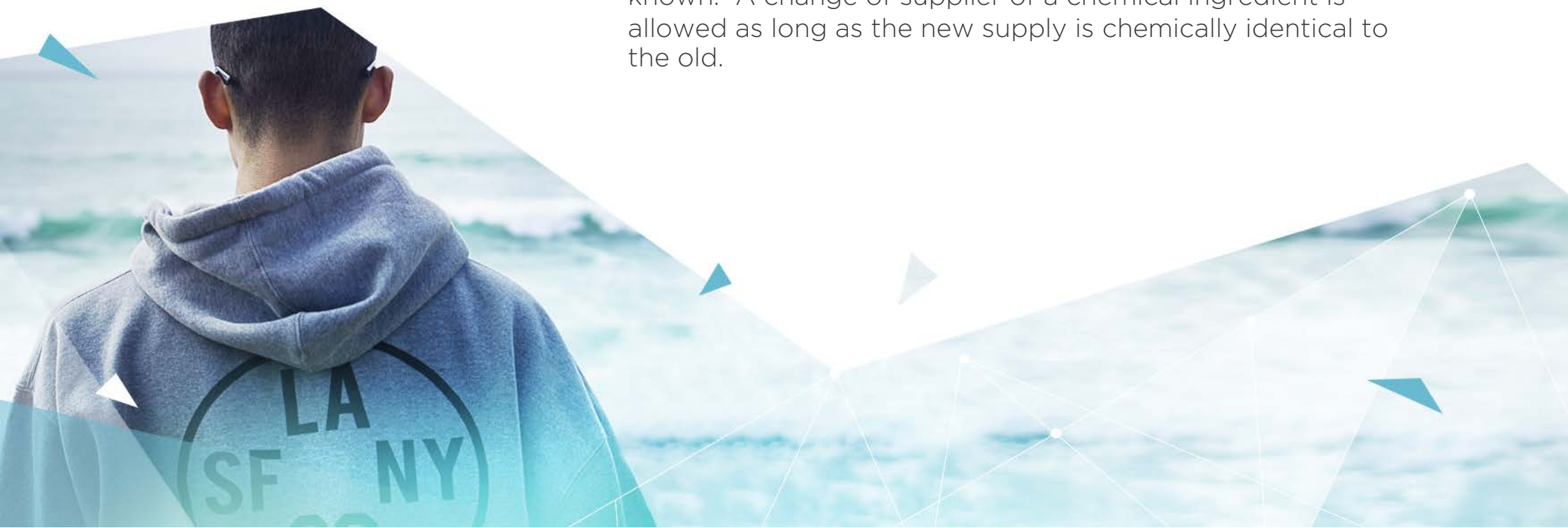
All materials manufactured for GNA printed textiles must comply with the requirements in this document

## GNA - ULTIMATE COMPLIANCE ASSURANCE FOR TEXTILE PRINTING INKS

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### COMPLIANCE:

- RSL test results will be valid for one year from the test date or if the formulation is changed, whichever is sooner
- No change to a formulation is allowed once a RSL PASS has been received for a material without a re-test. A change of formula is defined as where there is a change of a chemical ingredient or where there is a change of a proprietary ingredient, where the composition of that ingredient is not known. A change of supplier of a chemical ingredient is allowed as long as the new supply is chemically identical to the old.



## GNA RESTRICTED SUBSTANCES LIST

### **VOLUNTARY CHEMICAL RESTRICTIONS**

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GNA voluntarily restricts the following chemicals: -

#### **Polyvinyl Chloride (PVC)**

All GNA approved inks are PVC-free

#### **Formaldehyde**

GNA limits are much more stringent than legislated limits. GNA requires all textile printing inks / ink components to be <5ppm formaldehyde (the detection limit) for babies, children and adults

#### **Alkylphenol Ethoxylates (APEOs) and Alkylphenols (Aps)**

Legislated limits are 1,000 mg/kg for APs and APEOs in finished products. GNA has a limit of 20 mg/kg

#### **Solvent based printing systems**

GNA is limited to water based formulations only

# GNA RESTRICTED SUBSTANCES LIST

## SUMMARY TABLE SHOWING THE BRANDS WHERE COMPLIANCE TO GNA MEANS COMPLIANCE WITH THAT BRAND'S RSL

	GNA	LEGISLATION	OEKO-TEX	INDITEX	NIKE	ADIDAS	AFIRM GROUP	AMERICAN EAGLE	C&A	ENGELBERT STRAUSS	H&M	LEVI	PUMA	UNDER ARMOUR
	Version 1.2		Standard 100	Clear to Wear	Chemistry Playbook	A-01		RSL	RSL	Version 2				Version 3
	JULY 2018		Edition 2 2017	2018	09/05/2018	01/09/2017	01/12/2015	19/08/2013	05/01/2017	FEB 2016	JAN 2018	NOV 2017	2014	FEB 2018
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
APEO	<20	<1000	-	-	<100	<100	<100	<100	<100	<250	<50	<100	<100	<100
AZOS	<5	<20	<20	<5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
FORMALDEHYDE	<5	<16	<16	<5	<16	<16	<16	<75	<16	<16	<5	<16	<16	<16
CADMIUM	<5	<100	<40	<75	<40	<40	<40	<100	<75	<40	<1	<40	<50	<40
LEAD	<40	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<50	<40	<90
MERCURY	<0.1	<1	<4	<0.5	<0.5	<0.5	<0.5	<60	<60	-	<0.5	<0.5	-	<0.5
TIN SCREENING FOR ORGANOTINS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PHthalATES	<50	<1000	-	<500	<500	<500	<1000	-	<1000	<1000	<250	<500	ND	<500
PVC	ND	-	-	-	ND	-	-	-	-	ND	ND	-	ND	-
CHLOROPHENOL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	ND	<0.5	<0.05	<0.5	<0.5	<0.5

Key: - Not Required ND Not Detectable

Notes:  
\* Organo Tin – GNA requires an initial screening test for the presence of Tin < 0.1mg/kg. If Tin is present above 0.1g/mg, then the concentration of organo tin present must be tested and the following thresholds apply: -

- Dibutyltin (DBT) <1mg/kg
- Dioctyltin (DOT) <1mg/kg
- Monobutyltin <1mg/kg
- Tertiarybutyltin (TBT) <0.5mg/kg
- Triphenyltin <0.5mg/kg
- all other tri-substituted organo tin compounds <1mg/kg each

\*\* PVC - Not legislated in textiles but common source of phthalates and cadmium

\*\*\* Cadmium – The GNA non-detection limit for Lead Cadmium is slightly higher than some Brands' RSL; this is due to the test protocol in the external laboratory and as can be seen the GNA RSL is much lower than the legislation. If in doubt, the supplier must carry out further testing

For other Brands, please check their RSL Vs the GNA test reports on the GNA website



## REACH SVHC

### REACH Substances of Very High Concern (SVHC)

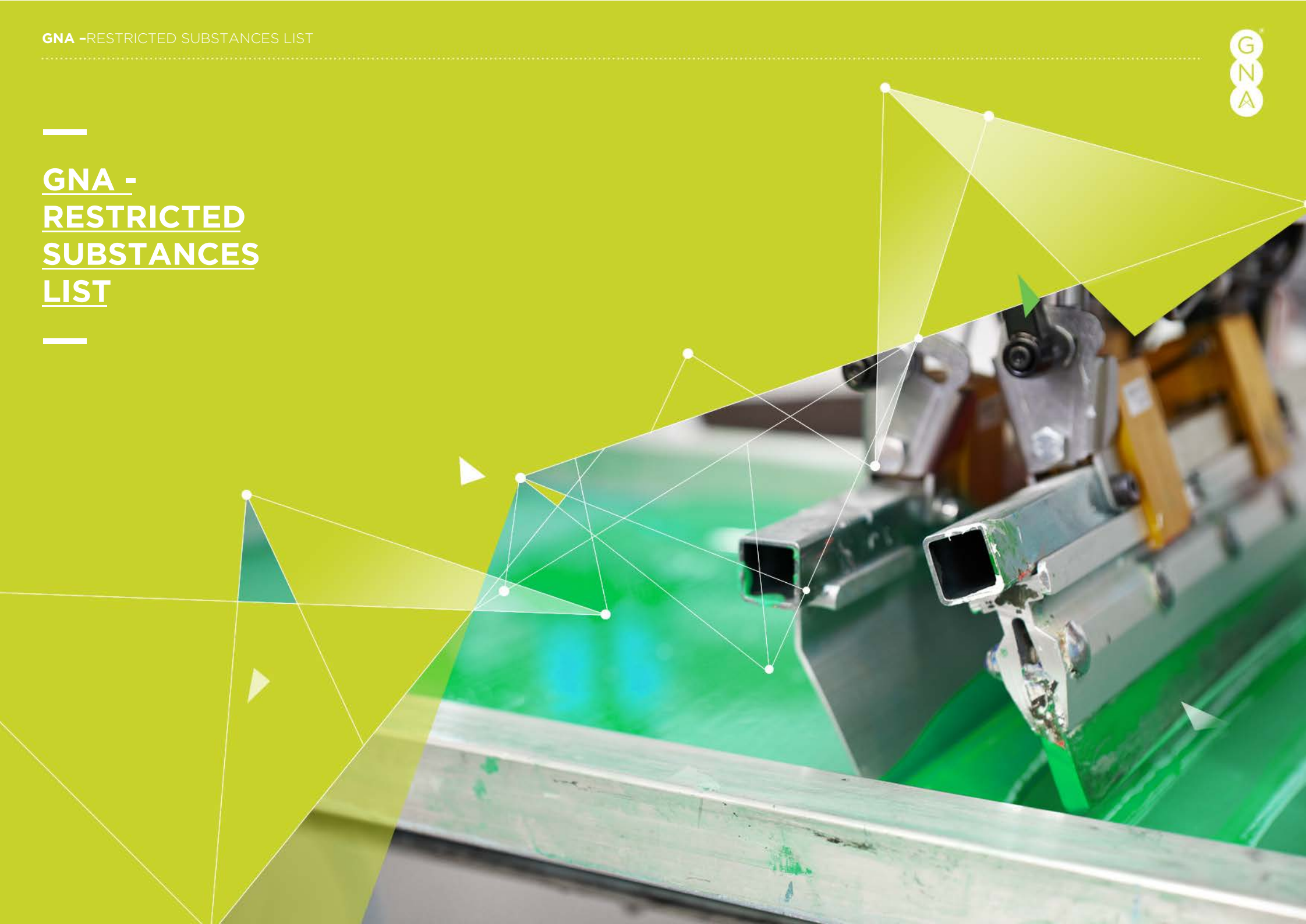
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A chemical is required to be registered under REACH if it is manufactured or imported into the EU at or above 1 tonne per year and contained in the product above 0.1% by weight. See <http://echa.europa.eu/support/guidance> for assistance.

Substances of Very High Concern (SVHC) will be published and updated by the European Chemicals Agency (ECHA) periodically; suppliers should follow the most up-to-date version from <http://echa.europa.eu/> GNA requires all products not to exceed the 0.1% limit for any SVHC substance or SVHC candidate list substance.

Note. Testing is not required for the chemicals on the REACH SVHC list unless that substance is part of the GNA RSL or the supplier suspects, or is aware of, the presence of a SVHC in their product

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**GNA -**  
**RESTRICTED**  
**SUBSTANCES**  
**LIST**  
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Restricted Substance or Group Name (CAS #)	Reason for Restriction	GNA Limit	Test Method and Comments
		Maximum allowable concentration in component	
<b>Alkylphenols (APs)</b> Nonylphenols (25154-52-3) Octylphenols (27193-28-8)	Legislated	Sum of NP and OP 20 mg/kg	Solvent extraction, Quantification by GC-MS or LC-DAD-MS
<b>Alkylphenol Ethoxylates (APEOs)</b> Nonylphenol ethoxylate (9016-45-9) Octylphenol ethoxylate (9002-93-1)	Legislated	Sum of NPEO and OPEO 20 mg/kg	Solvent extraction, Quantification by GC-MS or LC-DAD-MS
<b>Polychlorinated phenols (PCPs)</b> Pentachlorophenol (87-86-5) Tetrachlorophenol (various) Orthophenylphenol (90-43-7)	Legislated	0.05mg/kg	\$64 LFGB BLV 82.02-8 (modified)

Restricted Substance or Group Name (CAS #)	Reason for Restriction	GNA Limit	Test Method and Comments
		Maximum allowable concentration in component	
<b>Dyes, Azo dyes</b>	Legislated	5 mg/kg Per listed amine in product	EN14362-1: 2012
<p>4-Aminodiphenyl (92-67-1)  Benzidine (92-87-5)  4-Chloro-o-Toluidine (95-69-2)  2-Napthylamine (91-59-8)  o-Aminoazotoluene (97-56-3)  2-Amino-4-nitrotoluene (99-55-8)  2,4 Diaminoanisoole (615-05-4)  4,4Diaminodiphenylmethane (101-77-9)  3,3-Dichlorobenzidine (91-94-1)  3,3-Dimethoxybenzidine (119-90-4)  3,3-Dimethylbenzidine (119-93-7)  3,3-Dimethyl-4,4'-diaminodiphenylmethane (838-88-0)  p-Chloroaniline (106-47-8)  p-Cresidine (120-71-8)  4,4-Methylene-bis-(2-chloroaniline) (101-14-4)  4,4-Oxydianiline (101-80-4)  4,4-Thiodianiline (139-65-1)  2,4-Toluenediamine (95-80-7)  o-Toluidine (95-53-4)  2,4,5-Trimethylaniline (137-17-7)  o-Anisidine (90-04-0)  p-Amino-azobenzene (60-09-3)  2,4-Xylidine (95-68-1)  2,6-Xylidine (87-62-7)</p>			
<p>Screening tests for all GNA products  p-Toluidine (106-49-0)  m-Toluidine (108-44-1)</p>	Information only		

Restricted Substance or Group Name (CAS #)	Reason for Restriction	GNA Limit	Test Method and Comments
		Maximum allowable concentration in component	
Formaldehyde (50-00-0)	Legislated	5mg/kg	ISO 14184-1
<b>Metals</b>			
Cadmium (7440-43-9)	Legislated	5mg/kg	Total metal content by microwave digestion and ICP or AAS analysis
Lead (7439-92-1)	Legislated	50 mg/kg	
Mercury (7439-97-6)	Legislated	0.1 mg/kg	
Tin (7440-31-5) Screening test for organotins	Organotins legislated	Tin 0.1 mg/kg If Tin > 0.1 mg/kg, organotin analysis required	For Lead, test method conforms to CPSC-CH-E1003-09.1
<b>Organotin Compounds</b>	Legislated	<ul style="list-style-type: none"> <li>- Dibutyltin (DBT) &lt;1mg/kg</li> <li>- Dioctyltin (DOT) &lt;1mg/kg</li> <li>- Monobutyltin &lt;1mg/kg</li> <li>- Tirbutyltin (TBT) &lt;0.5mg/kg</li> <li>- Triphenyltin &lt;0.5mg/kg</li> <li>- all other tri-substituted organotin compounds &lt;1mg/kg each</li> </ul>	ISO 17353:2005 Extraction and derivatization, followed by GCMS analysis

Restricted Substance or Group Name (CAS #)	Reason for Restriction	GNA Limit	Test Method and Comments
Maximum allowable concentration in component			
<p><b>Phthalates</b>                      All esters of o-phthalic acid, including but not restricted to:                      Di-isononyl phthalate (DINP) (28553-12-0)                      Di(ethylhexyl) phthalate (DEHP) (117-81-7)                      Di-n-octyl phthalate (DNOP) (117-84-0)                      Di-iso-decyl phthalate (DIDP) (26761-40-0)                      Butyl benzyl phthalate (BBP) (85-68-7)                      Dibutyl phthalate (DBP) (84-74-2)                      Di-isobutyl phthalate (DiBP) (84-69-5)                      1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (68515-42-4)                      1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (71888-89-6)                      1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (68515-50-4)                      Bis-(2-methoxyethyl) phthalate (DMEP) (117-82-8)                      Diisopentylphthalate (DIPP) (605-50-5)                      N-pentyl-isopentyl phthalate (NPIPP) (776297-69-9)                      Di-n-pentylphthalate (DnPP) (131-18-0)                      Di-n-hexylphthalate (DnHP) (84-75-3)                      Dimethylphthalate (131-11-3)                      Diethylphthalate (84-66-2)</p>	Legislated	50mg/kg	<p>Determination of defined Orthophthalis esters by LC-DAD-MS, Confirmation of failure by fragmentation HPLC-MS</p> <p>Note. Test method conforms to: CPSC-CH-C1001.09.3</p>
<p>Polyvinylchloride (PVC) (9002-86-2)</p>	GNA Requirement	Not detected	<p>Beilsteins test (for Chlorine) then Infrared analysis: Spectroscopy (IR) with or without solvent extraction. (Positive results for both tests indicate PVC)</p>

Further tests	Reason for test	GNA Limit	Test Method and Comments
		Required	
<b>Fastness to Rubbing</b>			
Dry Crocking test		Grade 4	ISO 105/X12 (Oeko-Tex®)
<b>Fastness to Saliva and Perspiration</b>			
Fast to saliva	Oeko-Tex® Standard 100 requirement	Yes/No	(Pigments only)
Fast to perspiration		Yes/No	LMBG 82.10-1 modified (Pigments only)
pH		4.0-7.5	ISO 3071 (Bases only)

## SAMPLE PREPARATION & SAMPLING REQUIREMENTS

### **GNA001**

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Sample preparation for GNA Chemical Testing

### **GNA002**

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Sample preparation for GNA pigments for saliva, perspiration, rub fastness and pH testing

### **GNA003**

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Sample preparation for GNA pH testing



## **APPROVED** **TESTING** **LABORATORIES**

Bureau Veritas Consumer Products Services Germany GmbH  
Wilhelm-Hennemann -Str. 8,  
19061 Schwerin,  
Germany  
[customerservice.schwerin@de.bureauveritas.com](mailto:customerservice.schwerin@de.bureauveritas.com)  
[www.bureauveritas.de/cps](http://www.bureauveritas.de/cps)





Always visit [gnastandard.com](http://gnastandard.com) to verify that you have the most recent version of the RSL.