Version Jan 2021

Criteria Catalog.
Saphira Eco.

HEIDELBERG

Safe, clean, strong. **Saphira Eco.**

Think economically, print ecologically. These two requirements are equally important to Heidelberg®. But how can production be economically successful and environmentally responsible at the same time?

Under the Saphira® Eco label, Heidelberg offers a comprehensive range of environmentally responsible consumables that have one thing in common: They all meet the strictest criteria and industry standards. And they are continuously enhanced by Heidelberg and adapted to new or extended requirements.

The current criteria catalog contains a concise and fact-based representation of all Saphira Eco product groups. It highlights their relevant components and details the criteria based on which Saphira Eco consumables have been classified as “ecologically recommended”. It also proves that Heidelberg takes its environmental commitment and its self-declared goal of opening up promising economic prospects for you through environmentally friendly products seriously.

heidelberg.com/de/saphira-eco

Contents.

Environmental management. **Ecological responsibility as a corporate principle.**

Environmental protection and careful use of resources have been clearly defined elements of our corporate activities since 1992. Systematic environmental commitment at all process stages, green printing, and innovative overall solutions are the focal points of a holistic corporate strategy at Heidelberg.

Facts illustrating the environmental commitment of Heidelberg

- Our production sites in Wiesloch-Walldorf, Amstetten, Brandenburg, Leipzig, and Ludwigsburg are certified to the international ISO 14001:2015 HDM AG 9001/14001 standard.
- Since 2001, printing presses from Heidelberg have held the “Emissions Tested” and “Optimized UV Printing” certificates.
- Our Print Media Center in Wiesloch-Walldorf is FSC certified; since 2009, FSC paper has been used exclusively for all our printed products.
- At IPEX 2010, Heidelberg presented a “carbon footprint calculator” as a new function within Prinect® Analyze Point.
- Heidelberg is a co-initiator of the German engineering federation VDMA guideline on the measurement of energy consumption for sheetfed offset printing presses.

Environmental commitment as an ongoing task

Heidelberg is continuously working on new projects to further optimize the company’s environmental footprint.

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Saphira Eco
Fountain Solution
Beseitigt vollständig die Verwendung von Isopropyl Alkohol und stabilisiert gleichzeitig den pH zwischen 4,8 und 5,2.
Saphira Eco
Ink Excel Yellow
Yellow · Gelb · Jaune
Use before end of/ Utiliser avant fin/ Mindesthaltbarkeit
03.2018
Batch/ Lot/ Charge
Made in EU
Ink Excel Magenta
Magenta · Magenta · Magenta
Made in EU

Saphira Eco.
Environmentally sound consumables.

Saphira Eco is an extensive range of environmentally friendly consumables for the entire printing process. All products bearing the Saphira Eco label have been carefully selected based on green criteria and meet or even exceed current legal environmental requirements.

The right product for every application
Heidelberg is continuously expanding its product range of environmentally friendly materials.

Committed to the environment
Wherever possible, Saphira Eco products are manufactured using renewable raw materials and/or contribute to the recyclability of the end products. Substances defined as CMR[1], PBT[1], or vPvB[1] under the REACH Regulation are not used as raw materials in Saphira Eco products. The Saphira Eco label stands for lower emission levels than those of most comparable products.

Main benefits
In addition to its ecological benefits – such as reducing emissions of volatile organic compounds (VOC), ammonia, and particulate matter – Saphira Eco also stands for the use of fewer chemicals, and less waste water.

Available worldwide
Saphira Eco consumables are available from our 250 sales offices around the globe and online. Please note that, due to various factors, not every product is available in every market. For more information, please contact one of our sales offices directly.

Note
Please be aware that there has been high dynamics in the adjustments of eco-label award criteria at the end of 2020. Any changes to the criteria are taken into account, and therefore changes to the criteria may take place in the course of the year. As things stands, there may be further changes, in particular with regard to recyclability, hydrocarbons in inks and coatings, polycyclic aromatic hydrocarbons (PAH), as well as perfluorinated and polyfluorinated substances in consumables.

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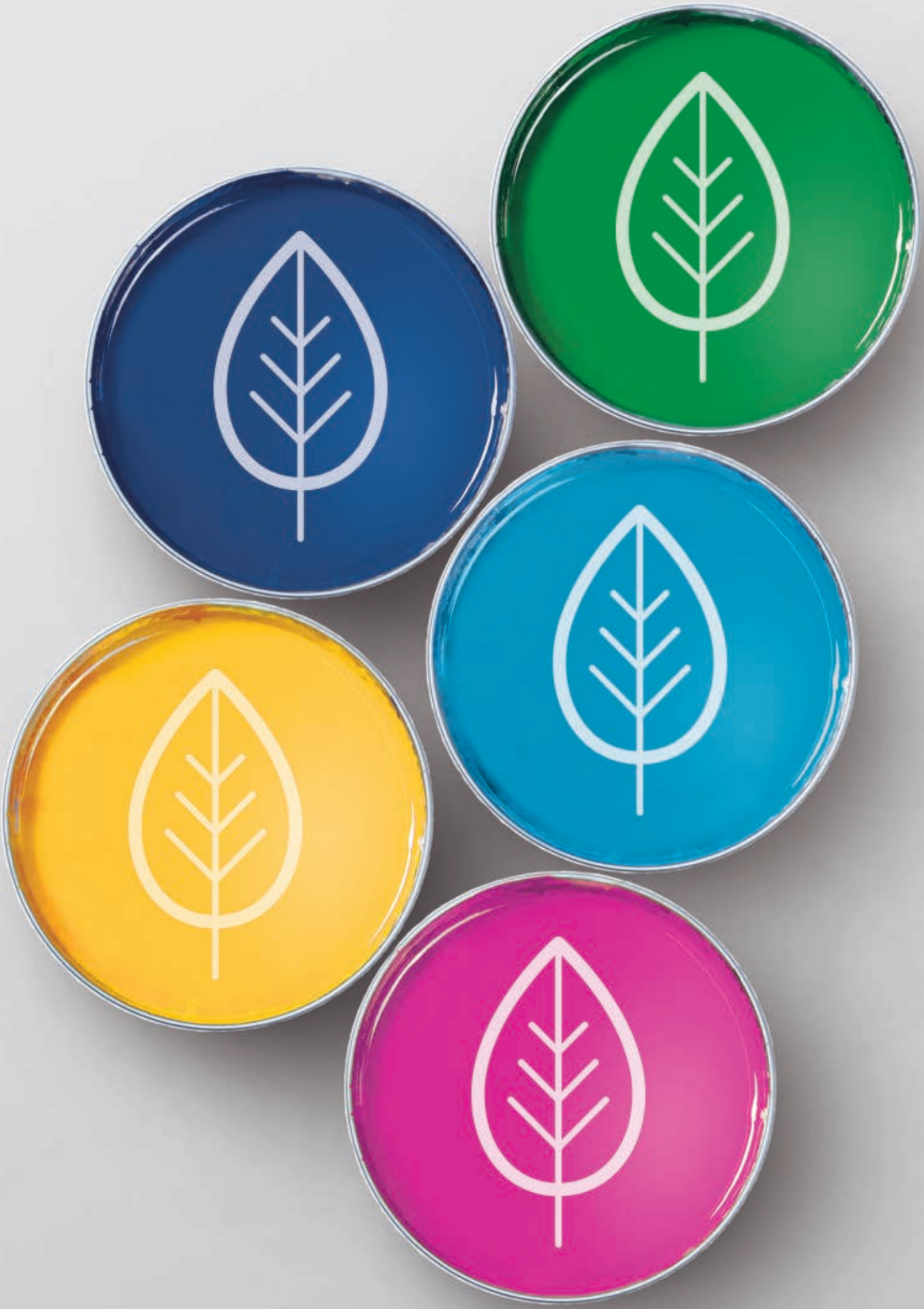
[1] See glossary



Verifiably environmentally friendly. **The criteria catalog.**

The Heidelberg criteria catalog for Saphira Eco products contains precise guidelines for environmentally friendly consumables, and distinguishes between general and product-specific criteria.

The general criteria apply across all product groups to all Saphira Eco consumables. They are always obligatory, and thus serve as an initial criterion for exclusion when selecting new environmentally friendly consumables. The product-specific criteria refer specifically to individual materials, and must be applied to particular products.

Only if they meet stringent requirements are the suppliers of Saphira Eco consumables approved by Heidelberg.

1. Handling instructions

1.1 Handling

The substances listed in the criteria catalog are divided into three levels:

Classification

Level 1: Substances are permitted to be used in Saphira Eco consumables.

Level 2: Substances are only permitted to be used under certain conditions.
Until they can be replaced or eliminated, these substances may be used in line with specified limit values.

Level 3: Substances are not permitted to be used in Saphira Eco consumables.
The use of these substances as a constitutional element is prohibited.

1.2 Notes regarding the tables

- **Percentages:**
  All percentages are by weight.
- **Measuring methods:**
  VOC values must be determined according to the definition of EN ISO 11890-1/2.
- **Abbreviations:**
  The abbreviation “N/A” means “Not Applicable”.

1.3 Effective date of the prohibitions

The respective date indicates the date from which Heidelberger Druckmaschinen AG will no longer accept a particular substance as a component of Saphira Eco consumables.

1.4 Terms and definitions

The glossary in the appendix of the document provides important terms and definitions.

2. General criteria

The general criteria for the use of Saphira Eco consumables apply to all consumables across all product groups.

Criteria

- Saphira Eco consumables must meet or exceed all applicable legal requirements and industry performance standards.
- Wherever possible, Saphira Eco consumables are manufactured using renewable raw materials and/or contribute to the recyclability of the end products.
- Substances defined as CMR, PBT, or vPvB under the current REACH Regulation are not used as raw materials in Saphira Eco products.
- Saphira Eco consumables produce lower emission levels than comparable products on the market.
- Saphira Eco consumables are compatible with printing machinery and equipment (see Fogra/MPA certificate).
- Saphira Eco consumables must meet or exceed the extended product-specific criteria that Heidelberg has undertaken to comply with.
- Saphira Eco consumables are not subject to labeling requirements. Exceptions exist for washing fluids.
- Exception washing fluid with hazard H 304.
- Due to the revision of our criteria catalog, there will be changes in the product portfolio. Please find a list of the current Saphira Eco products in our Saphira Eco positive list.

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	N/A	Carcinogenic (CMR)	01/2011
Level 3	N/A	Mutagenic (CMR)	01/2011
Level 3	N/A	Reprotoxic (CMR)	01/2011
Level 3	N/A	Persistent, bioaccumulative, and toxic (PBT)	01/2021
Level 3	N/A	Very persistent, very bioaccumulative (vPvB)	01/2021

Classification	Hazard statement	Risk statement	Effective date of the prohibitions
Substances and mixtures are not classified with one of the listed H Phrases. Exception: Wasing-agents with H304.	H 300	R 26, R 28	01/2011
	H 301	R 25	01/2011
	H 304*	R 65	01/2021
	H 310	R 27	01/2011
	H 311	R 24	01/2011
	H 314	R 34/R 35	01/2011
	H 317	R 43	01/2021
	H 318	R 41	01/2011
	H 330	R 26	01/2011
	H 330, H 310, H 300	R 26, R 27, R 28	01/2011
	H 331	R 23	01/2011
	H 334	R 42	01/2011
	H 340	R 46	01/2011
	H 341	R 68	01/2011
	H 350	R 45, R 49	01/2011
	H 350i	R 49	01/2011
	H 351	R 40	01/2011
	H 360, H 360D, H 360F, H 360FD, H 360Fd, H 360DF	R 60, R 61	01/2011
	H 361, H 361f, H361d, H 361fd	R 62, R 63	01/2011
	H 362	R 64	01/2011
	H 370	R 39, R 39/23, R 39/24, R 39/25, R39/26, R39/27, R39/28	01/2011
	H 371	R 68/20, R 68/21, R 68/22	01/2011
	H 372	R 48, R 48/23, R 48/24, R 48/25	01/2011
	H 373	R 48, R 48/20, R 48/21, R 48/22, R 48/23, R 48/24, R 48/25	01/2011
	H 373	R 33	01/2011
	H 400	R 50, R 50/53	01/2011
	H 410	R 50/53	01/2011
	H 411	R 51/53	01/2011
	H 412	R 52/53	01/2011
	H 413	R 52, R 53	01/2011
	H 420	-	01/2021
	EUH 029	R 29	01/2011
	EUH 031	R 31	01/2011
	EUH 032	R 32	01/2011
	EUH 059	R 59	01/2011
	EUH 070	R 39/41	01/2011

*Washing agents: Exempt from the requirement with hazard statement H 304.

Saphira Eco consumables are **not** marked with any of these symbols.

3. General requirements for manufacturers

The requirement criteria stipulated by Heidelberger Druckmaschinen AG apply to all manufacturers and suppliers of Saphira Eco consumables. Meeting these criteria is a prerequisite for approval as a manufacturer/supplier of Saphira Eco consumables, and compliance will be checked by Heidelberg at regular intervals.

Requirements

- The manufacturer/supplier of Saphira Eco consumables warrants the implementation of its environmental policy in both technical and organizational terms by means of an environmental management system. Suppliers of Saphira Eco consumables are certified to ISO 9001/14001, or can verify that they meet or exceed the requirements of ISO 9001/14001.
- The manufacturer/supplier of Saphira Eco consumables is called upon to strive for continuous improvement in environmental protection with regard to environmental impact, as well as resource and energy consumption.
- The manufacturer/supplier of Saphira Eco consumables is committed to achieving a higher standard of environmental protection than is required by law.
- The manufacturer/supplier of Saphira Eco consumables continuously reviews, monitors, and assesses the impact of its business activities on the environment.
- The manufacturer/supplier of Saphira Eco consumables endeavors to eliminate potential negative impacts on the environment from the early stages of product development, and in the subsequent production process.
- The manufacturer/supplier of Saphira Eco consumables trains and informs its employees to promote environmental awareness both within and outside the company.
- The manufacturer/supplier of Saphira Eco consumables is committed to eco-friendly sourcing of its raw materials, and thus makes an active contribution to preserving the environment.
- The manufacturer/supplier of Saphira Eco consumables pledges to continuously improve the company's environmental protection measures, for example by integrating environmental protection technologies into production.

4. Product-specific criteria

Product-specific criteria for Saphira Eco consumables in each case relate to the individual product groups. They must be applied in line with the specified classification and concentration.

Made primarily from renewable or recyclable raw materials, our Saphira Eco consumables contain only a minimum amount of harmful substances.

4.1 Printing plates and chemicals

4.1.a Printing plates

Stipulation: Only chemical-free or chemical-reduced CtP printing plates and developed on press (DoP) printing plates may be used for Saphira Eco printing plates.

4.1.b Printing plate chemicals

Stipulation: Printing plate chemicals are not suitable as Saphira Eco products.

4.2 Inks

4.2.a UV inks

Stipulation: UV inks are not suitable as Saphira Eco products.

4.2.b Conventional inks

4.2.b.1 Heavy metals

Stipulation: Restrictions/exclusion: See Appendix 1.

Exceptions Heavy Metals				
Classification	**CAS Number**	**Designation**	**Concentration**	**Effective date of the prohibitions**
Level 1	147-14-8	Copper phthalocyanine	N/A	N/A
Level 2	7439-96-5	Manganese	< 0.5 %[1]	N/A
Level 2	7440-48-4	Cobalt	< 0.1 %[2] USA/Canada	05/2016
Level 3	7440-48-4	Cobalt	N/A	05/2016

[1] As a siccative in relation to the ink
[2] In relation to the ink

4.2.b.2 Dyes/pigments

Stipulation: Restrictions/exclusion: See Appendix 2.

4.2.b.3 Mineral oil content

Classification	**CAS Number**	**Designation**	**Concentration**	**Effective date of the prohibitions**
Level 2	N/A	Mineral oil	< 1 %	N/A
Level 2	N/A	Mineral oil	< 3 % USA/Canada	N/A

4.2.b.4 Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.2.b.5 Solvents for inks

Usage: Restrictions/exclusion: See Appendix 4.

4.2.b.6 Natural resins/waxes

Classification	**CAS Number**	**Designation**	**Concentration**	**Effective date of the prohibitions**
Level 1	N/A	Natural resins[1]	N/A	N/A
Level 1	N/A	Natural waxes[1]	N/A	N/A

[1] Chemically modified as raw material

4.2.b.7 VOC content*

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 3 % according to European measuring method*	N/A

* VOC values must be determined according to the definition of EN ISO 11890-1/2.

4.2.b.8 Flash point

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Flash point	> 100 °C	N/A

4.2.b.9 Miscellaneous compounds

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	1879-09-0	2,4-Dimethyl-6-tert-butylphenol	N/A	01/2013
Level 3	N/A	Diaminostilbene and its derivatives	N/A	01/2013
Level 3	90-93-7	4,4'-Bis(dimethylamino)benzophenone (Michler's ketone)	N/A	01/2013
Level 3	608-73-1 319-84-6 319-84-7 319-84-8	Hexachlorocyclohexane	N/A	01/2013
Level 3	75-09-2	Methylene chloride	N/A	01/2021
Level 3	60-00-4	Ethylenediaminetetraacetic acid (EDTA)	N/A	07/2013
Level 3	139-13-9	Nitrilotriacetic acid (NTA)	N/A	07/2013
Level 3	1763-23-1 45298-90-6	Perfluorooctanesulfonic acid (PFOS)	N/A	07/2013
Level 2	N/A	Perfluorinated and polyfluorinated alkylated substances (PFAS)*	N/A	01/2021

* Use permitted if necessary for product quality and no alternatives are available. Indication of total organically bound fluorine content in mgTOF/kg.

4.2.b.10 Phthalates and other plasticizers

Stipulation: Restrictions/exclusion: See Appendix 7.

4.2.b.11 Aliphatic hydrocarbons

Stipulation: Restrictions/exclusion: See Appendix 8.

4.2.b.12 Polycyclic aromatic hydrocarbons (PAH, according to Annex XVII to REACH)

Usage: Restriction/exclusion: See Appendix 9.

4.3 Coatings

4.3.a Oil-based coatings

Stipulation: Oil-based coatings correspond in their composition to conventional inks without dyes/pigments. The criteria for Saphira Eco inks apply here.

4.3.b Water-based coatings

4.3.b.1 Heavy metals

Stipulation: Restrictions/exclusion: See Appendix 1.

4.3.b.2 Dyes

Stipulation: Restrictions/exclusion: See Appendix 2.

4.3.b.3 Solvents for inks/water-based coatings

Usage: Restrictions/exclusion: See Appendix 4.

4.3.b.4 Substances

Stipulation: Restrictions/exclusion: See Appendix 5.

4.3.b.5 VOC content*

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 3 % according to European measuring method	N/A

* VOC values must be determined according to the definition of EN ISO 11890-1/2.

4.3.b.6 Ammonia content

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	7664-41-7	Ammonia	< 1 % (NH_4)	N/A

4.3.b.7 Phthalates and other plasticizers

Stipulation: Restrictions/exclusion: See Appendix 7.

4.3.b.8 Aliphatic hydrocarbons

Stipulation: Restrictions/exclusion: See Appendix 8.

4.3.b.9 Polycyclic aromatic hydrocarbons (PAH, according to Annex XVII to REACH)

Stipulation: Restrictions/exclusion: See Appendix 9.

4.3.b.10 Miscellaneous compounds

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	1879-09-0 2	4-Dimethyl-6-tert-butylphenol	N/A	01/2013
Level 3	N/A	Diaminostilbene and its derivatives	N/A	01/2013
Level 3	90-93-7	4,4'-Bis(dimethylamino)benzophenone (Michler's ketone)	N/A	01/2013
Level 2	N/A	Perfluorinated and polyfluorinated alkylated substances (PFAS)*	N/A	01/2021

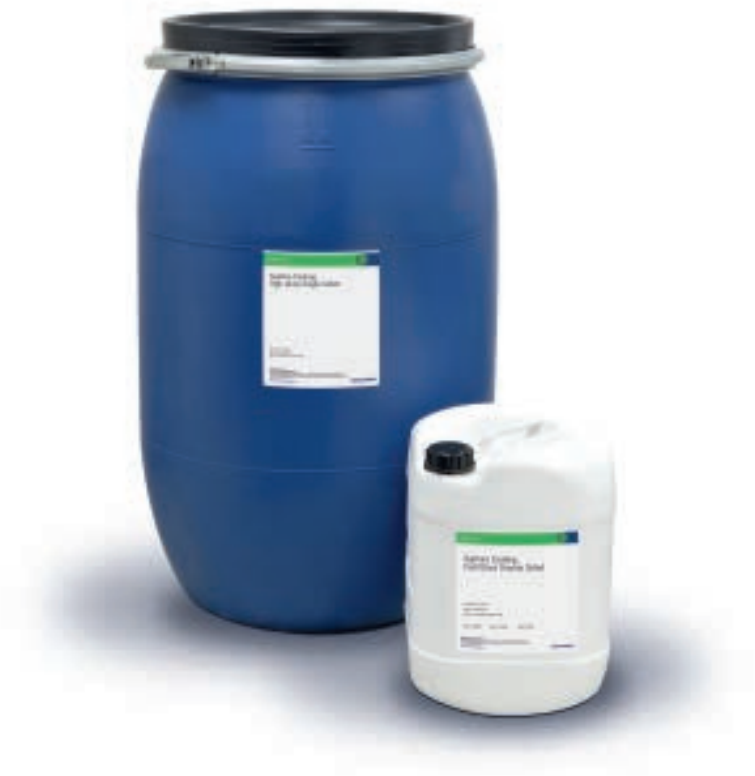
* Use permitted if necessary for product quality and no alternatives are available. Indication of total organically bound fluorine content in mgTOF/kg.

4.3.c Biocides

Stipulation: Biocides are only permitted if their bioaccumulation potential has a logKOW (octanol-water partition coefficient) < 3.0 or an experimentally determined bioconcentration factor (BCF) ≤ 100. Only biocides approved in the EU are permitted.

4.3.d UV coatings and special coatings

Stipulation: UV coatings and special-effect coatings such as pearly luster/metallic effect coatings, scented coatings, etc., are not suitable as Saphira Eco products.



4.4 Dampening solution additives

Stipulation: Only dampening solution additives suitable for alcohol-free printing may be used for Saphira Eco.

4.4.a Glycol ether

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	109-86-4	Methyl glycol Other names: • 2-Methoxyethanol • Ethylene glycol monoethyl ether	N/A	01/2011
Level 3	110-80-5	2-Ethoxyethanol Other names: • Ethylene glycol monoethyl ether • Cellosolve • Ethyl cellosolve	N/A	01/2011

4.4.b 2-Propanol

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	67-63-0	2-Propanol Other names: • Propan-2-ol (IUPAC) • Propanol-2 • Isopropanol • i-Propanol • Isopropyl alcohol • Secondary propyl alcohol • sec-Propanol • Persprit • Petrohol • Petrosol • Dimethylcarbinol • ß-Hydroxypropane • Propol • Alcohol isopropylicus • IPA	N/A	01/2011

4.4.c Biocides

Stipulation: Biocides are only permitted if their bioaccumulation potential has a logKOW (octanol-water partition coefficient) < 3.0 or an experimentally determined bio-concentration factor (BCF) ≤ 100. Only biocides approved in the EU are permitted.

4.4.d Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.4.e VOC content*

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 5 % according to European measuring method*	01/2011

* VOC values must be determined according to the definition of EN ISO 11890-1/2.

4.4.f Substances

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	60-00-4	Ethylenediaminetetraacetic acid (EDTA)	N/A	07/2013
Level 3	139-13-9	Nitrilotriacetic acid (NTA)	N/A	07/2013
Level 3	1763-23-1 45298-90-6	Perfluorooctanesulfonic acid (PFOS)	N/A	07/2013

4.4.g Fogra/MPA approval

Stipulation: All Saphira Eco dampening solution additives require a Fogra/MPA certificate for fountain solution concentrates.

4.5 Washing fluids

Usage: Used in automatic washup devices.

4.5.a Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.5.b Substances

Stipulation: Restrictions/exclusion: See Appendix 5.

4.5.c VOC content*

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 10 % and < 100 g/l[1]	01/2011

[1] SCAQMD Rule 1171 – USA
* VOC values must be determined according to the definition of EN ISO 11890-1/2.

4.5.d Fogra approval

Stipulation: All Saphira Eco washing fluids require a Fogra certificate for washing agents.

4.5.e Flash point

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Flash point	> 100 °C	N/A

4.5.f Phthalates and other plasticizers

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	N/A	Alkylphenols and alkylphenol ethoxylates	N/A	01/2021

4.5.g Biocides

Stipulation: Biocides are only permitted if their bioaccumulation potential has a logKOW (octanol-water partition coefficient) < 3.0 or an experimentally determined bio-concentration factor (BCF) ≤ 100. Only biocides approved in the EU are permitted.

4.6 Cleaning agents

Usage: Used for manual cleaning.

4.6.a Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.6.b Substances

Stipulation: Restrictions/exclusion: See Appendix 5.

4.6.c pH value

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	pH value	4.8–9	N/A

4.6.d Flash point

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Flash point	> 60 °C	N/A

4.6.e Phthalates and other plasticizers

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	N/A	Alkylphenols and alkylphenol ethoxylates	N/A	01/2021

4.6.f Biocides

Stipulation: Biocides are only permitted if their bioaccumulation potential has a logKOW (octanol-water partition coefficient) < 3.0 or an experimentally determined bio-concentration factor (BCF) ≤ 100. Only biocides approved in the EU are permitted.

4.7 Spray powders

Stipulation: Only starch-based or mineral powders may be used for Saphira Eco spray powders.

80 (–5) % by volume of the total particles in a powder must be within the grain size range 0.5 × median to 1.5 × median.

Spray powders

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Fine powder grain	≤ 20 µm	N/A
Level 2	N/A	Medium powder grain	> 20 and ≤ 40 µm	N/A
Level 2	N/A	Coarse powder grain	> 40 µm	N/A

Particulate matter content

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Fine powder grain	10 + 0.5 % by volume	N/A
Level 2	N/A	Medium powder grain	7.5 + 0.5 % by volume	N/A
Level 2	N/A	Coarse powder grain	5 + 0.5 % by volume	N/A

4.8 Glues

4.8.a PUR glues

Stipulation: PUR glues may only be used if they meet the requirements of the European Recovered Paper Council's "Scorecard for the Removability of Adhesive Applications". They must also comply with the protective measures concept for the use of reactive PUR hot-melt adhesives in the processing of wood, paper, and leather as stipulated by the Berufsgenossenschaftliches Institut für Arbeitsschutz (BGIA, Institute for Occupational Safety and Health of the German Social Accident Insurance).

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Methylenediphenylisocyanate (MDI)*	< 0.1 %	01/2013

* Maximum processing temperature 130 °C

4.8.a.1 Heavy metals

Stipulation: Restrictions/exclusion: See Appendix 1.

4.8.a.2 Phthalates and other plasticizers

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	84-69-5	Diisobutylphthalates (DIBP)	N/A	01/2021
Level 3	N/A	Alkylphenols and alkylphenol ethoxylates	N/A	01/2021

4.8.a.3 Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.8.a.4 Substances

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	N/A	Secondary amines	N/A	01/2021
Level 3	N/A	Secondary amines	N/A	01/2021
Level 3	N/A	Terpenes	N/A	01/2021
Level 3	110-54-3	n-Hexane	N/A	01/2021
Level 2	71-43-2	Benzene	< 0.1 %	01/2021
Level 2	108-88-3	Toluene	< 0.1 %	01/2021
Level 2	1330-20-7	Xylene	< 0.1 %	01/2021
Level 2	N/A	Aromatics (above C9)	< 0.1 %	01/2021
Level 3	111-76-2	2-Butoxyethanol	N/A	01/2021
Level 3	N/A	Halogenated hydrocarbons	N/A	01/2021

4.8.a.5 VOC

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 5 % according to European measuring method*	N/A

* VOC values must be determined according to the definition of EN ISO 11890-1/2.

4.8.b Hot-melt glues

Stipulation: Hot-melt glues are not suitable as Saphira Eco products.

4.8.c Dispersion adhesives

4.8.c.1 Heavy metals

Stipulation: Restrictions/exclusion: See Appendix 1.

4.8.c.2 Flash point

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Flash point	> 100 °C	N/A

4.8.c.3 Water Hazard Class

Stipulation: Restrictions/exclusion: See Appendix 3.

4.8.c.4 Phthalates and other plasticizers

Stipulation: Restrictions/exclusion: See Appendix 7.

4.8.c.5 VOC

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Volatile organic compound (VOC)	< 5 % according to European measuring method*	N/A

* VOC values must be determined according to the definition of EU ISO 11890-1/2.

4.8.c.6 Substances

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	N/A	Secondary amines	N/A	01/2021
Level 3	N/A	Secondary amines	N/A	01/2021
Level 3	N/A	Terpenes	N/A	01/2021
Level 3	110-54-3	n-Hexane	N/A	01/2021
Level 2	71-43-2	Benzene	< 0.1 %	01/2021
Level 2	108-88-3	Toluene	< 0.1 %	01/2021
Level 2	1330-20-7	Xylene	< 0.1 %	01/2021
Level 2	N/A	Aromatics (above C9)	< 0.1 %	01/2021
Level 3	111-76-2	2-Butoxyethanol	N/A	01/2021
Level 3	N/A	Halogenated hydrocarbons	N/A	01/2021
Level 3	60-00-4	Ethylenediaminetetraacetic acid (EDTA)	N/A	01/2021
Level 3	139-13-9	Nitrilotriacetic acid (NTA)	N/A	01/2021
Level 3	1763-23-1/45298-90-6	Perfluorooctanesulfonic acid (PFOS)	N/A	01/2021

4.8.c.7 Biocides

Stipulation: Biocides are only permitted if their bioaccumulation potential has a logKOW (octanol-water partition coefficient) < 3.0 or an experimentally determined bio-concentration factor (BCF) ≤ 100. Only biocides approved in the EU are permitted.

4.9 Blankets

4.9.a Heavy metals

Stipulation: Exclusion, see Appendix 1.

Exceptions Heavy Metals				
Classification	**CAS Number**	**Designation**	**Concentration**	**Effective date of the prohibitions**
Level 2	7440-66-6	Zinc	< 3 %	01/2013

4.9.b Dyes/pigments

Stipulation: Restrictions/exclusion: See Appendix 2.

4.9.c Phthalates and other plasticizers

Stipulation: Exclusion, see Appendix 7.

4.9.d Solvents

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	108-88-3	Toluene	< 30 %	01/2013

4.9.e Fillers

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 1	N/A	Cotton fabric	N/A	01/2013
Level 2	N/A	Oxides or mixed oxides of calcium, magnesium, aluminum, silicon, and zinc	< 3.0 %	01/2013
Level 3	N/A	Asbestos	N/A	01/2013

4.9.f Vulcanization agents

Classification	CAS Number	Designation	Concentration		Effective date of the prohibitions
Level 2	97-74-5	Tetramethylthiuram monosulfide	< 1.2 %		01/2013
Level 2	137-26-8	Tetramethylthiuram disulfide (TMTD)	in total < 3.0 %	in total < 3.0 %	01/2013
Level 2	97-77-8	Tetraethylthiuram disulfide (TETD)			01/2013
Level 2	53880-86-7	Dimethyldiphenylthiuram disulfide (MPDT)			01/2013
Level 2	120-54-7	Dipentamethylenethiuram tetrasulfide (DPTT)			01/2013
Level 2	149-30-4	2-Mercaptobenzothiazole	< 0.05 %		01/2013
Level 2	120-78-5	Dibenzothiazyl disulfide	< 0.5 %		01/2013
Level 2	85-44-9	Phthalic anhydride	< 0.5 %	in total < 2.5 %	01/2013
Level 2	65-85-0	Benzoic acid	< 1.0 %		01/2013
Level 2	57-11-4	Stearic acid	< 1.5 %		01/2013
Level 3	98-77-1	Pentamethyleneammonium-N-pentamethylenedithio-carbamate			01/2013

4.9.g Processing agents

Classification	CAS Number	Designation	Concentration
Level 2	N/A	Zinc salts of saturated and/or unsaturated high-molecular fatty acids (chain length mainly over the recommendation of C17, but not below C14)	< 3.0 %
Level 2	8050-09-7	Rosin	< 2.0 %
Level 2	9006-24-0	Xylene formaldehyde resins	in total < 5.0 % including any paraffin oils in factice
Level 2	N/A	Liquid paraffins	
Level 2	N/A	Melamine-resorcinol-formaldehyde resins and resorcinolformaldehyde resins	as bonding agent < 5.0 %
Level 2	N/A	Factice	< 20 % providing that the following conditions are met: Only natural and/or hydrogenated fats and oils of vegetable and/or animal origin, but no blown fats or oils, may be used as raw materials in the production of factice. Only aliphatic or cycloaliphatic secondary amines may be used as regulators in the production of factice. The regulators must be completely reacted.

4.9.h Aging inhibitors

Classification	CAS Number	Designation	Concentration	
Level 2	4066-02-8	2,2'-Methylenebis(4-methyl-6-cyclohexylphenol)		
Level 2	77-62-3	2,2'-Methylenebis(4-methyl-6-(alpha-methylcyclohexyl)-phenol)		
Level 2	119-47-1	2,2'-Methylenebis(4-methyl-6-tertbutylphenol)		
Level 2	N/A	Bis(3,5-dimethyl-2-oxyphenyl)isobutane		
Level 2	N/A	Phenol and/or methylphenols reacted with styrene or alpha-methylstyrene and/or olefins of chain length C3 to C12		
Level 2	128-37-0	2,6-ditert-butyl-4-methylphenol		
Level 2	26523-78-4 1333-21-7	Tris(monononylphenyl)phosphite, also mixed with tris(dinonyl-phenyl)phosphite		
Level 2	123968-25-2	2,4-Ditertpentyl-6-(1-(3,5-ditertpentyl-2-hydroxyphenyl)ethyl) phenylacrylate	< 0.5 %	in total < 1 %
Level 2	7786-17-6	Mixture of 2,2'-methylenebis(4-methyl-6-nonylphenol), approx. 2 parts, and 2,6-bis(2-hydroxy-3-nonyl-5-methylbenzyl)-p-cresol, approx. 1 part	< 0.3 %	
Level 2	6683-19-8	Tetrakis(methylene(3,5-ditertbutyl-4-hydroxy)hydrocinnamate) methane	< 0.25 %	
Level 2	991-84-4	2,4-Bis(octylthio)-6-(4-hydroxy-3',5'-ditertbutylaniline)-1,3,5-triazine	< 0.2 %	
Level 2	110553-27-0	2,4-Bis(octylthiomethyl)-6-methylphenol	< 0.5 %	
Level 2	61167-58-6	2-Tertbutyl-6-(3-tertbutyl-2-hydroxy-5-methylbenzyl)-4-methyl-phenyl acrylate	< 0.5 %	
Level 2	N/A	Styrenated diphenylamine		
Level 2	2082-79-3	N-Octadecyl-beta(4'-hydroxy-3',5'-ditertbutylphenyl) propionate	< 0.5 %	
Level 2	31570-04-4	Tris(2,4-ditertbutylphenyl)phosphite	< 0.4 %	
Level 2	119-47-1	2,2'-Methylenebis(4-ethyl-6-tertbutylphenol)		
Level 2	N/A	Reaction product of 4-methylphenol with isobutylene and dicyclopentadiene	< 1.4 %	
Level 2	110675-26-8	2,4-Bisdodecylthiomethyl-6-methylphenol	< 0.5 %	

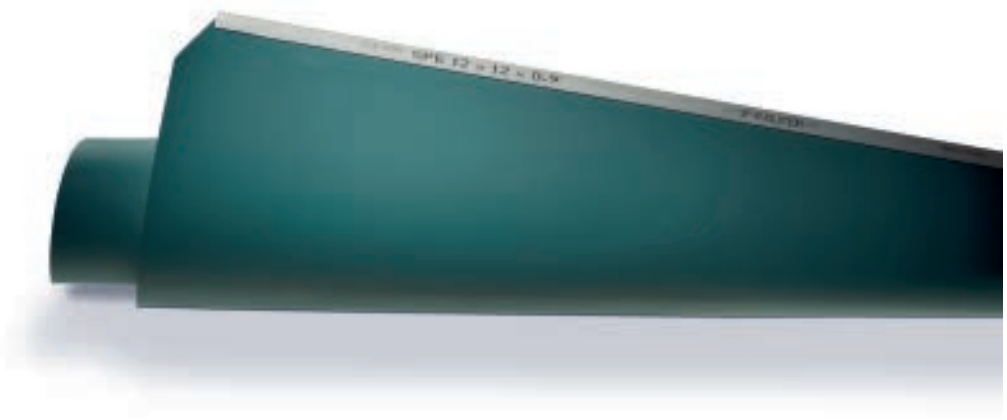
Aging inhibitors for ethylene propylene rubber
For ethylene propylene rubber, only the following products may be used:

Classification	CAS Number	Designation	Concentration
Level 2	96-69-5	4,4'-Thiobis(3-methyl-6-tertbutylphenol)	< 0.25 %
Level 2	2082-79-3	N-Octadecyl-beta(4'-hydroxy-3',5'-ditertbutylphenyl) propionate	< 0.2 %
Level 2	6683-19-8	Tetrakis(methylene(3',5'-ditertbutyl-4-hydroxy)hydrocinnamate)methane	< 0.2 %

4.9.i Slip additives and mold release agents

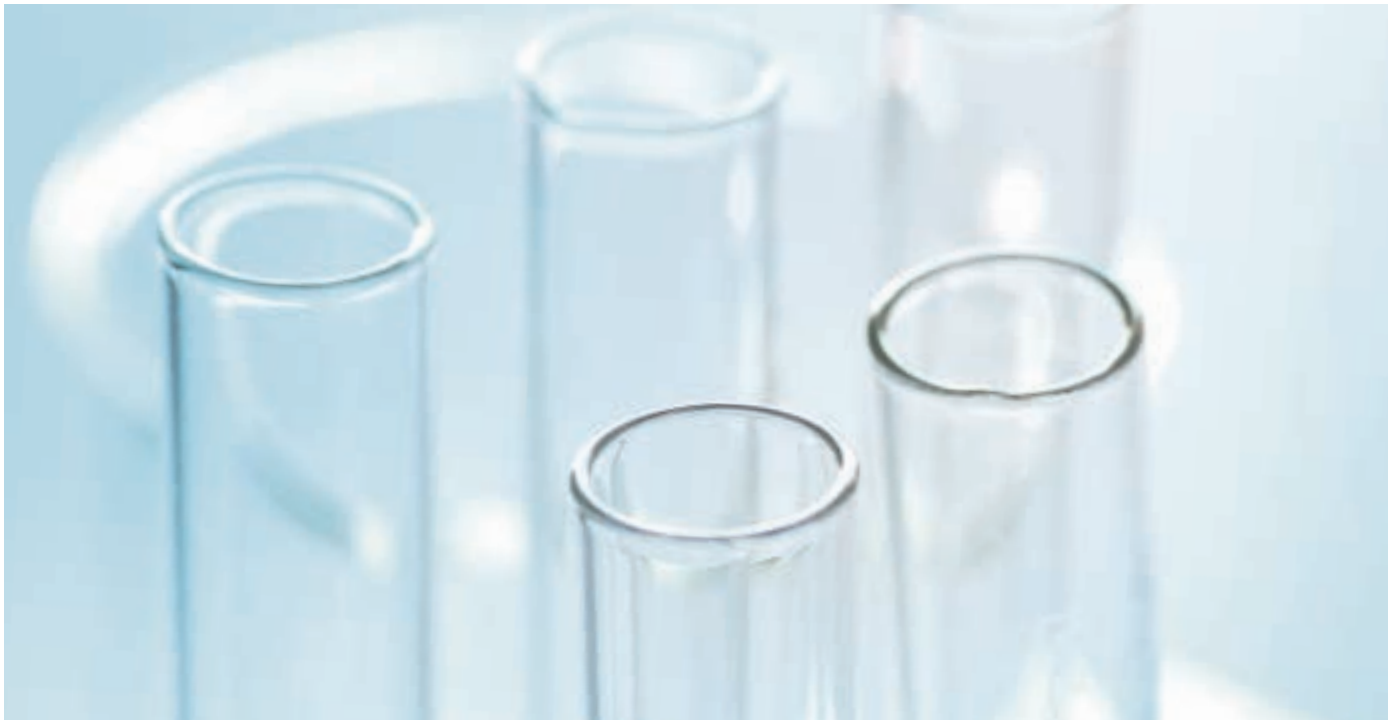
Classification	CAS Number	Designation	Concentration
Level 2	557-05-1	Zinc stearate	Zinc content < 3.0 %

4.9.j N-Nitrosamines
Usage: Restrictions/exclusion: See Appendix 6.



Prohibited raw materials. **Appendix.**

Various legal regulations prohibit the use of certain materials. The following tables provide an overview of the substances concerned.



Substances defined as CMR, PBT, or vPvB under the current REACH Regulation are not used as raw materials in Saphira Eco products.

Appendix 1

Heavy metals

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	7439-97-6	Mercury	01/2011
Level 3	7439-92-1	Lead	01/2011
Level 3	7440-43-9	Cadmium	01/2011
Level 3	1333-82-0	Chromium(VI) oxide	01/2011
Level 3	7440-38-2	Arsenic	01/2011
Level 3	7440-36-0	Antimony	01/2011
Level 3	7782-49-2	Selenium	01/2011
Level 3	7440-50-8	Copper	01/2011
Level 3	7440-02-0	Nickel	01/2011
Level 3	7440-39-3	Barium (soluble)	01/2011

Appendix 2

Dyes and pigments

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	92-67-1	4-Aminobiphenyl Other names: • p-Phenylaniline • Biphenyl-4-ylamine • p-Aminobiphenyl • p-Aminodiphenyl • 4-Biphenylamine • Xenylamine	01/2011
Level 3	92-87-5	Benzidine Other names: • 4-(4-aminophenyl)aniline (IUPAC) • 4,4'-Diaminobiphenyl • 1-Amino-4-(4-aminophenyl)benzene • 4,4'-Bisaniline • para'-Diaminobiphenyl • C.I. 37225	01/2011
Level 3	95-69-2	4-Chloro-ortho-toluidine Other names: • 1-Amino-4-chloro-2-methylbenzene • 4-Chloro-2-methylaniline • 2-Amino-5-chlorotoluene • 5-Chloro-2-aminotoluene	01/2011
Level 3	91-59-8	2-Naphthylamine Other names: • 2-Aminonaphthalene • ß-Naphthylamine	01/2011
Level 3	97-56-3	o-Aminoazotoluene Other names: • 4-Amino-2',3-dimethylazobenzene • 4-o-Tolylazo-o-toluidine	01/2011

Dyes and pigments (continued)

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	99-55-8	2-Amino-4-nitrotoluene Other names: • 5-Nitro-o-toluidine • 2-Methyl-5-nitroaniline • 4-Nitro-2-aminotoluene • 2-Amino-1-methyl-4-nitrobenzene • PNOT	01/2011
Level 3	106-47-8	4-Chloroaniline Other name: • p-Chloroaniline	01/2011
Level 3	615-05-4	2,4-Diaminoanisole Other names: • 4-Methoxy-m-phenylendiamin • 2,4-Diaminophenylmethylether • 3-Amino-4-methoxyaniline • 3-Amino-p-anisidin • 2,4-Diamino-1-methoxybenzol • 4-MMPD	01/2011
Level 3	101-77-9	4,4'-Diaminodiphenylmethane Other names: • DADPM • DAPM • Bis(p-aminophenyl)methane • Dianilinemethane • 4,4'-Methylenedianiline • Methylenebisaniline • Bis(4-aminophenyl)methane • DDM • DDPM • 4-(4-Aminobenzyl)aniline	01/2011
Level 3	91-94-1 612-83-9 (as dihydrochloride)	3,3'-Dichlorobenzidine Other names: • 4,4'-Diamino-3,3'-dichlorobiphenyl • 3,3'-Dichloro-4,4'-diaminodiphenyl • o,o'-Dichlorobenzidine • 3,3'-Dichloro-4,4'-biphenyldiamine • 3,3'-Dichlorobiphenyl-4,4'-diamine • DCB	01/2011
Level 3	119-90-4	3,3'-Dimethoxybenzidine Other names: • o-Dianisidine • 3,3'-Dimethoxybiphenyl-4,4'-diamine • 4,4'-Diamino-3,3'-dimethoxybiphenyl	01/2011
Level 3	119-93-7	3,3'-Dimethylbenzidine Other names: • 4,4'-Diamino-3,3'-dimethylbiphenyl • 4,4'-Bis(o-toluidine) • o-Tolidine • 3,3'-Dimethylbiphenyl-4,4'-diamine • Bianisidine • Diaminoditolyl • 4,4'-Di-o-toluidine • 4,4'-Bi-o-toluidine	01/2011
Level 3	838-88-0	3,3'-Dimethyl-4,4'-diaminodiphenylmethane Other names: • 4,4'-Methylenedi-o-toluidine • 4,4'-Methylenebis(2-methylaniline) • Me-MDA • MBOT • Tolidine base • DADPM • DAPM	01/2011

Dyes and pigments (continued)

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	120-71-8	p-Cresidine Other names: • 2-Methoxy-5-methylaniline (IUPAC) • 5-Methyl-o-anisidine • 3-Amino-4-methoxytoluene • 6-Methoxy-m-toluidine • 1-Amino-2-methoxy-5-methylbenzene	01/2011
Level 3	101-14-4	4,4'-Methylene-bis(2-chloro-aniline)	01/2011
Level 3	101-80-4	4,4'-Oxydianiline	01/2011
Level 3	139-65-1	4,4'-Thiodianiline	01/2011
Level 3	95-53-4	o-Toluidine Other names: • 2-Methylaniline • 1.2-Methylaniline • 1,2-Aminotoluene • o-Tolylamine	01/2011
Level 3	95-80-7	2,4-Diaminotoluene Other names: • 4-Methyl-m-phenylenediamine • 2,4-Toluylenediamine	01/2011
Level 3	137-17-7	2,4,5-Trimethylaniline Other names: • 1-Amino-2,4,5-trimethylbenzene • (2,4,5-Trimethylbenzene)amine • psi-Cumidine • Pseudocumidine	01/2011
Level 3	60-09-3	Aniline Yellow Other names: • 4-Aminoazobenzene • 4-(Phenylazo)aniline • 1-Amino-4-(phenylazo)benzene • p-(Phenylazo)aniline • AAB • p-Aminodiphenylimide • p-Phenylazophenylamine • C.I. 11000 • C.I. Solvent Blue 7 • C.I. Solvent Yellow 1 • Fat Yellow AAB • Oil Yellow AAB • Solvent Yellow 1 • Sudan Yellow R • EINECS 200-453-6	01/2011
Level 3	90-04-0	2-Anisidine Other names: • 2-Methoxyaniline • o-Anisidine • 1-Amino-2-methoxybenzene • 2-Methoxyphenylamine • o-Aminoanisole • 2-Aminoanisole • o-Anisylamine • o-Methoxyaniline • 2-Anisidine	01/2011
Level 3	2465-27-2	Auramine Other names: • Auramine hydrochloride • Auramine, monohydrochloride • 4,4'-Carbonimidoylbis(N,N-dimethyla-niline) monohydrochloride	01/2011

Dyes and pigments (continued)

Classification	CAS Number	Designation	Effective date of the prohibitions
Level 3	532-82-1	Chrysoidine Other names: • Chrysoidine monohydrochloride • 4-Phenylazophenylene-1,3-diamine monohydrochloride • 4-Phenylazo-m-phenylenediamine monohydrochloride • 2,4-Diaminoazobenzene hydrochloride • Basic Orange 2 • C.I. 11270	01/2011
Level 3	632-99-5	Fuchsine Other names: • Aniline Red • Diamond fuchsine • Alkaline fuchsine • Fuchsin RTN • Magenta I • Magenta Red • Basic Violet 14 (INCI; KVO) • CI 42510 (INCI) • Rosaniline chloride • Methyl fuchsine • 3-Methyl-para-fuchsin	01/2011
Level 3	8004-98-6	Induline	01/2011
Level 3	4482-25-1	Cresylene Brown	01/2011
Level 3	N/A	Other azo dyes	01/2011
Level 3	1344-37-2	Lead Sulfochromate Yellow Other name: • C.I. Pigment Yellow 34	01/2013
Level 3	12656-85-8	Lead chromate molybdate Sulphate Red Other name: • Pigment Red 104	01/2013
Level 3	399-95-1	4-Amino-3-fluorophenol	01/2016
Level 3	N/A	6-Amino-2-ethoxynaphtalene	01/2016
Level 1	13463-67-7	Titanium dioxide	01/2021

Appendix 3

Water Hazard Class (WHC)

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	N/A	Water Hazard Class (WHC)	Slightly hazardous to water (1) for Europe	01/2011
Level 2	N/A	Water Hazard Class (WHC)	Highly hazardous to water (3) for Europe*	01/2021

* Only for inks with Pigment Yellow. WHC (1) applies to Black/Cyan/Magenta. Exemption until technical solution has been found.

Appendix 4

Solvents for inks/water-based coatings

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	109-86-4	2-Methoxyethanol (methylglykol)	N/A	01/2013
Level 3	110-80-5	2-Ethoxyethanol (ethylglykol)	N/A	01/2013
Level 3	110-49-6	2-Methoxyethyl acetate (methylglycol acetate)	N/A	01/2013
Level 3	111-15-9	2-Ethoxyethyl acetate (ethylglycol acetate)	N/A	01/2013
Level 3	108-90-7	Chlorobenzene	N/A	01/2013
Level 3	95-50-1 541-73-1 106-46-7	Dichlorobenzene	N/A	01/2013
Level 3	N/A	Volatile chlorinated hydrocarbons (CHC)	N/A	01/2013
Level 3	N/A	Volatile chlorofluorocarbons (CFC)	N/A	01/2013
Level 3	79-46-9	2-Nitropropane	N/A	01/2013
Level 3	67-56-1	Methanol (methyl alcohol)	N/A	01/2013
Level 2	N/A	Aromatic hydrocarbons	< 0.1 %	01/2013
Level 3	N/A	Halogenated hydrocarbons	N/A	01/2021

Appendix 5

Substances

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	111-76-2	2-Butoxyethanol	N/A	01/2013
Level 3	N/A	N-Methyl-2-pyrrolidone (NMP)	N/A	01/2013
Level 3	109-86-4	2-Methoxyethanol Other names: • Ethanediol monomethyl ether • Glycol monomethyl ether • Methyl cellosolve • 1-Methoxy-2-hydroxyethane • Methyl glycol • EGME	N/A	01/2011
Level 3	110-80-5	2-Ethoxyethanol Other names: • Ethylene glycol monoethyl ether • 2-Ethoxyethanol • Cellosolve • Solvulose • Glycol monoethyl ether • Oxitol • Ethyl glycol • Ethyl cellosolve • EGEE	N/A	01/2011
Level 3	110-49-6	2-Methoxyethyl acetate Other names: • Methyl glycol acetate • Ethylene glycol monomethyl ether acetate • 2-Methoxyethanol acetate • Glycol monomethyl ether acetate • EGMEA • Acetic acid 2-methoxyethyl ester • Methylcellosolveacetate • 1-Acetoxy-2-methoxy-ethane	N/A	01/2011
Level 3	111-15-9	2-Ethoxyethyl acetate Other names: • Ethylene glycol monoethyl ether acetate • Ethyl glycol acetate • Acetic acid 2-ethoxyethyl ester • EGEEA	N/A	01/2011
Level 3	108-90-7	Monochlorobenzene Other names: • Chlorobenzene • Monochlorobenzene • Phenyl chloride	N/A	01/2011
Level 3	1763-23-1/45298-90-6	Perfluorooctanesulfonic acid (PFOS)	N/A	01/2013
Level 3	139-13-9	Nitrilotriacetic acid (NTA)	N/A	01/2013
Level 3	60-00-4	Ethylenediaminetetraacetic acid (EDTA)	N/A	01/2013
Level 3	95-50-1 541-73-1 106-46-7	Dichlorobenzene: • 1,2-Dichlorobenzene • 1,4-Dichlorobenzene • 1,3-Dichlorobenzene	N/A	01/2011
Level 3	79-01-6	Trichloroethylene Other names: • Ethylene trichloride • TCE • Trichloroethene • Tri	N/A	01/2011

Substances (continued)

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	79-46-9	2-Nitropropane Other names: • Dimethylnitromethane • Isonitropropane • 2-NP	N/A	01/2011
Level 3	67-56-1	Methanol Other names: • Methyl alcohol • Carbinol • Wood spirit • MeOH	N/A	01/2011
Level 3	N/A	Aromatic amides	N/A	01/2011
Level 3	N/A	Amides	N/A	01/2011
Level 3	N/A	Amines	N/A	01/2011
Level 3	N/A	Secondary amines	N/A	01/2011
Level 3	N/A	Terpenes	N/A	01/2011
Level 3	110-54-3	n-Hexane	N/A	01/2011
Level 3	N/A	Alkylphenol ethoxylates and derivatives	N/A	01/2011
Level 2	71-43-2	Benzene	< 0.1 %	N/A
Level 2	108-88-3	Toluene Other names: • Retinaphtha • Methylbenzol • Methylbenzene • Anisene • Toluen • Phenylmethane	< 0.1 %	N/A
Level 2	1330-20-7	Xylene	< 0.1 %	N/A
Level 2	N/A	Aromatics (above C9)	< 0.1 %	N/A
Level 3	N/A	Halogenated hydrocarbons	N/A	01/2016
Level 3	127-18-4	Tetrachloroethene Other names: • 1,1,2,2-Tetrachloroethylene • Tetrachloroethene • Tetrachloroethylene • Per • Ethylene tetrachloride • Perchloroethylene • Perchloroethene (PCE)	N/A	01/2011
Level 3	75-09-2	Dichloromethane Other names: • Methylene chloride • Methylene dichloride	N/A	01/2011
Level 3	N/A	Volatile fluorinated hydrocarbons	N/A	01/2011
Level 3	N/A	Volatile chlorinated hydrocarbons	N/A	01/2011

Appendix 6

N-Nitrosamines

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	924-16-3	N-Nitrosodi-n-butylamine	N/A	01/2013
Level 3	1116-54-7	N-Nitrosodiethanolamine ((2,2'-Nitrosoimino)-bisethanol)	N/A	01/2013
Level 3	55-18-5	N-Nitrosodiethylamine	N/A	01/2013
Level 3	601-77-4	N-Nitrosodiisopropylamine	N/A	01/2013
Level 3	62-75-9	N-Nitrosodimethylamine	N/A	01/2013
Level 3	621-64-7	N-Nitrosodi-n-propylamine	N/A	01/2013
Level 3	612-64-6	N-Nitrosoethylphenylamine	N/A	01/2013
Level 3	10595-95-6	N-Nitrosomethylethylamine	N/A	01/2013
Level 3	614-00-6	N-Nitrosomethylphenylamine	N/A	01/2013
Level 3	59-89-2	N-Nitrosomorpholine	N/A	01/2013
Level 3	100-75-4	N-Nitrosopiperidine	N/A	01/2013
Level 3	930-55-2	N-Nitrosopyrrolidine	N/A	01/2013

Appendix 7

Phthalates and other plasticizers

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 3	117-81-7	Di-(2-ethylhexyl) phthalate (DEHP)	N/A	01/2011
Level 3	84-74-2	Di-n-butyl phthalate (DBP)	N/A	01/2011
Level 3	85-68-7	Butyl benzyl phthalate (BBP)	N/A	01/2011
Level 3	28553-12-0	Diisononyl phthalate (technical) (DINP)	N/A	01/2011
Level 3	68515-48-0	Diisononyl phthalate (technical) (DINP)	N/A	01/2011
Level 3	26761-40-0	Diisodecyl phthalate (technical) (DIDP)	N/A	01/2011
Level 3	68515-49-1	Diisodecyl phthalate (technical) (DIDP)	N/A	01/2011
Level 3	N/A	Chlorinated naphthalenes	N/A	01/2011
Level 3	N/A	Chlorinated paraffins	N/A	01/2011
Level 3	N/A	Monocresyl phosphate	N/A	01/2011
Level 3	1330-78-5	Tricresyl phosphate (isomer mixture)	N/A	01/2011
Level 3	26444-49-5	Monocresyl diphenyl phosphate	N/A	01/2011
Level 3	N/A	Chlorinated polyaromates	N/A	07/2013
Level 3	84-69-5	Diisobutylphthalates (DIBP)	N/A	01/2021
Level 3	117-84-0	Di-n-octyl phthalate (DNOP)	N/A	01/2021
Level 3	N/A	Alkylphenols and alkylphenol ethoxylates	N/A	01/2021

Appendix 8

Aliphatic hydrocarbons

Classification	CAS Number	Designation	Concentration	Effective date of the prohibitions
Level 2	-	Aliphatic hydrocarbons	Chain length C10 to C20	01/2021
Level 2	-	Microcrystalline waxes	C > 30 (without dissolving properties) and with C20 to C30 1.5 % max. contaminated	01/2021
Level 2	-	Vaseline		01/2021
Level 2	-	Polyolefin waxes		01/2021
Level 2	-	Parrafin waxes		01/2021
Level 2	-	Fischer-Tropsch waxes		01/2021
Level 2	-	Aromatic hydrocarbons from mineral oil	< 1.0 %	01/2021

Appendix 9

Polycyclic aromatic hydrocarbons (PAH, according to Annex XVII to REACH)

Classification	CAS Number	Designation	Concentration		Effective date of the prohibitions
Level 2	56-55-3	Benz[a]anthracene	< 1 mg/kg		01/2021
Level 2	205-99-2	Benzo[b]fluoranthene	< 1 mg/kg		01/2021
Level 2	205-82-3	Benzo[j]fluoranthene	< 1 mg/kg		01/2021
Level 2	207-08-9	Benzo[k]fluoranthene	< 1 mg/kg		01/2021
Level 2	50-32-8	Benzo[a]pyrene	< 1 mg/kg		01/2021
Level 2	192-97-2	Benzo[e]pyrene	< 1 mg/kg		01/2021
Level 2	218-01-9	Chrysene	< 1 mg/kg		01/2021
Level 2	53-70-3	Dibenz[a, h]anthracene	< 1 mg/kg		01/2021
Level 2	191-24-2	Benzo[ghi]perylene	< 1 mg/kg		01/2021
Level 2	193-39-5	Indeno[1, 2, 3-cd]pyrene	< 1 mg/kg		01/2021
Level 2	91-20-3	Naphtalene	≤ 1 mg/kg		01/2021
Level 2	85-01-8	Phenanthrene	≤ 1 mg/kg	≤ 2 mg/kg**	01/2021
Level 2	129-00-0	Pyrene			01/2021
Level 2	120-12-7	Anthracene			01/2021
Level 2	206-44-0	Fluoranthene			01/2021

** Total must not exceed the above value.

Definitions and more.
Glossary.

The glossary of the Heidelberg criteria catalog for Saphira Eco consumables describes terms and definitions that require explanation. It also serves as a tool for easy understanding of the texts and tables.

2-Propanol	2-Propanol, also known as isopropyl alcohol, isopropanol, or IPA, is the simplest non-cyclical secondary alcohol. It is highly volatile, flammable, and colorless, with a slightly sweet but pungent odor when inhaled more intensely.
Biocides	Biocides are active substances and preparations containing one or more active substance, intended to eliminate, render harmless, prevent damage by, or otherwise exert a controlling effect on harmful organisms by biological or chemical means. With the introduction of the globally harmonized system of classification and labeling of substances and mixtures, even greater significance has been attached to the risk of sensitization (R43/H317).
Biodegradable	Biodegradable substances/materials can be decomposed by microorganisms or other natural influences. For surfactants in detergents, the biodegradability is defined in Regulation (EC) No. 648/2004 as follows: • According to Annex III, Section A of the EC Regulation, surfactants in detergents shall be considered as biodegradable if the level of biodegradability (mineralization) measured according to specific test procedures is at least 60 % within 28 days. The test method must be specified for other substances/materials. OECD 301B (carbon dioxide evolution test): the carbon dioxide produced when the test substance biodegrades is regularly analyzed over a period of 28 days and is an indicator of biodegradation.
CMR	Table of substances, activities, and processes that are carcinogenic, mutagenic, or reprotoxic. The table can be found in Annex VI, Part 3, of Regulation (EC) No. 1272/2008.
EcoLogo	EcoLogo is the most important environmental certificate in North America. It was introduced in 1988 by the Canadian government, and is meanwhile recognized worldwide. The certificate is strongly based on ISO certification, is linked to it, and takes the entire product life cycle into account. The EcoLogo forms part of the Global Ecolabeling Network (GEN). Information is provided on the overall process and the ingredients of the inks.
Limitations in print quality and performance	This includes printability and all qualitative requirements that must be satisfied in printing.
EU Ecolabel	The aim of the EU Ecolabel is to make products more eco-friendly in order to reduce or avoid harmful effects on the environment. The entire manufacturing process is taken into account. Products carrying the label must meet the stipulated criteria. The label provides information on the entire process as well as on inks, dampening solutions, coatings, and glues.
EuPIA	The European Printing Ink Association (EuPIA) is an association of European ink manufacturers and a sub-organization of CEPE. In a voluntary commitment, the manufacturers have agreed on an exclusion list of ingredients that must no longer be used in inks.

Flash point	The flash point is a safety-related parameter for assessing the fire and explosion hazard of liquids. It defines the lowest temperature of a substance at an air pressure of 1,013 mbar at which a combustible vapor/air mixture can form. Regulation (EC) No. 440/2008 lays down in A.9 the authorized test methods for determining the flash point. Authorized test methods: • Pensky-Martens method (> 50 °C; DIN EN ISO 2719:2003-09, currently standard apparatus) • Abel-Pensky method (< 50 °C; DIN EN ISO 1523:2002-08 Corrigendum 2006-11 for non- aqueous mineral oil products, DIN EN ISO 3679:2004-06 for aqueous mineral oil products, closed cup) • Cleveland method (DIN EN ISO 2592:2002-09, open cup) • Marcusson method (DIN 51584, open cup, outmoded method from 1959)
Fogra	Forschungsgesellschaft Druck e. V. (Graphic Technology Research Association), Munich, Germany
GHS	Globally harmonized system of classification and labeling of chemicals. The new system differentiates between hazard classes and hazard categories. New hazard notes, the so-called hazard statements, replace the previously used R phrases. New safety instructions in the form of precautionary measures, the so-called precautionary statements, replace the familiar S phrases. Implementation in the EU is in accordance with CLP Regulation (EC) No. 1272/2008.
ISO 9001	Quality management standard that enables organizations to demonstrate their ability to supply products that meet the requirements of customers and the authorities.. Evidence that the standards have been implemented is provided in the form of a certificate.
ISO 14001	Environmental management standard that lays down globally acknowledged requirements that an environmental management system must satisfy. The aims are to promote environmental protection and to prevent or reduce environmental impact, while also satisfying economic, social, and political requirements. Evidence that the standards have been implemented is provided in the form of a certificate.
MPA	Materialprüfungsanstalt (State Materials Testing Institute), Darmstadt University, Germany.
New Zealand Ecolabel	The New Zealand Ecolabel is based on a voluntary, multi-specification ecological certification process that follows international principles and stipulations. It was introduced in 1989 by the New Zealand government, and has been constantly amended and evolved ever since. It aims to reduce the harmful environmental impact in the manufacture of products and to provide consumers with a clear picture of the environmental compatibility of products. The Ecolabel cooperates with other internationally accepted labels, and is a member of the Global Ecolabeling Network (GEN). It is one of the three largest and most comprehensive labels. It provides information on the composition of inks.
Nordic Swan	Nordic Swan is the official ecolabel of the Nordic countries. The main goals of the label are to ensure ecologically responsible consumption and to develop a green society. The label was introduced in 1989 by the Swedish government, and meanwhile embraces 65 certifiable product groups. In the field of printed products, the entire print creation process is taken into account. The evaluation process is based on a points system, which means that in the entire production process a certain score must not be exceeded. Holders of the label must optimize their processes each year to achieve continuous improvement. The label is held for one year at a time. The annual usage fee is based on the amount of paper purchased per year.
Austrian ecolabel	Gives consumers the information they need for making environmentally responsible purchasing decisions. This certificate is awarded by the Austrian state for the use of eco-friendly business practices. It is awarded in three categories: products, tourism, and education. The certificate has been in use for 20 years. For the printing sector, the certificate takes the entire print production into account. The guidelines are defined by the Austrian Federal Ministry of Agriculture, Regions and Tourism and the VKI (Austrian Association for Consumer Information). Applications are submitted to the VKI, and a usage fee for the label is due upon its award. The label can be withdrawn if the guidelines are violated. These guidelines include statements on paper, offset inks, dampening solutions, postpress (glues, wirestitching), and disposal.
PBT/vPvB	A PBT substance is defined by three properties: according to the REACH criteria in Annex XIII of Regulation (EC) No. 1907/2006, it is persistent (P), bioaccumulative (B), and toxic (T). • Persistent substances exhibit poor to minimal degradation, and therefore persist over a long period of time. Neither bacteria nor other environmental factors are able to contribute to any noteworthy degradation over a defined period. • Bioaccumulative substances are absorbed and accumulated by a living organism through food or the surrounding medium (water, soil air). • Toxic substances are poisonous and cause irreversible damage. A vPvB substance is classified as very persistent (vP) due to its extended half-life in water, sediment, and soil, and as very bioaccumulative (vB) due to its higher accumulation in the food chain.
Recycling – recovery	Recycling describes any recovery process that turns waste materials into products, materials, or substances for either the original or other purposes. Paper recycling is particularly important in the printing industry. The EU Waste Directive defines recovery as any process that puts waste to a useful use, i.e. material or energy recovery.

Safety data sheet (SDS)	Safety data sheets for hazardous substances contain information on hazard potential and safe handling of such substances. Since June 1, 2007, their structure and contents have been defined by the REACH Regulation (EC) No. 1907/2006 (Registration, Evaluation, Authorization, and Restriction of Chemicals). The classification, labeling, and packaging of substances and mixtures are regulated in Europe by implementation of the GHS through Regulation (EC) No. 1272/2008.
Compatibility with machinery	Industry initiatives in the German printing industry have resulted in the definition of test criteria for cleaning agents and dampening solution additives to ensure that there are no incompatibilities with materials used in the printing presses, for example swelling and peeling of plastics and elastomers, or corrosion of metals. Fogra/MPA certificate: Tests are conducted by Fogra (Forschungsgesellschaft Druck e. V., Graphic Technology Research Association) or MPA (Materialprüfungsanstalt Darmstadt, State Materials Testing Institute), and published on the Fogra website (www.fogra.org).
Use of sustainable resources	Resources are considered sustainable if they can recover or grow back naturally. The essential properties of the ecological system are thus preserved.
VOC Europe	Collective term for organic carbon-containing substances that are highly volatile and are already present as a gas at low temperatures.. Volatile organic compounds are defined differently in various European guidelines. The definition in Regulation 1999/13/EC applies to the “Saphira Eco” criteria catalog: “[...] organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more.”
VOC USA	Every carbon-based chemical compound, excluding carbon monoxide, carbon dioxide, carbonic acid, metal carbides or carbonates, and ammonium carbonate, that is involved in photochemical reactions in the atmosphere. Other exceptions are listed in Regulation “40 CFR 51.100”.
Water Hazard Class (WHC)	The Water Hazard Class system is a German system for classifying substances based on the hazard they pose to water. The classification of substances into water hazard classes provides a starting point for taking measures following incidents and describes safety precautions to protect areas of water during the storage, filling, transshipment, and transport of substances that are hazardous to water. The classification is made according to the German Administrative Regulation on Substances Hazardous to Water (VwVwS) of May 17, 1999. There are three different classes: • WHC 1: Slightly hazardous to water • WHC 2: Hazardous to water • WHC 3: Highly hazardous to water

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Publishing information
Publishing 01/21
Photos: Heidelberger Druckmaschinen AG
Fonts: Heidelberg Antiqua Ml and Heidelberg Gothic Ml

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