

## Printing Inks for the Toy Industry

Non-toxic inks are a prerequisite for use today in all sectors of the printing industry. Tougher demands are applied to the inks used for printing on commodities, food packaging, medical products and in the toy industry. The latter in particular is facing special challenges, since babies and small children often explore their toys by touching and using their mouths by sucking and chewing. This demands higher safety requirements, especially in terms of the chemicals used in printing inks on toys.

Norms and regulations have thus existed to ensure the safety of toys for years in this sector. They are intended to guarantee compliance with common safety standards within the European Union. These toy regulations have recently been revised and are now described in Directive 2009/48/EU. Compliance with the stipulated chemical safety requirements stated in the regulation is also regulated by the EN 71 norm series (Toy Safety). For coloring and printing toys or toy components, EN 71-3:2013 is the primary applicable regulation. The list of the hazardous substances in this norm was expanded to 19 substances and some of the limit values for the protection of the consumer (children) were tightened considerably. Discussions are currently underway about lowering the limit value of substances such as barium.

### Annex II Particular safety requirements, III chemical requirements of Directive 2009/48/EC, migration limits from toys or components of toys (as compared with EN 71-3:1994)

Element	ppm in dry, brittle, powder-like or pliable toy material (category I)	ppm in liquid or sticky toy material (category II)	ppm in scraped-off toy material (category III)	ppm in toy material EN 71-3:1994 (former norm)
Aluminium	5625	1406	70000	
Antimony	45	11.3	560	[60]
Arsenic	3.8	0.9	47	[25]
Barium	4500	1125	56000	[1000]
Boron	1200	300	15000	
Cadmium *	1.3	0.3	17	[75]
Chromium (III)	37.5	9.4	460	[60]
Chromium (VI)	0.02	0.005	0.2	
Cobalt	10.5	2.6	130	
Copper	622.5	156	7700	
Lead	13.5	3.4	160	[90]
Manganese	1200	300	15000	
Mercury	7.5	1.9	94	[60]
Nickel	75	18.8	930	
Selenium	37.5	9.4	460	[500]
Strontium	4500	1125	56000	
Tin	15000	3750	180000	
Organic tin compounds	0.9	0.2	12	
Zinc	3750	938	46000	

\* Lower limit values for cadmium according to Directive 2012/7/EC amending Directive 2009/48/EC.

Source: [http://vdmi.de/files/use\\_of\\_pigments\\_in\\_toys.pdf](http://vdmi.de/files/use_of_pigments_in_toys.pdf)

The permissible migration values depend on the type of material the toy is made of, and are divided into three categories as shown in the table above. Due to the in-part extremely low limit values, which are within the range of trace impurities or ubiquitous amounts, compliance with these limits cannot be ensured without analysis of the printed end product. Such analyses can be carried out by accredited laboratories (such as SQTS, SGS Institut Fresenius, Intertek, TÜV). The toy manufacturer is responsible for compliance with legal requirements for toys.

Based on the known information on the raw materials used and a professional handling of the printing inks, selected Printcolor ink series comply with the new 2009/48/EU regulation and thus also with EN 71-3:2013. However, still has to be verified by an accredited laboratory by means of migration regulations.

### **Note I: Further requirements and methods**

Further requirements and methods are described in norms EN 71-7 (Finger paints – Requirements and test procedures), as well as EN 71-9 (organic chemical bonds such as softeners, flame retardants or dyes). Depending on the type of toy or component, compliance with these norms is also required.

### **Note II: RAPEX – Rapid alert system for consumer protection**

The European "Rapid Exchange of Information System (RAPEX)" is a clear indicator that not all manufacturers, merchants and distributors are aware of their responsibility. RAPEX is a rapid alert system for consumer protection in the EU. Products which fail to comply with the legal requirements in any way are listed in RAPEX, and, if necessary, taken out of circulation. The European Commission's *Directorate General for Health and Consumers* publishes a weekly report on current RAPEX warnings (see <http://www.bvl.bund.de>).

### **Note III: Further information**

Further descriptions and explanations on this topic can be found here:

- › VdMi policy document of the „Verband der Mineralfarbenindustrie e.V.“  
[http://vdmi.de/files/use\\_of\\_pigments\\_in\\_toys.pdf](http://vdmi.de/files/use_of_pigments_in_toys.pdf)
- › CEPE - European Council of the Paints, Printing Inks and Artists' Colours Industry  
[www.cepe.org](http://www.cepe.org)