



ETAD recommendations for threshold limits on organic impurities in dyes

Introduction

The question of the presence of impurities in dyes and their potential impact on the environment is a persistent point of discussion. In particular for the main application in textiles, dyes manufacturers are asked to comply with many different standards, any of which invariably requires both a specific impurity profile for the dyes and limits for trace impurities in the final product. Obviously, even the limits on the textiles have to be considered in order to provide suitable products for the dying process.

This document lines out the position of ETAD's member companies and their commitment as regards the control of certain impurities other than carcinogenic aromatic amines, since the latter are already covered by ETAD's Code of Ethics.

Origin of impurities

Several sources may contribute to the presence of impurities, e.g.:

- impurities in reactants or raw materials;
- residues of solvents, reactants or reaction by-products;
- particularly in the case of trace metals, use of metal catalysts or corrosion of manufacturing plant equipment.

General considerations

The overall quality of products from an ETAD member company is quite high, also from the point of view of their impurity profile. This is achieved by good manufacturing practices like

- implementation of a suitable quality management system
- quality specification and control of all chemicals used in the manufacture of colorants
- state-of-the-art manufacturing processes
- proper clarification/purification steps
- automatized control of certain process parameters like pH, temperature etc.

Currently, ETAD members do not intentionally use most of the recognized substances of concern.

Additionally, ETAD constantly monitors new eco/toxicological information, which allows an early assessment of substances likely to become part of the above strategy. Corresponding ETAD recommendations communicate immediately any need for action, often beyond regulatory requirements.

Therefore, we are confident that the contamination of organic colorants with impurities can very well be kept below the ETAD recommended level without any adverse effect on the coloristic or technical properties of the colorant.



Requirements on impurities

Information on impurities in colorants may be required for a variety of reasons, e.g.

- compliance with regulatory schemes (e.g., REACH);
- compliance with consent limits for aqueous effluent may require monitoring and reduction of all possible sources of such substances;
- need to certify that products comply with the requirements of various ecolabelling schemes;
- need to provide information to customers concerning substances of concern in colorants used.

The table on the next page provides ETAD's recommended limits for dyes as regards some relevant organic impurities which might be present in dye formulations used for consumer goods.

The reported limits reflect the current scientific knowledge on dyes and impurities as well as their regulatory status. Therefore, ETAD will regularly check the validity of the table and update it as soon as new information or new pieces of legislation indicate such need.



Substances/Substance groups	Limit in mg/kg [ppm]	Analytical methods *
Chlorobenzenes/ Chlorotoluenes	200	GC/MS
Chlorophenols	20 (sum of tetra/pentachlorophenols)	GC/MS
Organotin compounds (e.g. TBT)	5	LRMS
PCBs	50	HRMS
Short-chained chlorinated paraffins (SCCPs)	50	GC/MS
NPEOs and OPEOs	1000	LC/MS
Dioxins and Furans	sum of substances in group I	HRMS
Group I: 2,3,7,8-Tetrachlorodibenzo-p- dioxine 1,2,3,7,8-Pentachlorodibenzo-p- dioxine 2,3,7,8-Tetrachlorodibenzofurane 2,3,4,7,8- Pentachlorodibenzofurane	0.001	
Group II: 1,2,3,4,7,8-Hexachlorodibenzo-p- dioxine 1,2,3,7,8,9- Hexachlorodibenzo-p- dioxine 1,2,3,6,7,8- Hexachlorodibenzo-p- dioxine 1,2,3,7,8- Pentachlorodibenzofurane 1,2,3,4,7,8- Hexachlorodibenzofurane 1,2,3,7,8,9- Hexachlorodibenzofurane 1,2,3,6,7,8- Hexachlorodibenzofurane 2,3,4,6,7,8- Hexachlorodibenzofurane	sum of substances in group I and II	
Group III: 1,2,3,4,6,7,8-Heptachlorodibenzo- p-dioxine 1,2,3,4,5,6,7,8-Octachlorodibenzo- p-dioxine 1,2,3,4,6,7,8- Heptachlorodibenzofurane 1,2,3,4,7,8,9- Heptachlorodibenzofurane	0.005	
	sum of substances in group I, II and III	
	0.1	
Formaldehyde	200	Derivation + GC/MS or Steam- Distillation/Photometry
PAH, polycyclic hydrocarbons	100	GC/MS
Quinoline	1000	

* The detailed analytical method depends on the laboratory, since no dyes-specific standard methods are available for these impurities