



**ETAD recommended trace metal limits
for organic pigments used in textile applications
(pigments reference for the ZDHC MRSL¹)
January 2017**

Metals/ Elements	Total content in the pigment ²
Antimony	250
Arsenic	50
Barium	100
Cadmium ³	50
Chromium ³	100
Lead ³	100
Mercury ³	25
Selenium	100
Zinc	1000

1. **Manufacturing Restricted Substances List of the Zero Discharge of Hazardous Chemicals** program
2. All values are **ppm** (parts per million = mg/kg)
3. Total of **Cd, Pb, Cr(VI)** and **Hg** not to exceed **100 ppm**

Important notes

- a) As also specified above, the limits refer to the **total metal content** in the pigments (see section “Basis of the ETAD recommended limits”).
- b) **Above limits do not apply** to products containing a listed metal as an inherent compositional part (e.g. metal-complex colorant, the double salts of certain cationic colorant or extenders like barium sulfate) or which may be present as unavoidable impurities in slightly increased amounts due to the manufacturing process. In these cases the extractable content of the corresponding metal has to be considered.
- c) The listed metals and limits **only refer to organic pigments**. Because of the differences in properties and application processes of pigments and dyes used in textiles, **dyes have to be addressed separately and have a different metal list with different limits** (also available at the ETAD website).

Trace metal impurities in organic pigments

Regulatory requirements and rationale of ETAD's trace metal limit recommendations

Introduction

The question of the presence of certain trace metal impurities in organic colorants and their potential impact on the environment including human health in critical consumer applications is a persistent point of discussion. For the specific case of dyes used in textile applications, ETAD has established for its companies mandatory limits in a separate document. As regards **organic pigments used in textile applications**, this document lines out ETAD's position and commitments to this topic.

Definition

Trace metal impurities normally refer to ionic metal impurities in the colorant. In practice however, the analytical procedures commonly used encompass both, the free metal and the ionic metal content. It should be noted here that **metals which are intentional constituents of metal complex or laked colorants are not to be regarded as metal impurities.**

Origin

Several sources may contribute to the trace metal impurities, e.g.:

- Impurities in reactants or raw materials;
- Use of metal catalysts or reactants;
- Corrosion of manufacturing plant equipment.

Requirements

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

- Compliance with consent limits for aqueous effluent may require monitoring and reduction of all possible sources of such metals;
- Need to certify that products comply with the requirements of various eco-labelling schemes;
- Need to provide information to customers concerning trace metals in colorants in order to support the value chain to meet requirements of CONEG and Packaging and Packaging Waste Directive 94/62/EC: Sum of total Cd, Pb, Cr (VI), Hg content in packaging not to exceed 100 ppm.
- Need to certify that products comply with purity criteria as laid down in food contact materials regulations.
- Reporting requirements for other reasons.

Basis of the ETAD recommended limits

For generic limits for organic pigments the main consideration was originally the applicable limits for extractable metals in a variety of consumer applications¹.

The total limit on the four more critical metals (cadmium, lead, chromium VI and mercury) of 100 ppm was set because of the CONEG (in the US) and European Packaging and Packaging Waste Directive requirements.

However, the ETAD limits for organic pigments refer to total trace metal content rather than extractable metals as on one hand this facilitates the analytical monitoring and on the other hand builds a sound base for above mentioned worst case calculation.

Purpose of having recommended limits

The ETAD recommended limits aim at providing a "worst case" basis on which a customer can determine if the actual trace metal content is likely to be critical under his specific conditions of use. Most organic pigments, manufactured in accordance with state-of-the-art processes and technologies, should satisfy these limits and it is expected that in only exceptional circumstances will the actual trace metal content be critical. The recommended limits apply to the many thousands of colorants marketed by ETAD members. However, in some rare cases, specific colorants may not meet the ETAD limits; this has to be communicated to customers adequately.

¹ When the limits were first set, the available regulatory references used were:

- consumer goods packaging regulations in Belgium, Germany, France, Italy, the Netherland and Spain
- the old toys standard EN 71
- the General Preparation Directive 88/379/EEC