



**ECO
PASSPORT**

ECO PASSPORT Findings

OEKO-TEX®
International Association for Research and Testing in
the Field of Textile and Leather Ecology

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Introduction

Within the past month OEKO-TEX® has analyzed the laboratory findings for the different ECO PASSPORT testing parameters. This has helped to identify which parameters exceed the threshold values most often and which product groups are affected. OEKO-TEX® shared this data with its certificate holders already to support them during their ECO PASSPORT certifications and testing programs. The association decided to publish the findings to raise awareness in the industry and achieve long-term positive effects on people and the environment.

The findings spotlight key parameters—*aniline, chlorinated benzenes and toluenes, formaldehyde, siloxanes, and quinoline*—that present potential environmental and health risks. By highlighting these substances, OEKO-TEX® seeks to support manufacturers in adhering to rigorous safety standards while fostering greater accountability and innovation across the textile, leather and chemical industries.

Below, OEKO-TEX® lists the most relevant parameters that most often fail laboratory testing or would lead to a restriction.

Substances frequently exceeding threshold values

Aniline

Aniline was one of the first chemicals used to make synthetic dyes. Today it is mainly used as a starting material to produce dyes as well as to enhance the stability and intensity of colouring. Despite modern alternatives, it remains an indispensable component of dye chemistry.

According to various global health institutions Aniline is classified as toxic and potentially harmful to health, which is why its use in the textile industry is strictly regulated. Production and use require measures to minimize environmental and health risks.

4.7% out of 1'640 tests were found to contain aniline above the threshold value. This parameter most often failed for 2.1 Acid dyes (24.2%) and 2.2 Basic dyes (16.7%).

Chlorinated benzenes & toluenes

Chlorinated benzenes are benzene derivatives in which hydrogen atoms have been replaced with chlorine. Typical representatives are monochlorobenzene, dichlorobenzene and trichlorobenzene. They are used in the textile industry



primarily in chemical processing, in the production of dyes and as solvents. They also function as carrier materials in polyester dyeing as they improve dye absorption in water-repellent fibers. Toluenes can be used in textile processing to degrease raw materials or remove grease residue.

Chlorinated benzenes are persistent and can be harmful to the environment and health. Toluenes are highly volatile and potentially toxic. Exposure can be harmful to health if handled improperly. Their use is regulated by occupational health and environmental regulations such as REACH in the European Union.

3.8% out of 1,749 tests were found to contain chlorinated benzenes and toluenes above the threshold value. This parameter most often failed for 2.5 Pigments (18.2%) and 2.3 Disperse dyes (5.7%).

Formaldehyde

There are many fields of application in the textile industry for formaldehyde, mainly for finishing fabrics to make them wrinkle-resistant, colourfast, shrink-resistant and durable. Due to its antimicrobial properties that can prevent the growth of microorganisms on fabrics, it is also used in textiles for medical applications.

Formaldehyde is known to be potentially harmful to health and cause allergies. High concentrations can cause skin and respiratory irritation. The textile industry is increasingly working to minimize the use of formaldehyde and develop alternatives. Substances that are treated with formaldehyde must comply with limit values, e.g. the REACH regulation in the European Union.

2.7% out of 2,174 tests were found to contain formaldehyde above the threshold value. This parameter most often failed for 3.1.2 Agents for the improvement of crease and shrink resistance and easy-care finishes (18.8%, sample size is only 16 tests here though) and 1.3.24 Reducing agents (17.9%).

Siloxanes

Siloxanes are widely used in the textile industry due to their versatility. They improve the softness, water repellency, durability and appearance of textiles. Siloxane coatings improve the dirt repellency of textiles and prevent oil, grease or dust from easily penetrating the fibres. These properties are used in home textiles, work clothing and special protective textiles.

While many siloxanes are considered safe, there are concerns about the environmental impact of certain volatile siloxanes, such as D4, D5 and D6 (cyclic siloxanes), which can accumulate in the environment.

1.7% out of 4,323 tests were found to contain siloxanes above the threshold value.



Quinoline

Quinoline is used in the textile industry in the production of azo dyes and other bright colours, for fluorescent effects in safety textiles and as a dye process enhancer. Some quinoline derivatives have antimicrobial properties and are used to treat textiles that are intended to be resistant to microorganisms, e.g. in medical or technical textiles.

Quinoline is classified, among others, by the IFA, the Institute for Occupational Safety of the German Social Accident Insurance, as toxic and hazardous to the environment and may only be handled with strong ventilation and only with suitable protective gloves. The release of the substance into the environment must be prevented. There is reasonable evidence that human exposure to quinoline can cause cancer. In addition, there is a reasonable suspicion of a mutagenic effect. Quinoline is classified as class 2 hazardous to water.

7.9% out of 478 tests were found to contain quinoline above the threshold value. This parameter most often failed for 2.3 Disperse dyes (26.4%) and 2.1 Acid dyes (11.8%).

Conclusion

Moving forward, OEKO-TEX® will continue to monitor these and other critical substances and their presence in textile, leather and chemical products. We continue to collaborate with stakeholders and certificate holders to drive the highest environmental and health standards and meaningful progress in chemical safety.