

## ETAD quick reference on fluorine-containing dyes<sup>1</sup>

### Q: How are dyes affected by the PFAS discussion?

**A:** Only a few colorants fall under the PFAS definition by OECD; among them, a few dyes having a CF<sub>3</sub>-substituent on an aromatic ring. Unless specific derogations are introduced at some point in time in the current pieces of legislation referring to this definition, these colorants will have to be taken out of the market according to the prescribed deadlines.

### Q: What about other F-containing dyes?

**A:** Fluorine is also a key element in the structure of non-PFAS reactive dyes on the market. Although not directly affected by the definition, they might be affected by some PFAS-related legislation: in case compliance is only based on the simple fluorine analysis, a result above the regulatory limits would immediately mean a failure for the article (all exemptions considered).

### Q: What happens to fluorine in the non-PFAS reactive dyes?

**A:** Fluorine is the leaving group in the reaction between the fiber and the colorant and is not expected to be found in final articles. If present, it can only be as a residue from unreacted/unhydrolyzed dye molecules; this residue would be detected by a fluorine analysis.

### Q: In which jurisdictions could a positive result by the fluorine analysis become problematic?

**A:** According to the current information (status October 2023) only in the three US States Maine, California and Minnesota.

### Q: What about other jurisdictions (and standards)?

**A:** In all other cases, the fluorine analysis is only used as a screening method, which needs to be followed by a targeted analysis for specific PFAS groups of concern (often with much lower limits) and integrated by information on non-PFAS substances which could be responsible for a fluorine finding. Therefore, providing the information on the presence of non-PFAS fluorine in the dye's molecule will avoid having an article wrongly assessed.

### Q: What information should be exchanged along the supply chain?

**A:** Companies should check all available data on their products and prepare the corresponding information for their customers. The main piece of information which needs to be provided throughout the supply chain is whether a reactive dye contains fluorine. This key information should be easily available to customers and retrievable for the analytical laboratories checking for compliance.

On a higher level of communication further details can be added, depending on the data available to the dye manufacturer, e.g.:

- precise structure of the dyes;
- whether negative or positive results have been already observed in a general fluorine test by dyed textiles (be it total fluorine, total organic fluorine or extractable organic fluorine);
- measured concentrations of fluorine in the test.

**NOTA BENE:** Specific analytical results would depend on the dyes, the process and the after-treatment. Therefore, any corresponding conversation must be conducted as a business communication between all the involved parties, since it might involve CBI.

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<sup>1</sup> This quick reference is based on ETAD's "Information Notice on fluorine-containing reactive dyes". Please refer to it for further details.