

# PRE - 1000

## POLICY BRIEF

### **STANDARD AND TOOL FOR SUBSTANCE ANALYSIS**

DESIGNED TO ENABLE RECYCLERS TO PROVIDE HIGH CONFIDENCE STATEMENTS ON THE PRESENCE OR ABSENCE OF SUBSTANCES OF CONCERN.



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## **STANDARD AND TOOL FOR SUBSTANCE ANALYSIS**

**CREATED BY PLASTICS RECYCLERS EUROPE, A PRIMUS PROJECT PARTNER, TO ENABLE RECYCLERS TO PROVIDE HIGH CONFIDENCE STATEMENTS ON THE PRESENCE OR ABSENCE OF SUBSTANCES OF CONCERN.**

### **ABOUT PRIMUS PROJECT**

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The PRIMUS project, funded by Horizon Europe with €7 million, aims to enhance the quality and safety of recycled plastics in Europe over three years. Involving 10 partners and 2 affiliated entities, it focuses on innovative recycling technologies to increase recycle circularity and quality. The project will demonstrate recycled plastics in automotive parts, refrigerators, and washing machine seals. PRIMUS also seeks to establish transparent procedures for recycle quality and safety, engaging stakeholders across the European plastics sector and society to support the adoption of recycled products, emphasizing safety, traceability, and societal concerns.

### **ABOUT PLASTICS RECYCLERS EUROPE**

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Plastics Recyclers Europe is an organization representing the voice of the European plastics recyclers who reprocess plastic waste into high quality material destined for production of new articles. Recyclers are important facilitators of the circularity of plastics and the transition towards the circular economy.

Plastics recycling in Europe is a rapidly growing sector representing over €10.4 billion in turnover, 12.5 million tonnes of installed recycling capacity, around 850 recycling facilities, and over 30,000 employees.



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### OVERVIEW

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Plastics Recyclers Europe (PRE), the trade association representing European recyclers, developed the PRE-1000 voluntary industry standard to enable recyclers to verify compliance of recyclates with the applicable chemicals legislation in a cost-effective manner. This method is meant to be integrated into the quality control procedure already present at recyclers' facilities. Recyclers are companies that purchase waste and place a product on the market, thus they need to ensure that this product is compliant with product regulation and fulfils the end of waste criteria of the Waste Framework Directive. The existing legislative and regulatory framework sets the following requirements on substances: a recycler that places a substance or mixture on the market as a product must inform its customer if there is a 'substance of very high concern' (SVHC) present within the material above its regulatory cutoff value (often  $>0.1\%$ ), and compliance with restricted substances (POP, REACH, etc).



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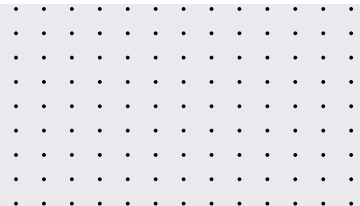
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### **APPROACH AND VALIDATION**

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When preparing the PRE 1000 specification, PRE made an inventory of all Substances of Concern (SoC), that includes: all SVHCs, all substances under relevant REACH restrictions, all relevant POP substances, all RoHS substances. At the moment, considering the evolving of the legislation and the consequent update of the standard, over 300 entries are listed.

For each substance, PRE carried out an analysis to determine if the SoC can be present in plastics recycles above the regulatory limit values by looking at several properties, spanning from physical-chemical properties to technical function to polymer specificity. The remaining substances that can be present within plastics, and thus plastic waste, typically contain certain elements that can be detected through handheld XRF devices that have a low to modest investment cost (e.g. 30,000 EUR) and a low marginal cost for each use (e.g. cents).





While these devices cannot give an indication as to which molecule such elements are attached to, they can be used to calculate whether or not it is possible for a certain substance to be present above its regulatory limit value. Further chemical analyses are on the other hand needed to quantify substances instead of elements.

The standard also suggests specific sampling protocols and sample preparation methods. In this context, to ensure the results provided by the PRE-1000 tool were accurate, work has been undertaken in the PRIMUS project to validate the approach. Both the sampling and sample preparation as well as the functioning of the PRE-1000 have been successfully validated. For instance, it was determined that homogenization of the material with granulation, followed by injection moulding machine, to produce plaques plays a key role.

## KEY MESSAGES

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01

The PRE 1000 standard enables plastics recyclers to obtain the necessary information for general product regulation requirements related to SoCs (i.e., REACH and POP regulation) and remain compliant with the existing legislation.

02

The PRE 1000 method provides an easy to use tool (excel file) that allows a first and quick monitoring of SoCs at low cost. It allows plastics recyclers to use with confidence the PRE-1000 tool to demonstrate compliance with the chemicals legislation.

03

When properly implemented the PRE 1000 standard should be considered a solution to ensure fulfilment of article 6.1(d) of the WFD, i.e., the End-of-Waste criteria relating to not having an overall adverse effect on human health and the environment.

## USER TESTIMONIAL

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"PRE-1000 allows us to use a method to screen Substances of Concern (SoC) in an economical and viable way, using the X-ray fluorescence (X-Ray), which is a practical equipment and simple to handle. Being the first user of the tool with more than 5 years of data collection and several evaluations between the results of the method and the results of external laboratories, it allowed us to not only increase the frequency of analyses, but also increase confidence in our materials and in the way we verify and report.

In the last years we have used this method as an internal quality procedure in order to verify compliance with legislation applicable to products such as REACH, POP and RoHS, as well as reporting according to the end-of-waste criteria as defined by the Waste Framework Directive (WFD). With the increase of regulated substances and the constant pressure to sell a material with high SoC control, this method proved that it is possible for recyclers to use something practical and reliable at acceptable cost."

Ana Rita Neiva - Process Engineer at **Coolrec B.V.**  
[www.coolrec.com](http://www.coolrec.com)





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## **DISCLAIMER**

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