

Method for identifying the type of plastics from the waste electrical and electronic equipment (WEEE)

Summary

Profile type	Company's country	POD reference
Technology offer	Romania	TORO20220824013
Profile status	Type of partnership	Targeted countries
PUBLISHED	Commercial agreement with technical assistance	
Contact Person	Term of validity	Last update
Cristina-Maria Balgaradean	12 Oct 2022 12 Oct 2023	12 Oct 2022

General Information

Short summary

A Romanian research team from Transylvania has developed a method for identifying the type of plastics from the waste electrical and electronic equipment (WEEE) (TRL 6).

The analytical method is validated and implemented in the Romanian laboratory and the research institute is now looking for international partners to cooperate under commercial agreement with technical assistance.

Full description

A research team from a Transylvanian research institute is actively involved in the development, validation and implementation in its laboratories of a set of modern analytical methods for the characterization of waste electrical and electronic equipment (widely known as WEEE or e-waste) during the process of transformation from waste into reusable materials.

In this context, the Romanian research team has developed an analytical method for identifying the type of plastics from the waste electrical and electronic equipment (WEEE) (TRL 6).

The method allows the determination of the type of plastics from WEEE using gas chromatography coupled with mass spectrometry. The method is able to determine the following WEEE sample compounds: acrylonitrile butadiene styrene (ABS), acrylonitrile styrene acrylate (ASA), acrylonitrile styrene (SAN), polystyrene and polypropylene.

The method parameters are as it follows:

- required sample mass: 0.5-10 grams;
- temperature of volatile compounds: 170-250 degrees C,

- Solid-Phase Microextraction (SPME) fiber conditioning temperature: 55;
 - Liquid-liquid headspace (LL-HS) extraction temperature: 50-160;
 - concentration of the saline solution: 0.7-15%
- The analytical method is validated and implemented in the Romanian laboratory.

The Romanian research institute is now looking for foreign partners interested to implement the analytical method within their daily activities:

- chemical laboratories specialized in the field of circular economy,
- environmental protection agencies focusing on urban waste recovery;
- waste management and/or collection companies;
- R&D institutes and universities with interests in chemistry or electronics etc.

The Romanian research team is offering commercial agreement with technical assistance and will support its foreign partners with the provision of additional support services.

Advantages and innovations

The analytical method for identifying the type of plastics from WEEE developed by the Romanian researchers is *a high precision method, with *reduced consumption of reagents.

The method is *eco-friendly and it was *already validated and implemented in the laboratories of the Romanian research institute.

Technical specification or expertise sought

- Principle of the method: measuring the concentration of compounds: Acrylonitrile butadiene styrene (ABS), Acrylonitrile styrene acrylate (ASA), Styrene acrylonitrile (SAN), Polystyrene (PS), Polypropylene (PP).
- Detection limit: 0.5% for each individual compound.
- Uncertainty of the method: max. 18%.
- Degree of recovery: 82...111%.
- Field of use: analytical chemistry, bioeconomy, design of electrical equipment/ devices; recovery of WEEE.

Stage of development

Available for demonstration

IPR Status

IPR applied but not yet granted

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**
- **Goal 13: Climate Action**

Partner Sought

Expected role of the partner

The partner sought could be among SMEs, big companies, R&D institutions, universities supporting/ adopting the concept of circular economy; it could be chemical laboratories, waste management and/or collection companies, environmental protection agencies focusing on urban waste recovery, R&D institutions or universities specialized in chemistry or electronics.

The partner sought should be interested in implementing the analytical method for identifying the type of plastics from WEEE under commercial agreement with technical assistance (offered by the Romanian research team).

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **SME <=10**
- **University**
- **R&D Institution**
- **SME 50 - 249**
- **Big company**
- **SME 11-49**

Dissemination

Technology keywords

- **001001013 - Printed circuits and integrated circuits**
- **10003004 - Recycling, Recovery**
- **09001002 - Analyses / Test Facilities and Methods**

Targeted countries

Market keywords

- **08004004 - Other pollution and recycling related**
- **03004003 - Other electronics related equipment**
- **03007002 - Other measuring devices**

Sector groups involved

- **Environment**
- **Digital**