



Summary

of the study

„Comparison of different standards for assessing the recyclability of plastic packaging“

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Background

Article 6 of the draft European Packaging & Packaging Waste Regulation (PPWR) aims to ensure that all packaging must be recyclable. And also, it determines a multiple-step approach for requirements to be met:

Article 6 Recyclable packaging

(1) All packaging shall be recyclable.

(2) Packaging shall be considered recyclable where it complies with the following:

- a) it is designed for recycling;*
- b) it is effectively and efficiently separately collected in accordance with Article 43 (1) and (2);*
- c) it is sorted into defined waste streams without affecting the recyclability of other waste streams;*
- d) it can be recycled so that the resulting secondary raw materials are of sufficient quality in order to substitute the primary raw materials;*
- e) it can be recycled at large scale.*

Point a) shall apply from 1 January 2030 and point e) shall apply from 1 January 2035.

From 1 January 2030, packaging will have to comply with the design for recycling criteria. From 1 January 2035, the requirements will be further adjusted to ensure that recyclable packaging is also sufficiently and effectively collected, sorted, and recycled, i.e. recycled at large scale.

A more concrete formulation of both the **criteria for recycling-oriented design** and the **assessment procedure** about whether packaging is recycled on a large scale will be deferred to delegated acts.

Against the backdrop of efforts at European standardization to establish EU-wide standards for assessing recyclability, BKV has commissioned CHI to compare the methodology and content of existing standards. The following standards were selected by the client from the current flood of standards, most of which are Design-for-Recycling (D4R) guidelines:

- COTREP: „COTREP GUIDELINES“, <https://www.cotrep.fr/en/steps>
Editor of the D4R-Guideline is the industry society COTREP
- RECOUP: „PLASTIC PACKAGING RECYCLABILITY BY DESIGN 2023, Recycling of Used Plastic Ltd. (RECOUP), Version 10 (Update: December 2022), plastic packaging; <https://www.recoup.org/wp-content/uploads/2023/09/rbd-2022-1687261042.pdf>



- RECYCLASS: „DESIGN FOR RECYCLING GUIDELINES“, 2023, <https://recyclclass.eu/recyclability/design-for-recycling-guidelines/>
- CEFLEX: „DESIGNING FOR A CIRCULAR ECONOMY GUIDELINES“ Phase 1, June 2020, D4R-Guideline, PO-based flexible packaging; <https://guidelines.ceflex.eu/resources/>
- APR: „APR Design Guide® for Plastics Recyclability“, not versioned, <https://plasticsrecycling.org/apr-design-guide>
- EPBP: Design for Recycling Guidelines for PET bottles, European PET Bottle Platform (EPBP), <https://www.epbp.org/design-guidelines>
- EN 13430: Packaging – Requirements for packaging recoverable by material recycling, EN 13430:2004
- CHI-RA: Verification and examination of recyclability – Requirements and assessment catalogue of Institute cyclos-HTP for EU-wide certification (CHI-Standard), www.cyclos-htp.de/publikationen/a-b-katalog, available English edition dated 14 September 2021
- ZSVR: Mindeststandard für die Bemessung der Recyclingfähigkeit von systembeteiligungspflichtigen Verpackungen gemäß § 21 Abs. 3 VerpackG, 31. August 2023, <https://www.verpackungsregister.org/>

Scope of the study

The study focuses on the methodological comparison between the three basic types: D4R guidelines, D4R assessments and recyclability assessments. To this end, the procedures of the different basic types are described in detail and compared. The comparison is carried out on two levels. In a first step, the standards are compared methodically and in the second step with regards to content. Both levels of investigation are illustrated using selected examples. The criteria listed in the table below are taken into account in the systematic analysis of the evaluation systems compared in the study:



Assessment parameter	
compatibility	CEFLEX, COTREP, RECOUP, APR, EPBP, RecyClass (D4R)
recyclability	RecyClass (Online-Tool), EN 13430, CHI, Mindeststandard (ZSVR)
Definition of the assessment parameter	
yes	CEFLEX, APR, (RecyClass (Online Tool)), CHI, Minimum standard (ZSVR)
no	COTREP, RECOUP, EPBP, RecyClass D4R, EN 13430
Rating type/ scaling	
qualitative / ordinally	CEFLEX, COTREP, RECOUP, APR, EPBP, RecyClass (D4R)
qualitative / 2-way ordinal	RecyClass (Online-Tool)
quantitative, qualitative, metric	EN 13430, CHI, Minimum standard (ZSVR)
Quantification of recyclability	
ordinal 3-stage (traffic light system)	CEFLEX, RECOUP, EPBP, RecyClass (D4R), APR
ordinal 4-stage	COTREP
ordinal (classes A-F)	RecyClass (Online-Tool)
metric, gradual	EN 13430, CHI, Minimum standard (ZSVR)
Methodical tool	
qualitative, ordinally scaled adjustment with threshold values	CEFLEX, RECOUP, APR, RecyClass (D4R), RecyClass (Online-Tool),
qualitative, ordinally scaled adjustment without threshold values	COTREP, EPBP
Process simulation (balance)	EN 13430
Process simulation (balance) + binary evaluation of incompatibilities	CHI, Minimum standard (ZSVR)

Conclusion

The aim of the investigations is to reveal similarities, differences and possible gaps and inconsistencies in detail by directly comparing the different assessment approaches. In particular, the sometimes highly divergent classifications and assessments can be used to identify the need for action and options for the upcoming consultation phases for harmonized assessments of recyclability at the standardization level.

It should be noted that guidelines and guideline-based assessments have fundamental methodological weaknesses if they are to be instrumentalized for the purpose of assessing recyclability. The greatest of these weaknesses lies in the ordinal scaling, which does not adequately reflect the physical, chemical and procedural principles of recycling. This deficit is particularly pronounced in the predominantly used 3-stage rating scale, which does not allow sufficient differentiation.



Results and recommendations

In the recommendations shown in the study, it is assumed that guidelines will be the decisive basis for the application of Article 6 of a PPWR. On the basis of the comparison of different standards for assessing the recyclability of plastic packaging in existing studies and the application experience of the study participant, recommendations for test points and constructive suggestions for changes for the consultation phases are submitted under the following premises:

1. A categorization should be made in at least 4 levels.
2. A comprehensible definition of recyclable materials is required for each guideline; this must always be placed in the context of the recycling application on which the guideline is based as a reference for the assessment of formulations and components of a packaging specification.
3. Only non-separable components or materials are to be classified under the aspect of "conditional compatibility" or "incompatibility".
4. The highest claims must be set on classification as incompatibility (red category).
5. Threshold values must be avoided unconditionally.
6. Reference to the state of the art must apply to all process stages (sorting, recycling and recycle application).
7. Analogously scaled criteria must also be reflected analogously in the assessment.
8. An additional "gray category" must be implemented necessarily to indicate that no assessment can be made without individual examination.
9. In the final test, it is essential to carry out application tests of complex packaging in order to check the practicability of the application.
10. Analysis specifications for measurement requirements must be practically and scientifically sound.

The complete study can be ordered from the BKV GmbH website for a fee of EUR 400,-- plus VAT: <https://www.bkv-gmbh.de/studies.html>.

The study is also available in German edition.