

For our environment

Umwelt 
Bundesamt

Towards High-Quality Material Recycling, 16/12/2022

Recyclability for environmentally friendly packaging design

Session 1: Issues and policy needs of product design

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Agenda

1 Legal framework for circular economy

2 Recyclability of packaging

3 Project "Determination of the practice of sorting and recycling of packaging"

4 Conclusion

1 Legal framework for circular economy



To enable circular economy

- Waste collection systems need to be established
- Sorting and recycling processes need to be set up and developed
- Packaging needs to be designed to enable recycling
- Recyclates need to be used in packaging



Essential requirements for packaging

Eco Fee Modulation



EPR schemes are responsible for collection at private households



Recycling targets for EPR schemes

Overall recycling target

at least 50 percent (by weight) of the material collected in the lightweight packaging waste collection

Material specific targets

90 % of Glass, paper/cardboard, metals

80 % of beverage carton packaging

70 % of other composite packaging

63 % of plastics

More information: [EU-Packaging-Directive](#), [German Packaging Act](#), [UBA-Website](#), [ZSVR](#)



1 Legal framework for circular economy

Essential requirements for packaging - obligations of producers

Reducing packaging to a minimum (volume, mass)

- Packaging only where needed
- Reducing material input

Allow for more re-use or recovery

- Making packaging re-usable
- Increasing recyclability

Increasing input of secondary raw materials

- Using recycled materials

Minimizing environmentally harmful substances with disposal

- E.g. considering chemical components in packaging



2 Recyclability of packaging

Eco Fee Modulation

EPR schemes are obliged to provide incentives to producers of packaging subject to system participation to design packaging that is as recyclable to a high degree and contains recyclates (secondary raw materials).

What we reference when we speak about recyclability:

- **High-quality mechanical recycling**
Suitability of a packaging to substitute virgin material in applications typical for this material after undergoing recovery processes available on an industrial scale
- **Not only theoretically recyclable**
Avoiding greenwashing for real ecological benefits
- **Considering the current practice of sorting and recycling**
In order to support achieving the recycling targets

More information: [Section 21 German Packaging Act](#), [Evaluation report](#)



2 Recyclability of packaging

How to determine the recyclability of packaging?

3 criteria

- 1) **Availability of sorting and recycling infrastructure** that allows for high-quality mechanical recycling for this packaging
- 2) **Sortability** of the packaging, **separability** of its components (e.g. no large-surface labelling (> 50 % of the surface) with foreign material)
- 3) **No incompatibilities** of packaging components or substances contained therein that might render a successful recycling impossible with currently used technology (e.g. silicone components in plastic packaging)

➔ If packaging meets these requirements, the available recyclable content determines recyclability.
If criteria are not met, the packaging is not recyclable.

Source: [Minimum Standard](#) by Central Agency Packaging Register and UBA

3 Project “Determining the practice of sorting and recycling of packaging within the meaning of § 21 VerpackG for the period 2021 to 2024” (FKZ 3722 34 309 0)

Duration: May 2022 to December 2025 (in-house research project)

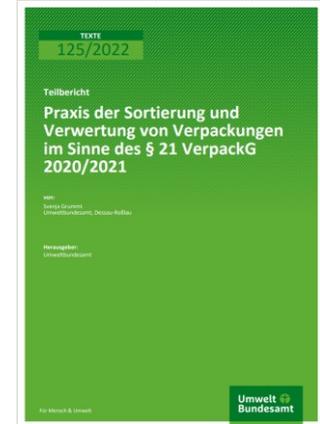
..... Publication of the first partial report: [UBA TEXTE 125/2022](#)

Objectives and content

- Results serve a scientific basis for the "Minimum Standard for the assessment of the recyclability of packaging subject to system participation" (§ 21 VerpackG)
- Survey of the operators of sorting and recycling facilities

Selected Results in relation to the practice

- A complete plastic type sorting (recycling of PET, PS, PP and PE) was used for about half of the lightweight packaging collection volumes
- Only a few German sorting centers sort out black plastics and PET-trays as a mono fraction
- Hot washing and color sorting are common practice in PET recycling plants; in non-PET recycling plants, there are only a few plants practicing these techniques



<https://www.umweltbundesamt.de/publikationen/praxis-der-sortierung-verwertung-von-verpackungen>

4 Conclusion

- Preventing and reducing packaging. Waste prevention is the primary goal of the waste hierarchy (KrWG).
- Packaging must be detectable and recyclable by the current sorting and recycling plants. Expansion of sorting and recycling infrastructure according to the state of the art.
- Use of recyclates reduces CO₂-Emissions and saves resources.
- Providing more financial incentives for packaging eco-design, including recyclability.

Thank you for your attention

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This presentation also includes material by other colleagues of section III 1.6 – special thanks to them.