GOLDEN DESIGN RULES

For optimal plastic design, production and recycling

Demonstrating leadership in the progress towards a circular economy, members of the CGF Plastic Waste Coalition of Action have aligned on Golden Design Rules for packaging design to increase the circularity of their packaging portfolios where appropriate. This set of voluntary, independent and time-bound commitments which together reach over 90% of plastic packaging available on the market will create significant value for the industry and wider system. For more information about the Coalition, visit www.tcgfplasticwaste.com.

1

GOLDEN DESIGN RULE

Increase Value in PET Recycling

- Use transparent and uncoloured **PET** (preferred), or transparent blue or green in all PET bottles[1, 2]
- Ensure material choice, adhesive choice and size of sleeve or label is not problematic for recycling[3, 4, 5]

PET is polyethylene terephthalate, one of the most commonly used plastic materials. This Golden Design Rule applies to all PET bottles in food and non-food applications, including beverages, home care products, personal care products, and more. Switching from coloured to transparent PET bottles will positively impact supply of high quality recycled PET, and helps ensure only materials that have a viable closed loop recycling pathway are used.

THE SCALE

PET bottles represent 13% of plastic packaging on the market, according to data from Plastics Europe and Eunomia.

1) With a minimum L value of 40; 2) Exception: Where barrier protections (for UV light, CO2, or O2) are required for product shelf life and other solutions (e.g., full-body sleeves) are not possible; 3) Including phase out of PETG and PLA labels/sleeves, non-water soluble/dispersible adhesives and sleeves that cover more than 75% of bottle (unless proven not to limit the recyclability of the product); 4) Exception: Unless proven not to limit the recyclability of the product (e.g. cPET, sleeves that detach during recycling processes prior to optical sorting); 5) Exception: Small non-recyclable bottles exempt

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GOLDEN DESIGN RULE

Remove Problematic Elements from Packaging

a. No **undetectable**[1] **carbon black**[2]
b. No **PVC** or **PVDC**[2, 3]
c. No **EPS** or **PS**[2]
d. No **PETG** in rigid plastic packaging[2, 3]
e. No **oxo-degradable**[4]

Undetectable carbon black is undetectable in the sorting process when using Near Infra-Red (NIR) technology, which is widely used in plastics recycling systems. As a result, dark-coloured packaging commonly ends up as residue and is disposed of in landfill or incineration. It is commonly used in meat and vegetable trays and bottles. As well as minimising avoidable environmental impacts, removing carbon black would help increase the volume of recycled plastic.

PVC or PVDC is polyvinylidene chloride or polyvinylidene dichloride. It can be problematic if in the recycling stream by disrupting the recycling of some other plastics. It is found in several types of plastic packaging, including meat trays, plastic film around vegetables or blister packs.

EPS or PS is expanded polystyrene or polystyrene. (E)PS is too uncommon the packaging materials stream to make recycling economically viable. As a result, it is rarely sorted from household waste and recycled, with the majority of it incinerated or landfilled. Examples of its application are food takeaway containers, yoghurt pots, and cushioning/filler. This element of Golden Design Rule 2 excludes other types of polystyrene such as SAN or ABS.

PETG is polyethylene terephthalate, and is a contaminant in the PET recycling stream which lowers the value of recycled PET materials. It is found in, for example, drinking bottles and cooking oil containers. This element applies to all single-use rigid packaging materials in the consumer goods market.

Finally, **oxo-degradable** plastics contribute to microplastic pollution and are not suited for long-term reuse, recycling at scale or composting. Uses include shrink and stretch film, carrier bags, blister packs, bottles, labels and caps. This element of Golden Design Rule 2 applies to all oxo-degradable plastics as defined by CEN, the European Standards authority, unless use is required by law.

THE SCALE

According to the Ellen MacArthur Foundation, these problematic elements are present in over 10% of plastic packaging.

1) Undetectable means by commonly used sortation technologies; 2) Exception: This rule does not apply to small non-recyclable packs; 3) Exception: Except in medical applications where there is no alternative; 4) Exception: Except where legally required; "This rule does not apply to oxo-biodegradable plastics"

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GOLDEN DESIGN RULE

Eliminate Excess Headspace

- Eliminate excess headspace for all flexible pack types, such that the maximum headspace is 30% or less across the product categories outlined in the rule.

This Golden Design Rule applies to the following categories: cleaning products, confectionary, dry groceries, frozen foods & ice-cream, health & wellness, personal & baby care, pet food, produce & fresh food, shelf stable foods, water & beverages**.** By eliminating **excess headspace** in flexible packaging, companies reduce the demand for virgin plastic and reduce the absolute amount of plastic being placed on to the market.

4

GOLDEN DESIGN RULE

Reduce Plastic Overwraps

- Reduce plastic overwraps by only using them when “necessary” (as defined by the developed guideline)

This Golden Design Rule applies to the following categories:
- Food: confectionary, crisps and snacks, canned and tinned food, beverages.
- Non-food: home care, personal care, baby care

By removing unnecessary **overwraps**, companies reduce the demand for virgin plastic and reduce the absolute amount of plastic being placed on to the market.

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GOLDEN DESIGN RULE

Increase Recycling Value for PET Thermoformed Trays and Other PET Thermoformed Packaging

For PET thermoformed trays and other PET thermoformed packaging:

1. Regional design guidelines to fit with existing recycling programs[1] shall be met wherever possible.
2. For packaging that is not accepted by existing recycling programmes, and where there is a clear pathway for a future recycling system by 2025[2], the following requirements apply:
   - A Use transparent and uncoloured (preferred), or transparent blue or green PET[3]
   - B Ensure material choice, adhesive choice, inks and size of sleeve or label is not problematic for recycling[4]
   - C Use only mono-material PET[5]
   - D Use minimal or moderate direct printing[6]
   - E Ensure material choice and adhesive choice of lidding films, inserts or other components is not problematic for recycling[7]

PET trays are not currently recycled at in practice and at scale but solutions are being scaled-up in Europe and North America – a rule to increase recyclability would provide a boost to emerging recycling infrastructure and increase the quantity and availability of rPET which is necessary to meet targets around recycled content[3]

This rule is aligned with published retailer guidelines and third-party guidelines such as APR, RecyClass / PetCore and WRAP.

THE SCALE

If adopted industry-wide, a rule on PET trays and other thermoformed PET packaging would affect >3% of the total plastic packaging market.*

1) Recycling programmes are at different stages of development in different regions, so companies are recommended to check regional advice or guidelines such as those provided by APR in the US. Signatories should use the exceptions reporting process to record cases where they have followed regional design guidelines instead of the Golden Design Rules. 2) As accepted by industry associations and multi-stakeholder value-chain initiatives such as RecyClass/PetCore and Plastics Pacts and targeting recycling rates of >30%. 3) With an L-value of 40; Do not use fillers that affect clarity; coatings should not lead to misdetection of the packaging and misdirection to waste.

4) Including phase out of paper labels and PETG, PVC and PLA labels/sleeves, and non-water soluble/dispersible adhesives. Labels/sleeves should not lead to misdetection of the packaging and misdirection to waste. 5) Including minimum 95% PET content with an intrinsic viscosity that is suitable for the recycling programme in region. Do not use materials that have a negative impact on rPET clarity. 6) E.g. production date or expiry date; Where additional printing is necessary, use of labels is preferred. If this is not possible, use only inks that do not bleed. 7) Lidding films, inserts and other components should not lead to the misdetection of the main packaging, and if using non-PET polymers, density should be <1g/cm3.

**EMF New Plastics Economy Global Commitment Progress Report 2020*

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GOLDEN DESIGN RULE

Increase Recycling Value in Flexible Consumer Packaging

For flexible consumer packaging made mostly from plastic[1]:

1. Regional design guidelines to fit with existing recycling programmes[2] shall be met wherever possible.
2. For packaging that is not accepted by existing recycling programs, and where there is a clear pathway for a future recycling system by 2025[3], the following requirements apply:
   A. Maximise polyolefin content:
   B. Preferably >90% mono PE, or >90% mono PP
   C. Minimum either >80% mono PE, >80% mono PP or >80% mixed polyolefins
   D. Density <1 g/cm^3
   E. Each barrier layer should not exceed 5% of the total packaging structure weight[4]
   F. No PVC, PVDC, fibres, aluminium foil, PET

Demand for **flexible packaging** is expected to increase with increasing demand for convenience food and online retailing.

Consumer flexible plastic packaging is not currently recycled in practice and at scale, however there are multiple efforts underway to improve collection, sorting and recycling systems to recycle flexible materials.

All consumer flexible packaging made mostly from plastic:

- 'Consumer' packaging is packaging likely to end up either in the household waste stream or disposed of by consumers during consumption outside the home
- 'Flexible' packaging is packaging that does not keep its shape when moved or emptied.
- 'Made mostly from plastic' defined as packaging made from >50% plastic (i.e. where plastic is the predominant material)

THE SCALE

Flexible plastic packaging makes up an estimated 51% of the total plastic packaging market.*

1) 'Mostly from plastic' defined as packaging which is > 50% plastic (based on EU recognised definition of a 'predominant' material). This rule does not cover compostable plastic packaging that meets accepted certification standards for compostability.
2) Recycling programmes are at different stages of development in different regions, so companies are recommended to check regional advice or guidelines such as those provided by APR in the US. Signatories should use the exceptions reporting process to record cases where they have followed regional design guidelines instead of the Golden Design Rules.
3) As accepted by industry associations and multi-stakeholder value-chain initiatives such as CEFLEX and Plastics Pacts and targeting recycling rates of > 30%.
4) Only use barrier layers and barrier coatings proven not to limit the recyclability of the packaging. AlOx, SiOx, EVOH and PVOH are recommended. Excess outer metallisation (as a barrier or for decoration) could lead to misdetection of the packaging and misdirection to waste.
**EMF New Plastics Economy Global Commitment Progress Report 2020*

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GOLDEN DESIGN RULE

Increase Recycling Value in Rigid HDPE and PP

For all rigid HDPE and PP packaging:

a. For all labels, ensure material choice, adhesive choice, inks and size is not problematic for recycling[1]
b. Use minimal or moderate direct printing[2]
c. For closures, ensure material choice, liners and seals are not problematic for recycling
d. Do not use fillers that increase the density of the packaging to >1g/cm^3

The rule applies to **all rigid HDPE and PP packaging,** including bottles and squeeze tubes.

Rigid HDPE and PP packaging is recycled in practice and at scale in many markets[2], but there is significant scope for increasing value in recycling and increasing availability and quantity of recycled material[3]

THE SCALE

If adopted industry-wide, this rule would affect 20% of the total plastic packaging market.*

1) Including phase out of paper labels, and PET, PETG, PLA and PVC labels/sleeves; and non-water soluble/dispersible adhesives. Labels/sleeves should not lead to misdetection of the packaging and misdirection to waste. For in-mould labelling use only polyolefins.
2) E.g. production or expiry date. Where additional printing is necessary, use of labels is preferred. If this is not possible, use only inks that do not bleed or which are proven not to limit recyclability.
3) Including phase out of silicone valves, and PVC and silicone seals; PS and PVC; and steel and aluminium caps. Closures should not lead to the misdetection of the packaging and misdirection to waste.
** EMF New Plastics Economy Global Commitment Progress Report 2020*

GOLDEN DESIGN RULE

8 Reduce Virgin Plastic Use in Business-to-Business Plastic Packaging

Reduce the use of virgin plastic in business-business (B2B) plastic packaging[1] in a way that is environmentally beneficial by:

a. Eliminating unnecessary plastic (defined as unnecessary if it can be removed without compromising supply chain/operational efficiencies)
b. Using post-consumer recycled content (where plastic is necessary)
c. Switching to reuse models or alternative materials

- This segment of the packaging market generally does not require food-grade plastics or barrier properties so can be well suited to the use of recycled plastics or substitute materials
- Reusable alternatives to single-use packaging are available (See EMF Upstream Innovation Guide for examples of reuse models for this packaging segment)
- Reducing the use of virgin plastic through elimination, use of recycled content and reuse models could lead to a lower environmental impact from both a waste and GHG emissions perspective if done in an environmentally net beneficial way

The intended scope of this rule is to cover all plastic packaging that does not reach the consumer (as distinct from rule 4 on overwraps). This means all packaging that does not end up either in the household waste stream or is disposed of by consumers during consumption outside the home. This could include, but is not limited to:

- Packaging that is additional to the consumer packaging, and that may be used for protection and collation of individual units during storage, transport and distribution, and to display primary packs on shelf;
- Transportation packaging, including pallets, slip sheets, and stretch wrap used for the shipment and distribution of goods.

Notes: 1) The intended scope of this rule is to cover all plastic packaging that does not reach the consumer, as distinct from rule 4 on overwraps. This means all packaging that does not end up either in the household waste stream or is disposed of by consumers during consumption outside the home

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GOLDEN DESIGN RULE

9 Use On-Pack Recycling Instructions

Include recycling or reuse instructions on consumer plastic packaging[1]

A high-level rule allows companies to implement the rule according to what is possible in different markets.

Consumers have a key role to play in ensuring packaging is sorted for the appropriate end-of-life solution; clear and accurate on-pack recycling instructions can increase the chances that this role is fulfilled.

There are a growing number of initiatives developing guidelines for on-pack recycling instructions working towards a standardised and accurate way of communicating recycling and reuse instructions to consumers in different markets.

The scope: All consumer plastic packaging: 'Consumer' packaging is packaging likely to end up either in the household waste stream or disposed of by consumers during consumption outside the home

Notes: 1) Instructions should reflect the local conditions. Companies should continue to work at the local level to determine the most accurate way to reflect this in each country