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Golden Design Rules Case Study Booklets





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Preface |

This Case Study Booklet co-compiled by CGF members, aims to promote design-for-recyclability and circular economy, with the participation and support from enterprises, academics and related organizations.

Through the demonstration of pioneer companies in the consumer goods industry, not only showed advanced cases of recyclable design and multiple technology solutions, but also to help people understand the potentials on carbon reduction direction from plastic packaging design optimization. Therefore, to promote upstream recyclable design in China market, and contribute to circular economy and double-carbon target.

In the actual situation, we should consider “design-for-recyclability”. However, based on the current situation of China, the recycling flow of some plastic materials is not so perfect. Therefore, in order to encourage brands/retailers/suppliers, implementation on upstream design change and innovation is suggested according to the design specification “Golden Design Rules”, with 33 leading multi-national companies having signed up to implement these rules across their plastic packaging portfolios by 2025. At the same time, we encourage our members to lead local pilots, and work together to explore the challenges and opportunities, as well as the feasibility of recycling infrastructure at scale for some plastic packaging based on the current situation in China.

This Case Study Booklet is based on the widely recognized CGF “Golden Design Rules” which has been adopted and implemented internationally. It will be continuously updated according to the latest policy and regulation requirements, new experience and knowledge domestic and abroad, as well as relevant management system tools and methods. Welcome any correction for future modification and improvement.






CEO Comments

*The following CEO comments are presented in the alphabetical order of their companies

As a century-old dairy enterprise resonating with the times and constantly radiating vitality in the new era on the basis of integrity and innovation, Bright Dairy clearly understands the importance of harmonious coexistence between man and nature, and fostering circular economy to promote the transformation of the dairy industry to sustainable development. Bright Dairy has taken the lead in launching a green public welfare action for milk carton recycling in the whole industry, and joins hands with consumers to explore a green road of sustainable development and contribute Bright Dairy's solutions to the development of low-carbon circular economy. At present,the CGF gold design principle has pointed out the right direction for promoting the sustainable development of plastic packaging, and also provided a new idea for the dairy industry on the level of productpackaging design. Bright Dairy is looking forward to the localization of the CGF gold design principle in China,and hopes to work with outstanding enterprises from all sectors of society to give full play to our respective advantages and potential to promote the establishment of China's product packaging recycling design standards and the optimization and upgrading of the recycling system, so as to inject new driving forces into the circular economy and low-carbon sustainable development.



-- Huang Liming
Party Secretary and Chairman of Bright Dairy & Food Co., Ltd.

We are Colgate, a caring, innovative growth company that is reimagining a healthier future for all people, their pets and our planet. Eliminate Plastic Waste is one of the key actions in our global sustainability & social impact strategy. We will design and deliver zero plastic waste solutions for Colgate-Palmolive products. We aim to eliminate one third of our new plastics and achieve 100% recyclable, reusable or compostable packaging by 2025. Colgate has determined that it is not enough to behave responsibly within our own business, to truly make a difference and have a positive impact. We are working toward a shift to the circular economy. This ambitious goal is not something any one company can achieve on its own; it is by working with partners like the Consumer Goods Forum (CGF) Coalition of Action on Plastic Waste. I am very happy to see that 3 projects from Colgate China were selected in CGF China Golden Design Rules Booklet. I believe by working to promote CGF Golden Design Rules in China, it can help eliminate the plastic waste and enable us to move toward a sustainable future.

-- Winnie Wong
Vice President and General Manager, Greater China Hub




As a leading global food and beverage company, Danone's dual social and economic project dating back to 1972 is a founding element of our approach to business. With a long-standing mission of bringing health through food to as many people as possible, the company aims to inspire healthier and more sustainable eating and drinking practices while committing to achieve measurable nutritional, social, societal and environment impact.

Danone released global packaging policy in 2018 and our goal for 2030 is that every piece of packaging will be reusable, recyclable, or compostable. In China, The Mizone bottles are 100% recyclable by 2021. In 2022, Danone announced a partnership with LanzaTech in a research and development project to develop "Carbon Smart" monoethylene glycol (MEG) for PET bottles. This brand-new type of low-carbon resin for packaging based on "carbon capturing" technology allows the production of chemical building block of PET directly from carbon emissions.


We appreciate Consumers Goods Forum's work on promoting sustainability and are glad to know Danone's two sustainability projects "Packaging innovation of Mizone Bottle" and "Investing in Carbon Capture technology- Carbon Smart bottle" have been selected in the case study booklet. We look forward to more collaborations across the whole value chain and together contribute to China's circular economy and carbon goals.

-- Peng Qin
Chairman, Danone




Ecolab is committed to help protect people, planet and business health. We continuously improve the design and packaging of our products, and increase the efficiency of use and reduce waste generation by introducing new plastic bottles, tablet products etc. We're very proud that our packaging sustainability project "4L packaging plastic reduction for commercial use detergent and sanitizer products" has been accepted by CGF Golden Design Rules and Carbon Emission Reduction Case Study Booklet. The new generation 4L bottle can reduce 20g virgin plastic usage per piece by optimizing the wall thickness program, upgrading the shape of the standing point and finally improve the physical performance to equal with the original heavy bottle. This lightweight project will help us to yearly reduce about 20 Ton virgin plastic usage from the first year's implementation. Ecolab actively responds to the United Nations Sustainable Development Goals to halve carbon emissions by 2030 and achieve net-zero carbon emissions by 2050. Ecolab Greater China will continue to innovate and develop to help China achieve its goal of carbon peak and carbon neutrality.

--Christina Kong
executive vice president and market head of the Ecolab Greater China




Haleon is determined to break down the social and environmental barriers that hold people back from better everyday health. We aim to achieve this by tackling carbon emissions, making our packaging more sustainable, sourcing trusted ingredients sustainably, and reducing waste and water usage in manufacturing. As for carbon emission reduction, our Suzhou plant has achieved operational carbon neutral in 2021, making it not only the first Carbon Neutral factory within the Haleon global network, but also the first Carbon Neutral factory of the whole consumer health industry of China market. On sustainable packaging, we are committed to reducing our use of virgin petroleum-based plastic by a third by 2030, making a billion toothpaste tubes recyclable by 2025, and making all our packaging recyclable or reusable by 2030. Gold Design Rules is in line with our strategy and plan on sustainable packaging. It gives us directions and inspirations on development and innovation of sustainable packaging.

--Susan Gu
General Manager, Mainland China & Hongkong, Haleon



Henkel has actively promoted the development of circular economy and set a grand commitment in terms of sustainable packaging. The goal by 2025 is to achieve 100% recyclable or reusable packaging. By the end of 2020, Henkel has achieved this target on about 89% of packaging. Henkel is steadily increasing the proportion of packaging with recycled materials, and will increase the proportion of recycled plastics in all global consumer goods to more than 30% by 2025. We look forward to promoting the development of plastic recycling in China under the guidance of CGF golden design rules and making due contributions to building a resource conserving and environment-friendly society.

--Rajat Agarwal
President of Henkel Greater China



As environmental and social challenges become increasingly acute, L'Oréal is accelerating its transition to a more sustainable and inclusive development model that respects the boundaries of the planet. In 2020, L'Oréal launched its new sustainably program "L'Oréal for the Future" and set a series of ambitious goals for the group for 2030. We have pledged that by 2025, 100% of our plastic packaging will be refillable, reusable, recyclable or compostable. By 2030, 100% of the plastics used in our packaging will be either from recycled or biobased sources.


We recognize and support The Consumer Goods Forum's efforts to drive sustainable packaging for the industry. "L'Oréal for the Future" not only promotes our own transformation, but also looks forward to joining hands with more partners to continue to expand the sustainable consumption and win-win ecosystem. So as to evolve together and create a lower carbon and more sustainable future!

-- Fabrice Megarbane
President North Asia Zone & CEO L'Oréal China



In its over 100 years of evolution, Mars has always committed itself to harmony between people and nature through cultivating the circular economy. We firmly believe that packaging should never become useless waste, instead it should be reusable, recyclable, or compostable so it returns to nature eventually. To achieve that end, Mars is focusing on packaging research and development and advocating for the right infrastructure around the world. On the one hand, we have been redesigning or improving our packaging in the principle of D4C (Design for Circularity), a few examples being Extra gum bottle plastics reduction, M&Ms reusable packaging in novation, and mono material flexible plastic packaging for pet food. On the other hand, we have been advancing cooperation with the government, industry associations and partners across the value chain to push for continued progress in both policy and infrastructure. Looking ahead, we expect to work with all relevant parties through the CGF platform to jointly usher in a brighter future for China's circular economy.

--Larry Feng
President, Mars Wrigley China



As a Chinese dairy company with global influence, Mengniu has always attached great importance to sustainable development. With the vision of "promise a healthier world", we firmly practice the road of green, low-carbon, and inclusive sustainable development, and strive to become a social enterprise that creates greater value for mankind. This year, we actively responded to the China dual-carbon strategy, set Mengniu's strategic goal of "carbon peaking in 2030 and carbon neutrality in 2050", as well as the phased goal of leading the entire industry, and started the journey of leading the entire industrial chain towards carbon neutrality. The development and application of low-carbon and sustainable dairy packaging is an important part of our dual-carbon strategy. By practicing the Golden Design Rules, we will continue to join hands with domestic and foreign enterprises to accelerate the development of sustainable packaging applications in China and contribute to the global sustainable development and the response to climate change in the consumer goods industry.


--Jeffrey Minfang Lu
CEO & Executive Director, Mengniu



We highly appreciate CGF's efforts in promoting the sustainable development of plastic packaging, and our teams in China have also been actively supporting and participating in the discussions, activities and industry exchanges organized by CGF. In terms of sustainable packaging, by 2025, Mondelez aims to achieve 100% packaging designed to be recyclable and reduce overall virgin plastic use by 5%. This also matches the direction advocated by the Golden Design Rules.

As a global snacks leader, Mondelez International is determined to lead the future of snacking by offering the Right Snack, at the Right Time, made the Right Way, and to achieve net zero emissions by 2050. We would like to continue to working with CGF, upstream and downstream of the industry, and innovative partners to improve flexible plastic waste recycling and closed-loop solutions, and to reducing packaging use, advancing a circular pack economy and dual carbon strategic goal in China.

--Joost Vlaanderen
President, Mondelez Greater China



Nestlé's vision is that none of our packaging, including plastics, ends up in landfill or as litter. We pledged to work across the industry to create a circular economy for plastic. The nine Golden Design Rules (GDRs) of Consumer Goods Forum's Plastic Waste Coalition of Actions helps drive better packaging design, increase collective action and accelerate progress towards a circular model. I am proud that many Nestlé products already comply with these standards and we will continue to do so. It is truly inspiring to see so many innovative packaging solutions from member companies in the Case Book. Look forward broader implementation of the GDRs in the future. Let us tackle plastic pollution TOGETHER.

-- David (Xiqiang) Zhang
EVP of Nestlé Group & Chairman and CEO Nestlé Zone Greater China




ZhaoRiWeiPin is a brand that provides consumers with natural, safe and tasty quality agricultural products based on the "circular agriculture" model. Our brand is working on 'circular farming' which is in itself a sustainable model of agriculture. For the past 20 years, we have been reusing cow manure compost and using environmentally friendly methods to weed and pest control, allowing the crops to grow in accordance with nature. This is the basis of our product quality, and we will continue to refine it in the future.

Not only do we want to convey the idea of sustainable and friendly lifestyle, but we also consider the environment as an important part of the product creation process: the packaging is designed in a simple way to reduce ink, plant-based materials are chosen to help the packaging degrade, and we collect creative examples and encourage consumers to recycle the packaging.

We are proud to work with CGF to promote golden design principles and sustainable development. In the future, we hope to make a small contribution to environmental protection in China through our continuous efforts, and at the same time, we will continue to encourage people to practice sustainable lifestyles and lighten the burden of the planet.

--Zhang Lei
General Manager Shandong Lu Yuan Wei Pin Branch
of New Hope Dairy Co., Ltd.



At P&G, everything starts with the consumers. For 34 years in China, we are dedicated to drawing inspiration from the needs of consumers, improving their lives now and for generations to come. As one of the biggest FMCG companies in the world, P&G is focusing on consumers to create a better sustainable landscape through responsible manufacturing, responsible selling and responsible consumption, speeding up our progress towards a sustainable future. We are committed to making everyday life better for Chinese consumers throughout superior products and services, and ensure that is also sustainable. Better for consumers and better for planet, better for brands and people we serve.

-- Jasmine Xu
Chairman and Chief Executive Officer P&G Greater China



Unilever's vision is to be the global leader in sustainable business and to demonstrate how our purpose-led, future-fit business model drives superior performance and make sustainable living commonplace. Regards to plastics, Unilever has set ambitious plans, such as our commitment by 2025

- 50% virgin plastic reduction, including an absolute reduction of 100,000 tonnes
- 25% recycled plastic
- Collect and process more plastic than we sell
- 100% reusable, recyclable or compostable plastic packaging

The "Golden Design Rules" as a standard for the recyclable design of product packaging, is in line with Unilever's drive to reduce plastic use over the years. As one of the initiators, Unilever wish to work with more partners through CGF to promote and land the "Golden Design rules", to improve consumers' awareness of sustainable packaging, and accelerate the upstream and downstream collaborative solutions. Let's all together to build a "waste-free planet"

-- Frank Qu
President, Unilever China





Advisor Comments

It's great to see that with the support and efforts of all CGF China members, we have together launched the second case study booklet of Golden Design Rule. It is another milestone after the recommended regional design guidance released in China. Over the two years, the case study booklets have received wide attention and interest from the strategic level of sustainable development of Chinese consumer brands and retail enterprises.

The selected case studies have scientifically demonstrated how Golden Design Rules and the regional design guides can step-by-step uplift plastic recyclability and improve the overall packaging sustainability. Most of the cases are focused on reducing virgin plastic usage (such as material substitution and using recycled content), removing problem elements that disrupting recycling, changing toward mono-materials, investing in new material technology innovations and switching to new logistic modes in B2B and product distribution (such as loose transportation and packaging reuse).

Promoting plastic packaging recyclability is an important practice of implementing China's "green design" and "reduction at the source" policies. Therefore, by making plastic products more in line with the guidance, making packaging design more close to the expectations and needs of the plastic recycling industry in China, and improving the actual recycling efficiency, it is the most direct, effective and wild influential scheme for all parties in the current plastic value chain.

We will continue to promote more of the upstream efforts to be commonly understood and wildely recognised by both consumer and the plastic recycling industry.



Vice President, CPRRA (China Plastics Reuse and Recycling Association)
Executive Manager, Pro-Eco Material-Tech Ltd.

It is a great honour to be invited to participate in this case selection of Golden Design Rules Booklet. We are pleased to see that Customer Goods Forum (CGF), on the basis of the original Golden Design Rules, also takes into account whether the packaging changes and innovations have carbon emission reduction effects or potentials, which reflects its awareness and attention to environmentally friendly and sustainable development.

With the substantial support of CGF members in China, we note with pleasure that a bigger number of cases submitted this year, more than 70% of which have the potential to have a lower carbon footprint, which demonstrates that these enterprises follow the global trend to lead a green and low-carbon development, incorporate reducing carbon emissions and climate impact into the future goals of the enterprise, and also have implemented this goal in the daily behaviour such as R&D.

Through this case selection, we could conclude that most enterprises are making certain efforts to reduce their carbon emissions of its packages according to their own understanding, in a variety of ways, such as lightweight, material substitution, to use paper instead of plastics, to promote recycling value, etc. Many of them can be used in the future on a large scale, as well as some very creative innovation. Although there is still some misunderstanding about whether some measures would actually reduce the carbon footprint, the efforts of companies are admirable.

As the world's leading carbon footprint /LCA research and development institution, as the initiator of the full life cycle carbon neutrality assessment system, we have been committed to popularize the meaning and method of life cycle assessment (LCA) and carbon footprint assessment. In the future, we will work closely with CGF to clear the misunderstandings and obstacles in carbon emission reduction for more enterprises, and assist their packaging design in reducing carbon emissions.



Yuhan Zeng
Deputy Secretary-General of LCA Committee
Senior Consultant, Chengdu IKE Environmental Technology Co., Ltd.

*Statement before you read Carbon Reduction Information of Product Packaging and Environmental Impact of This Product Packaging

You may find that the information presented by different cases is different, such as some cases show "Carbon Reduction Information of Product Packaging" while some cases show "Environmental Impact of This Product Packaging". The reason for this discrepancy is that the former change/innovation of product packaging can be evaluated to have a reduced carbon footprint with high probability or maximum probability. For the latter, the change of its carbon footprint cannot be determined temporarily due to lack of accurate LCA assessment, or the probability to have a reduced carbon footprint is small. In order to avoid misleading all members, differentiated ways of explanation and terms are carried out.



Partner Comments

Congratulations on the launch of the second edition of the Golden Design Rules Case Study Booklets. Alibaba Group is honored to have participated, together with other CGF members, in the development and transformation of product R&D technology, promoting a circular economy that not only benefits the environment, but also enables sustainable operations of corporates.

Alibaba's long-term sustainability strategy has been guided by the UN Sustainable Development Goals, and is also highly consistent with the spirit of the Golden Design Rules. The SDG 12 Sustainable Consumption and Production is shared goal of our joint efforts.

In this second batch of Golden Design Rules cases, we found that many companies incorporated carbon reduction design into the application of the Golden Design Rules. This is an important step of Golden Design Rules' application and further development in China's specific socioeconomic contexts. Alibaba will continue to work with CGF to enhance the methodology in quantitatively assessing the carbon reduction effects of applying the Golden Design Rules, and help expand the influence of the rules by promoting a wider range of implementation. Specifically through jointly establishing low-carbon product standards, we encourage and promote CGF members to increase investment in product carbon emission reduction. Alibaba Group's Carbon88 Ledger offers a unique platform for jointly serving the new demands of consumers under the sustainable consumption transition, making it a booster for both business growth and sustainability brand image.



Lingye Yang
Director of ESG Strategy and Operations Department, Alibaba Group
Sustainability Steering Committee Member, Alibaba Group



Global Progress

The Consumer Goods Forum's Plastic Waste Coalition of Action "Golden Design Rules"

Plastic pollution is one of the biggest issues of our time. Currently 95% of plastic packaging is created for single use and packaging produced by our consumer goods industry is on the rise globally. The United Nations Environment Programme estimates that of the 8.3 billion tonnes of plastics produced since the 1950s, about 60 percent has ended up in a landfill or the natural environment. Sadly, the 8-12 million tonnes of plastic litter that ends up in the ocean every year is one of the most visible and alarming signs of this problem.

We need collaborative action, and the CGF Plastic Waste Coalition of Action is in a formidable position to help drive positive change on the plastic waste challenge and toward a circular economy.

The Consumer Goods Forum's Plastic Waste Coalition of Action has created nine "Golden Design Rules", for the design of plastic packaging, in line with the targets laid out in the New Plastics Economy Global Commitment, led by the Ellen MacArthur Foundation in collaboration with the UN Environment Programme.



CGF Plastic Waste Coalition Launches Full Set of "Golden Design Rules" to Tackle Plastic Waste

1. Packaging design is crucial for reducing unnecessary packaging and ensuring that plastic packaging is suitable for reuse or recycling at the end of its life. After a proliferation of technical design guidelines in recent years, convergence on globally coherent design principles is now critically needed to enable a circular plastics economy. In line with this need, and in response to the New Plastics Economy Global Commitment, led by The Ellen MacArthur Foundation in collaboration with the UN Environment Programme, The Consumer Goods Forum's Plastic Waste Coalition of Action has developed "Golden Design Rules" covering the vast majority of all plastic packaging.

2. These Golden Design Rules are based on published eco-design guidelines including those published by the Association of Plastic Recyclers and Plastic Recyclers Europe, advice from experts and recycling associations, and input from Coalition members, some of whom have already implemented elements of these Rules. The nine rules are complementing and amplifying the years of complementing and amplifying the years of high-quality technical work and stakeholder alignment that has taken place across industry platforms and within country-level discussions. These rules provide a simple and accessible entry point to help companies prioritise and deliver the most important design changes needed across their plastic packaging portfolio, drawing on technical guidelines and local advice.

3. These are voluntary, visible and ambitious changes that require convergent action to achieve progress towards a circular economy for plastics, with thirty-three leading multi-national companies having signed up to implement these rules across their plastic packaging portfolios by 2025. Together, if fully adopted by industry, the full set of Golden Design Rules reach over 90% of plastic packaging available on the market.



The Plastic Waste Coalition of Action was founded in 2020 with the aim of developing a more circular approach to the development and processing of plastic packaging in the consumer goods industry. Golden Design Rules are scalable across global value chains and are compatible with regional and national technical packaging guidelines.

Golden Design Rules

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}

ET 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:** ET 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.



2

GOLDEN DESIGN RULE

Remove Problematic Elements from Packaging

- a. No **undetectable**¹ carbon black²
- 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"

3

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:

- 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.





4

GOLDEN DESIGN RULE

Reduce Plastic Overwraps

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

This Golden Design Rule applies to the following categories:

- a. Food: confectionary, crisps and snacks, canned and tinned food, beverages.
- b. 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.



5

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 programs¹ 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 2025², the following requirements apply:
 - A Use transparent and uncoloured (preferred), or transparent blue or green PET³
 - B Ensure material choice, adhesive choice, inks and size of sleeve or label is not problematic for recycling⁴
 - C Use only mono-material PET⁵
 - D Use minimal or moderate direct printing⁶
 - E Ensure material choice and adhesive choice of lidding films, inserts or other components is not problematic for recycling⁷

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 content³.

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



6

GOLDEN DESIGN RULE

Increase Recycling Value in Flexible Consumer Packaging

For flexible consumer packaging made mostly from plastic¹:

1. Regional design guidelines to fit with existing recycling programmes² 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 2025³, 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/cm³
- E Each barrier layer should not exceed 5% of the total packaging structure weight⁴
- 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.

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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 recycling¹
 - b. Use minimal or moderate direct printing²
 - 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/cm³

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 markets², but there is significant scope for increasing value in recycling and increasing availability and quantity of recycled material³.

**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.

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GOLDEN DESIGN RULE

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

- Reduce the use of virgin plastic in business-business (B2B) plastic packaging¹ 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 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

Use On-Pack Recycling Instructions

- Include recycling or reuse instructions on consumer plastic packaging¹
- 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.



Golden Design Rules Case Study

Golden Design Rules 7 increase recycling value in rigid HDPE and PP

Basic Information

Product Packaging Name:

Ru Shi 250g fermented milk square bottle and cap

Company Name:

Bright Dairy & Food Co., Ltd;

Ru Shi 250g fermented milk square bottle and cap

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Compared with the packaging design of other brands of low-temperature dairy products, the packaging of Ru Shi 250g fermented milk used single polyolefin material and recyclable label. Raw material source of high-quality polyolefin recycled plastics.

Description of the Product's Packaging (Including Packaging Material):

Bottle & Inner cap: transparent HDPE; Outer cap: white PP; shrink label: PETG、adhesive label; Bottle 23g、inner cap 3.5g、outer cap 10g;

Status of Packaging Change and Innovation:

Started R&D since 2019, and launched this product in April 2021. It is a new packaging.

Environmental Impact of This Product Packaging:

Material and structure of this packaging are conducive to recycling and regeneration, and can be used as raw materials for PCR.



Effort Made and China Good Story:

Bottle and inner cap of Ru Shi 250g fermented milk used single HDPE material (no barrier layer、no color masterbatch) at the initial stage of development, the material can be easily recycled. By optimizing wall thickness, the bottle weight was controlled at 23g, thereby achieving weight reduction. Through continuous efforts to overcome technical difficulties, the development of packaging was successful at last, and can be recyclable. The overall packaging complies with the Golden Design Rules.



Golden Design Rules 8 reduce virgin plastic in B2B packaging

Basic Information:

Product Packaging Name:

Corn Germ Product Bulk Transportation

Company Name:

Cargill Bio-Chemical Co., Ltd.

Corn Germ Product Bulk Transportation

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

The original packaging patten of corn germ products is polypropylene woven bags. The packaging process of each bag needs human interven-tion. And after packaging, it needs to be warehoused, loaded, distributed, unloaded, and warehoused by customer. Starting from 2020, Cargill Songyuan uses high-bar truck to transport germ products in bulk, and realized automatic loading operation. This practice saved a lot in terms of time, personnel and plastic packaging materials.

Description of the Product's Packaging (Including Packaging Material):

Removed all woven polypropylene (PP) bags from corn germ products and shipped in bulk in high-bar trucks.

Status of Packaging Change and Innovation:

Germ product bulk transportation was implemented in December 2020.

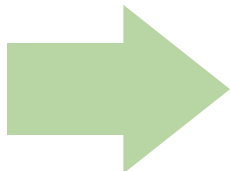
Environmental Impact of This Product Packaging:

Bulk transportation replaces all bags, reducing 327.5 tons of PP plastic per year.



before

After



Effort Made and China Good Story:

The corn germ bulk transportation project team followed the principle of energy saving and GHG emission reduction to design the scheme and determines the transportation route through in-depth communication with customers. Project implementation, site construction, and commissioning has experienced more than one year. The whole project involves the production department, the quality department, the safety department, the warehousing department, the logistics department, the sales department and customers. The project was successfully completed with the joint efforts of all departments, together with the understanding and support from customers.

In the early stage of the project, we have done a lot of work, including bulk site selection, automation intervention, etc., which not only saved labor costs and packaging materials and reduced carbon emissions, but also saved storage space and optimized logistics routes, and was recognized by customers.



Golden Design Rules 8 reduce virgin plastic in B2B packaging

Basic Information:

Product Packaging Name:

Songyuan Flexibag transportation

Company Name:

Cargill Bio-Chemical Co., Ltd.

Songyuan Flexibag transportation

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

1. Reduce the use of virgin material

The original Flexibag is 5 layers (1 layer PP + 4 layers PE). The bag is improved to 4 layers (1 layer PP + 3 layers PE) after evaluation and testing by professional technicians. The improved bag meets filling and transportation needs and reducing the use of virgin PE by 25%.

2. eliminate excess headspace

The original filling volume capacity is 82.6%. After the evaluation and verification of the strength of the packaging, and the optimization of parameters like filling rate, the volume filling capacity is increased to 100%.

Description of the Product's Packaging (Including Packaging Material):

A large number of liquid products from Songyuan plant are shipped in standard containers to destinations at home and abroad, The liquid product in the container is packaged in a large plastic bag, which is also known as a Flexibag. The Flexibag has strict load-bearing and strength requirements, so different materials of plastic materials are used for composite. The common material is a layer of polypropylene (PP) and 4 layers of polyethylene (PE). The recommended loading capacity of flexibag is 97%-103%, and the actual loading method is pumping syrup and other liquids through pipeline into the folded bag. Due to food safety and other factors, Flexibility bags are usually not recycled as food direct contact packaging materials. Material improvement:

The common material of the Flexibag is one layer of polypropylene (PP) and four layers of polyethylene (PE). In March 2020, Cargill Songyuan production, quality, commercial and purchasing teams jointly innovate with supplier and change the material to one layer of polypropylene (PP) and three layers of polyethylene (PE), reducing the weight of each flexibag by 6.3kg to 29.38kg. In September of the same year, we further optimized the outer polypropylene layer of the flexibag, reducing the thickness of this layer from 168 g/m² to 165 g /m² and hence the weight of each Flexibag by 0.17kg.

Headspace reduction:

The original volume of the Flexibag is 22m³ and the filling weight is 25 tons. After the improvement, the volume of the Flexibag is reduced to 20m³ and the filling weight is increased to 27.6 tons.

With the recent railway weight limit, 20m³ Flexibag can only fill up to 21.5 tons of products. After internal collaboration and external communication with customers, 20m³ Flexibag is changed to 16m³ Flexibag (weight is 25.54 kg), the filling weight is not changed at 21.5 tons.

The weight of 22 m³ flexibag is 29.38 kg; the weight of 20 m³ is 28.45 kg; the weight of 16 m³ is 25.54 kg.

Headspace reduction from 22 m³ to 20 m³ is from 17.35% to 0%.

Headspace reduction from 20 m³ to 16 m³ is from 20% to 0%.

Carbon Reduction Information of Product Packaging

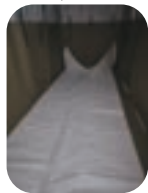
Potentials on Carbon Reduction of This Packaging Change:

B2B plastic packaging reduction. After the design change, 1 layer of PE was eliminated, the sickness of PP layer was reduced, and there is carbon reduction effect at the material end.

Environmental Impact of This Product Packaging:

Light weight, reduce 7.7 tons of PP and 40.2 tons of LLDPE plastic per year.

Preparation



Before innovation



After innovation



Effort Made and China Good Story:

Cargill biochemical co., LTD (Songyuan) continuously practice energy conservation and reduce GHG emissions, and continuously improve unit packaging ability and reduce packaging materials usage. Since the establishment of the project team in 2020, we have gradually optimized the flexibag with suitable volume and less weight to avoid wasting space and ensure the quality and safety at the same time. The project results were reached after repeated communication and evaluation among suppliers, Cargill, and customers, the following is the project progress:

1. In March 2020, the flexibag was reduced from 4 PE layers to 3 PE layers.
 2. In September 2020, the outer PP was reduced from 168 g/m² to 165 g/m²
 3. In June 2020, 20m³ flexibags were used instead of 22m³ liquid bags, and the filling weight was increased from 25 tons/bag to 27.6 tons/bag.
 4. In February 2022, a new weight limit was issued for railway transportation: maximum of 21.5 tons of liquid per container. In order to reduce waste, the Songyuan factory replaced 20m³ flexibags with 16 m³ felxibags.
- In conclusion, 7.7 tons of PP and 40.2 tons of LLDPE are saved annually.



Golden Design Rules 1 increase recycling value in PET bottles

Basic Information

Product Packaging Name:

Colgate Enzyme Whitening MouthWash Recyclable PET Bottles With Washable Labels

Company Name:

Colgate-Palmolive(China) CO., LTD

Goals of Corporate Sustainable Packaging:

- 2025 :
0% unnecessary & problematic packaging
25% recycled plastics (>50% recycled material)
1/3rd new plastic use (eliminate)
All recyclable packaging ALL categories

Targets of Corporate Carbon Reduction:

Colgate has targeted Net Zero carbon emissions across our growing business, including our own operations, suppliers and consumers. Our goal is to achieve Net Zero carbon by 2040 and 100% renewable electricity for our global operations by 2030.

Colgate Enzyme Whitening MouthWash Recyclable PET bottles with washable labels

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Full recyclable packaging with washable label

Description of the Product's Packaging (Including Packaging Material):

PP cap; PET bottle; Washable and transparent PP label.

Status of Packaging Change and Innovation:

Launched in 2021

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Compared with colored PET bottles, transparent colorless PET bottles have carbon reduction potential.
Compared with non-washable labels, washable labels can increase the value of recycling during the discarding stage, and the deduction generated by recycling can reduce the carbon footprint.

Environmental Impact of This Product Packaging:

100% PET recyclable



Effort Made and China Good Story:

The package material of this product consists of PP cap, transparent PET bottle and washable label. Because of the washable label, the PET bottle can be recycled easily.

Common pressure-sensitive labels limit the recycling of PET into rPET due to adhesive contamination. But the washable label used in Colgate Enzyme Whitening Mouthwash uses a switchable adhesive. The adhesive will stick firmly to the bottle for the life of the product until it is destroyed during the sink/float screen in the recycling unit. This feature cleanly separates the label facestock and adhesive from the PET flakes. At present, the washable label of this product has passed the "APR" recycling agreement for PET containers with plastic pressure-sensitive labels.

Colgate is now able to market a more circular and therefore more sustainable package. In addition to complying with the Association of Plastics Recyclers (APR guidelines) CleanFlake delivers excellent performance and shelf appeal while making packaging more recyclable and helping to increase the quality and volumes of recycled PET (rPET), giving a needed boost to the region’s circular plastics economy.



Golden Design Rules 1 increase recycling value in PET bottles

Basic Information

Product Packaging Name:

Colgate Luminous White Toothpaste Complete Recyclable Plastic Toothpaste Packaging

Company Name:

Colgate-Palmolive(China) CO., LTD

Goals of Corporate Sustainable Packaging:

- 2025 :
0% unnecessary & problematic packaging
25% recycled plastics (>50% recycled material)
1/3rd new plastic use (eliminate)
All recyclable packaging ALL categories

Targets of Corporate Carbon Reduction:

Colgate has targeted Net Zero carbon emissions across our growing business, including our own operations, suppliers and consumers. Our goal is to achieve Net Zero carbon by 2040 and 100% renewable electricity for our global operations by 2030.

Colgate Luminous White Toothpaste Complete recyclable plastic toothpaste packaging

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Full recyclable packaging with washable label

Description of the Product's Packaging (Including Packaging Material):

Bottle: PET; Cap: PET; Shroud: PP; Shoulder: PP; Label: BOPP label with washable adhesive; Product Size: 80mL, including packaging weight: 149g

Status of Packaging Change and Innovation:

Launched in Sep 2022

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Compared with colored PET bottles, transparent colorless PET bottles have carbon reduction potential.
Compared with non-washable labels, washable labels can increase the value of recycling during the discarding stage, and the deduction generated by recycling can reduce the carbon footprint.

Environmental Impact of This Product Packaging:

The packaging applies the Liquiglide technology and washable label that makes the PET packaging 100% recyclable and eliminates the waste of toothpaste.



Effort Made and China Good Story:

Colgate Luminous White Toothpaste combines a first-of-its-kind PET tube with Liquiglide technology, allowing Colgate to fill in a thicker toothpaste essence that flows smoothly. The product is not only full of design, but also recyclable, which is both beautiful and environmentally friendly.

Common pressure-sensitive labels limit the recycling of PET into rPET due to adhesive contamination. But the washable label used in Colgate Luminous White Toothpaste uses a switchable adhesive. The adhesive will stick firmly to the bottle for the life of the product until it is destroyed during the sink/float screen in the recycling unit. This feature cleanly separates the label facestock and adhesive from the PET flakes. At present, the washable label of this product has passed the "APR" recycling agreement for PET containers with plastic pressure-sensitive labels.

Colgate is now able to market a more circular and therefore more sustainable package. In addition to complying with the Association of Plastics Recyclers (APR guidelines) washable label delivers excellent performance and shelf appeal while making packaging more recyclable and helping to increase the quality and volumes of recycled PET (rPET), giving a needed boost to the region’s circular plastics economy.



Golden Design Rules 7 increase recycling value in rigid HDPE and PP

Basic Information:

Product Packaging Name:

Colgate Himalayan Salt Healthy Whitening Toothpaste Recyclable Toothpaste Tube

Company Name:

Colgate-Palmolive(China) CO., LTD

Goals of Corporate Sustainable Packaging:

- 2025 :
0% unnecessary & problematic packaging
25% recycled plastics (>50% recycled material)
1/3rd new plastic use (eliminate)
All recyclable packaging ALL categories

Targets of Corporate Carbon Reduction:

Colgate has targeted Net Zero carbon emissions across our growing business, including our own operations, suppliers and consumers. Our goal is to achieve Net Zero carbon by 2040 and 100% renewable electricity for our global operations by 2030.

Colgate Himalayan Salt Healthy Whitening ToothpasteRecyclable toothpaste tube

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Recyclable tube + recyclable carton + recyclable cap = 100% recyclable package material

Description of the Product's Packaging (Including Packaging Material):

HDPE tube; PP cap; Flexo printing for tube; Carton without film; EVOH/Barrier layer: EVOH; Product size: 115g/piece; 150g/piece with packaging; Color effect: white tube;

Status of Packaging Change and Innovation:

Regular products

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change :

The product packaging is a recyclable HDPE tube + a recyclable PP cap, which can increase the value of recycling during the discarding stage, and reduce the carbon footprint of the deduction generated by recycling.

Environmental Impact of This Product Packaging:

Achieved 143 tons of plastic and paper packaging materials changing from non-recyclable to 100%recyclable.



Effort Made and China Good Story:

Made for the Future: The recyclable tube! Under development for more than five years, we're so excited to bring this recyclable technology to life. Billions of toothpaste tubes end up in landfills every year. As leaders in the oral care industry, we wanted to create a recyclable alternative. With this breakthrough, we're proudly helping to build a more environmentally friendly future for generations to come. And we are sharing this technology with all other companies- we believe it's that important. Together we can make a difference!



Golden Design Rules 1 increase recycling value in PET bottles & Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information:

Product Packaging Name:

Mizone bottle

Company Name:

Danone Waters China

Goals of Corporate Sustainable Packaging:

- By 2021, all Mizone plants achieve zero waste to landfill management certification (Completed)
- By 2030, 100% of our packaging is reusable, recyclable or compostable

Targets of Corporate Carbon Reduction:

- By 2023, shift to 100% renewable electricity
- By 2023, all Mizone plants certified as carbon neutral.
- By 2025, the carbon footprint of the whole life cycle of Mizone product will be reduced by 42%

Mizone bottle

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

- Replaced the PVC labels of all products of Mizone with PETg labels, which is more environmental friendly. The PETg labels is 0.06g/cm³ lighter than PVC labels
- Committed to reduce the packaging weight of Mizone bottle and use less of other packaging materials

Description of the Product's Packaging (Including Packaging Material):

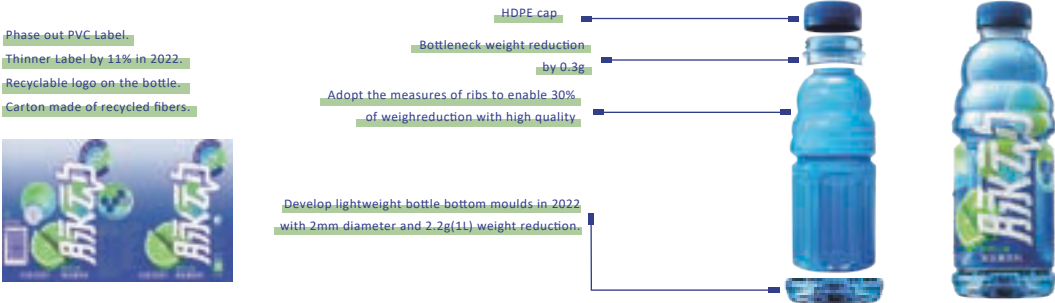
Mizone bottle is made of PET with HDPE cap and PETg label

Status of Packaging Change and Innovation:

The new packaging with PETg labels is available since 2021

Environmental Impact of This Product Packaging:

- 1)The PET bottles for new “Ling Qi” sparkling beverage is colorless and transparent while the PET bottles for Mizone is clear and light blue with L>40.
- 2)The plastic weight of Mizone bottles has been reduced by 30% since 2004 while at the same time ensuring the consumer experience. Mizone has piloted 15 smart plastic bottle recycling machines in Shanghai, Wuhan and Guangzhou to encourage consumers to join in the green recycling action.



Effort Made and China Good Story:

As a beverage manufacturer, Danone Waters China (DWC) adheres to the idea that product packaging should contribute to recycling from the designing stage. In 2021, DWC successfully replaced the PVC labels of all Mizone products with PETg labels, and obtained the recyclable design certification by CPRRA, and finally achieved the whole bottle recycle. At the same time, DWC has been actively explored the new ways to reduce the use of packaging materials. The plastic weight of Mizone bottles has been reduced by 30% since 2004. In terms of carton weight reduction, Mizone team successfully reduced the maximum diameter of 600ml bottle from 75mm to 73mm, which led to less carton usage. Other ingenious ideas include label thickness and bottleneck weigh reduction. In 2022, R&D team also worked on the "slimming" of 1L beverage bottle. With the above series of processes and raw material innovations, we have reduced packaging material usage by more than 5,000 tons in 2021 compared to 2004. In addition to this, all Mizone plants obtained the certification of Three Star TÜV Rheinland zero waste to landfill management system in 2021 which is the highest-level certification. This means over 99% of the wastes in all Mizone-manufacturing plants were fully recycled.



Golden Design Rules 1 increase recycling value in PET bottles & Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information:

Product Packaging Name: Danone Mizone “Carbon Smart” PET Bottle	Company Name: Danone Waters China
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Goals of Corporate Sustainable Packaging: ·By 2021, all Mizone plants achieve zero waste to landfill management certification (Completed) ·By 2030, 100% of our packaging is reusable, recyclable or compostable	Targets of Corporate Carbon Reduction: ·By 2023, shift to 100% renewable electricity ·By 2023, all Mizone plants certified as carbon neutral. ·By 2025, the carbon footprint of the whole life cycle of Mizone product will be reduced by 42%
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Danone Mizone “Carbon Smart” PET Bottle

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
As a new cutting-edge solution to fight against global climate change, LanzaTech’s advanced “carbon capture” technology will turn captured CO and CO₂ into MEG, which would otherwise come from virgin fossil resources.

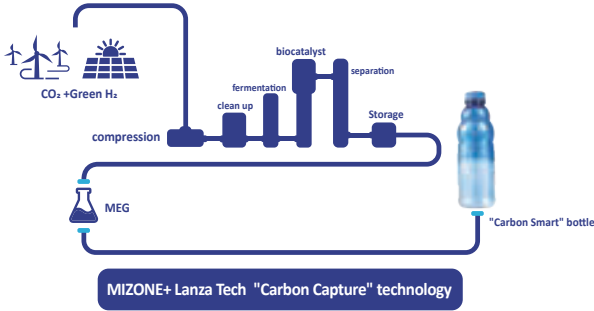
Description of the Product's Packaging (Including Packaging Material):
"Carbon Smart" bottle is made of "carbon capture" PET with a HDPE cap and adopts label-free design. The embossed text “Made From CO₂” on the bottle highlights the source of “smart carbon”. It showcases Mizone’s unyielding commitment to greener packaging as well as unceasing efforts to pursue a cleaner environment.

Status of Packaging Change and Innovation:
Mizone “carbon smart” concept bottle is launched in 2022.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:

- "Carbon Smart" bottle is label-free design and it does not contain hazardous elements such as carbon black, PVC, PVDC, EPS, PS PETG etc.
- The cutting-edge technology will capture CO and CO₂ from carbon rich gases and convert carbon emissions into MEG thanks to a living organism (bacterium). With this, the new technology avoids the multi-step pathways required to convert fossil oil into ethylene and MEG, thus reduces its carbon footprint and impact on the environment.



Effort Made and China Good Story:

On June 2nd 2022, right before the World Environment Day, Danone Waters China announced a partnership with Carbon Capture and Transformation firm LanzaTech to co-fund a pioneering solution for outputting sustainable packaging. As a new cutting-edge tool to fight against global climate change, LanzaTech’s advanced “carbon capture” technology is able to turn captured CO and CO₂ into key building block for producing “Carbon Smart” PET bottles, that would otherwise come from virgin fossil resources. With the carbon emissions reduction that ensues, it may help explore a breakthrough packaging solution for the industry, thereby contributing to China’s ambitious 30/60 carbon goals. And to inspire more consumers’ green awareness, Mizone puts much thought into the bottle design, adopting embossed text “Made From CO₂” to highlight the source of “smart carbon”. It showcases Mizone’s unyielding commitment to greener packaging as well as unceasing efforts to pursue a cleaner environment.



Golden Design Rules 8 reduce virgin plastic in B2B packaging

Basic Information:

Product Packaging Name: 4L detergent and sanitizer products bottle	Company Name: Ecolab Inc.
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Targets of Corporate Carbon Reduction: Our aim is to halve our carbon emissions by 2030 and reduce them to net-zero by 2050.
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4L detergent and sanitizer products bottle

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
The new generation 4L bottle Ecolab launched in July 2022 can reduce 20g bottle weight per piece by optimizing the wall thickness, upgrading the shape of the standing point and finally improve the physical performance to equal with the original heavy bottle.

Description of the Product's Packaging (Including Packaging Material):
4L detergent and sanitizer products; HDPE bottle, PP closure with EPE gasket;

Status of Packaging Change and Innovation:
All validations were completed within the third quarter of 2022 and followed up with the change over across all the plants in China.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
Reduce virgin plastic in B2B packaging. Reduced 20g bottle weight per piece compared with before.

Environmental Impact of This Product Packaging:
Weight Reduction, reducing 20 tons of HDPE plastic packaging materials per year.



Effort Made and China Good Story:

Ecolab commit to help our clients response to the trends and challenges of sustainability and insist on the value proposal of eROI in which index value is measured in seven indicators: safety, water saving, energy saving, improved air quality, reduction of raw materials/waste and high equipment reliability. We advocate the management concept of both economic and environmental benefits and promote low-carbon sustainable development.

Recently, the packaging experts from Shanghai RDE center keep working out new opportunities in the packaging sustainability area. The project team now has figured out the weight reduction feasibility of existing widely used 4L bottle in China market by carrying out the research on reducing packaging raw materials and chemical solid waste from the concept of green environmental protection, and successfully implement the scientific verification on lightweight packaging performance to meet the green sustainable development goals. This project has implemented in Ecolab China from the third quarter of 2022 after the positive test result in plant trial with the lightweight bottle of reducing 20g HDPE raw material usage per piece. And this lightweight and standardization project will help our clients to reduce 20000kg solid waste from the first year’s implementation. Ecolab has been always in the action to help customers reduce their carbon footprint and solid waste and contribute to sustainable development.



Golden Design Rules 8 reduce virgin plastic in B2B packaging

Basic Information:

Product Packaging Name:	Company Name:
Centrum and Caltrate shrink-wrap removal for plastic removal	Haleon

Goals of Corporate Sustainable Packaging:	Targets of Corporate Carbon Reduction:
Reduce our use of virgin petroleum-based plastics by 1/3rd by 2030. Develop solutions for all product packaging to be recyclable or reusable by 2030.	Reduce our net Scope 1 & 2 carbon emissions by 100% by 2030 Reduce our Scope 3 carbon from source to sale by 42% by 2030.

Centrum and Caltrate shrink-wrap removal for plastic removal

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
In response to the company's sustainable packaging commitment, Centrum and Caltrate are exploring plastic reduction opportunities in logistics, and gradually removing the shrink-wrap for bundling pack.
Description of the Product's Packaging (Including Packaging Material):
Bottle and cap are HDPE; carton is white cardboard; shrink-wrap is PE.
Status of Packaging Change and Innovation:
The shrink-wrap removal in Centrum and Caltrate products has been started since 2021.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
Before the change, 6 unit carton boxes were wrapped by shrink film(LDPE), 4 bundles were packed into one shipping box. After the change, 24 individual unit carton boxes are packed into one shipping box directly. The shrink-wrap has been removed, the electricity consumption of heating shrinking equipment has been reduced, carbon emission of plastics and electricity have been reduced.
Environmental Impact of This Product Packaging:
Weight Reduction. The shrink-wrap removal in Centrum and Caltrate products has been started since 2021, annual plastics reduction is about 22.5 tons in 2022.

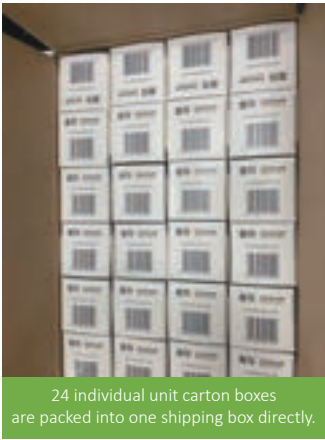
Before



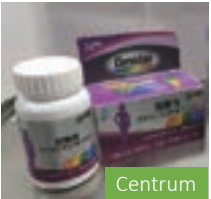
Centrum



Caltrate



24 individual unit carton boxes are packed into one shipping box directly.



Centrum



Caltrate

After

Effort Made and China Good Story:

Most of cartons in market today are grouped and packaged with shrink-wrap, with some even having shrink-wrap on individual carton. The shrink-wrap removal case of Centrum and Caltrate will reduce about 22.5 tons of plastic per year, leading the industry to be more sustainable and low-carbon.



Golden Design Rules 4 reduce plastic overwraps

Basic Information:

Product Packaging Name:	Company Name:
Silver Centrum Multivitamin tablets series products outer packaging plastic film removal	Haleon

Goals of Corporate Sustainable Packaging:	Targets of Corporate Carbon Reduction:
Reduce our use of virgin petroleum-based plastics by 1/3rd by 2030. Develop solutions for all product packaging to be recyclable or reusable by 2030.	Reduce our net Scope 1 & 2 carbon emissions by 100% by 2030 Reduce our Scope 3 carbon from source to sale by 42% by 2030.

Silver Centrum Multivitamin tablets series products outer packaging plastic film removal

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
The paperboard of Centrum Silver series have been changed to non-film white cardboard with cold foil stamping, the PET film has been removed to reduce plastics usage.
Description of the Product's Packaging (Including Packaging Material):
HDPE plastic bottles, HDPE plastic caps. Flexographic printing self-adhesive labels, offset printing cartons.
Status of Packaging Change and Innovation:
Development started in 2021, and commercialization starts from July 2022.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:
Compare with plastics film laminated metallic paper carton, cold foil metallic transfer paper carton has less plastics film consumption about 50%-80%. When we make the change, all the plastics film on the paper carton has been removed, that makes all the unit carton be recyclable, carbon emission has been reduced because of less plastics consumption and recyclable design.
Environmental Impact of This Product Packaging:
The paperboard of Centrum Silver series have been changed to non-film white cardboard with cold foil stamping, the PET film has been removed to reduce plastics usage of about 5.49 tons. From non-recyclable to 100% recyclable, achieved about 43.6 tons of recyclable paper.



laminated silver paperboard changed to cold stamping silver process

Effort Made and China Good Story:

Centrum changed the paper carton of the Centrum silver series of products from plastic film laminated cardboard to non-film white cardboard with cold foil stamping, removed the PET film to reduce the use of plastic by approximately 5.49 tons per year. Approximately annual 43.6 tons of paper will be changed to recyclable ready. The change makes plastics removal on outer paper packaging and keep the same packaging appearance. It in line with No. 4 of Gold Design Rules, reduce, replace or minimize virgin plastics usage.



Golden Design Rules 4 reduce plastic overwraps

Basic Information:

Product Packaging Name:	Company Name:
Caltrate Glucosamine & Chondroitin plus calcium tablets outer packaging plastic film removal.	Haleon

Goals of Corporate Sustainable Packaging:	Targets of Corporate Carbon Reduction:
Reduce our use of virgin petroleum-based plastics by 1/3rd by 2030.	Reduce our net Scope 1 & 2 carbon emissions by 100% by 2030
Develop solutions for all product packaging to be recyclable or reusable by 2030.	Reduce our Scope 3 carbon from source to sale by 42% by 2030.

Caltrate Glucosamine & Chondroitin plus calcium tablets outer packaging plastic film removal.

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Keep the consumer experience of product packaging remains unchanged, use the new film free transfer metallized paper technology, the PET plastic film has been removed. Plastics usage has been reduced and paper carton will be recyclable-ready.
Description of the Product's Packaging (Including Packaging Material):
HDPE plastic bottles, HDPE plastic caps. Flexographic printing self-adhesive labels, offset printing cartons.
Status of Packaging Change and Innovation:
Development has been started in 2021 and completed in Apr 2022.

Environmental Impact of This Product Packagin :

Change the material of Caltrate Glucosamine series of products cartons from silver film laminated cardboard to film free transfer metallized paper, the outer layer of PET film is removed. Reduced about 3.7 tons of PET plastic per year.
From non-recyclable to 100% recyclable, achieved about 41.7 tons of recyclable paper.



Effort Made and China Good Story:

It in line with No. 4 of Gold Design Rules, reduce, replace or minimize virgin plastics usage.

We are continually looking for opportunities to create value for our company and society in a green and sustainable way by applying film free transfer metallized paper to white cardboard of 300 gsm and above. From 2021, the Cartons of Caltrate Gold and Glucosamine series of products have been made of film free transfer metallized paper, which removes the plastic from the non-recyclable laminated silver cardboard, making the cartons fully recyclable, whilst keeping the same productivity and appearance. Each carton reduces plastic by approximately 6% of the carton weight and the whole carton will be recyclable ready. Caltrate reduces plastic by approximately 24 tons per year on film free transfer metallized technology project, making about 300 tons of paper recyclable ready and making a huge contribution to the environment and society. As a leading brand in the calcium category, Caltrate not only responds to the national call for "three reductions and three health benefits" and carries out various public welfare activities to improve the health of Chinese people's bones and overall mobility, but also explores a path of plastic reduction and recycling through its own influence in the industry.



Golden Design Rules 3 eliminate excess headspace

Basic Information:

Product Packaging Name:	Company Name:
200ml Refil pouch of Schwarzkopf and Syoss shampoo	Henkel (China) Investment Ltd.

Goals of Corporate Sustainable Packaging:
Henkel strives to reach the main targets of packaging strategy by 2025.
1)100% of our packaging to be recyclable or reusable,
2)50% reduction in the amount of virgin plastics from fossil sources in our consumer products,
3)Help prevent plastic waste from being disposed of in the environment.

200ml Refil pouch of Schwarzkopf and Syoss shampoo

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Shampoo products from Schwarzkopf and Syoss reduce headspace from 65% to 30% in 200ml refil pouch format, and reduce plastic usage.
Description of the Product's Packaging (Including Packaging Material):
200ml refil pouch for shampoo product using laminated film with reverse printing.
Status of Packaging Change and Innovation:
New design refil pouch launches on Schwarzkopf and Syoss by end of 2022.

Carbon Reduction Information of Product Packaging:

Potentials on Carbon Reduction of The Packaging Change:
Headspace was reduced from 65% to 30%. The potential carbon emission reduction was reduced due to weight reduction.
Environmental Impact of This Product Packaging:
Headspace of refil pouch has been reduced from 65% to 30% by size optimization. 4.4 tons of plastic consumption has been reduced each year.



Effort Made and China Good Story:

Compared with the bottled format, the amount of plastic consumption for shampoo refil pouch has been greatly reduced. In order to further reduce the impact on the environment, through the design optimization on the size and the upgrading of the packing equipment, the head space of the new shampoo refil pouch is reduced to 30%, and the plastic consumption is reduced by 4.4 tons per year.



Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information

Product Packaging Name:	Company Name:
Hair Coloration set from Henkel	Henkel (China) Investment Ltd.

Goals of Corporate Sustainable Packaging:
Henkel strives to reach the main targets of packaging strategy by 2025.
1)100% of our packaging to be recyclable or reusable,
2)50% reduction in the amount of virgin plastics from fossil sources in our consumer products,
3)Help prevent plastic waste from being disposed of in the environment.



Information of the Product Packaging:

Highlights of Packaging Design Change or Innovation:
Change the material of tray from PS to PP.

Description of the Product's Packaging (Including Packaging Material):
The material of paper carton is 100% recycled paper (containing 8.5% coating). Coloration set product contains coloration agent and tools which have been placed into a plastic tray. The whole product with tray will be placed into a paper carton.

Status of Packaging Change and Innovation:
New pack has been launched in China in 2022.

Carbon Reduction Information of Product Packaging:

Potentials on Carbon Reduction of This Packaging Change:
PP has lower Carbon footprint compared with PS in terms of the same weight, so there is an opportunity to reduce the carbon emission reduction effect by changing PS to PP.

Environmental Impact of This Product Packaging:
Change the material of tray from PS to PP, achieved 56 tons of plastic from non-recyclable to 100% recyclable.



Effort Made and China Good Story:

PS has been widely used with good stiffness, easy molding and good weather resistance. In order to achieve sustainability target, Henkel began to develop alternative materials of PS in 2021. Through working with suppliers, the mold design was optimized and the process parameters were adjusted. Finally, the transition of recyclable PP plastic tray was successfully implemented, and the conversion of 56 tons of non-recyclable materials to 100% recyclable materials was realized. At the same time, the material of the paper carton has also been upgraded to 100% recycled paper to further promote sustainability.



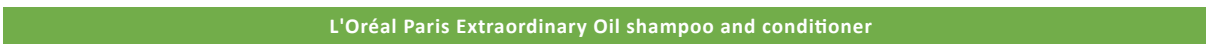
Golden Design Rule 1 Increase recycling value in PET bottles and Golden Design Rule 2 Remove problematic elements from plastic packaging

Basic Information

Product Packaging Name:	Company Name:
L'Oréal Paris Extraordinary Oil shampoo and conditioner	L'Oréal China

Goals of Corporate Sustainable Packaging:
At L’Oreal, we are committed to sustainable packaging strategy with a robust eco-design approach and a roadmap based on 3 main principles: reduce, replace and recycle.
- By 2030, we will reduce by 20% in intensity the quantity of packaging used in our products, compared to 2019.
- By 2030, 100% of the plastic used in our packaging will be either from recycled or biobased sources (we will reach 50% by 2025).
- By 2025, 100% of our plastic packaging will be refillable, reusable, recyclable or compostable.

Targets of Corporate Carbon Reduction:
- By 2025, all of our sites will achieve carbon neutrality by improving energy efficiency and using 100% renewable energy. (In 2019, China becomes L’Oréal’s first market realizing carbon neutral with operation sites covering plants, distribution centers, research & innovation center and offices.)
- By 2030, we will innovate to enable our consumers to reduce their greenhouse gas emissions resulting from the use of our products by 25% compared to 2016, on average and per finished product.
- By 2030, we will reduce by 50% on average and per finished product, the greenhouse gas emissions linked to the transport of our products, compared to 2016.
- By 2030, our strategic suppliers will reduce their direct emissions (scopes 1 and 2), by 50% in absolute terms, compared to 2016.



Information of the Product Packaging:

Highlights of Packaging Design Change or Innovation:
Packaging optimization: full plastic pump integration, 100% rPET bottle without carbon black masterbatch, the clear MDO label removing silver metal lamination.

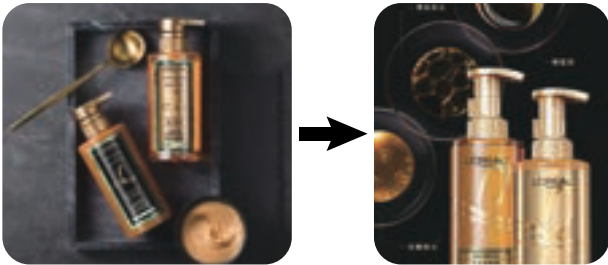
Description of the Product's Packaging (Including Packaging Material):
Light gold transparent bottle in rPET, full plastic pump, clear MDO label for shampoo.

Status of Packaging Change and Innovation:
1st generation product was launched in 2018 with 100% rPET bottle but with a traditional metal spring pump; In July 2022, L’Oréal has upgraded this hero product with a disruptive full plastic recyclable pump, carbon black free master batch in a 100% rPET bottle, making L’Oréal Paris the 1st brand to use recycable pump in the group.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
No Virgin fossil plastics: PCR PET
Good for recycling: carbon black free masterbatch for bottle and full plastic pump without any metal material

Environmental Impact of This Product Packaging:
In addition to full plastic pump integration and PCR PET / carbon black free master batch for bottle, this product has also achieved a better eco-design evaluation based on an internal LCA tool and database “SPOT”.



Effort Made and China Good Story:

The second generation of “L’Oréal Paris extraordinary oil shampoo and conditioner” | The 1st 100% recyclable plastic pump of L’Oréal Group, coupled with recycled plastic bottle, Because Our Planet is Worth it!

In response to the environmental and social emergency, L’Oréal Group launched the program of “L’Oréal for the future” in 2020. We pledge to undertake an in-depth transformation by respecting the planet boundaries and creating a more sustainable and inclusive business model.

Building on the Group’s sustainability goals, L’Oréal Paris released the 2030 brand sustainability program “Because Our Planet Is Worth It” in 2021, committed to the protection of our planet environment. Today, L’Oréal Paris is doubling down on its efforts to offer products that are sustainable on both formula and packaging design. In 2022, one of L’Oréal Paris hero products, L’Oréal Paris extraordinary oil shampoo and conditioner, have been renovated on both formulation and packaging, coupled with the 100% recyclable plastic pump (based on RecyClass Design for Recycling Guidelines),being the 1st brand of L’Oréal Group of using 100% recyclable plastic pump. This brand-new patented “sustainable pump” brings the ingenuity of being more aesthetically slender while being consumer centric. The bottle is also made of 100% PCR PET, saving around 413 tons of virgin plastics every year.



Golden Design Rules 3 eliminate excess headspace

Basic Information

Product Packaging Name:

Magic tissue mask (non fresh-mix)

Company Name:

L'Oréal China

Goals of Corporate Sustainable Packaging:

At L'Oréal, we are committed to sustainable packaging strategy with a robust eco-design approach and a roadmap based on 3 main principles: reduce, replace and recycle.

- By 2030, we will reduce by 20% in intensity the quantity of packaging used in our products, compared to 2019.
- By 2030, 100% of the plastic used in our packaging will be either from recycled or biobased sources (we will reach 50% by 2025).
- By 2025, 100% of our plastic packaging will be refillable, reusable, recyclable or compostable.

Targets of Corporate Carbon Reduction:

- By 2025, all of our sites will achieve carbon neutrality by improving energy efficiency and using 100% renewable energy. (In 2019, China becomes L'Oréal's first market realizing carbon neutral with operation sites covering plants, distribution centers, research & innovation center and offices.)
- By 2030, we will innovate to enable our consumers to reduce their greenhouse gas emissions resulting from the use of our products by 25% compared to 2016, on average and per finished product.
- By 2030, we will reduce by 50% on average and per finished product, the greenhouse gas emissions linked to the transport of our products, compared to 2016.
- By 2030, our strategic suppliers will reduce their direct emissions (scopes 1 and 2), by 50% in absolute terms, compared to 2016.

Magic tissue mask (non fresh-mix)

Information of the Product Packaging:

Highlights of Packaging Design Change or Innovation:

To minimize the excessive headspace and to mitigate the packaging waste, MG tissue mask (non fresh-mix mask) was re-designed by reducing the size of the sachet film and carton, removing the inner tissue liner and by optimizing the formula filling volume.

Description of the Product's Packaging (Including Packaging Material):

Non-woven tissue, multi-layer sachet film, FSC certified carton.

Status of Packaging Change and Innovation:

- (1) Reduction of the packaging materials (Size reduction of sachet film and carton and removal of the tissue liner)
- (2) Optimization of formula filling volume
- (3) Moving to mono-material film or paper sachet for next step renovation

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Reduce the sachet film size and filling volume to eliminate by max. 28% in terms of excessive void space* and avoid the formula waste. (*Data varies as per different tissue/formula combinations.)

Environmental Impact of This Product Packaging:

A traditional Magic tissue mask product was re-designed by reducing the size of the sachet film and carton and by optimizing the formula filling volume to minimize the excessive headspace and to mitigate the packaging waste.



Effort Made and China Good Story:

In response to the environmental and social emergency, L'Oréal Group launched the program of "L'Oréal for the future" in 2020. We pledge to undertake an in-depth transformation by respecting the planet boundaries and creating a more sustainable and inclusive business model.

As a renowned Chinese facial mask brand, Magic(MG) is positioning to lead in this specific domain. Back in 2017, the format of 162*162mm size mask product covered the majority of MG tissue mask. To further explore the market potential while making the product more sustainable, L'Oréal has investigated different sizes of tissue mask thanks to different pilot trials from industry. We managed to develop a best-fit size of 140*140mm that is able to meet the most appropriate filling volume without having any impact of production efficiency and product efficacy. At the same time, L'Oréal was committed to maintaining the same product perceived value as before, leveraging the consumer tests and efficacy evaluation. From 2018 onward, step by step, the brand has taken every action to switch these formats with this new size (140*140mm), marking a significant milestone for packaging intensity reduction, less excessive headspace and thus carbon footprint reduction.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name:

Grinding star product for Pets' tooth cleaning

Company Name:

Mars Food China

Goals of Corporate Sustainable Packaging:

Mars is innovating to make sure it is reusable, recyclable or compostable. We aim to:

- Have 100% of our packaging reusable, recyclable or compostable.
- Reduce our use of new "virgin" plastic by 25%;
- Incorporate 30% recycled content into our plastic packaging.

*based on local legislation.

Grinding star product for Pets' tooth cleaning

Information of the Product Packaging:

Highlights of Packaging Design Change or Innovation:

Mono material for Recyclable was applied for the first time in China, and a major technological breakthrough was achieved.

Description of the Product's Packaging (Including Packaging Material):

PE; LLDPE; Eight side sealed pre-bag; 11.3g;

Status of Packaging Change and Innovation:

Launched in China 2022.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:

Eliminate PET layer in Flexible packaging, and use mono PE material.

Environmental Impact of This Product Packaging:

Successful replace multilayer material with mono PE materail , which is designed for recycle.



Effort Made and China Good Story:

Mars target on 100% reusability, recyclability and compostable of plastic packaging in the world, promised to reduce the use of a large number of primary plastics, and adhered to the principle of "conducive to environmental protection and recycling", carried out targeted upgrading and iteration of product packaging, and thus made significant progress in Packaging Sustainability. After 2 years of development, we achieve using recyclable material (single polyethylene material) packaging bag as the first time in China in our grinding star product for Pets' tooth cleaning product, and a major technological breakthrough was achieved.

Golden Design Rules 8 reduce virgin plastic in B2B packaging

Basic Information

Product Packaging Name:	Company Name:
M&M’s Colorworks reuse program	Mars Wrigley China

Goals of Corporate Sustainable Packaging:

Mars is innovating to make sure it is reusable, recyclable or compostable. We aim to:

- Have 100% of our packaging reusable, recyclable or compostable.
- Reduce our use of new “virgin” plastic by 25%;
- Incorporate 30% recycled content into our plastic packaging.

*based on local legislation.

M&M’s Colorworks reuse program

Information of the Product Packaging:

Highlights of Packaging Design Change or Innovation:

This design uses the reusable display bean wall to reduce a large number of primary packaging plastics on the consumer side. And provide reusable tin packaging for consumers, and encourage consumers to reuse the tin to buy m-bean chocolate.

Description of the Product's Packaging (Including Packaging Material):

The reusable packaging model includes three parts: 5kg product packaging (PE film) + transparent PET display column in the store + consumer reusable container (paper or iron tin).

Status of Packaging Change and Innovation:

Based on th GSV calculation, this new model contributes 7.1tons of virgin plastic reduction in a rolling year. And more plastic eduction contribu- tion foretasted according to the increasing GSV.

Carbon Reduction Information of Product Packaging:

Potentials on Carbon Reduction of The Packaging Change:

Through reuse the display column in the store, reduces the virgin plastic in the Business-to-Business Plastic Packaging.

Environmental Impact of This Product Packaging:

According to the sales volume of GSV, the year-on-year decrease of 7.1 tons of B2C plastic packaging, and it has increased year by year with the increase of effort.



Effort Made and China Good Story:

Innovation of reusable packaging mode

In the end of 2021, Mars Wrigley China launched this new M&M's refill tin in 80 BESTORE, a snacking retailers in Shanghai, Guangzhou, Wuhan, Ningbo and Nanchang. We also provide cash redeem coupon to encourage consumers to reuse this packaging when they purchase M&M'S.

Golden Design Rules 5 increase recycling value in PET thermoformed trays and other PET thermoformed packaging

Basic Information

Product Packaging Name:	Company Name:
Chocolate Bowl cap weight reduction	Mars Wrigley China

Goals of Corporate Sustainable Packaging:

Mars is innovating to make sure it is reusable, recyclable or compostable. We aim to:

- Have 100% of our packaging reusable, recyclable or compostable.
- Reduce our use of new “virgin” plastic by 25%;
- Incorporate 30% recycled content into our plastic packaging.

*based on local legislation.

Chocolate Jar cap weight reduction

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Dove Chocolate bowl cap weight reduction

Description of the Product's Packaging (Including Packaging Material):

Dove Chocolate bowl cap, PET, weight 12.9g, transparent, no label, no printing.

Status of Packaging Change and Innovation:

Launched in 2021 with weight reduction.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Reduce PET virgin plastic use.

Environmental Impact of This Product Packaging:

Weight reduction, reduce 13.8% PET plastic use V.S original design.



Effort Made and China Good Story:

Growth of business cannot be separated from a healthy, green and sustainable global environment. Mars Wrigley China started the sustain- able packaging project globally in 2017, and has taken positive actions. And continuing to fulfill our commitment to environmental protection.

Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information

Product Packaging Name: Miaodiandian milk beverage	Company Name: China Mengniu Dairy Company Limited
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Goals of Corporate Sustainable Packaging:
Mengniu is committed to promoting recycled packaging materials to provide better quality products. We follow the principle of 5R (Redesign - Reduce - Reuse - Recycle - Recovery) and continue to reduce packaging waste through scientific innovation to minimize end landfills. Mengniu has pledged to develop 100% environmentally friendly packaging materials by 2025.

Targets of Corporate Carbon Reduction:
Carbon peaking in 2030 and carbon neutrality in 2050
Phase I: To control the carbon emission intensity per tonne of dairy product within 165 kgCO2e/t in 2025
Phase II: To achieve the peaking of absolute value of Scope 1 and 2 carbon emission, and control the carbon emission intensity per tonne of dairy product within 160 kgCO2e/t in 2030
Phase III: To achieve the carbon neutrality of Scope 1,2 and 3 in 2050
Among them, the key measures in packaging are: optimizing packaging materials structure; changing packaging forms; reducing excessive packaging.

Miaodiandian milk beverage

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
The label is made of PETG instead of PVC

Description of the Product's Packaging (Including Packaging Material):
HDPE bottle is sealed with aluminum plastic film, PETG cover is adopted, and HDPE cover is used to seal again (no sealing effect). Shrink sleeve.
Product specifications: 180ml; Weight: 17.5±0.5g; Color effect: overall white.

Status of Packaging Change and Innovation:
Before, PVC was used as the standard material. After a series of tests, the material was changed to PETG since November 2021.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
Using alternative materials, 2 tons of plastic were reduced.
Replacing PVC with PETG can reduce the emissions of toxic gases caused by landfill and incineration, which is more environmentally friendly; HDPE bole is a kind of pure material without adding any additives and can be 100% recycled. The density of PETG is greater than HDPE, so the bole and label can also be well separated, which is conducive to recycling.

Effort Made and China Good Story:

Miaodiandian milk beverage products were labeled as PVC before November 2021. Although PVC material has good thermal shrinkage performance and printing effect, after being discarded through incineration, burial treatment will produce dioxins and other toxic gases, bringing harm to the environment and human body. Compared with PVC, PETG has the characteristics of environmental protection, high-grade appearance, good storage and low price, which is more in line with the developementing concept of Mengniu. After combining with pure HDPE bottles, it can also be effectively separated through density difference in the recycling and separation process at the back end, helping to achieve 100% recycling of HDPE bottles. After equipment evaluation, laboratory data collection, test proofing, production line sampling, sensory evaluation and other tests, the packaging research and development team finally completed the application of replacing PVC with PETG on Miaodiandian milk beverage products, and the switch was completed in November 2021.



Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information

Product Packaging Name: Mengniu YoyiC 340/330	Company Name: China Mengniu Dairy Company Limited
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Goals of Corporate Sustainable Packaging:
Mengniu is committed to promoting recycled packaging materials to provide better quality products. We follow the principle of 5R (Redesign - Reduce - Reuse - Recycle - Recovery) and continue to reduce packaging waste through scientific innovation to minimize end landfills. Mengniu has pledged to develop 100% environmentally friendly packaging materials by 2025.

Targets of Corporate Carbon Reduction:
Carbon peaking in 2030 and carbon neutrality in 2050
Phase I: To control the carbon emission intensity per tonne of dairy product within 165 kgCO2e/t in 2025
Phase II: To achieve the peaking of absolute value of Scope 1 and 2 carbon emission, and control the carbon emission intensity per tonne of dairy product within 160 kgCO2e/t in 2030
Phase III: To achieve the carbon neutrality of Scope 1,2 and 3 in 2050
Among them, the key measures in packaging are: optimizing packaging materials structure; changing packaging forms; reducing excessive packaging.

Mengniu YoyiC 340/330

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Among Mengniu YoyiC 340/330 series products,Cover-PE material, from 3.5g- 4.5g multi-specifications unified to 3.2g; Bottle - changed from PE material 27-29g to PE and reduced to 23.4g;Label- from 45um PVC material to 45um PET.G material; The outer packaging film is added with not less than 16% recycled plastic to reduce the raw material consumption and reduce the outer packaging film thickness by more than 10%. 24 bottle PCR membrane weight 31.9g.

Description of the Product's Packaging (Including Packaging Material):
Mengniu YoyiC 340/330 series, cover material-PE, bottle material-PET, label material - PET.G, packaging film material-PCR

Status of Packaging Change and Innovation:
We started research and development in 2019, gradually switched over and officially put on the market from 2020-2021, and fully switched over in 2022.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
Adding no less than 16% recycled plastics in the outer packaging film, and reducing thickness of the outer packaging film by more than 10% and thus reducing raw material consumption.

Environmental Impact of This Product Packaging:
It is estimated that after all switching, it is expected to reduce carbon dioxide emissions by 300 tons per year, which is equivalent to the amount of carbon dioxide absorbed by 16,000 trees for photosynthesis in a year; save 1,200 tons of water resources, which can be used to shower 40,000 times; save 13 gigajoules of energy, and allow 10,000 25-watt light bulbs to be continuously lit for a year.
*The assessment is based on the April 2018 APR report on the Life Cycle Environmental Impacts of Post-Consumer Recycled Resins. The data are estimated based on the industry average of US data.



Effort Made and China Good Story:

Mengniu always takes “promising a healthier world” as the vision, and takes "producing more nutritious products, leading a better life, and protecting a more sustainable earth" as the most basic requirements and preconditions for everything we do. This project is completed by integrating industrial ecological strength of Mengniu and cooperating with plastic raw material suppliers, packaging manufacturers, recyclers and other industrial chain parties. The intermediate layer of outer packaging film is PCR resin formula from Dow Company. This formula contains 40% post-consumer recycled material and enables the recycled material content in the overall shrink film structure to reach 13%-24%, enabling the production of films with properties comparable to those of native resins. At the same time, the amount of plastic waste in the environment is reduced, and the closed-loop application of packaging recycling is realized in a real sense. 2021 Annual Blue Star Program- Sustainable Packaging Competition- Recycling Scheme Award- Gold.

Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information

Product Packaging Name :	Company Name:
SHINY MEADOW fresh milk series products	China Mengniu Dairy Company Limited

Goals of Corporate Sustainable Packaging:
Mengniu is committed to promoting recycled packaging materials to provide better quality products. We follow the principle of 5R (Redesign - Reduce - Reuse - Recycle - Recovery) and continue to reduce packaging waste through scientific innovation to minimize end landfills. Mengniu has pledged to develop 100% environmentally friendly packaging materials by 2025.

Targets of Corporate Carbon Reduction:
Carbon peaking in 2030 and carbon neutrality in 2050
Phase I: To control the carbon emission intensity per tonne of dairy product within 165 kgCO2e/t in 2025
Phase II: To achieve the peaking of absolute value of Scope 1 and 2 carbon emission, and control the carbon emission intensity per tonne of dairy product within 160 kgCO2e/t in 2030
Phase III: To achieve the carbon neutrality of Scope 1,2 and 3 in 2050
Among them, the key measures in packaging are: optimizing packaging materials structure; changing packaging forms; reducing excessive packaging.

SHINY MEADOW fresh milk series products

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
The adhesive label of SHINY MEADOW fresh milk series products was switched from aluminous BOPP to double-transparent BOPP material. The double-sided printing was removed and adjusted to single-sided printing label to reduce the area of printing ink

Description of the Product's Packaging (Including Packaging Material):
SHINY MEADOW fresh milk series: bottle cap-PE, bottle body-PET, label-double-pass BOPP, seal label-PVC, turnover box-corrugated paper. 250mLbottle, cap-3.6g, bottle body-23g.

Status of Packaging Change and Innovation:
Launched in 2019.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
The BOPP back mark is switched from aluminum-plated BOPP to transparent BOPP. The back label is changed from double layer printing to single layer printing, reducing the area of printing ink.

Environmental Impact of This Product Packaging:
The adhesive label is changed from composite material to single material, which helps reduce the scope of ink printing, reduce the complexity of recovery, and reduce the environmental pollution caused by the ink.

Effort Made and China Good Story:

SHINY MEADOW back metal effect was originally realized through aluminous BOPP, but it can only be purchased exclusively due to the particularity of the process; Therefore, on the basis of the existing back label material, a new double transparent BOPP material is added. By the way of cold stamping and hot stamping, the gilding on the double transparent BOPP can achieve the effect of front-back printing close to aluminized BOPP, so as to change the exclusive supply situation and reduce the label cost, and realize the change from composite material to single material. At the same time, the original double-sided printing back label effect is changed, the inner brush pattern is removed, and the ink printing range is reduced.



Basic Information

Product Packaging Name :	Company Name:
YoyiC 0-sucrose 100ml PP embossed bottle	China Mengniu Dairy Company Limited

Goals of Corporate Sustainable Packaging:
Mengniu is committed to promoting recycled packaging materials to provide better quality products. We follow the principle of 5R (Redesign - Reduce - Reuse - Recycle - Recovery) and continue to reduce packaging waste through scientific innovation to minimize end landfills. Mengniu has pledged to develop 100% environmentally friendly packaging materials by 2025.

Targets of Corporate Carbon Reduction:
Carbon peaking in 2030 and carbon neutrality in 2050
Phase I: To control the carbon emission intensity per tonne of dairy product within 165 kgCO2e/t in 2025
Phase II: To achieve the peaking of absolute value of Scope 1 and 2 carbon emission, and control the carbon emission intensity per tonne of dairy product within 160 kgCO2e/t in 2030
Phase III: To achieve the carbon neutrality of Scope 1,2 and 3 in 2050
Among them, the key measures in packaging are: optimizing packaging materials structure; changing packaging forms; reducing excessive packaging.

YoyiC 0-sucrose 100ml PP embossed bottle

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
The bottle materials of YoyiC 0-sucrose 100ml is changed from unrecyclable PS to easy-recyclable PP; the weight is reduced from 7g to 6g; the PETG label is removed; the product information is sculptured on bottle body in which way the plastic is reduced.

Description of the Product's Packaging (Including Packaging Material):
HPP plastic bottle; Aluminum foil cap; POF outer film; Weighted 6g.

Status of Packaging Change and Innovation:
The package change project is started from 2019. The final product is launched in market in November 2022.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
The bottle materials of YoyiC 0-sucrose 100ml is changed from unrecyclable PS to easy-recyclable PP; the weight is reduced from 7g to 6g; the PETG label is removed; the product information is sculptured on bottle body in which way the plastic is reduced.

Environmental Impact of This Product Packaging:
Replacing the PS materials, reducing weight , removing the PETG lable, reducing 70 tons of PETG plastic/paper/other packaging materials per year.



Effort Made and China Good Story:

Mengniu collaborates with upstream plastic suppliers to jointly develop high-quality renewable plastic packaging. Through many laboratory and production line tests, including the compatibility of PP material and products, the evaluation and testing of the bottle's impact resistance, compressive strength, drop resistance and other key indicators, Mengniu constantly optimates the bottle design and production process, so as to achieve packaging that meets the quality requirements of Mengniu. After many small trials, pilot trials, batch testing and continuous improvement, finally reached the same quality requirements and PS bottle, and successfully launched.



Golden Design Rules 3 eliminate excess headspace & Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name:	Company Name:
Mondelēz ChiOreo sandwich cookiena	Mondelēz China

Goals of Corporate Sustainable Packaging:
In terms of sustainable packaging, company has committed to making all packaging material design for recycle by 2025, reducing the amount of virgin plastic used in all plastic packaging by 5%.

Targets of Corporate Carbon Reduction:
Net zero emissions by 2050



Oreo sandwich cookie

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
1) Increase recycling value in flexible consumer packaging, The primary packaging film is replaced from the non-recyclable material PET/PP lamination to the single material PP/PP lamination, but still can run on the high speed packaging line
2) eliminate excess headspace, the primary pack headspace is 14.3%

Description of the Product's Packaging (Including Packaging Material):
Primary pack is pillow pack, the material is BOPP/Met CPP; Secondary pack is box, use 275gsm ;

Status of Packaging Change and Innovation:
The single material design for recycle film was successfully developed in 2021 and launched in the first quarter of 2022

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
eliminate excess headspace, change into single material lamination.

Environmental Impact of This Product Packaging:
Single material to increase recycling value. eliminate excess headspace to have weight reduction on plastic usage.

Effort Made and China Good Story:
The film laminated by single material is difficult to be applied in high-speed production line because the thermal properties between the inner and outer layers are not big gap. As a result, the current high-speed packaging line uses films laminated by multiple materials. Mondelēz R&D team worked with upstream resin suppliers, re-develop the recipe of film sealing layer through many times experiment, significant improved the film heat sealing performance, it realized the single material laminated film running on high speed packaging line. The film started apply in Oreo line in 1st quarter 2022, and will gradually apply in all high speed biscuit packaging line.



Golden Design Rules 4 reduce plastic overwraps

Basic Information

Product Packaging Name:	Company Name:
CA! cookie family pack	Mondelēz China

Goals of Corporate Sustainable Packaging:
In terms of sustainable packaging, company has committed to making all packaging material design for recycle by 2025, reducing the amount of virgin plastic used in all plastic packaging by 5%.

Targets of Corporate Carbon Reduction:
Net zero emissions by 2050

CA! cookie family pack

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Reduce plastic while improving the consumer experience by redesigning packaging structure.

Description of the Product's Packaging (Including Packaging Material):
Box: 450gsm grey board; Primary pack: PET/MET BOPP;

Status of Packaging Change and Innovation:
Already launched on 2020

Environmental Impact of This Product Packaging :

Remove the outer wrapper and plastic tray of the original family pack, and replaced by paper box with portion pack, The original design uses about 0.107g of plastic packaging per gram of biscuits, while the new design uses about 0.036g of plastic per gram of biscuits, the ratio of new design/old design plastic weight is 0.34. Weight Reduction, reducing near_500 tons of Plastic per year.



Effort Made and China Good Story:
For CA! packaging renovation project, we redesigned the original family packaging, replaced the previous outer wrapper by recyclable cartons. At the same time, in order to meet the needs of consumers, we change the inner pack from big pack to portion pack, and the plastic tray was removed, reducing the plastic. Therefore, this project has achieved 3 targets- cartons have improved shelf display, portion pack have improved consumer experience, and at the same time, it made contribution to the environment by reducing the amount of plastic.



Golden Design Rules 4 reduce plastic overwraps

Basic Information

Product Packaging Name: Nestlé RTD coffee remove the PE shrink film of tin can products, and change to carton boxes, reduce the use of virgin plastic.	Company Name: Nestlé (China) Ltd.
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Goals of Corporate Sustainable Packaging:
Nestlé’s vision continues to be that none of our packaging, including plastics, ends up in landfill or as litter. We will reduce our use of virgin plastic by 1/3 by 2025; More than 95% of our packaging will be designed for reuse or recycling, and we remain committed to the goal of 100% reusable or recyclable.

Targets of Corporate Carbon Reduction:
Nestlé has committed to halving Nestlé’s greenhouse gas(GHG) emissions by 2030 and to achieving net zero by 2050, even as its business continues to grow, and Nestlé has launched a Net Zero Roadmap in 2020.

Nestlé RTD coffee remove the PE shrink film of tin can products, and change to carton boxes, reduce the use of virgin plastic.

Information of the Product Packaging

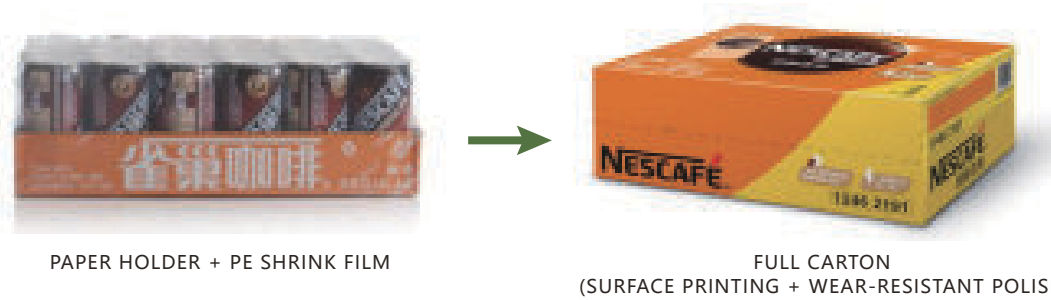
Highlights of Packaging Design Change or Innovation:
Remove PE shrink film and replaced it with full carton in order to reduce the use of virgin plastics.

Description of the Product's Packaging (Including Packaging Material):
Nestlé Ready-to-drink coffee cans used to be packaged in the form of paper holder and PE shrink film. In order to reduce the use of raw plastics, we have changed to remove PE shrink film and replaced it with full carton. Corrugated carton production process, surface printing plus wear-resistant coating treatment.

Status of Packaging Change and Innovation:
The switch has begun in April 2022.

Environmental Impact of This Product Packaging :

Reduce 252 tons of PE shrink film plastic each year.



Effort Made and China Good Story:

Since the original packaging form was paper holder +PE shrink-film packaging, removing the shrink-film of PE and replacing it with full-box packaging brings great challenges to the transportation of Nestle Ready-to-drink coffee cans. We, together with the R&D team of Nestle and the production team of OEM and carton suppliers, seek suitable wear-resistant varnish to ensure the wear-resistant performance of carton surface printing ink and adjust the friction coefficient between cartons to avoid the operation affected by the sliding in the transportation process after removing the PE shrink film. Through the unremitting efforts of the team, we pooled our ideas to find solutions to the problems found in the testing process. After several test failures, the team did not give up actively looking for solutions, and finally solved the problems and completed the trial production according to the plan until the conversion was completed.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name: Taiwan Nestlé Coffee Small strip bag	Company Name: Nestlé (China) Ltd.
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Goals of Corporate Sustainable Packaging:
Nestlé’s vision continues to be that none of our packaging, including plastics, ends up in landfill or as litter. We will reduce our use of virgin plastic by 1/3 by 2025; More than 95% of our packaging will be designed for reuse or recycling, and we remain committed to the goal of 100% reusable or recyclable.

Targets of Corporate Carbon Reduction:
Nestlé has committed to halving Nestlé’s greenhouse gas(GHG) emissions by 2030 and to achieving net zero by 2050, even as its business continues to grow, and Nestlé has launched a Net Zero Roadmap in 2020.

Taiwan Nestlé Coffee Small strip bag

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Taiwan Nestlé Coffee Small strip bag changed as design recycling packaging, the material changed from PET/PE/AL/PE to BOPP/PE/VMOPP/PE, at the same time reduce the packaging material weight.

Description of the Product's Packaging (Including Packaging Material):
Taiwan Nestlé Coffee Small strip bag 13g, material BOPP/PE/VMOPP/PE.

Status of Packaging Change and Innovation:
2022, Taiwan Nestlé Coffee Small strip bag changed as design recycling packaging.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:
The material changed from PET/PE/AL/PE to BOPP/PE/VMOPP/PE, mono material, more easily recycled. At the same time reduce the packaging material weight.

Environmental Impact of This Product Packaging:
Taiwan Nestlé Coffee Small strip bag changed as design recycling packaging, the material changed from PET/PE/AL/PE to BOPP/PE/VMOPP/PE, more easily recycled. At the same time reduce the packaging material weight, which can reduce the use of 5 tons of virgin plastic one year.



Effort Made and China Good Story:

Nestlé Taiwan coffee small strip packaging material structure PET/PE/AL/PE is a non-recyclable and reusable material. In order to achieve recyclable and reusable coffee strip packaging film, we designed the structure into recyclable and reusable materials. After many times of on-line test and full QOT experiments in the factory, we finally launched in May 2022. Nestlé Taiwan Coffee Bar packaging material is designed to be recycled packaging material, which can reduce the use of 5 tons of plastic a year.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name:

Nestlé PUIRNA PROPLAN

Company Name:

Nestlé (China) Ltd.

Goals of Corporate Sustainable Packaging:

Nestlé’s vision continues to be that none of our packaging, including plastics, ends up in landfill or as litter. We will reduce our use of virgin plastic by 1/3 by 2025; More than 95% of our packaging will be designed for reuse or recycling, and we remain committed to the goal of 100% reusable or recyclable.

Targets of Corporate Carbon Reduction:

Nestlé has committed to halving Nestlé’s greenhouse gas(GHG) emissions by 2030 and to achieving net zero by 2050, even as its business continues to grow, and Nestlé has launched a Net Zero Roadmap in 2020.

Nestlé PUIRNA PROPLAN

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Nestlé PUIRNA PROPLAN, the material change from PET/AL/PE to mono material which is designed recycling material, to increase recovery value.

Description of the Product's Packaging (Including Packaging Material):

PROPLAN 2.5kg bag product, change material to mono material: BOPP/VMOPP/PE.

Status of Packaging Change and Innovation:

At the beginning of 2022, Nestlé PUIRNA PROPLAN packaging will be gradually converted into recyclable and reusable design packaging.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:

The material changes from PET/AL/PE to mono material, which is designed recycling material, to increase recovery value.

Environmental Impact of This Product Packaging:

The material changes from PET/AL/PE to mono material, which is designed recycling material, to increase recovery value.



Effort Made and China Good Story:

In order to ensure the shelf life of food and the display effect of packaging, the composite structure of PET and aluminum foil used in packaging bags was used before, and the packaging specifications of pet food were generally too heavy, which posed a great challenge to the strength of packaging bags. In order to improve the recycling value of flexible packaging, we repeatedly evaluated and verified the feasibility plan with suppliers and factories, and finally chose VMOPP to replace the aluminum foil structure. After many times on-line packaging tests, improve the sealing temperature to ensure the sealing and sealing appearance smoothness, passed various tests such as drop tests, transportation tests, and finally successfully marketed.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name:

Qingdao Cube Condensed Milk

Company Name:

Nestlé (China) Ltd.

Goals of Corporate Sustainable Packaging:

Nestlé’s vision continues to be that none of our packaging, including plastics, ends up in landfill or as litter. We will reduce our use of virgin plastic by 1/3 by 2025; More than 95% of our packaging will be designed for reuse or recycling, and we remain committed to the goal of 100% reusable or recyclable.

Targets of Corporate Carbon Reduction:

Nestlé has committed to halving Nestlé’s greenhouse gas(GHG) emissions by 2030 and to achieving net zero by 2050, even as its business continues to grow, and Nestlé has launched a Net Zero Roadmap in 2020.

Qingdao Cube Condensed Milk

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

Nestlé Cube Condensed Milk use PE mono material, to increase recovery value.

Description of the Product's Packaging (Including Packaging Material):

Nestlé Cube Condensed Milk use 185g soft cube , PE mono material
The net weight of each tube is 185g, 6 tubes in a box, 4 boxes in each box

Status of Packaging Change and Innovation:

In order to reduce the use of plastic, the internal packaging of PET trays abolished in 2020.

In 2021, the color of the soft cube changed from dark blue to non-carbon black transparent blue.

In 2022, the material of the soft cube was changed from PE/AL/PE structure to the mono material to increase the recyclability.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of The Packaging Change:

Reduce the use of plastic, the internal packaging of PET trays abolished.

The color of the soft cube changed from dark blue to non-carbon black transparent blue.

The material of the soft cube was changed from PE/AL/PE structure to the mono material to increase the recyclability.

Environmental Impact of This Product Packaging:

In 2022, the material of the soft cube was changed from PE/AL/PE structure to the mono material to increase the recyclability.



Effort Made and China Good Story:

Previously, the main structure of condensed milk tube was PE and aluminum foil composite structure. In order to improve the recyclability of condensed milk tube, we plan to cancel the aluminum foil structure and change to a single PE structure. After technical evaluation of feasibility, it was finally decided to use high barrier EVOH coating instead of aluminum foil structure, while the EVOH content is controlled within 5%. After on-line packaging tests, finished product transportation tests and full shelf-life tests, the overall performance of the new tube is close to the previous structure. After the evaluation of production, quality and Marketing Department, the new management is considered to meet the requirements of Nestlé and agreed to start commercial production.

Golden Design Rules 4 reduce plastic overwrap

Basic Information

Product Packaging Name:	Company Name:
Zhao Ri Wei Pin Ranch yogurt Prepared Cup Collection	Shandong Lu Yuan Wei Pin Branch of New Hope Dairy Co., Ltd.

Information of the Product Packaging

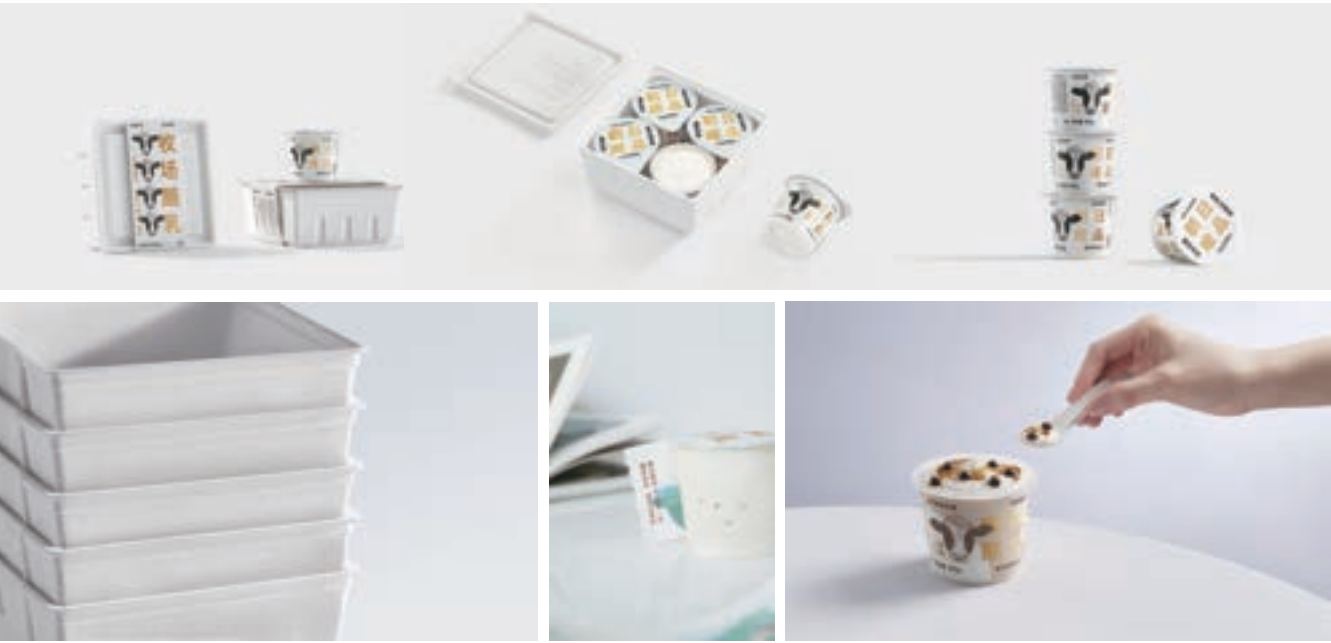
Highlights of Packaging Design Change or Innovation:
Reducing the use of lids with pre-made cup sets, plastic overwrap;
Plastic spoons replaced by biodegradable plant/paper based materials;
The yogurt cups are removable for sorting and the paper-based labels can be completely separated from the PP cups.

Description of the Product's Packaging (Including Packaging Material):
Packaging includes biodegradable plant-based box (bamboo + sugar cane), food-grade paper spoon, easy-to-remove PP paper cup with non-stick composite membrane cover piece.

Status of Packaging Change and Innovation:
Ranch yogurt was produced and launched in August 2021, and the same range of products includes other flavors such as raw coconut, cherry blossom and coffee.

Environmental Impact of This Product Packaging :

Reducing the use of plastic and increasing the recycling value of PP through the use of biodegradable plant-based alternative materials and the design of a collection and easy-to-remove label structure.



Effort Made and China Good Story:

We consider the environment as an important part of the product generation process. We adhere to the core concept of slow farming and also believe in the co-existence of human and natural cycles. We do not use excessive packaging and reduce non-biodegradable materials into the natural cycle in order to reduce the damage to the environmental balance.

Therefore, we have developed a more environmentally friendly and less polluting paper-pulp box as the outer packaging for the yogurt prepared cup collection, which also avoids the use of plastic cup lids. Using a paper spoon instead of a plastic spoon will not scratch the consumer's mouth, on the other hand, reduce the use of plastic.

As the use of plastic cups is unavoidable, we have made the printing on cardboard labels and made the design easy to remove, the cardboard labels are completely separated from the PP cups to ensure the recycling value of the transparent PP plastic cups.

We have also printed many examples of consumers creative reuse on the inside of the labels to attract more consumers to dismantle and sort the packaging after consumption and to recycle it.

Golden Design Rules 2 remove problematic elements from plastic packaging

Basic Information

Product Packaging Name:	Company Name:
Oral-B Vitality E-Brush	P&G China

Goals of Corporate Sustainable Packaging:
P&G Ambition 2030 sustainability goals- Waste Pillar:
100% of our consumer packaging will be recyclable or reusable.
We will reduce our use of virgin petroleum plastic in packaging by 50% vs a 2017 baseline.
80% e-commerce business without secondary protection from plant to consumers by 2030

Targets of Corporate Carbon Reduction:
P&G 2040 Ambition is NetZero including scope 1/2/3 By 2030, we will accelerate our pace for net zero including:
• 50% carbon footprint reduction on company total operation
• 40% Carbon footprint reduction on supply chain per unit of production

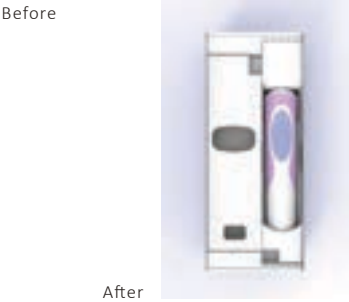
Oral-B Vitality E-Brush

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Besides Replacing the EPS with Eco-friendly paper lining materials, we also take modularized design to enable operation agility & automation feasibility and drive Go to Market Speed.

Description of the Product's Packaging (Including Packaging Material):
Carton BOX with modularized Paper Inserts. 120/110/120 gsm 3-ply F corrugated white kraft paper.

Status of Packaging Change and Innovation:
Replace EPS tray by paper packaging since June 2021



Environmental Impact of This Product Packaging :

Replace EPS by Paper carton to reduce plastic usage.

Effort Made and China Good Story:

EPS are widely used in package because they are cheap, but they are difficult for recycle. The challenge for us is find out a cost comparable solution with paper. We overcome this challenge by optimizing the structure design and achieved Cost comparable . During design the package structure, We also consider the moduliza-tion and simplification for Go to Market differentiation needs. With standard handle sleeve& tray and modeled insert to cover all package portfolio and serve for different customer needs on Go to Market speed.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

General information

Name of Packaging:	Company Name:
Air Capsule	P&G China

Goal of corporate sustainable packaging:
P&G Ambition 2030 sustainability goals - Waste Pillar:
100% of our consumer packaging will be recyclable or reusable.
We will reduce our use of virgin petroleum plastic in packaging by 50% vs a 2017 baseline.
80% e-commerce business without secondary protection from plant to consumers by 2030

Goal of carbon emission reduction:
P&G 2040 Ambition is NetZero including scope 1/2/3 By 2030, we will accelerate our pace for net zero including:
• 50% carbon footprint reduction on company total operation
• 40% Carbon footprint reduction on supply chain per unit of production

Air Capsule

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

The Air Capsule eCommerce package is developed by P&G to resolve today’s eCommerce packaging challenges in a sustainable way and own more than 12 patents filed globally.
It is a novel flexible-film package, made out of 100% recyclable mono-material, uses “air” to provide proper cushion for products during shipment without the need for an outer box or added inner dunnage layers, setting itself apart from typical corrugate boxes, bubble wrap or airbag liner solutions. As a result, it uses 40% less material than normal shippers and with an innovative tear strip, for a tamper-evident and more inclusive “scissors-free” easy-to-open experience. It is waterproof, weatherproof and has the flexibility to be adjusted to accommodate various product sizes and shapes. And like everything P&G does, the “Air Capsule” was created with the consumer in mind. Hence, every effort has been taken to provide a delightful unboxing experience.
P&G innovated a new PE film structure to replace the traditional barrier film (such as EVOH+PE or PA+PE) historically used to provide high gas barrier for extended shelf life. This new PE film uses mono materials needed for 100% recyclability. P&G achieved this by a special proprietary film that meets the requirements for the package structure and air barrier to keep package fully inflated during the last mile delivery timeframe.

1.Less Material

- Made from 100% single and recyclable material
- Eliminates need for added dunnage, inserts and tape
- Uses >40% less material by weight vs current corrugated parcel package

2.More Reliable

- Water resistance to prevent parcel damage
- Highly protective with integrated air cushions to reduce product damage
- Tamper-free opening for content integrity & to prevent product loss.

3.More Convenient

- Integrated easy-to-open tear strip, for a scissors-free opening experience
- Auto-deflate feature provides a hassle-free pack disposal after opening

4.More Efficient

- Air Capsule requires 75% less of the trucking required to transport the same amount of products vs. those packed in corrugated boxes.

Thus, this results in operational savings & reduction in CO2 emissions
Air Capsule requires 75% less warehousing space.



Description of the Product's Packaging (Including Packaging Material):
100% PE recyclable film

Status of Packaging Change and Innovation:
In addition, as part of our ongoing efforts to leverage innovation to drive positive Industry change to protect our planet, Procter & Gamble China joined the GRPG (Green Recycled Plastics Supply Chain Joint Working Group in China) with waste separation, recycling and plastic recycling enterprises. We are currently in a joint venture to carry out the collection & recycling pilot program of air capsule express packaging and other recyclable flexible plastic packages, so we can further develop China-relevant circular economy models.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
eliminate excess headspace, change into single material lamination.
Environmental Impact of This Product Packaging:
1). Less weight: use less plastic, uses >40% less material by weight vs current corrugated parcel package
2). More environment friendly: use PCR material and use Non-petroleum-based plastics



Effort Made and China Good Story:

For 185 years, P&G’s purpose has always been to improve the lives of the world’s consumers, now and for generations to come. We bring this purpose to life by providing products and services of superior quality and value. In 2020, P&G announced our Ambition 2030, which includes a commitment to achieve operational carbon neutrality for the decade. We followed up this in 2021 with our Net Zero 2040 declaration, with our commitment to achieve Net Zero GHG emissions. Part of the commitments include an objective to achieve use 100% recycled or reusable packaging by 2030. We also set a goal that by 2030, 80% of our E-Com business do not require secondary packaging. The Air Capsule, launched at the 2021 CIE (China International Import Expo) marks a significant big step towards greener E-Com packaging.

The rise of ecommerce has led to significant challenges for consumer goods companies and e-retailers on finding effective and efficient ways to protect fragile products inside last mile delivery parcels, while avoiding excessive packaging. The Air Capsule eCommerce package is developed by P&G to resolve today’s eCommerce packaging challenges in a sustainable way. With more than 12 patents filed globally. It is a novel flexible-film package, made out of 100% recyclable mono-material, uses “air” to provide proper cushion for products during shipment. As a result, it uses 40% less material than normal shippers. It is waterproof, weatherproof and has the flexibility to be adjusted to accommodate various product sizes and shapes. And like everything P&G does, the “Air Capsule” was created with the consumer in mind. Hence, every effort has been taken to provide a delightful unboxing experience.

During the Air Capsule development, P&G innovated a new PE film structure to replace the traditional barrier film (such as EVOH+PE or PA+PE) historically used to provide high gas barrier for extended shelf life. This new PE film uses mono materials needed for 100% recyclability. P&G achieved this by a special proprietary film that meets the requirements for the package structure and air barrier to keep package fully inflated during the last mile delivery timeframe.

In addition, as part of our ongoing efforts to leverage innovation to drive positive Industry change to protect our planet, Procter & Gamble China joined the GRPG (Green Recycled Plastics Supply Chain Joint Working Group in China) with waste separation, recycling and plastic recycling enterprises. We are currently in a joint venture to carry out the collection & recycling pilot program of air capsule express packaging and other recyclable flexible plastic packages, so we can further develop China-relevant circular economy models.

In addition, as part of our ongoing efforts to leverage innovation to drive positive Industry change to protect our planet, Procter & Gamble China joined the GRPG (Green Recycled Plastics Supply Chain Joint Working Group in China) with waste separation, recycling and plastic recycling enterprises. We are currently in a joint venture to carry out the collection & recycling pilot program of air capsule express packaging and other recyclable flexible plastic packages, so we can further develop China-relevant circular economy models.

The Air Capsule eCommerce package is developed by P&G to resolve today’s eCommerce packaging challenges in a sustainable way. With more than 12 patents filed globally, the Air Capsule E-Com package has several key benefits vs. traditional parcel that uses corrugated package plus plastic filler or air bags inside:



Golden Design Rules 4 reduce plastic overwraps

Basic Information

Product Packaging Name:	Company Name:
PCR Shrink Wrap For Pampers E-com Packaging	P&G China

Goals of Corporate Sustainable Packaging:
P&G Ambition 2030 sustainability goals- Waste Pillar:
100% of our consumer packaging will be recyclable or reusable.
We will reduce our use of virgin petroleum plastic in packaging by 50% vs a 2017 baseline.
80% e-commerce business without secondary protection from plant to consumers by 2030

Targets of Corporate Carbon Reduction:
P&G 2040 Ambition is NetZero including scope 1/2/3 By 2030, we will accelerate our pace for net zero including:
• 50% carbon footprint reduction on company total operation
• 40% Carbon footprint reduction on supply chain per unit of production

PCR Shrink Wrap For Pampers E-com Packaging

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
Reduce plastic waste into natural environment, reduce the carbon emission, by using 20% PCR(Post consumer recycle) PE shrink-wrap film to replace 100% virgin PE film

Description of the Product's Packaging (Including Packaging Material):
Color shipper+ hot shrink-wrap film, 50um PE transparent film

Status of Packaging Change and Innovation:
Start to using 20% PCR PE from April, 2022

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
Using 20% Post consumer recycle plastic

Environmental Impact of This Product Packaging:
Using PCR PE to replace 100% virgin plastic. Reduce Pamper hot shrink-wrap 20% virgin plastic and reduce 20% plastic into nature.

Effort Made and China Good Story:

PCR PE is well known, but the high material cost and unstable performance become a barrier for widely using. Worked with supplier, we developed one kind of low cost and good performance PCR PE shrink-wrap film, to reduce virgin plastic and reduce plastic waste into our nature. Further more, P&G is converting all color printed shipper to brown shipper in e-commerce channel. With that P&G will eliminate 100% plastic shrink wrapping film in Babycare e-commerce.



Golden Design Rules 1 It complies with Golden Design Rules

Basic Information

Product Packaging Name:	Company Name:
Pepsi Cola Label-less Pack	PepsiCo China

Goals of Corporate Sustainable Packaging:
1) Design 100% of packaging to be recyclable, compostable, biodegradable or reusable by 2025
2) Cut virgin plastic from non-renewable sources across our global beverages and convenient foods portfolio by 50% per serving by 2030.
Use of market-leading bio-based materials and increase recycled content (50% across plastics)

Targets of Corporate Carbon Reduction:
By 2040, PepsiCo plans to achieve net-zero emissions across the value chain.

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:
This product removes the primarily label, and removes the printing on cap top panel, so that two types of different plastic become single material, improving the recycling efficiency and the recycled materials quality. In addition, the secondary packaging shrink wrap of this product uses 24% recycled polyethylene material, which reduces the use of virgin plastics.

Description of the Product's Packaging (Including Packaging Material):
Pepsi Cola PET bottle, 300 ml 300ml, 18g, colorless, individual bottle is not labeled; 2.25 or 2.3g lightweight cap for carbonated beverages, HDPE unprinted screw-on cap; PE bundle printed with regulatory information and environmental promotional information, 30g, wrapping 12 bottles of individual products, shrink wrap containing 24% recycled materials (smallest unit being sold).

Status of Packaging Change and Innovation:
New pack has been launched in China in April 2022.



Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:
24% recycled polyethylene was added to the bundle packaging film

Environmental Impact of This Product Packaging:
Use recycled plastic, with 24% rHDPE.

Effort Made and China Good Story:

As one of top global leaders in Food & Beverage industry, PepsiCo has launched “PepsiCo Positive (pep+)” initiative. “pep+” is our strategic end-to-end transformation that puts sustainability and human capital at the center of how we will create value and growth. ‘pep+’ includes three pillars: positive agriculture, positive value chain and positive products.

We’re charting a new course to drive positive action for the planet and people. A better food system means better outcomes for the Earth, and all of us. By becoming better ourselves, we can help build a stronger, more sustainable future for us all. pep+ will guide our business — how we operate within planetary boundaries and inspire positive change for the planet and people. We’re evolving how we source our ingredients and make and sell our products, and how we inspire people through our brands.

The hidden efforts behind Pepsi Cola Label-less Pack:
For consumers, it may seem easy to remove the label on the bottle. But for brands, especially leading brands with huge sales networks and well-known product recognition in China, we need to double our efforts if we were to make any change. Pepsi's "label-less bottle" packaging kept the exclusive Pepsi Cola bottle shape design, with the iconic bottle curve & three-sectioned bottle shape, matched with the classic blue bottle cap, showing unique "Pepsi" branding. Primarily plastic label and ink printing are removed from the bottle body and cap respectively, Pepsi embossed trademark is added to the bottle body, and information such as product traceability and shelf life is laser-printed on bottle. Pepsi has also redesigned the secondary packaging of the products. The secondary shrink wrap packaging is made of 24% recycled polyethylene with the "Well Recycle" icon. The icon is innovatively designed based on the recyclable symbol, adding a thumbs-up gesture, and incorporating two arrows around the center of the circle on the "Hui" pattern, symbolizing that the beverage bottles can be recycled.

The product is sold as a whole pack, which meets the relevant compliance requirements of the China regulatory information. One piece of label may not be significant enough, but considering the annual consumption of beverages, the savings in packaging materials and carbon emissions behind them are huge. For PepsiCo, sustainability is not only a slogan, but also can be landed through tangible project with diligence and commitment. Pepsi's label-less packaging will undoubtedly become another sustainable pioneer in the beverage industry.



Golden Design Rules 3 eliminate excess headspace

Basic Information

Product Packaging Name:	Company Name:
Knorr 5kg chicken seasoning--pouch	Unilever (China) Co., Ltd.

- Goals of Corporate Sustainable Packaging:**
- 50% Virgin plastic reduction by 2025, including an absolute reduction of 100,000 tonnes.
 - 25% recycled plastic by 2025.
 - Collect and process more plastic than we sell by 2025.
 - 100% reusable, recyclable or compostable plastic packaging by 2025.
 - Maintain zero waste to landfill in our factories.

- Targets of Corporate Carbon Reduction:**
- Net zero emissions from all our products from sourcing to point of sale by 2039.
 - Halve greenhouse gas impact of our products across the lifecycle by 2030.
 - Zero emission in our operations by 2030.
 - Replace fossil-fuel derived carbon with renewable or recycled carbon in all our cleaning and laundry product formulations by 2030.
 - Share the carbon footprint of every product we sell.

Knorr 5kg chicken seasoning--pouch

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

To some customers who could accept big pack, we recommended 5kg knorr chicken essence Alu. Pack to replacing current 900g pack, to reduce the plastic usage per kg, and the headspace from original 24%, reduced to 20%.

Description of the Product's Packaging (Including Packaging Material):

knorr chicken essence flexible pack, structure is PET/AL/PE, AL is the barrier layer. Pack size 375×485 mm, 5kg/PC, 2 colors printing

Status of Packaging Change and Innovation:

In market in Aug 2022.

Environmental Impact of This Product Packaging :

Weight Reduction, reducing _42%_plastic packaging materials per year.
We reduced the printing colors and reduce the ink usage.

Effort Made and China Good Story:

Unilever is dedicated into achieving sustainable growth as we deliver our purpose and vision. Unilever put solid actions to fulfill its social and environmental mission, We grow our business and at the same time, we reduce the negative impact to environment, continuously play positive impact to society. As for our Knorr chicken essence Pack, we went through the propriety assessment and we run the med. Trial and mass trial in factory, continuous improvement, We successfully launch the product with the deliver of objective :reducing the plastic usage and no dilution to unilever quality standard.



Golden Design Rules 6 increase recycling value in flexible consumer packaging

Basic Information

Product Packaging Name:	Company Name:
Knorr ready-to-use sauce – Outer pouch	Unilever (China) Co., Ltd.

- Goals of Corporate Sustainable Packaging:**
- 50% Virgin plastic reduction by 2025, including an absolute reduction of 100,000 tonnes.
 - 25% recycled plastic by 2025.
 - Collect and process more plastic than we sell by 2025.
 - 100% reusable, recyclable or compostable plastic packaging by 2025.
 - Maintain zero waste to landfill in our factories.

- Targets of Corporate Carbon Reduction:**
- Net zero emissions from all our products from sourcing to point of sale by 2039.
 - Halve greenhouse gas impact of our products across the lifecycle by 2030.
 - Zero emission in our operations by 2030.
 - Replace fossil-fuel derived carbon with renewable or recycled carbon in all our cleaning and laundry product formulations by 2030.
 - Share the carbon footprint of every product we sell.

Knorr ready-to-use sauce – Outer pouch

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

To lightweight product packaging and reduce the virgin plastic usage by changing pouch packaging format from doypack to 3SS. Increasing the packaging recyclability and recycle value by adopting mono-material polyolefin packaging structure.

Description of the Product's Packaging (Including Packaging Material):

Knorr ready-to-use outer pouch packaging is made of mono polyolefin structure (BOPP/PE). No coatings/barriers or additional additives. Pouch size 170×220 mm, weight 7.7g/piece, colorful printing.

Status of Packaging Change and Innovation:

Launched in Aug 2022. The new packaging is now available on market.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Lightweight product packaging by optimize size and pack format, also reduce the carbon emission from material processing, fit the trend of packaging lightweight.

Environmental Impact of This Product Packaging:

Lightweight packaging by pack format optimization, reduced 15% of its packaging weight, and contributed to a reduction of 15% of virgin plastic usage per year.

Mono polyolefin structure boosts packaging recyclability and increases it's value for recycling.



Effort Made and China Good Story:

Unilever is dedicated into achieving sustainable growth as we deliver our purpose and vision. Unilever put solid actions to fulfill its social and environmental mission, to be the global sustainable leader. As for our Knorr ready-to-use series packaging, we went through a thorough and multi-dimensional assessment for its functionality, authenticity, and its user experience. And finalized our lightweight packaging design by pack format optimization. This approach helps reduce 15% of packaging weight and virgin plastic consumption. We are reducing environmental impact and caring for our planet while delivering delicious foods for our consumers.



Golden Design Rules 7 increase recycling value in rigid HDPE and PP

Basic Information

Product Packaging Name:

OMO laundry detergent PCR bottle

Company Name:

Unilever (China) Co., Ltd.

Goals of Corporate Sustainable Packaging:

- 50% Virgin plastic reduction by 2025, including an absolute reduction of 100,000 tonnes.
- 25% recycled plastic by 2025.
- Collect and process more plastic than we sell by 2025.
- 100% reusable, recyclable or compostable plastic packaging by 2025.
- Maintain zero waste to landfill in our factories.

Targets of Corporate Carbon Reduction:

- Net zero emissions from all our products from sourcing to point of sale by 2039.
- Halve greenhouse gas impact of our products across the lifecycle by 2030.
- Zero emission in our operations by 2030.
- Replace fossil-fuel derived carbon with renewable or recycled carbon in all our cleaning and laundry product formulations by 2030.
- Share the carbon footprint of every product we sell.

OMO laundry detergent PCR bottle

Information of the Product Packaging

Highlights of Packaging Design Change or Innovation:

OMO laundry detergent bottle contains recycled plastics, which reduced the virgin plastic and carbon footprint.

Description of the Product's Packaging (Including Packaging Material):

OMO laundry detergent bottle is HDPE bottle, with PP spout and PET transparent cap.

Status of Packaging Change and Innovation:

We started the development since 2019, and implemented it in Aug 2020.

Carbon Reduction Information of Product Packaging

Potentials on Carbon Reduction of This Packaging Change:

Apply 50% rHDPE in To C HPC packaging and reduced the virgin plastic usage.

Describe the quantitative contribution to carbon emission reduction of the above checked item:

The carbon footprint of product packaging before the implementation of this innovation is 0.1967 kg CO₂ equivalent. The packaging design changes have resulted in a reduction of 0.0514 kg CO₂ equivalent per product package item, and the carbon footprint of this package has been reduced by 25% compared to the previous one. Reduced 1028 tons of CO₂ equivalent per year. Equivalent to planting 46000 trees (a tree absorbs about 22kg of carbon dioxide a year)

Report Source/Name:

LCA Committee

Calculation method description:

Based on ISO14067, with "cradle to gate" as its system boundary, this CFP includes raw material acquisition, virgin HDPE pellet manufacturing, recycled HDPE pellet manufacturing, and bottle blowing processes.

Database name:

China CLCD, Switzerland Ecoinvent 3.5

Showcase channel for public access:

Please scan the QR code to view the carbon footprint information of Unilever OMO laundry detergent PCR bottle.

Environmental Impact of This Product Packaging:

Use recycled plastic, 50% rHDPE inclusion



Effort Made and China Good Story:

"Making sustainable living commonplace" is Unilever's mission . We are committed to leading the sustainable business worldwide. Unilever worked with the recyclers and jointly developed the recycled plastic with high quality. Via many lab testings, including the compatibility test, compression strength of the bottles, drop impact resistance, etc., together with the modification of the blowing machine as well as the blowing process adjustment, we continuously optimize the process of the recycled plastic production in order to meet Unilever quality standard. Through the small sampling, pilot trial and final large-scale trials we consistently made efforts to improve the recycled plastic quality, finally achieved the same quality as the bottles made of the virgin plastic and successfully implemented.



Thanks

Thanks for the representatives and professionals of CGF member companies who submitted cases.

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