CARBON FOOTPRINT

opens a new chapter in DECARBONISATION

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Green & Low Carbon Targets

Green material product development, assistant brand growth

- The Innovation Centre continues to develop recyclable materials, biodegradable materials, apple leather, pineapple leather, recyclable PU leather and other low-carbon and environmentally friendly materials, combined with the latest technology and fashionable elements to create 100% original product designs to enhance the competitiveness of our clients' brands in the market and help their economic benefits.

Actively engaging suppliers in low carbon initiatives

- C&T actively collaborates with suppliers to create a green supply chain.
- Encourage and guide suppliers to develop energy saving and emission reduction plans.
- Actively promote strategic cooperation to jointly develop new environmentally friendly materials, processes and products.

Full carbon verification and carbon footprint certification

- Companies carry out carbon footprint certification of their own R&D products and obtain relevant carbon footprint certificates

Active promotion of circular packaging

- C&T has undertaken a comprehensive review of the use of disposable packaging at each production site to reduce the use of disposable cartons, wooden boxes, inner pallets and other packaging materials. The current production lines are all using recyclable packaging to transfer products and reduce the number of times non-environmentally friendly materials are used.

- At the same time, the storage locations of materials in the warehouse have been re-planned to reduce the impact of non-environmental factors in the transportation of materials.

The current state of global green and low carbon development

- With extreme weather, melting glaciers, plastic pollution, and a significant increase in waste emissions, the environmental issues surrounding global warming have become increasingly prominent, endangering not only the balance of natural ecosystems but also human health and even threatening the future survival of humanity.
- The signing of the Paris Agreement in 2015 opened a new phase in the global response to climate change.
- In order to reduce the cost of emission reduction, the EU launched the EU Carbon Emissions Trading System in 2005, which became the earliest and most mature carbon trading mechanism in the world. Since then, the carbon trading mechanism has been adopted by many countries and regions due to its high flexibility and effectiveness in reducing emission costs.
- On the morning of 25 April 2023 (European time in Luxembourg), the Council of the European Union voted to adopt the Carbon Border Adjustment Mechanism (CBAM).
- The Carbon Border Adjustment Mechanism (CBAM) will be launched in October 2023, implemented in 2026, and fully operational in 2034 (with a transitional period from October 1, 2023 to December 31, 2025 for the first sectors, including cement, steel, electricity, aluminum, and fertilisers). During this period, these industries will only be subject to a reporting obligation, i.e., they will be required to submit annual data on the carbon emissions implicit in imported products without paying a fee for this purpose. In the same period, the EU ETS is also phasing out its free allowance scheme, and the sectors covered should reduce their greenhouse gas emissions by 62% by 2030 compared to 2005.

What is Carbon Footprint?

A Carbon Footprint is a collection of greenhouse gas emissions from a business, activity, product or individual through transport, food production and consumption, and various production processes.It represents the "carbon consumption" of a person or group. " The more "carbon dioxide", the main cause of global warming, is also produced. The larger the "carbon footprint", the smaller the "carbon footprint".

The greenhouse gases currently referred to are mainly the six greenhouse gases that are required to be reduced under the Kyoto Protocol.

CO2 : carbon dioxide (GWP = 1)
CH4 : Methane (GWP = 25)
N2O : Nitrous Oxide (GWP = 298)
HFC : Hidro Fluoro Carbon (GWP = 124- 14800)
SF6 : Sulphur Hexafluoride (GWP=22800)
PFC`s : Ozone Depleting Substances (GWP = 7390 - 12200)

Types of Product Carbon Footprint

As many countries or organisations have developed and introduced carbon footprint standards for different system levels, there are currently many different types of carbon footprint standards. Firstly, there are three levels of carbon footprint standards based on the level of the system being assessed.

1 National, sectoral or geographical level

The main international standards are the IPCC Guidelines for National Greenhouse Gas Inventories (IPCC, 2006) and the ICLEI Guidelines for Municipal Greenhouse Gas Inventories (ICLEI, 2009).

2 Corporate, organisational activity level

Mainly the GHG Protocol Corporate Accounting and Reporting Standard (WRI, WBCSD, 2004) and the ISO 14064 Standard Series (ISO, 2006);

3 At the product level

There are three main international standards: PAS2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services (BSI., 2011), GHGP rotocol (WRI, WBCSD, 2011) and ISO14067 Requirements and Guidance for Quantifying and Communicating the Carbon Footprint of Products Technical Specification (ISO,2013)

Methods of calculating the carbon footprint

The Life Cycle Assessment (LCA)

The LCA method is a bottom-up calculation method that calculates the entire process of collecting a product and its raw materials, through to the production, transport, sale, use, reuse, maintenance and final disposal of the product in a more detailed and accurate way.

It first identifies and quantifies the consumption of energy, substances, and environmental releases throughout the life cycle stages, then evaluates the environmental impacts of these consumptions and releases, and finally identifies and evaluates opportunities to reduce these impacts.

Input-output (IO)

The input-output method is a top-down calculation method that uses inputs and outputs for calculations that are not precise.

Integrated Professional Competence Course (IPCC)

The IPCC carbon emissions method is a greenhouse gas inventory guide prepared by the United Nations Committee on Climate Change, which takes full account of greenhouse gas emissions in its calculations.

Kaya carbon constancy equation

The Kaya carbon equation relates economic, policy and demographic factors to the CO2 produced by human activity through a simple mathematical formula.

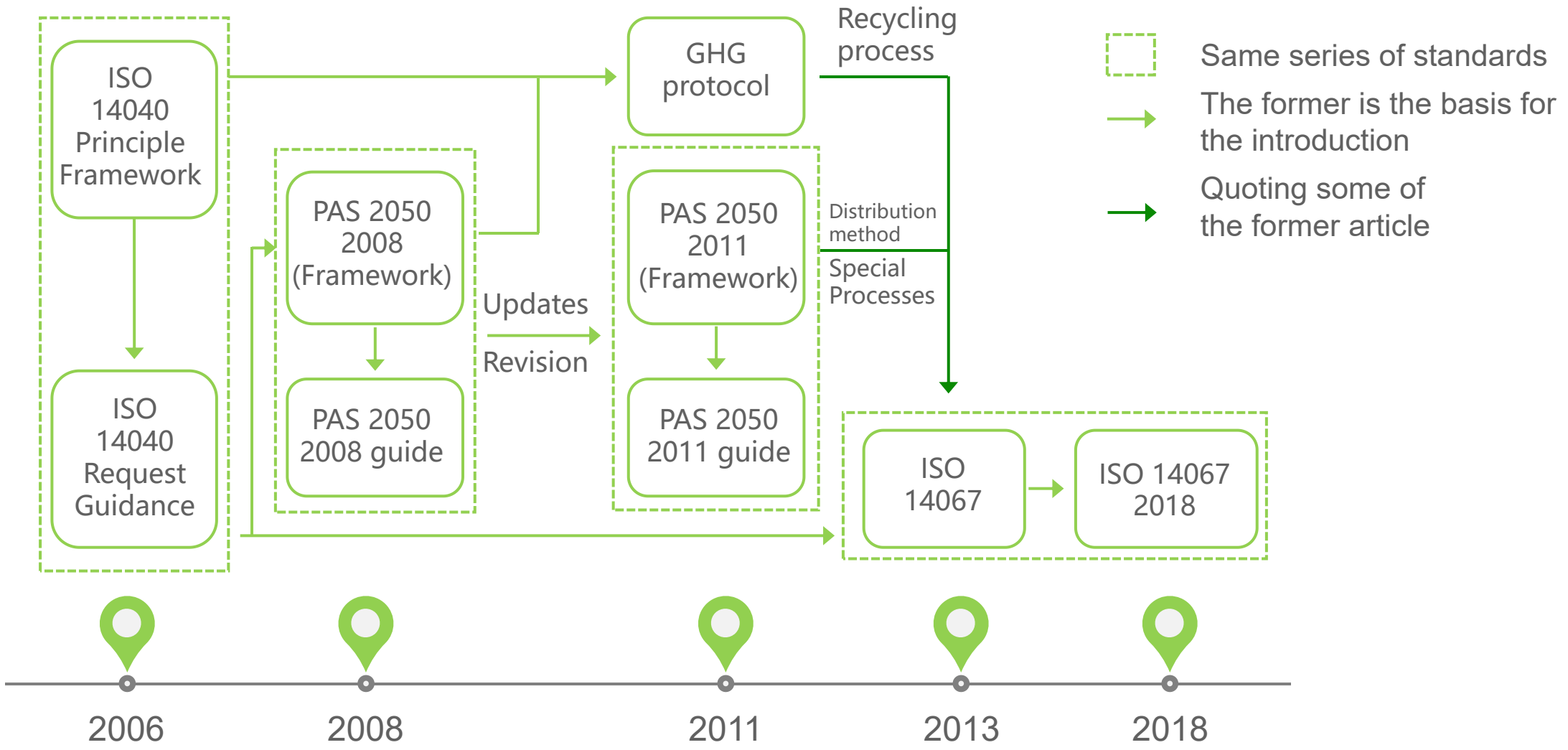
Four carbon footprint calculations are available, depending on the purpose of the business and how it goes about using it. A top-down calculation like this on a world map and a map provided by the US State Department calculates the carbon footprint per capita, as well as the total emissions for each country (or other senior workforce, organisation, etc.) and allows for the separation of individual resident emissions from the group. A bottom-up calculation would be like the example given above with your car's carbon footprint, summarising the carbon emissions attributed to individual individual actions.

iPhone 14 Pro
life cycle carbon emissions

81% Production
3% Transport
15% Use
<1% End-of-life processing

History of the development of international standards for product carbon footprint

Life Cycle Assessment Standards **Product Carbon Footprint Accounting Standards**



International standards for product carbon footprints
Currently, there are three international standards that are recognized and relatively widely used around the world

ISO 14067

INTERNATIONAL STANDARD **ISO 14067**

First edition
2018-08

Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

Gaz à effet de serre — Empreinte carbone des produits — Exigences et lignes directrices pour la quantification

ISO

Reference number
ISO 14067:2018(E)

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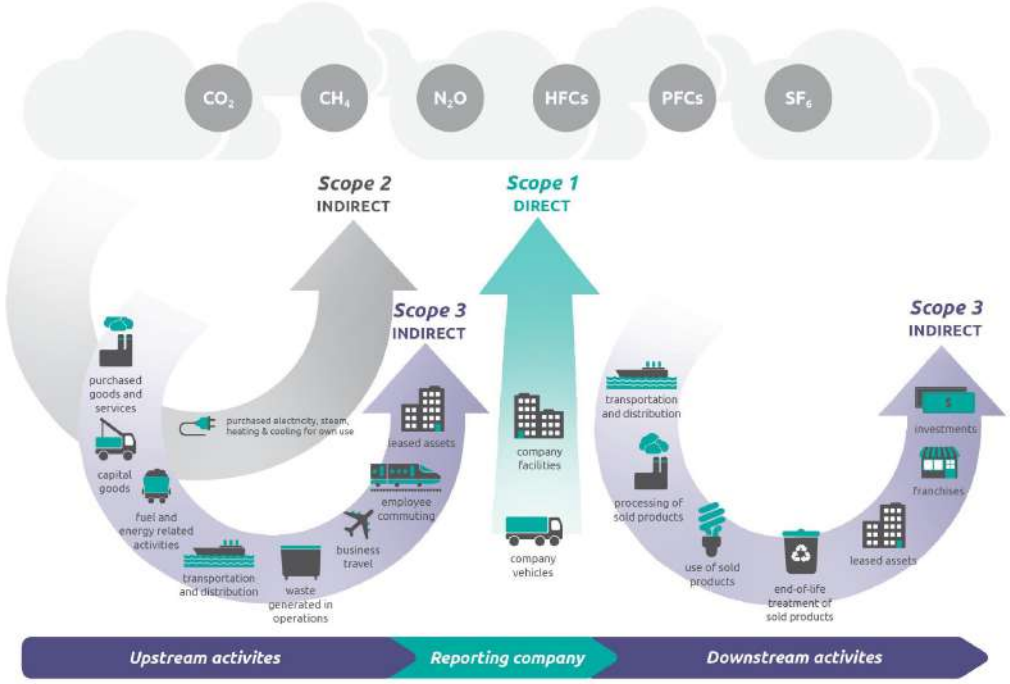
GHG Protocol

Figure [1.1] Overview of GHG Protocol scopes and emissions across the value chain



PAS 2050

PUBLICLY AVAILABLE SPECIFICATION

PAS 2050:2008

Specification for the assessment of the life cycle greenhouse gas emissions of goods and services

ISO 14067, developed by the International Organisation for Standardization (ISO) from the PAS 2050 standard, has the simpler and more intuitive name of 'Product Carbon Footprint'. It is considered to be a more general standard and its official version was published in 2013.
In ISO 14067, a product carbon footprint is defined as the sum of emissions and removals of greenhouse gases from a product system, based on a life cycle approach assessment, expressed in terms of carbon dioxide equivalent (CO_2eq).
ISO 14067 specifies that the research objectives must state the reason for conducting the research, the intended application and the audience (Soodeeta1.,2013).
After the publication of ISO 14067, other standards related to the carbon footprint of products will be discontinued or amended in accordance with this international standard.

GHGProtocol is a joint effort between two organisations (WRI and WBCSD) and was published in October 2011 as an open standard for the public.
The GHGProtocol standard is based on the Life Cycle Assessment Standard (ISO 14044) and is designed to help companies and organisations to develop carbon reduction strategies for product design, manufacture, sales, purchase and consumption.
The GHGProtocol standard was drafted in 2010 and has been tried and tested by 60 companies and is considered to be the most detailed and clear in terms of its provisions, requirements and guidance on carbon footprinting.

PAS2050,PAS2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services, its accompanying guidance standard PASguide, "GuidetPAS2050:2011: How to Account for Product Carbon Footprint, Identify Hot Spot and Reduce Supply Chain Emission".
PAS2050 is the world's first standard for accounting for a product's carbon footprint, providing a consistent way for companies to assess greenhouse gas emissions over the life cycle of a product (Sinden, 2009). The first version of the standard was produced by the British Standards Institution (BSI) and published on 29 October 2008. The original sponsors of the standard were the Department for Environment Food and Rural Affairs (Defra) and the Carbon Trust, two organisations that jointly initiated the standard.
The standard is used to account for and assess the greenhouse gas emissions of products and services throughout their full life-cycle, which refers to the entire process of collecting raw materials, processing and producing products, distributing and selling them in the market, using them by consumers and disposing of them after they have been disposed of. In 2011, a revised version of PAS 2050 was introduced, which is more relevant and applicable to a wider range of organisations than the first version in 2008.

What is carbon labelling?

Carbon Labelling is a way to mitigate climate change, reduce Greenhouse Gases (GHG) emissions and promote low-carbon emission technologies by indicating the amount of carbon dioxide consumed in the process of purchasing, transporting, producing and selling products. The carbon labelling is a quantifiable index of the carbon footprint of a product. A carbon labelling is a quantitative label of the carbon footprint of a product.

The significance of product carbon labelling is to reduce greenhouse gas emissions and mitigate climate change by guiding purchasers and consumers to choose products with a lower carbon footprint.

On the other hand, carbon labelling encourages consumers and producers to support a way of protecting the environment and the climate, depending more on the social ethics and sense of responsibility of consumers and producers.
The implementation of carbon labelling requires the approval of the greenhouse gas emissions resulting from the production process, which will impose additional costs on manufacturers and consumers will have to bear part of the price increase as a result.

Current developments in carbon footprint evaluation

working with the Carbon Trust

850g CO2

per wash

U.K.

France

Japan

China

Korea

Canada

Swiss

Why carbon labelling?

1. Advocating green concept and leading new consumer fashion

As people become increasingly concerned about climate change, there is a growing interest in and demand for 'carbon labelling' of consumer products. A survey by the Carbon Trust, one of the world's first consultants to introduce carbon labelling, **showed that two-thirds of the 10,000 consumers surveyed in Europe were in favour of labelling products with a carbon label.**

2. Satisfying consumers and enhancing the economic benefits of the brand

For companies, consumers will choose consumption patterns that are more beneficial to the environment.
It helps to promote the competitive strength of the brand's products, enhance the image of the company as a socially responsible company and improve the economic benefits of the brand.

Carbon Footprint Products

In the report, the life cycle of product is divided into five stages: the raw material acquisitive stage; the processing stage; the transport stage; the use stage; waste and recycle stage.
The model of carbon emission is established according to the consumption and emission of various substances in the life.

cycle of product, which shown in Figure 3.

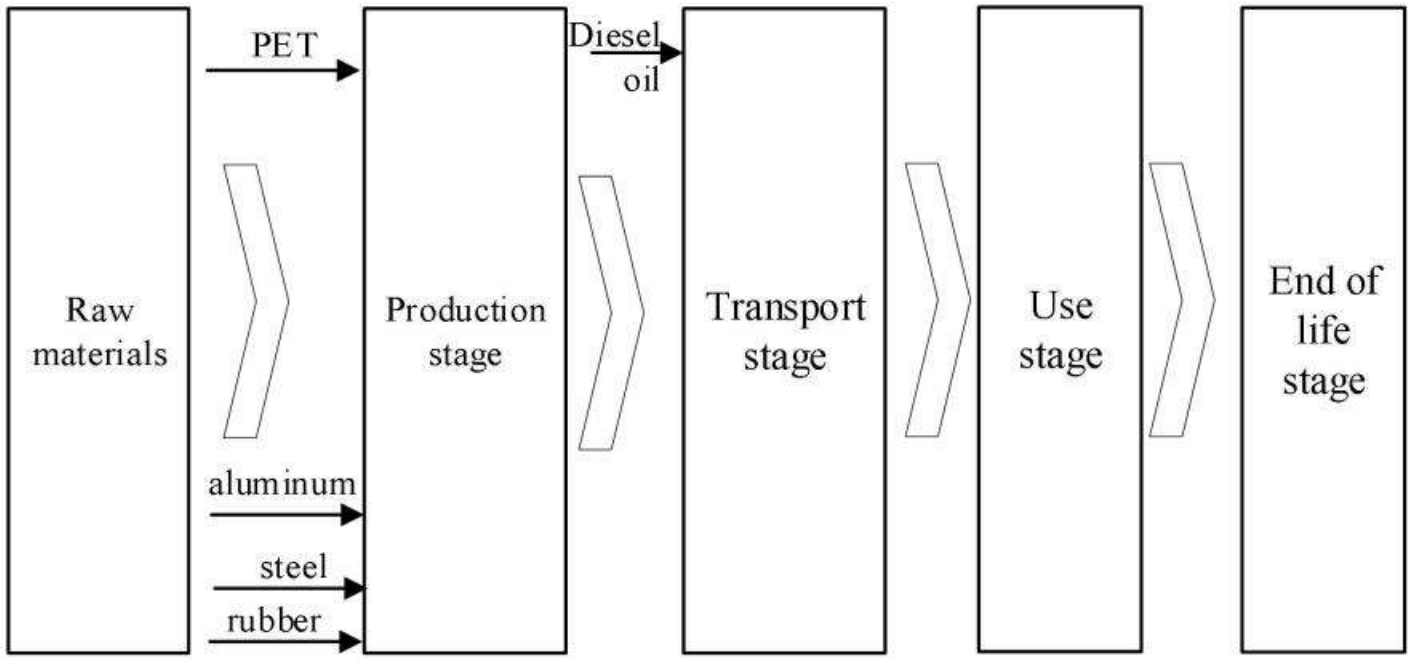
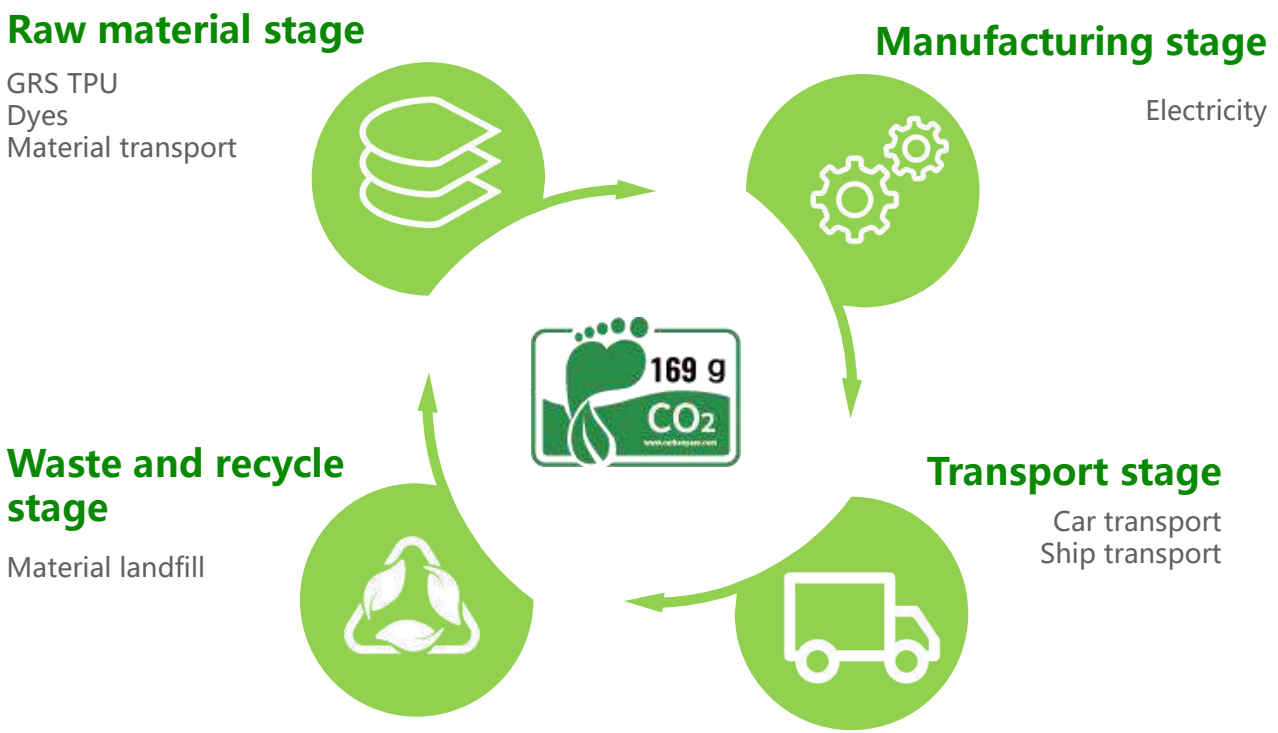


Figure 3 The system boundary of product

Table 8 The life cycle stage PCF results of recycled TPU phone shell

Stage	Value	Unit
Raw material stage	0.012	kg CO_2 eq
Manufacturing stage	0.131	kg CO_2 eq
Packaging stage	0.000	kg CO_2 eq
Transport stage	0.005	kg CO_2 eq
waste and recycle stage	0.022	kg CO_2 eq
total	0.169	kg CO_2 eq



Global Recycled Standard

GRS TPU

Ingredients: Recyclable waste PC material

Environmentally friendly ratio:
Up to 50%

Global Recycled Standard

169 g CO_2

Transparent phone case

Material: Hybrid transparent phone case

Model: iPhone15

Highlights: Anti-yellow, High quality-95%IR transmission


102TU004779


102TU004780


102TU004781


102TU004782


102TU004783


102TU004784

Transparent phone case

Material: Hybrid transparent phone case

Model: iPhone14/15 serise

Highlights: **PC+TPU,** anti-yellow, high quality

Global Recycled Standard

GRS TPU

Ingredients: Recyclable waste PC material

Environmentally friendly ratio:
Up to 50%

Recycled TPU case with

Global Recycled Standard

169 g CO_2

100% RECYCLED TPU CASE / +Silicone Logo Patch

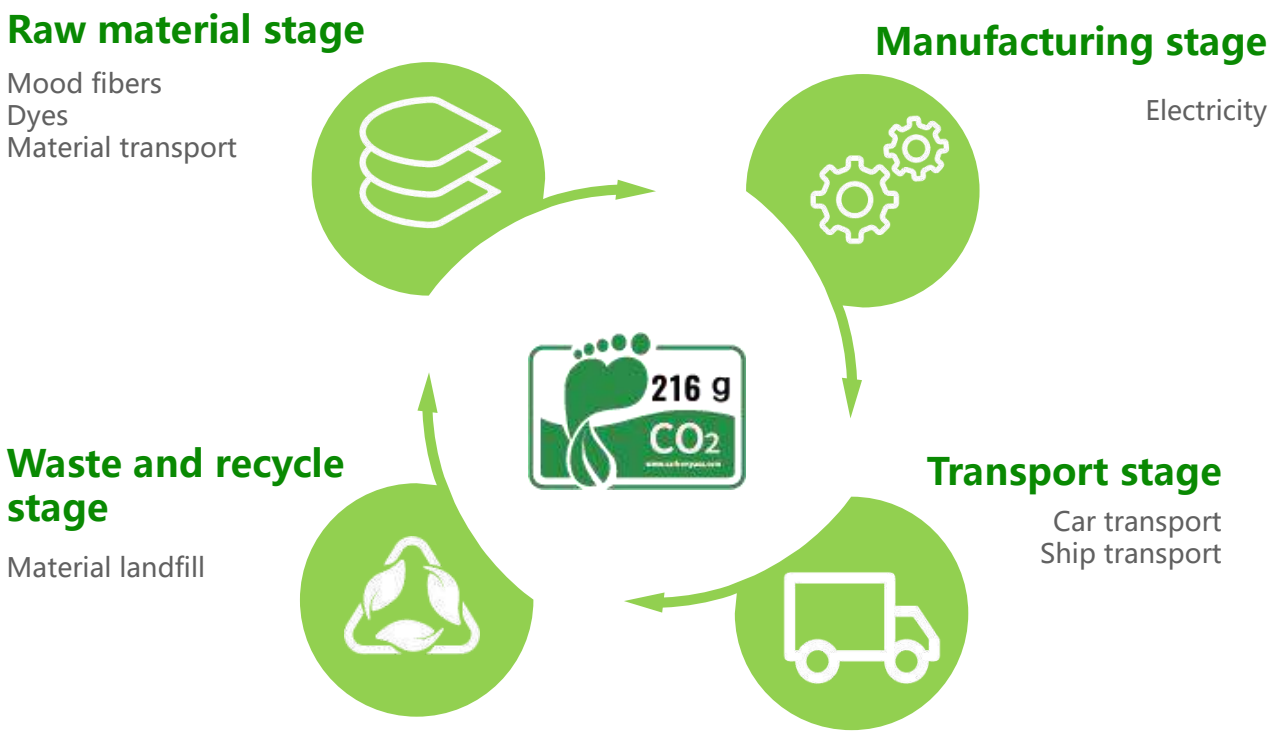
Material: 100% Recycled TPU

Model: iPhone15

Highlights: ①Eco-friendly material, reduce the use of new plastic.
②Matt finished, anti-fingerprint.

Table 8 The life cycle stage PCF results of mobile phone shell

Stage	Value	Unit
Raw material stage	0.016	kg CO_2 eq
Manufacturing stage	0.172	kg CO_2 eq
Packaging stage	0	kg CO_2 eq
Transport stage	0.005	kg CO_2 eq
waste and recycle stage	0.023	kg CO_2 eq
total	0.216	kg CO_2 eq



compostable

216 g CO_2

BIODEGRABLE PHONE CASE

Features: Under industrial composting conditions, it can be completely decomposed into water and carbon dioxide, safe and harmless.

Environmental Products Recommendation

Pineapple Hemp Leather

Ingredients: Pineapple root and leaves
Eco-friendly ratio: Up to 40%
Features: Breathable, moisture absorbent, naturally antibacterial Water and energy saving, biodegradable.

Apple Peel

Ingredients: Apple pomace and apple peel
Environmentally friendly percentage: Up to 66%
Features: Almost indistinguishable from classic leather.
It is slightly lighter, softer and finer, and less prone to aging.

Bio-based Leather (Corn)

Ingredients: Bio-based corn + PU Bio-based corn + PU
Environmentally friendly ratio: 50%-80%
Features: Light and breathable, soft and delicate, more durable and wearable.

Coffee grounds

Ingredients: 10% coffee grounds + 90% recyclable particles
Environmentally friendly ratio: Up to 100%
Features: Injectable molding, coffee scent, sturdy and durable, light and wearable.

GRS Silicone

Ingredients: Recyclable waste silicone material
Environmentally friendly ratio: Up to 100%
Features: Green and highly safe. Skin-friendly handfeel, highly elastic and drop-resistant.

Biodegradable Material

Ingredients: PLA+PBAT+Plant fiber
Environmentally friendly ratio: Up to 100%
Features: Under industrial composting conditions, it can be completely decomposed into water and carbon dioxide, safe and harmless.

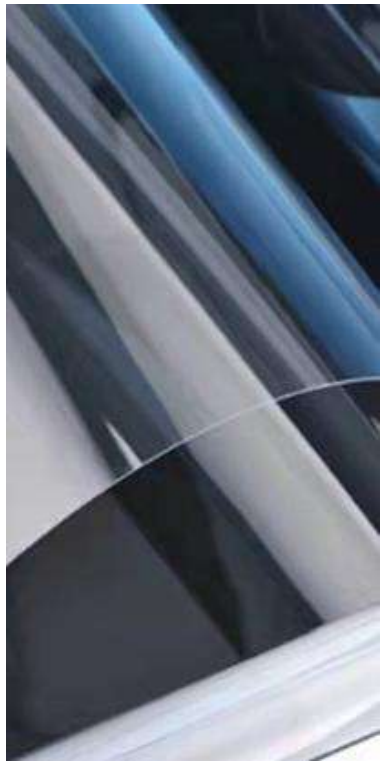
Existing GRS-certified material - Plastic

100% Recycled TPU

100% Recycled PC

100% Recycled PP

100% Recycled ABS



30%-100% RPET sheet

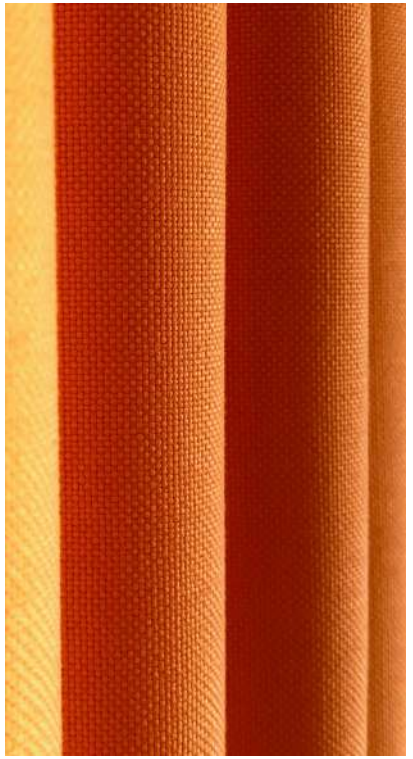
20%-30% TPU film

Existing GRS-certified material - Fabric/leather

30%-70%
Recycled leather

51%-75%
Recycled Genuine leather

100%
Recycled sequin fabric



100%
Recycled RPET

30%-50%
Recycled microfiber

40% -80%
Bio-based leather

GRS Silicone

Ingredients: Recyclable waste silicone material
Environmentally friendly ratio: Up to 100%


102GJ000673


102GJ000673


102GJ000673


102GJ000673


102GJ000673

Ultra-thin liquid silicone case

Material: Liquid Silicone+PC

Model: iPhone15

Highlights: ①Ultra-thin and light: the total thickness is about 1.3MM, the weight is about 20g.
②Without mircofiber inside: 40% faster heat dissipation.
③Anti-fingerprint and anti-dirty: not easy to be contaminated with fingerprints and dust, easy to clean.

Coffee ground recycled TPU case

Material: Recycled TPU+coffee ground

Model: iPhone15

Highlights: ①Made of Recycled TPU and coffee ground material, 100% sustainable material.

② With coffee smell.

102SY000012

102SY000011

102SY000015

102SY000013

Space-3 in 1 IMD phone case

Material: TPU+PET+TPE+magnet

Model: iPhone15

Highlights: ①With vivid colors and with not-faded printing.

②Can make many different kinds of printing technology.

③TPE at the bumper with anti-shock funtion.

④With insert Magsafe funtion, cannot touch.

3 in 1 IMD phone case

Material: TPU+PET+TPE+Magnet

Model: iPhone15

Highlights: ①With vivid colors and with not-faded printing, with glitter makes it catch eyes.

②Can make many different kinds of printing technology.

③TPE at the bumper with anti-shock funtion.

④With Magsafe funtion.


102IM002919


102IM002920


102IM002925


102IM002922

102IM002921

Double layers IMD phone case

Material: TPU+PET+magnet

Model: iPhone15

Highlights: ①With vivid colors and with not-faded printing.

②Can make many different kinds of printing technology.

③With Magsafe funtion.

102IM002904

102IM002905

102IM002906

102IM002907

102IM002908

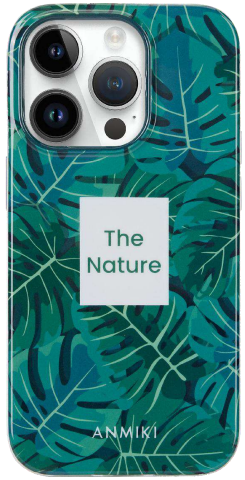
102IM002909

102IM002910

102IM002911

102IM002889

102IM002890



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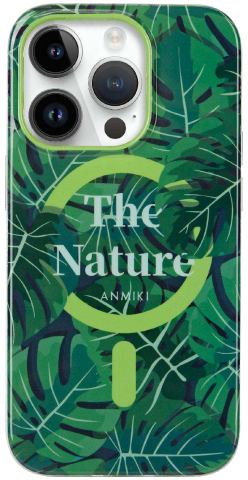

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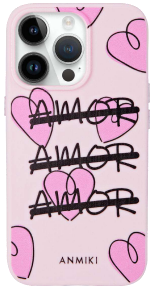
102EY000443


102EY000444


102EY000445


102EY000445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102EY000447

TPU+PC case with design printing

Material: TPU+PC

Model: iPhone15

Highlights: ①TPU+PC can be in match colors.

②Can make different designs printing on PC part.

③With sensitive buttons.

APPLE PEEL

Vegan leather, green ecology
Apple Peel highest percentage of 66%


101TP001770


101TP001771


101TP001772


101TP001773


101TP001774


101TP001775


101TP001776

TPU+PC+PU phone case

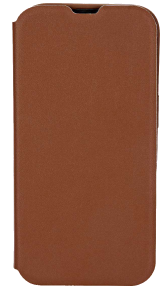
Material: TPU+PC+PU

Model: iPhone15

Highlights: ①Select match PU color with the color of case.
②Can select different PU textures and colors.
③Business style.

APPLE PEEL

Vegan leather, green ecology
Apple Peel highest percentage of 66%



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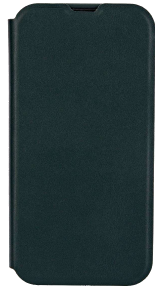

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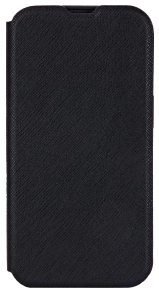

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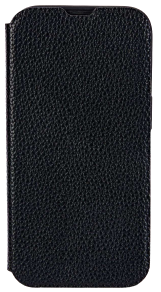


101LZ000725

Detachable phone case

Material: TPU+PC+normal PU or apple PU

Model: iPhone15

Highlights: ①Detachable and stand function.

②With one card slot.

③Support finger push card function.

④PU material can changed into recycled PU/apple PU.

APPLE PEEL

Vegan leather, green ecology
Apple Peel highest percentage of 66%

101LZ000713 101LZ000714 101LZ000715

101LZ000716 101LZ000717 101LZ000718

Detachable folio phone case

Material: TPU+PU

Model: iPhone15

Highlights: ①With 3 card slots.

②With stand & detachable funtion.

③With flip Magnetic.

④PU material can changed into recycled PU/apple PU.

⑤With Magsafe funtion.

PINEAPPLE HEMP LEATHER

Breathable, naturally anti-bacterial，bio-degradable.
Eco-friendly ratio: Up to 40%

101LZ000729　101LZ000730　101LZ000731

101LZ000732　101LZ000733　101LZ000734

Folio PU phone case

Material: TPU+PU

Model: iPhone15

Highlights: ①With 3 card slots.

②With stand funtion.

③With flip Magnetic.

④PU material can changed into recycled PU/apple PU.

101TP001783

101TP001781

101TP001786

Splicing PU phone case

Material: TPU+PC+PU

Model: iPhone15

Highlights: ①Fashion splicing phone case & strong protection.

② Can choose different textures & colors for the PU.

③ With Magsafe funtion.

101LZ000741

Folio phone case with Magsafe funtion

Material: TPU+Acrylic+PU+Magnet

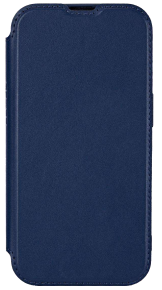
Model: iPhone15

Highlights: ①With Magsafe funtion.

②With one card slot, support finger push card function.

③ PU material can changed into recycled PU/apple PU/pineapple PU.

101LZ000736



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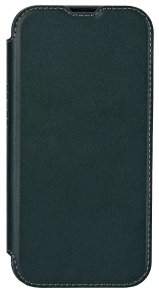

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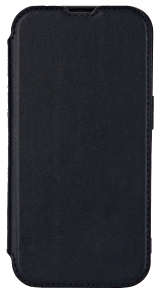

101LZ000740

Folio phone case with sewing TPU case

Material: TPU+PU

Model: iPhone15

Highlights: ①With Magsafe funtion.

②With one card slot, support finger push card function.

③ PU material can changed into recycled PU/apple PU/pineapple PU.

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Published by：C&T Marketing Operations Center