



GUIDE TO SUSTAINABLE METAL PACKAGING

The Power of Sustainable Metal Packaging

Introduction to the metal packaging market

According to Mordor Intelligence, the global metal cans market was valued at \$53.37 billion in 2019 and is expected to grow at an annual rate of 2.23%, reaching \$61.37 billion by 2025.

The Can Manufacturers Institute estimates that the more than 119 billion cans Americans use each year have created a \$17.8 billion industry in the United States. Mordor Intelligence estimates the value of the European can market at \$15.05 billion in 2019. Many reports indicate that the Asia/Pacific region has the highest projected growth for cans in the years ahead. MarketsandMarkets specifically values the food and beverage metal can market at an estimated \$27.6 billion in 2020.

Many important trends are playing a role in the ongoing growth of the metal packaging market. Take, for example, the increasing requirement for convenience packaging among consumers because of the "on the go" lifestyle in an increasingly busy society.

The growing awareness of environmental issues and health awareness among consumers are tied closely together. Consumers want packaging that's eco-friendly and safely preserves the packaged goods.

There is also the challenge brand owners always face to meet all these consumer expectations *and* differentiate their brands on the shelf.

While there are concerns in the marketplace about some aspects of metal packaging (e.g., bisphenol A and the cost of aluminium), metal packaging has much to offer in terms of versatility. Not only does it provide solid physical protection that can be shaped in many different ways, it is also an excellent barrier against microorganisms, corrosion, moisture, air and odours.

The versatility of metal as a reliable packaging substrate for consumers can be seen in the shift of consumption from bars and restaurants to homes and apartments due to the COVID-19 pandemic of 2020. Beverage can makers and other metal packaging industries have demonstrated their capacity to supply quickly, especially in the first weeks of the pandemic where people flooded retail stores to buy ready-made food to face potential shortages.

Metal packaging—the sustainable packaging format

Although far from the most used form of packaging, metal is the most sustainable form of packaging.

But how do we define sustainability? Using printing inks as an example, a converter's definition of a successful "sustainable ink" could be as simple as how well the ink and materials interact with each other to synergise the printing process. Inks that improve productivity on press or reduce waste could be seen as "green," but the three key regulatory terms commonly used in the packaging industry are "biodegradable," "biorenewable" and "eco-friendly/eco-efficient":

- Biodegradability is the ability of a material to be broken down by microorganisms. More relevant for sustainability is compostability, where that microorganism breakdown occurs within a set time and with the important parameters of water, oxygen and temperature defined.
- According to the USA National Association of Printing Ink Manufacturers (NAPIM), a biorenewable ink is derived from tree, plant, insect and/or animal materials. These can include resins, gums, oils, waxes, solvents and other polymer building blocks.
- Eco-efficiency refers to sustainable materials management for packaging. Many programs, such as the U.S. Department of Agriculture's BioPreferred® program, offer incentives for businesses to increase the usage of renewable agricultural resources in their products.

Each year, the average European generates two and a half times their own weight in packaging waste. Of the 86.7 million tonnes of packaging waste generated in 2016, 41% was made up of paper and cardboard. Plastic and glass made up 16% each, while metal made up only 5%. Although it makes up a small proportion of packaging waste, metals make up a big proportion of waste that's recycled. 74% of the rigid aluminium packaging used in soda cans, for example, is recycled, compared to 42% of all plastic packaging.

But though its recycling rate is similar to that of paper, metal is far less used. The reason recycling rates are so high is that metal packaging is made up of just one material, so it is more easily separated from other waste with magnet separators. Rigid metal packaging can also be endlessly recycled since its materials don't change their inherent properties when recycled into new products.*

*EURACTIV Jan. 2019 Event Report, "Recycling Metal Packaging." EURACTIV is an independent pan-European media network specialised in EU policies.



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According to the Can Makers Institute, every year Americans send 45 billion aluminium cans to the landfill. That's the equivalent of eleven 12-packs per person. The scrap value of all of these cans is enormous—\$800 million. In addition to the economic loss, it's a missed opportunity for significant environmental savings. Making a steel food can from recycled material involves using 75% less energy than making a new steel food can from virgin material. Similarly, the energy savings from making an aluminium beverage can is more than 90%, compared to making a new aluminium beverage can from virgin material.

Sun Chemical/DIC's approach to sustainability

As the world's largest producer of printing inks, coatings, pigments and polymers, Sun Chemical is constantly working with its parent company, DIC, to promote sustainable solutions.

As stated by Myron Petruch, the president and chief executive officer of Sun Chemical, "Our approach to sustainability guides the way we develop, manufacture and distribute products, as well as how we work with our customers and suppliers. Working with industry leaders, we are reducing global CO₂ emissions by increasing the use of biorenewable and recyclable materials, while promoting the value of these activities throughout the supply chain."

[Sun Chemical's latest Corporate Sustainability Report](#) focuses on how its commitment to sustainability has led to new products and services that help customers improve their eco-efficiency goals.



The 2018 report shows that Sun Chemical achieved its own recent energy and water usage goals and highlights various initiatives that have been implemented to increase the company's overall commitment to developing sustainable solutions for customers, such as:

- A long-term strategic target to reduce CO₂ levels by at least 30% by 2030
 - The reduction of water usage beyond the 32% achieved in 2018
 - The identification of areas to improve in driving innovation of sustainable procurements, as highlighted by EcoVadis, a leading provider of business sustainability ratings
- The company's connection to CEFLEX to promote a circular economy for flexible packaging
 - Greater levels of biorenewable content in Sun Chemical products

Sun Chemical continues to drive increased sustainability through innovation in its products and solutions.

The company's product sustainability initiatives can be categorised into three themes:

1. The raw materials used and the manufacturing processes—to increase the plant-based biorenewable content (BRC) and/or recycled content in Sun Chemical products. This reduces the products' effective carbon footprint and reduces the company's reliance on finite oil and coal resources. Having less fossil-based carbon in packaging will help with climate change.

2. The function of Sun Chemical products and the environmental impact of this function—to develop solutions that help resolve societal issues, such as food waste.

3. The end-of-life of Sun Chemical products and how they interact with recycling processes—to assist Sun Chemical customers in making products easier to recycle and promoting the development of circular economies. Recycling can be through a mechanical/chemical route or through a biological route.

From a solutions perspective, Sun Chemical's **SunDuo** inks for two-piece cans optimise metal can print production with good adhesion and a high pigment load. Suitable for the printing of non-varnish and overvarnish steel and aluminium beverage cans, the inks deliver excellent printability at high speeds. The SunDuo ink series provides good mileage and a trouble-free process for customers producing two-piece metal cans.

Suitable for all types of metal cans and closures, from crowns to pails, aluminium puffer-proof caps, aerosols, food cans, drawn fish cans and more, Sun Chemical's **SunTrio** offers a range of versatile, flexible, cost-effective and highly resilient inks for three-piece metal deco applications. Featuring low misting and good adhesion between layers and to the substrate, the range is available in conventional and UV versions with excellent printability at high speeds.

Sun Chemical's **SunAltec** ink series offers high-quality and high-performance metal decorating on monobloc aerosol cans, drink bottles and aluminium collapsible. The portfolio of inks provides outstanding performance, superior quality, high productivity and strong chemical resistance properties.

The SunAltec product family includes the **MB Plus Series**, which has been specifically designed for application on monobloc aerosols. The ink series uses an alkyd-based ink system which has been modified for optimum performance on new-generation product lines utilising today's basecoat technology.



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SunColorBox, Sun Chemical's unique set of tools and services that enables consistent and accurate digital color communication throughout the entire packaging supply chain, has had a substantial impact on sustainability for customers through a 20% to 70% increase in ink returns usage and a 30% to 40% reduction in substrate waste.

One SunColorBox service, **DigiProof**, allows converters to create a digital proof simulating the metal decorating substrate, which can be quickly produced and verified as an achievable target, accelerating the color approval process.

This ground-breaking, unique, metal deco digital proofing solution (CGS ORIS software linked to two metal deco dependent color libraries for PantoneLIVE™) for two-piece beverage cans is the result of [Sun Chemical's collaboration with CGS Publishing Technologies International](#) and enables can makers, designers and brand owners to reduce waste by dispensing with physical aluminium wet proofs and to significantly reduce the length of the packaging design process—from weeks to just days.

To learn more, download our [SunColorBox Guide](#).



Sun Chemical's approach to sustainable metal packaging

In line with our overall approach to sustainability and as our inks form an important and integral part of the finished metal packaging, Sun Chemical is committed to supporting the metal packaging industry to achieve its own sustainability goals by, for example, trying to increase the amount of raw materials obtained from biorenewable sources. One way in which we do this is by only using soybean oil that comes from already existing soybean crops in fields that have been certified as not replacing other pre-existing natural biodiversity.

By recognising the importance of sustainability as a global issue, not only is Sun Chemical supporting the metal packaging industry, but we are also looking to align our goals with those of the United Nations in its [“Transforming Our World: the 2030 Agenda for Sustainable Development.”](#) which is “a plan of action for people, planet and prosperity.”



We have therefore identified a number of the 17 UN goals on which the actions we're taking to help develop a more sustainable metal packaging industry will, we believe, have a positive impact.

How Sun Chemical is supporting the UN's goals for sustainable development

UN Goal #2: Zero Hunger

- Most undernourished people are in the sub-Saharan areas, partly because of the lack of water and partly because of the lack of resources/technology for harvesting their own food. Food in cans is low cost and already cooked.



UN Goal #3: Good health and well-being

- Vegetables in cans are processed fast, sometimes in less than four hours after collection, keeping their freshness and nutritional properties better than fresh vegetables traveling to the local market or other destination. Canned fish brings highly nutritional food to any part of the world. Repellents in aerosols provide protection against pandemic diseases spread by mosquitoes or other insects.
- Pharmaceutical materials have in aluminium tubes the most secure packaging due to inviolability, functional barrier to light and oxygen, and shelf life.
- Sun barriers travel best in monobloc aerosols, which provide a functional barrier to light and oxygen.
- Formaldehyde-free inks: cradle to cradle—approved products with a high level of biorenewable materials.



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UN Goal #6: Clean water and sanitation

- Due to the fact that cans travel easily and are resistant to external agents (heat/UV light/physically inviolable, etc.), drinkable water can be transported to any part of the world in beverage cans.
- One of the difficulties when bringing food into desert areas is the need for water for cooking. Food in cans does not need extra water for cooking and travels easily. And since different-sized cans are available to create different serving sizes, food in cans can be consumed with less waste.



UN Goal #9: Industry innovation and infrastructure

- Game changer for color management moving from inefficient analogue approval to fully digital workflow with newly introduced digital proofing solution based on PantoneLIVE, significantly increasing access to information and communication technology, specifically in developing countries, upgrading technological capabilities of graphic arts industrial sector.



UN Goal #12: Responsible consumption and production

- Digital color management significantly reduces ink waste, substrate waste and energy consumption through prevention and reduction of press make-ready time by at least 30%. Moving toward expanded color gamut with SunECG brings additional reduction of waste and energy. Particularly important in developing countries, it is strengthening scientific and technological capabilities to move towards more sustainable patterns of production. Latin America has embraced this approach over the last four years with great success.
- Canning operations are close to the point of collection and, as shelf life is very long (typically five years), cans can be transported using slower (but more fuel-efficient) modes.
- Aerosols are the best system to avoid material waste thanks to controlled dosing. Additionally, with the functional barrier of the aluminium, materials in aerosols better resist oxidation, thus increasing shelf life.
- Lower energy consumption through the use of LED UV.
- Recycled PET in Sun Chemical's PE resins.
- Ink formulations with a very high level of vegetable origin (high bio-based carbon content) raw materials.



UN Goal #13: Climate action

- Digital color communication significantly reduces carbon footprint by avoiding urgent physical sample deliveries for color approvals and reduces travel for press approval.
- Lower energy consumption through the use of LED UV.



UN Goal #14: Life below water

- Aluminium is infinitely recyclable and the scrap is valuable, so it is very unlikely cans will be discarded as urban waste (especially if compared to PET).
- Steel is infinitely recyclable and the scrap is valuable, so it is very unlikely cans will be discarded as urban waste. In addition, its magnetic property makes it easy to segregate from common waste or other packaging materials.



UN Goal #15: Life on land

- Recycled PET in Sun Chemical PE resins.
- Ink formulations with a very high level of vegetable origin (high bio-based carbon content) raw materials.



Sun Chemical drives sustainability during the research and development phase of all products. Learn about the many products that fit our [2030 Sustainability Agenda](#) and are included as part of our **SunEco** portfolio of solutions.

If you would like to learn more about Sun Chemical's metal deco solutions, please contact Sun Chemical at globalmarketing@sunchemical.com.



THE POWER OF SUSTAINABLE PACKAGING

Today's environment requires more than change. It demands transformation—and a partner who's willing to transform with you. Sun Chemical, a member of the DIC group, is a leading producer of printing inks, coatings and supplies, pigments, polymers, liquid compounds, solid compounds, and application materials. Together with DIC, Sun Chemical has over 20,000 employees located at 176 subsidiaries across 63 countries working every day to meet the needs of customers by improving performance on the essentials of business, such as reliable, on-time delivery and consistent product quality. Sun Chemical tailors solutions to unique customer needs and brings new ideas and the latest technology to market. As you move forward into a world of stiffer competition, faster turnarounds, more complex demands and sustainable products, count on Sun Chemical to be your partner.

Along with our parent company, DIC, Sun Chemical is constantly working to promote sustainable metal decorating solutions. Our approach to sustainability guides the way we develop, manufacture and distribute products, as well as how we work with our customers and suppliers as we look to reduce global CO₂ emissions by increasing the use of biorenewable and recyclable materials, while promoting the value of these activities throughout the supply chain.

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working for you.

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