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INTERVIEW

MODERN PACKAGING CLASSIC

Aluminium | Sustainable, safe, and easy to use – these are the requirements that the cosmetics market will place on the packaging of the future. Gregor Spengler and Jörg Schäfer explain where aluminium should be classified as a packaging material in this context and how it is used.

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COSSMA: Due to its properties, aluminium is a popular packaging material – also in the cosmetics industry. What are the great benefits of aluminium for cosmetic products?

Gregor Spengler: Aluminium offers plenty of functional, marketing, and environmental credentials for cosmetic products: First, aluminium provides an optimal product protection thanks to its extraordinary barrier properties. Compared with other materials, aluminium packaging is corrosion resistant and shows no signs of material aging. Secondly, aluminium is a premium material with a special shine which provides an eye-catching, up-market appeal to the consumer. Thirdly, aluminium is a sustainable material which can be almost infinitely recycled. **The current recycling rate of aluminium packaging in Germany amounts to 93.2%, that in Europe to roughly 60%.** Since aluminium has the highest scrap value of all packaging materials, there is a strong economic incentive to recycle it. In addition, **recycling saves 95% of the energy required to produce primary aluminium.** Thus, recycling massively reduces the carbon footprint of aluminium products.

In which cosmetic products is aluminium used? What are the advantages of aluminium tubes here?

Gregor Spengler: Aluminium tubes are used in many cosmetic products such as hair colourations, foot, hand, face and shaving creams as well as for many so-called cosmeceuticals. In all these cases, the aluminium tube is a multi-functional packaging for utmost product protection, resource efficiency, hygiene, and convenience.
Aluminium's property as a so-called absolute barrier prevents the products from perishing. Thus, all resources which were needed to produce the filling good cannot get lost. Such losses would in most cases be far higher than all resources needed to produce the packaging itself. Thus, any spoilage of the product would have a huge detrimental effect on the carbon footprint of the finished product.
Thanks to customised protective internal coatings, the aluminium tube is a "Jack-of-All-Trades" and **suitable for all types of contents**, even for those applications with more aggressive ingredients such as hair colourations.
Regarding hygiene, collapsible aluminium tubes benefit from their easy foldability which avoids any unwanted suck-back of the product. This advantage prevents air and micro-organisms from getting into the tube during use ensuring utmost hygiene, best product protection and a longer shelf life.
In addition, user-friendly aluminium tubes are light, unbreakable and allow a precise application of the product.

To what extent have the requirements for aluminium tubes changed?

Gregor Spengler: Let's consider, for example, the trend towards natural cosmetics which also influences the composition of the ingredients. Thanks to its optimal barrier credentials, the aluminium tube not only ensures extraordinary product protection and longer shelf lives. In addition, it is possible to do without the use of preservatives which is crucial for many customers in this market segment.
As regards handling and special functions, innovative closure and dispensing systems have made the aluminium tube more consumer-friendly allowing a convenient, hygienic, and precise application of the product.
Due to increasing varieties of product lines and a rising number of new product launches and re-launches, lot sizes are constantly decreasing which requires utmost flexibility of the production process. Due to the flexible impact extrusion production technology, aluminium tubes can ▶

There are no limits to the packaging and dosage forms made of aluminium in cosmetics.

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flexibly and economically cope with quickly changing market trends.

Another classic in the cosmetics industry is the aerosol can. How has it changed since it was launched?

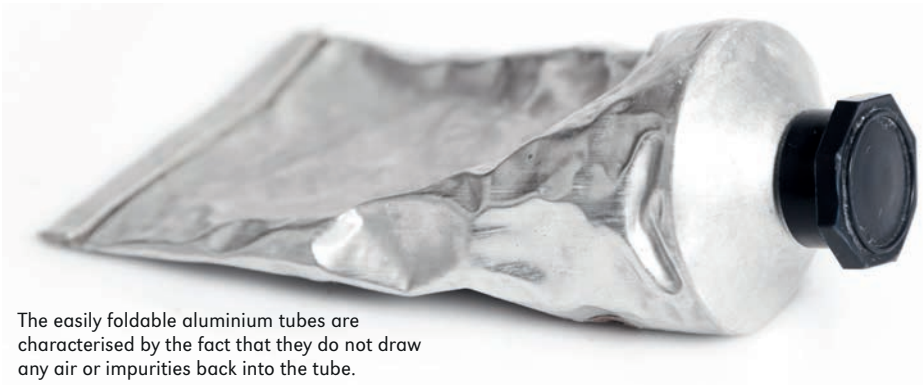
Gregor Spengler: The aluminium aerosol can has undergone fundamental changes over the years with changing marketing, environmental and regulatory requirements.
Besides the classical cylindrical container, all sorts of spectacular shapes are possible today. The container's appeal can be further boosted through embossing or debossing technologies and ground-breaking printing technologies which enable brands to let their products stand out on the shelves and allow them a high degree of design freedom.
Regarding sustainability, considerable downgauging has been realised thanks to the use of new alloys. Thus, **the weight of the cans and their carbon footprint have been considerably reduced without compromising on the functionality of the cans.**
New innovative internal lacquer technologies have been developed which allow for replacement of substances which are no longer in compliance with regulatory provisions or which are critically perceived by the consumer.

What other options are there for the use of aluminium in the cosmetics industry?

Gregor Spengler: Besides aluminium tubes and aluminium aerosols, other aluminium and aluminium containing packaging is used for packing cosmetics. For example, aluminium foil is an important constituent of composite packaging such as pouches and sachets for lotions or creams. **In many cases aluminium foil is not visible for the consumer, but it is the "hidden champion" which provides the protection needed for the integrity of the product.** The science of cosmetics, where special oils, vitamins, herbal and chemical compounds come into play, is very sophisticated. Thus, full protection from light and contamination is of paramount importance. Moreover, in composite packaging where the aluminium is clearly visible the metallic glitter is often used to enhance the excitement and prestige of the pack design.
Recently, also refillable aluminium bottles have been discovered by cosmetics companies to replace, for example, plastic shampoo bottles. In April this year, Procter & Gamble started the launch of its refill system "Refill the Good" for shampoos of the brands Pantene Pro-V, Head & Shoulders und Herbal Essences. This system will enable European households to recycle, reduce and reuse packaging. The system will consist of a new reusable 100% aluminium bottle and a recyclable refill pouch which requires 60% less plastic compared to the standard plastic bottle.

In popular parlance, aluminium does not have a reputation for being particularly environmentally friendly. Experts speak of a high level of recyclability. How well does recycling work and where are possible weaknesses or difficulties?

Jörg Schäfer: The focus of an environmental evaluation should be done on the product with a holistic view on its life cycle including recycling. However, very often the public view takes out parts of the whole issue. For aluminium it is often the mining process or the electrolysis.
To begin with the mining process: there are interferences with the local environment. The aluminium industry is doing its very best to keep the interventions to nature as little as possible ensuring for example an efficient rehabilitation. For the electrolysis with a relatively high electricity demand the operator does everything to reduce the consumption as environmental issues are supported by economic circumstances. Electricity costs are dominating the process costs. To stay competitive, all potentials need to be taken to reduce costs. Over the last decades the electricity demand has been reduced by 20%. However, an essential step is set by legislation. The political target is zero CO_2 emissions for electricity. This will more than half the carbon footprint of the aluminium production in Europe until 2050.
Focusing on recycling: aluminium is a recycling material par excellence. It is **fully recyclable without loss of quality and this by 95% less energy of that needed for the primary production.** The energy reduction potential emphasises the necessity to keep aluminium in the loop and this is done. In Germany, aluminium packaging achieves a recycling rate of 93.2%. The high recycling rate can be derived from a consumer-friendly collection system for packaging in yellow bins at households and offices. Followed by comprehensive and efficient sorting technologies which separate the aluminium and aluminium containing packaging from the mixed fraction (eddy-current technology). Finally, a versatile infrastructure for metallurgical treatment ensures to preserve the



The easily foldable aluminium tubes are characterised by the fact that they do not draw any air or impurities back into the tube.

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aluminium from the packaging for new aluminium applications. Thus, a circular economy for aluminium packaging is already in place.

In terms of sustainability, aluminium is said to have many advantages due to various properties. Where does aluminium particularly score?

Jörg Schäfer: Sustainability does not only focus on environmental issues, but also on social and economic issues. Aluminium products' functionality and weight – if considered as part of sustainability – are big points as they reflect raw material efficiency and less CO_2 emissions. Within the use phase the aluminium packaging contributes with its light weight to an efficient reduction of CO_2 emissions during transport/distribution. Alternative packaging materials such as steel or glass are heavier, thus require more energy for transport. Additionally, aluminium offers highest functionality with less material. Therefore, thin aluminium foil packaging applications are a good example for resource efficiency in terms of "preserving the functionality with less material".

How can the use of aluminium help to improve the so-called carbon footprint of a cosmetic product?

Jörg Schäfer: Aluminium packaging contribute to the improvement of the carbon footprint of a cosmetic product

- with high recycling rates
- its light weight
- highest functionality with less material
- by further downgauging;

Further optimisation could be achieved by

- consumer education (used aluminium packaging are a raw material)
- development of process technology
- and new alloys for lighter products

A further boost comes from the CO_2 neutral energy supply targeted by politics. The process of the electrolysis will reward it with considerably lower CO_2-emissions.

Aluminium foils protect the valuable ingredients of cosmetics from contamination and thus increase their shelf life.

The Coronavirus pandemic has changed a lot in almost every industry. What influences can be determined when using aluminium in the cosmetics industry?

Gregor Spengler: During the pandemic, aspects such as safety and hygiene have come to the fore in consumers' mindsets. As outlined before, aluminium packaging solutions have many aces up their sleeves when it comes to safety and hygiene. Perfect product protection, clean application and exact dosage of the products ensure that the integrity of the product and a resource-efficient application are ensured.

Irrespective of the lasting Covid-19 crisis, **sustainability will be the key requirement for any packaging solution**. Real recyclability in the framework of the existing collection, sorting and recycling infrastructure in Europe and a consistent design for recycling through the entire supply chain will gain in importance to improve the carbon footprint and the resource efficiency of packaging.

How will the use and status of aluminium in cosmetic packaging change in the near future? What will be the trends?

Gregor Spengler: I think that it has become clear that aluminium provides convincing answers to changing consumer mindsets dominated by the ongoing pandemic and the sustainability megatrend. So, I am rather confident that aluminium packaging will be able to make further inroads in the cosmetics sector. Nevertheless, there will be several other trends to which the packaging industry in general, not only aluminium packaging producers, will have to offer suitable solutions.

Compliance will remain another key requirement for packaging. Brand owners must ensure the regulatory compliance of their products in the framework of ever more complex international cosmetics and packaging regulations. For aluminium packaging, especially regulatory compliance of internal coatings and printing inks will be high on the producers' agenda.

In addition, online shopping has gone through the roof during the pandemic and is likely to continue its track record in future. "Omnichannel" branding and primary packaging designs that work both online and in-store will be another major challenge for packaging producers.

Finally, an increasingly mobile society and the digitisation trend will challenge the packaging industry as such. **Convenient and tailor-made packaging sizes for an increasingly nomad society as well as improved customisation and personalisation of packaging are likely to gain in importance.**

Any packaging which wants to be ahead of the pack in future needs to provide convincing answers to all these trends. The aluminium packaging sector is ready to pick up these challenges. □

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