GESAMTVERBAND DER
ALUMINIUMINDUSTRIE e.V.

ALUMINIUM FOIL – FOR CUSTOMISED FOOD PACKAGING

There is barely any other material that is as versatile as aluminium foil for packaging food and drinks or barely any other packaging material that offers packaging solutions customised to the needs of brand owners and end users like aluminium foil. This is all the more true at a time when consumer habits and lifestyles are changing ever more rapidly – one only needs to think of the growing number of single households. This calls for different products, different forms of packaging and different pack sizes. Aluminium foil makes an important contribution. A large range of packaging products is made from aluminium foil or containing aluminium foil as a partner in a composite laminate. By way of example one can mention here:

- containers and trays, e.g. pre-cooked meals or pre-packaged food like lasagne
- (stand-up) pouches and bags, e.g. for powdered soups
- single-portion packs, like stick packs for a pre-portioned cup of instant coffee
- wrappers for butter or chocolate
- lids for dairy products like yoghurts
- portioned capsules for coffee machines
- capsule foil for wine and sparkling wine
- barrier foil for drinks cartons and for sterilisable carton packs, like those for moist ready meals.

Aluminium foil offers perfect barrier protection …

Aluminium foil's most important property is probably its ability to act as a barrier to external influences that impair quality. No other packaging material provides protection against light, gas, humidity and UV radiation like aluminium foil, no other packaging material contributes to a longer shelf-life of foodstuffs in this way.

Aluminium foil's barrier properties also come to bear as a wafer-thin partner in a composite laminate with other packaging materials. By protecting the product from the harmful effects of oxygen, aluminium foil ensures that drinks can be kept fresh for several months without refrigeration. Originally developed for use with long-life milk, aluminium composite board has long since established itself as a packaging material for a very broad range of products, not only drinks but also food products. It has also been used for a long time as a moisture and heat-resistant packaging system for foodstuffs that are sterilised in autoclaves.

Examples of products packaged in composite board range from fruit and vegetables or desserts and yoghurts through to soups, ready-to-eat meals and pet food – products that at one time were only available in glass jars or tin cans in many cases. The benefits for food companies, the trade and consumers are manifold. Sterilisable composite board packs are not just another alternative to conventional packaging. As an innovative packaging system with an eye-catching appearance they offer additional differentiation from competitive products. There is no risk of breakage like there is with glass and no sharp edges like there is with tins. The packs are very light, space-saving, easily stackable and utilise volume efficiently.

… and convenience

Aluminium foil packaging offers a high degree of convenience. Ready meals in foil dishes can be heated up easily and quickly in the microwave without having to transfer them to another container. Flexible aluminium stand-up pouches are often resealable and/or have a notch or pre-perforation, which means no special devices are needed to open a pack. Wrappers for butter, cheese or chocolate are suitable for storing packs that have already been opened. Lids on yoghurts or canned vegetables can be removed very easily. Aluminium screw closures for wine, for example, can be opened without using a corkscrew and guarantee there is never any cork taint.

Aluminium foil for a sustainable life style

Aluminium foil packaging does not only offer customised packaging solutions for brand owners and consumers, though: it also supports a sustainable lifestyle. After all, greater barrier protection means a longer shelf life at room temperature and this results in less food being wasted as well as energy savings during transport and storage. A better barrier also means fewer nutrients are lost and that foodstuffs can be consumed with pleasure. For example, 1.5 grams of aluminium foil in a combipack weighing 28 grams suffices to protect a litre of milk from deterioration for several months without refrigeration. The aluminium foil's high thermal conductivity also means less energy is needed to prepare and process foodstuffs.

Flexible packaging containing aluminium foil offers greater functionality thanks to an optimal material combination and thus an optimal packaging/product ratio, which conserves resources. This also results in a smaller CO_2 footprint for the product/packaging system along with efficient distribution.

Recycling

Foil is recycled either to recover the metal or – as in the case of very thin foil (e.g. in composite packaging) – its energy. With waste that is collected separately (e.g. the Green Dot scheme), modern separation systems filter out the foil from the packaging waste and recover it correctly sorted. As a partner in a composite laminate with other packaging materials, the aluminium can be recovered as a metal using pyrolysis techniques. In those cases where aluminium foil or foil packaging is not collected separately for recycling but is mixed together with the rest of the household waste, the energy stored in the foil is recovered. New studies have shown that a considerable fraction of even the thinnest foil does not oxidise during energetic recycling but melts; it can be sorted from the ash of the incineration plant and returned to the material loop. Nowadays, material loops have been closed to a large extent in the packaging sector as well. The overall recycling rates for aluminium packaging are now about 87 per cent in Germany and some 60 per cent in Europe. Some 95 per cent less energy is required to remelt used foil and use it as the starting material for new products than is needed for the production of primary aluminium.

Manufacturing processes

Aluminium foil, which is mainly produced from commercially pure aluminium, is cold rolled in several steps or passes. The starting material is so-called re-roll stock between 0.6 and 1.5 millimetres thick. A process controller for the rolls and automated thickness measuring allows rolling speeds of up to 2500 metres a minute to be achieved. Two webs are rolled simultaneously (so-called double rolling) to produce thin foil down to four thousandths of a millimetre thick; this ensures that the foil web does not break under the high speeds and tensile forces. Heavy deformation during rolling increases the aluminium's strength and the foil is hard and brittle. It can be softened and made more flexible by subsequently heat treating it (so-called soft annealing).

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