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EAFA European Aluminium Foil Association
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Alufoil helps battle the extremes

— providing essential support and life saving properties

Space exploration, biodiversity, humanitarian aid, crime scene investigations, adventure or military operations are not usually the first applications that spring to mind when we are asked to think about uses for aluminium foil. But these are some of the extreme uses to which alufoil adds its essential, and often life saving, properties and any study of its unique properties makes it an obvious choice for many extraordinary feats of human endeavour.

When battling with extreme climatic conditions, for example, protection of food, goods and equipment is essential and in this scenario many of alufoil's attributes come into their own. Goods frequently have to be delivered to some of the remotest parts of the world where the transport infra structure is often rudimentary at best. This means that the most efficient and effective packaging possible is needed.

Take deterioration of products, whether food or equipment, these need protection from moisture, oxygen, UV light, and extreme temperatures which, for example, may lead to increased water vapour transmission rates. Alufoil provides a total barrier to all these potentially damaging external factors and has the lowest water vapour transmission rate of any flexible packaging material.

Protective climatic packaging also has to be sturdy enough to withstand the rigours of transport and 'large' alufoil bags and sheet are used as an inner lining for bulk containers. Anti-static alufoil layers, essential to protect sensitive electronic equipment, are also often used in combination with other forms of protective packaging. It is not easy to set up the logistical framework necessary to get nutritional aid to those who need it most. Difficult logistic problems associated with disaster areas include potential external factors such as mould growth, corrosion and the need for hygienic delivery and dispensing of food, drink, and medicinal products.

It is essential that vitamins, medicines and food reach the affected populations in pristine condition. Blister packaging and medicinal delivery systems are areas in which alufoil excels providing unrivalled barrier properties that exclude moisture, oxygen and other gases, micro-organisms and light. These attributes keep sensitive products in peak condition for long periods, while also providing quick, safe and effective methods of dispensing.

Engineering applications for aluminium foil where high temperature resistance and electrical or thermal conductivity are required include foils designed for insulation and duct sealing in the heating, ventilation and air conditioning market, and electromagnetic protection in the electronic industry, automotive or aerospace. Even underwater sea cables are protected by aluminium foil.

See inside pages for examples of the extreme applications in which alufoil plays an essential role. ///

Recycling rates on the up and up

A clear upward trend is emerging in European recycling rates for alufoil trays and semi-rigid containers which rose to 45% in 2008 (2007: 40%). But this is not the whole story, a number of other factors have to be considered to get a clearer picture of how the aluminium foil sector is helping to produce real sustainable options for its customers. Increasingly recycling rates must be linked to continuous light weighting through down-gauging material to gain a better understanding of the sustainability issues involved. See page 4 ///

INSIDE

Alufoil in the extreme

Clever ideas

***Alufoil** was used by the Japanese designer Tokujin Yoshioka to create his 'memory' chair for Italian furniture group - Moroso. Yoshioka's specially developed alufoil fabric*

transforms and memorises its shape upon use to produce a 'shape-shifting' chair, so that it squashes into a new shape every time someone sits on it. Introduced at Milan Design Week 2010, Yoshioka said that he chose aluminium foil as it was the perfect material to produce the fabric. ///

***Protection** of forensic evidence gathered by the police is vital. For example, intelligence gleaned from mobile phones or similar devices can be an important investigative tool and it is essential that information is neither corrupted nor deleted by an external source.*

Protective Packaging has come up with an ingenious Evidence Preservation Bag made from an alufoil laminate designed to effectively prevent radio frequency waves from passing through the bag. Now in use by many police forces the bag is heat sealed on all three sides and secured by folding the top of the bag over several times and using a tamper evident seal to ensure the bag remains closed. ///

Helping hand for human endurance

— from military personnel to adventurers

Venturing into dangerous situations, whether a military operation, mountaineering or exploring desert terrain, needs resourceful people, and protective and resource efficient materials to safeguard food, drink and equipment.

"An army marches on its stomach", a well-known saying attributed to Napoleon, is just as relevant today as it was in the early 1800s. But today alufoil's characteristics have brought much greater sophistication and protective properties to military rations the world over. This means that nowadays if a cooked meal was stored in a hot warehouse, dropped out of an airplane and not eaten for five years, it would be perfectly safe to eat when packed in specially-designed alufoil packaging.

An example of which is the field ration MRE (Meal Ready-to-Eat) – the main operational ration for the US military during field activities – many of which are packed in Flexalcon®. This alufoil-based material from Amcor, ensures food stays safe over prolonged periods when formed into 3-dimensional

Packs and pouches for military use are printed sand grey/beige for camouflage

packs. Flexalcon®, which is also used for consumer food products, provides a long shelf life while protecting the shape of preserved foods, such as burgers, sausages, steaks or chicken, thanks to the deep drawn forming method. The lightweight material offers excellent barrier to light, oxygen, water vapour and aromas, as well as forming properties.

Amcor also supply easy-open alufoil pouches for individual portions of pumpable foods which have the advantage of being lightweight and fitting easily into the pocket. ///

Disaster relief a growing necessity

Human disasters across the globe have many causes from 'natural' environmental phenomenon to man-made disasters with reports reaching our newspapers and television screens almost daily about environmental catastrophes including floods, droughts, famines, hurricanes and earthquakes. Figures from Oxfam show that each year an average of about 250 million people are affected by disasters, and it is suggested that this figure could grow to more than 375 million people by 2015.

Relief organisations and governments are crying out for a sustainable means to get food and equipment to affected areas to help alleviate suffering and aluminium foil can certainly play its part. According to the United Nations World Food Programme packaging must be designed to protect goods from extreme temperatures and humidity and suppliers are encouraged to make recommendations regarding improved packaging specifications.

Essential attributes of aluminium foil for disaster relief are numerous making it a prime candidate to help where human suffering is rife. Its characteristics include: Impermeability – providing a high performance barrier; Opacity – total barrier to light including the UV spectrum; Non-absorbency – providing proof against grease, oil, water and other liquids; Hygiene and safety – alufoil is sterile at the end of its production process. Alufoil is safe for use in contact with foodstuffs and does not harbour or promote the growth of bacteria; it is also tasteless and odour free. ///

Alufoil in the extreme

Space exploration the ultimate challenge

— Lightweight solutions for food and drink

Food needs packaging to keep it in first class condition. In space NASA is looking for packaging that provides a long shelf-life, is lightweight and produces the least waste possible. For example missions to Mars will require a five-year shelf-life and for journeys into the unknown alufoil-based packs have many advantages. ///

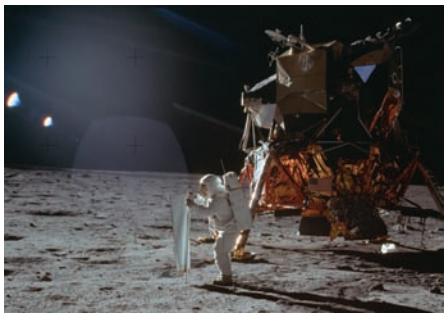
Mission not impossible for pouches

Stand-up pouches that are used on earth about six billion times a year are now being used by astronauts on their trips to outer space. Produced by INDAG, the high-tech alufoil-based pouches were designed to strict specifications from the Space Food Project of the European Space Agency (ESA). Having made drinks pouches for such well-known brands as Capri-Sun, INDAG was well placed to create the adaptations needed by ESA. The pouches weighed in at just 4.05 grams with a consequent low waste volume, which proved to be the decisive factor when the ESA made its choice for the 20th mission to the International Space Station in 2009.

A first delivery of 80 "space pouches" containing two instant ice-tea flavours (22.5g) in a 250 ml pouch were aboard the 20th mission to the International Space Station

However, work had to be carried out on the dispensing pouch to make sure it would work properly in weightless conditions and here INDAG and partners created an adapter with sealing membrane to ensure it dispensed efficiently.

Aluminium foil is not new to space food concepts, since 1981 the crew members of the US Space Shuttle having been eating their meals from single-serve alufoil containers held on a tray by Velcro, magnets and a bungee cord. ///



Apollo Solar Wind Experiment

Even before the American flag was placed on the moon a Solar Wind Collector using aluminium foil was positioned by Neil A. Armstrong and Buzz Aldrin during the Apollo 11 mission in July 1969.

The Solar Wind Composition Experiment was also performed on Apollo 12, 14, 15, and 16, and used an aluminium foil sheet measuring 1.4 metres x 0.3 metres deployed on a pole facing the sun. The foil was exposed to the sun for periods ranging from 77 minutes on Apollo 11 to 45 hours on Apollo 16, allowing solar-wind particles to embed themselves into the foil. It was then returned to Earth for laboratory analysis. The alufoil sheet was provided by Amcor Flexibles Kreuzlingen, Switzerland, the birthplace of alufoil 100 years ago. ///

International Year of Biodiversity

— Alufoil protection essential for global seed vault

The United Nations declared 2010 the International Year of Biodiversity to celebrate life on earth and safeguard its variety. One project that is certainly playing its part is the Svalbard Global Seed Vault where 400,000 seed samples from the earth's most important food crops were deposited in its first year of operation. The vault, in the frozen mountains of Svalbard, a Nor-wegian archipelago in the Arctic, is designed to protect millions of crop seeds from natural disasters, wars and global warming.

Nicknamed the "doomsday vault," it contains gene banks from all regions of the world and so far contains more than 3,200 species with more than 70,000 varieties of rice and 60,000 varieties of wheat, all of which are packed in alufoil sachets and bags. Stored in specially designed boxes at -18°C, the seeds can be sent back to developing countries where food security is often a major challenge in the face of environmental disasters. ///


Alufoil pouches in use at Svalbard Global Seed Vault

Branding excellence

***Produced to celebrate** the 100th Anniversary of aluminium foil, this foil wrapped chocolate coin is a good example of the branding and decorative possibilities provided by lacquered aluminium foil. Easily shaped to the contours of the product the foil provides both excellence in design and protection of the product. The foil was produced by Novelis Lüdenscheid and the chocolate was made by Albert Premier Chocolaterie, Belgium. ///*

Recycling

Recovery, recycling and recycled metal content

Everything we do has an environmental impact and today, more than ever before, the 'footprints' of products and services are top priority. Environmental claims are now commonplace to help attract consumers, but do these claims always provide a clear understanding of all the sustainability issues involved?

Recently, for example, the phrase '100% recycled aluminium' appeared as a green claim to trigger purchase decisions for aluminium household foil at the point of sale. But is this claimed recycled metal content really the most appropriate yardstick for 'greener' aluminium foil production? To answer this question it is important to understand how such a claim can be backed up and what the drivers are to increase sustainability within the production and use of aluminium foil.

Recycling of materials and metals in particular, is as old as mankind and is driven by the inherent value of the material itself. Today recycling is not only value driven, it is also part of a waste prevention strategy to reduce the amount of industrial and household waste created and – where environmentally significant – to replace primary production.

— It is noteworthy that 75% of all aluminium ever produced is still in productive use today! —

Aluminium – as are all other metals – is endlessly recyclable. However, its unique property is that 95% less energy is needed to recycle the metal compared with primary production. This high energy efficiency is the reason why aluminium scrap is such a valuable material source. In most processes in which aluminium is used, processed scrap is collected and recycled for use in aluminium products. Production scrap, which is recycled from one aluminium application to another is not waste, it is simply a versatile means of increasing the overall efficiency of production.

This leaves the other part of the equation – post-consumer recycling, which includes both household waste and, for example, waste from fast food outlets. And it is recycling alufoil from the post-consumer waste stream that is an essential part of the alufoil industry's approach to sustainability issues.

The aluminium industry is very active in helping to increase recycling rates and thanks to its many initiatives aluminium-based packaging recycling rates in Europe vary between 80% and 30% to give an average European recycling rate of above 50%.

But will redirecting this waste into a specific application generate the largest savings for the environment? The answer is: Not necessarily.

By directing recycled material to a specific application an artificial material flow may have to be created along with increased transport and logistic costs. In effect this does not support the efficient use of recyclable material.

Aluminium packaging recycling in Europe creates numerous challenges for the industry and these are far more important than triggering short-term purchasing decisions with a 'green' – but possibly empty – claim such as '100% recycled metal content'. However, recycling is not the complete answer to the broader concept of environmental sustainability. Efforts to recycle aluminium foil must be balanced against its function when in use.

Alufoil-based flexible packaging, for example, provides a perfect barrier to help protect food, pharmaceuticals and a variety of other products; in fact it has an almost optimal product to package ratio. This means that even without recycling more resources are saved owing to flexible packaging's lightweight and the protective properties such packs exhibit. It is here that incineration with energy recovery becomes a viable option closing the gap in the race for 100% resource efficiency.

By closing material loops and increasing resource efficiency society benefits by decreasing pressure on the natural environment. Ultimately, it also ensures that both the aluminium industry and its customers retain their credibility by actively supporting ecologically meaningful approaches to sustainable production and consumption.

More information on www.alufoil.org ///

Guards at Expo 2010 Shanghai enjoy their meal served in compartmentalised alufoil trays

On the march at Expo 2010 Shanghai

***Celebrating the Better City** and Better Life theme of Expo 2010 Shanghai, a joint initiative between container manufacturer Shanghai Ashburn Al Foil Product and the Expo's catering suppliers resulted in 100,000 compartmentalised alufoil food containers embossed with the Expo logo being used daily at the show – May 1 to October 31 2010.*

Alufoil containers were chosen because of their 100% recyclability and formed the single largest order for this type of packaging in China, said the organisers, which hope that it will help promote the recycling and user friendly credentials of alufoil trays to a wider audience. ///

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EAFA European Aluminium Foil Association

The international body representing foil rollers, container, household foil and flexible packaging manufacturers.

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— Find out more about alufoil!

Visit www.alufoil.org where you can find out all about every EAFA member, make business enquiries and see the latest news about alufoil applications and the industry.

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