

Questions and Answers

“Recycling, Recovery and Recyclability of Aluminium Foil”

Concepts, Claims and Definitions

Q1: What does “recycling” and “recovery” mean?

Clarity is given in the EU Directive on Waste (2008/98/EC) introducing recovery as umbrella term embracing recycling and energy recovery:

“Recovery means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy”.

“Recycling means any recovery operation through which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations”.

The Packaging & Packaging Waste P&PW Directive (94/62/EC) defines:

“Recycling shall mean the reprocessing in a production process of the waste materials for the original purpose or for other purposes including organic recycling but excluding energy recovery”.

Q2: Why is recycling and recovery so important nowadays?

In principle recycling returns valuable materials out of a product after use. This helps to diminish the demand for virgin materials from nature and also minimizes the amount of waste.

Another argument for recycling is the independence of natural resources which is rather important for those economies which have limited access to them.

Recycling may also create less impact than primary production to give a net benefit for the environment. This is in particular true for the recycling of aluminium which needs 95% less energy compared with primary production.

Recycling maintains the material and its properties. When material is used to create energy this is referred to as energy recovery.

Thereby recycling and also recovery contribute to a sustainable development by saving resources. Especially for materials being resource intensive in primary production recycling is important to close material loops and increase overall efficiencies.

Q3: Is recycling of packaging¹ a legal obligation?

Recovery of packaging embracing recycling and energy recovery is a legal target which is defined in the P&PW Directive (94/62/EC). The targets set down in the directive apply to all types of packaging (consumer, industrial, transport, etc.). The directive states that in all EC countries the Member States must introduce systems for the return and/or collection of used packaging to attain targets as: *“At least 60% of packaging by weight must be recovered or incinerated at waste*

¹ Packaging does not include aluminium household foil by definition.

incineration plants with energy recovery; at least 55% and no more than 80% must be recycled.” Individual material-specific recycling targets are given with 60% by weight for glass, paper and board; 50% by weight for metals; 22.5% by weight for plastics and 15% by weight for wood”.

On a country level targets may be higher and more specific for materials.

In the Essential Requirements of the P&PW Directive (94/62/EC) production related provisions include:

“Minimisation of packaging volume and weight, consistent with the level necessary for safety, hygiene and acceptance by the consumer, design and use of packaging in a manner that permits its reuse and recovery.”

Q4: What is so important about aluminium recycling?

The recycling process for aluminium requires 95% less energy compared to the primary production which also corresponds to enormous emission savings. Aluminium recycling takes place as aluminium scrap is a valuable raw material for a variety of applications.

Today approximately 75% of all the aluminium ever produced is still in productive use today², creating a virtual aluminium pool which is fed out of short term applications (e.g. packaging) and long term applications (e.g. buildings).

Recycling is triggered by the constant and high value of scrap due to a permanently increasing demand. Aluminium is abundant in the earth’s crust and currently known reserves will last 200 years or more.

Q5: Is aluminium foil recycled?

The average recycling rate for aluminium packaging (packaging with aluminium dominant material including beverage cans) **in Europe is above 50%³**. The amount of aluminium packaging effectively recycled greatly depends upon individual national requirements, the specific application, and the efficiency of the collection schemes; therefore national rates vary from 30% to 80% or more across Europe.

For thin foil applications (with a low amount of aluminium in the pack) like laminates, energy recovery from advanced incineration plants is a viable option. **The European wide recovery rate for both recycling and energy recovery for foil is around 50%⁴**.

Q6: What is a recycled content?

Many materials can be composed from both virgin and recycled raw materials. The recycled content is the fraction of recycled material in the final material normally given as a percentage. In case of metals the term recycled metal content is used (RMC).

The labelling standard - ISO 14021 - states that *“recycled content and its associated terms shall be interpreted as proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content.”*

² International Aluminium Institute

³ European Aluminium Association

⁴ European Aluminium Foil Association

This provision is subject to interpretation and can be misunderstood depending on the definition of pre-consumer materials.

Pre-consumer materials are recycled from the solid waste stream during manufacturing processes. Consequently this does not include materials and by-products generated by and commonly reused in the original manufacturing process. Industrial scrap, rework, and regrind, which are collected in-plant and re-introduced in the original production process cannot carry a “recycled” claim.

Q7: Is an increased Recycled Metal Content (RMC) a meaningful environmental indicator for aluminium?

A higher recycled metal content in a given application is in general not meaningful as environmental indicator; this is particularly the case for aluminium as:

- **It only shows how much recycled material has been taken from the market** of recycled metals and not how much has been put onto this market generating especially in the case of aluminium high environmental benefits.
- **There are no environmental benefits in directing recycled aluminium towards targeted market applications** while it is already more efficiently recycled into other demanding markets. This may even create market distortions and additional environmental inefficiencies. For example, it may lead to transportation over longer distances resulting in adverse environmental impacts.
- The continued growth of the aluminium market and the fact that most aluminium products have a fairly long lifetime (buildings, airplanes, automotive, etc.) means it is not possible to achieve a high recycled metal content for all new aluminium products, simply because **the available quantity of used aluminium falls considerably short of total demand.**

Q8: How can the benefits of aluminium recycling be credited?

Recycling of aluminium needs 95% less energy compared with its primary production. Together with the corresponding savings in emissions this can be quantified in a life cycle context by using the recycling rate to calculate the benefits which are achieved at the end of a product life. **Therefore the recycling rate is essential to calculate and visualize the environmental performance of aluminium.**

Q9: Can the recycled metal content (RMC) be measured?



It is impossible to distinguish how often metals have been recycled; therefore **a RMC cannot be measured in terms of a metallurgical analysis.** An attempt to do so is similar to trying to determine if water in a lake stems from rivers or from rain. Therefore a RMC can be determined only with knowledge about the different converging material flows in refining or re-melting.

Given the provisions in labeling standards as cited above, a “recycled content” is ambiguous as the definition of “pre-consumer material” can be interpreted differently. Only in specific situations, where e.g. a packaging application is recycled into the same packaging application again can a RMC be unambiguously identified.

Q10: How can recycling in different sustainability contexts be dealt with?

Consistent communication that takes into account different audiences and markets is the only way to achieve or maintain credibility. Table 1 gives a condensed overview of claims about recycling and their relevance in different sustainability contexts.

Table 1: Recycling and recycled content claims in labeling and communication for aluminium foil

Example of a message or claim	Relevance with regard to sustainability	Labeling and communication	Taxation; Jurisdiction	Life cycle analyses and carbon footprints
<p><i>"Recycled Metal Content X%"</i></p> 	Does not necessarily contribute positively to a sustainable development (Q7).		Not an issue so far. Nevertheless part of recommendations	If necessary EAA and EAF A provide general figures for modeling purposes and also in B2B communication.
<p><i>"Recyclable aluminium packaging"</i></p> 	Prerequisite for efficient recycling. Meaningful in combination with existing recycling schemes. Aluminium is 100% recyclable.	Meaningful and credible in particular if recycling actually takes place. Allowed only if aluminium is a major component	Not an issue so far. Nevertheless part of requirements	Not relevant as it is a material property.
<p><i>e.g.: Recycle this package, e.g. by putting it into the yellow bag or another collection scheme</i></p>	Relevant giving stimulus to do the right things for consumers and customers if there is collection	If appropriate it is useful	May collide with green dot schemes if not registered. Make sure that license registration is available	Not relevant
<p><i>Recycling rate</i></p>	Most relevant as associated with net benefits for the environment	Specific schemes do not exist	Not an issue	Essential to calculate benefits

EAF A; October 26st, 2009

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