

Sustainable Steel

Key environmental messages for steel & metal packaging

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Metal messages

Metal is one of the easiest and cheapest materials to recover.

Metal recycling offsets primary production processes and their associated environmental impacts and energy consumption.

Metal recycling has environmental, economic and social value.

The recycled metal market is well established.

Metal is a renewable material which is too precious to waste.¹

Corus Steel Packaging Recycling
Trostre
Llanelli
Carmarthenshire
SA14 9SD

T +44 (0)1554 712632
F +44 (0)1554 712571
E nicola.bennett@corusgroup.com

Steel specific messages

Recyclability

Steel recycling is a closed loop process - steel can be recycled over and over again without loss of quality or properties.

Steel is one of the world's most recycled materials.

Steel is 100% recyclable, which is reflected in its high recycling rates.

Steel recycling has grown in parallel with increased steel consumption.

All end-of-life steel products can be recycled into new steel products.

The recycling rate of steel packaging is very high: in 2006, it was 66% in the EU.

Steel's magnetic qualities enable recycling opportunities not available to other materials.

Recycled Content

Steel production routes use steel scrap as a secondary raw material, substituting primary raw material i.e. iron ore, and saving energy.

All 'new' steel products contain recycled steel.

In 2005, the average recycled content of steel in the EU was 54%. (The average recycled content of steel is defined as the annual tonnage of steel scrap consumed divided by the tonnage of steel produced).

Environmental

Although the food and beverage can market has grown by 57% during the last two decades, the European metal packaging industry's net energy consumption has gone down by almost the same percentage.

Today, the European metal packaging industry uses less metal than 20 years ago. A good example of this is the soft drinks can – nowadays the average weight of a soft drinks can is only 21.4g. In 1980, it was 31.2g.

The European metal packaging industry has managed to reduce its carbon dioxide emissions by 50% in the last twenty years.²

Recycling one tonne of steel cans saves 1.5 tonnes of iron ore, 0.5 tonnes of coal and 40% water usage.

Recycling one tonne of steel scrap saves 80% of the CO₂ emissions produced when making steel from iron ore.

Notes

1. Source: MPMA (Metal Packaging Manufacturers Association)
2. Source: Empac (European Metal Packaging)

Steel Packaging - Energy and CO₂ saving factoids

Introduction

In the EU-25 in 2006, according to APEAL, the steel packaging steel rate was 66%.

In the UK in 2006, the steel packaging recycling rate was 57.3%.

In the UK in 2005, on average, each UK household recycled 8kg of steel packaging. This was mainly a mixture of beverage cans (approx. 50 cans) and food packaging.

Recycling and the manufacture of secondary steel from scrap requires significantly less energy and produces less CO₂ than the manufacture of primary steel from iron ore.

International Iron and Steel Institute (IISI) studies have shown that the recycling of steel, such as steel packaging, saves 1.88 tonnes of CO₂ and 17.4GJ of energy for every tonne of recycled material. The CO₂ emissions saved by recycling steel packaging saves 80% of the CO₂ required to make primary steel.

These savings, in the case of steel packaging, are reflected in the following table:

	Savings per tonne	Total savings in the EU/year	Total savings in the UK/year	Total savings per UK household/year
CO ₂	1.88t	4.32Mt	0.62Mt	14.7kg
Primary Energy	17.4GJ	40PJ	6.1PJ	137MJ

Amazing factoids

The benefits of these savings can be more easily communicated by putting them in the context of everyday scenarios that consumers can relate to, e.g. 'A steel can can be recycled back into a steel can within 33 days.'

European Steel Packaging Recycling Facts			UK Steel Packaging Recycling Facts	
Context	Factoid	Supporting reference(s) /Assumptions	Factoid	Supporting reference(s) /Assumptions
Blackpool Tower	The energy savings made by recycling steel packaging in Europe in 2005 would light Blackpool Tower for the next 8,000 years.	According to the Blackpool Tower website, the Tower consumes 150kW when illuminated. www.theblackpooltower.co.uk	The energy savings made by recycling steel packaging in the UK in 2005 would light Blackpool Tower for the next 1,000 years.	According to the Blackpool Tower website, the Tower consumes 150kW when illuminated. www.theblackpooltower.co.uk
Cars	The CO ₂ savings made by recycling steel packaging in Europe in 2005 was equivalent to the CO ₂ produced by 1.6 million cars in the same year.	Based upon a compact class car (eg Ford Focus 1.8 diesel) with a CO ₂ emissions rating of 137g/km that travels 20,000km in one year.	The CO ₂ savings made by recycling steel packaging in the UK in 2005 was equivalent to the CO ₂ produced by 240,000 cars in the same year.	Based upon a compact class car (eg Ford Focus 1.8 diesel) with a CO ₂ emissions rating of 137g/km that travels 20,000km in one year.
UK Households	The CO ₂ savings made by recycling steel packaging in Europe in 2005 was equivalent to the CO ₂ produced by over 700,000 households in the same year.	The average CO ₂ emissions per household in the UK are estimated to be 5.6t CO ₂ per year (Green City Report, May 2006).	The CO ₂ savings made by recycling steel packaging in the UK in 2005 was equivalent to the CO ₂ produced by over 100,000 households in the same year.	The average CO ₂ emissions per household in the UK are estimated to be 5.6t CO ₂ per year (Green City Report, May 2006)
Cities	The recycling of steel packaging in Europe saves enough energy to power three large cities the size of Sheffield each year.	According the 2001 Census, Sheffield has 220,000 households.	The CO ₂ savings made by recycling steel packaging in the UK in 2005 was equivalent to the CO ₂ produced by all the households in Cardiff in the same year.	The number of households in Cardiff is about 120,000 according to the 2001 Census.
Wind turbines	The energy saved by the recycling of steel packaging across Europe in 2005 is equivalent to that produced by over 4,000 1MW wind turbines in the same year.	British Wind Energy Association reports that a 1MW wind turbine produces 2630MWh per year. www.bwea.com/edu/calcs.html	The energy saved by the recycling of steel packaging in the UK in 2005 is equivalent to that produced by over 600 1MW wind turbines in the same year.	British Wind Energy Association reports that a 1MW wind turbine produces 2630MWh per year. www.bwea.com/edu/calcs.html

UK Household Steel Packaging Recycling Facts		
Context	Factoid	Supporting reference(s)/Assumptions
Kettle	The energy savings made by recycling steel packaging from one UK household in 2005 were equivalent to the energy produced by boiling a kettle over 300 times.	Market Transformation Programme - a typical kettle consumes 169.6kwh in one year for 1542 uses. www.mtprog.com
Car	The CO ₂ savings made by recycling steel packaging in one UK household in 2005 were equivalent to the CO ₂ produced by a car travelling over 100km.	Based upon a compact class car (eg Ford Focus 1.8 diesel) with a CO ₂ emissions rating of 137g/km that travels 20,000km in one year.
Light bulbs	The CO ₂ savings made by recycling steel packaging in one UK household in 2005 were equivalent to the CO ₂ emissions produced by having 24 60W light bulbs on permanently for a day.	A 60W light bulb running off UK grid electricity. No green tariffs/household renewables etc.
Fridge Freezer	The energy savings made by recycling steel packaging from one UK household in 2005 would have provided enough energy to run a fridge freezer for over one month.	Market Transformation Programme - a typical 'A' rated fridge freezer consumes 382 kWh in one year. www.mtprog.com