RESOURCE UTILISATION AND WASTE MANAGEMENT ASSESSMENT 2024

Introduction

The purpose of this assessment is to review resources used in the manufacture of products that Avon Metals Ltd sells and the management of the wastes generated in that manufacturing.

Business Overview

Avon Metals Ltd (AML) is a specialist recycling company, primarily focused on the production of recovered and recycled aluminium alloys. Over the years, AML has continually refined its processes and invested in new plant and equipment to increase the proportion of scrap aluminium used in its alloys.

A key motivation behind this effort is the substantial carbon footprint reduction achieved by using secondary (scrap) aluminium in place of primary aluminium. Producing aluminium alloys from scrap requires just 1/20th of the embedded carbon emissions compared to manufacturing from primary, virgin sources.

In addition to aluminium, AML strives to source as many of its alloying elements as possible from recycled materials—such as scrap steel, copper, and zirconium. The company also recovers significant quantities of silicon, from AlSi alloy castings such as alloy wheels.

As an Energy Intensive Industry, AML places strong emphasis on energy efficiency. Energy is the company's second largest variable cost, after raw materials. Although energy markets have stabilised somewhat since the extreme volatility of 2022 and 2023, ongoing global uncertainty continues to drive price fluctuations. This reinforces AML's commitment to maximising energy efficiency wherever possible.

Resource Utilisation.

Raw Materials

Wherever possible, AML sources raw materials from secondary or scrap metals, prioritising recycling and material recovery. Primary metals are only used when no suitable secondary sources are available, when customer specifications mandate the use of primary materials, or when technical requirements cannot be met using recycled inputs.

Currently, over 70% of AML's raw material input is derived from secondary or scrap sources, resulting in significant carbon savings in product manufacturing. Several AML products are made from 100% recycled content, achieving a carbon intensity of just 300–400 kg CO_2 per metric tonne of alloy substantially lower than the European average of 7.6 metric tonnes CO_2 per metric tonne for alloys based on primary aluminium.

AML works closely with its customers to continually increase the use of secondary materials in its products. This not only reduces AML's own environmental footprint but also supports its customers in lowering theirs—aligning with the UK's broader commitment to a circular economy.

Avon Metals

AML is also a key support partner in a consortium, partly funded by the Advanced Propulsion Centre (APC), including Aston Martin as the Tier 1 manufacturer. The initiative aims to replace all primary aluminium structural castings with 100% recycled aluminium. In addition, the consortium is targeting a 30% weight reduction in cast components, which is expected to reduce tailpipe emissions and save an estimated 7.9 million tonnes of embedded carbon annually.

AML's commercial team are always looking for new sources of secondary raw material.

AML current uses the following EWC waste codes as raw materials for its manufactured products.

WASTE CODE	DESCRIPTION
10	WASTES FROM THERMAL PROCESSES
10 03	wastes from aluminium thermal metallurgy
10 03 15	skimmings that are flammable or emit, upon contact with water, flammable gases in hazardous quantities
10 03 16	skimmings other than those mentioned in 10 03 15
12	WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS
12 01	wastes from shaping and physical and mechanical surface treatment of metals and plastics
12 01 01	ferrous metal filings and turnings
12 01 02	ferrous metal dust and particles
12 01 03	non-ferrous metal filings and turnings
12 01 04	non-ferrous metal dust and particles
15	WASTE PACKAGING, ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	packaging (including separately collected municipal packaging waste
15 01 04	metallic packaging
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 01	end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)
16 01 17	ferrous metal
16 01 18	Non-ferrous metal
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 04	metals (including their alloys)
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 05	iron and steel
17 04 07	mixed metals
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified

19 12 02	ferrous metal
19 12 03	non-ferrous metal
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	separately collected fractions (except 15 01)
20 01 40	metals

Energy and Carbon

AML uses both Gas and Electricity for the manufacture of its alloy products.

AML operates ISO 50001 Energy Management System which is accredited by a 3rd party accreditation body.

In 2024 AML used

3,298 MWh of electricity

14,525 MWh of mains gas

With 10,110 mt produced, this gives a specific consumed energy intensity of 1,763 kWh/mt.

The company has invested in real time energy management and reports specific energy data monthly and this is being used constantly to analyse energy use.

AML continues to use electricity from certified 100% renewable sources which can be stated as 0 mt of CO_2 per annum.

AML gas usage amounts to 2,656 mt of CO_2 per annum based on 2024 GHG conversion factors.

AML is currently working towards formal carbon foot printing of its operations and products, initially as Scope 1 and Scope 2 reporting but will be adding Scope 3 in due course. AML believe they will be the first in the secondary industry to achieve such reporting. AML is also actively participating in Industry sector initiatives and also is on working committees with the UK Department of Trade and Industry, formally BEIS.

Avon Metals Ltd is committed to reducing the carbon intensity of the alloys it produces, with the primary strategy being the increased use of recycled scrap metal. By raising the percentage of recycled content, particularly post-consumer scrap, the company significantly lowers the embedded carbon footprint of its products. However, this approach does have trade-offs: higher scrap input can lead to lower metal recovery rates and longer production cycles, resulting in increased energy consumption (measured in kWh per metric tonne).

Despite these challenges, in 2024 Avon Metals achieved a 73% scrap input in its alloy production, 60% of which came from post-consumer sources. This shift is estimated to reduce CO_2 emissions by 4 to 8 metric tonnes per tonne of aluminium alloy produced, depending on the type of primary aluminium being replaced. The associated increase in CO_2 emissions due to additional energy use is approximately 0.1 metric tonne

per tonne of alloy. Overall, this translates to an annual embedded carbon saving of 40,000 to 80,000 metric tonnes, with only around 1,000 metric tonnes of CO_2 added annually due to increased energy use.

AML is constantly investigating new opportunities to reduce the embedded carbon and energy use and improve the recovery of the metals it processes.

To emphasise the importance of this in a changing world, we have been chosen as the alloy supplier to a APC UK government-funded initiative alongside Aston Martin, Sarginsons, Gescrap, Altair AI, and Brunel University.

With two key objectives:

- Convert all Aston Martin's structural aluminium components from 100% primary to 100% recycled aluminium.
- Achieve a 30% weight reduction in these components.

This represents a key shift in the automotive sector that's been very reluctant to go down the recycled route, and is being supported by JLR, Ferrari, Boeing, Koenigsegg amongst others.

From 2023 AML reports CBAM installation data to its EU customers.

Water Discharges

AML minimises the use of water in its processes.

The majority of plant use closed circuit cooling radiators for their cooling needs.

The only exception is water used for product cooling on the casting tracks, but 95% is evaporated leading to minimal process water discharges.

After contact with Sever Trent, AML has located its supply meters and periodic meter readings have now been taken from February.

Water usage 1st Feb to 31st Dec was 2,504 l equivalent to 0.25 l/mt output.

Air Discharges

AML has fume abatement plant to clean furnace emissions.

This minimises emissions to air, the following calculation is based on the 2024 extractive data.

Particulate	76 kg
HCl	22 kg
HF	110 kg
Dioxin/Furan	0.00002418 kg

Waste Management

AML as other manufacturing businesses generates waste from the production of its products.

AML also buys high grade metal scrap (predominately aluminium and end of waste) for its own use and trading to other recycling companies or foundries as a raw material. All these materials are recovered and recycled, zero goes for disposal and not considered waste in this section as it is a traded commodity.

Wherever and whenever possible, AML aims to minimise its waste generation, and is committed to ensuring any waste that is generated is sent to specialist companies for recovery and has a zero to landfill commitment.

Individually identified Waste Skips are used to collect different waste codes and avoid waste mixing.

The skips are collected on a regular basis, see table for typical collection schedules, but this is dependent on generation.

Waste collections 2024 in the following table.

Non Hazardous			
Description	**Waste Code**	**Typical Annual Generation**	**Management Method**
Cardboard	WC 15 01 01	1.2 mt	Certified Waste Recovery Companies for recycling, baled and collected every 1 to 2 months.
Wood	WC 15 01 03	65 mt	Certified Waste Recovery Companies for recycling, monthly.
General Waste	WC 20 03 01	84 mt	Certified Waste Recovery Companies for recycling, collection once or twice weekly.
Furnace Skimmings	WC 10 03 16	1,019 mt	Specialist recovery companies that recover the aluminium from the skimmings for recycling, and residue, collection once or twice monthly.

Hazardous			
Description	**Waste Code**	**Estimated Annual Generation**	**Management Methods**
Interceptor Waste	WC 13 05 08	~22,700 lt	Specialist Oil treatment and recovery Companies, collection twice per annum. ~11,350 l per collection
Fume abatement collected flue dust	WC 10 03 19	8 mt	Certified Waste Recovery Companies for recycling, collection when generated.
Oily Rags, Wipes & Gloves	WC 15 02 02	1.81 mt	Specialist Oil treatment and recovery Companies, collection annual.
Mixed Oil	WC 12 01 09	8 mt	Specialist Oil treatment and recovery Companies, collection quarterly.

Opportunities for Improvement

1. Increase secondary/scrap usage.
2. Continuous development of techniques and technology to improve metal recovery during processing.
3. Continuous development of techniques and technology to reduce energy use during processing.
    a. More granular analysis of energy use, to determine potential savings.
4. Continuous assessment of lower carbon techniques and technology.

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