



BAT Assessment

Hensel Recycling (UK) Limited



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SITE DETAILS

North Storage Depot
Chiddingfold Road
Dunsfold
GU8 4PB

OPERATOR DETAILS

Hensel Recycling (UK) Limited
12 Maydwell Avenue,
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APPLICATION REFERENCE

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APPENDICES

REFERENCE	TITLE
Appendix A	BAT Conclusions (K245.2~09~08)
Appendix B	Noise Assessment (SA-6377-4)

DRAWINGS

REFERENCE	TITLE
K245.2~20~003	Site Layout Plan

1 INTRODUCTION

This Best Available Techniques (BAT) Assessment has been produced on behalf of Hensel Recycling (UK) Ltd (the operator and applicant) in line with Sector Guidance Note IPPC S5.06 Guidance for the recovery and disposal of hazardous and non-hazardous waste¹ and specifically the Environment Agency's Best Available Techniques guidance², to support an Environmental Permit Application in accordance with the Industrial Emissions Directive for the storage and treatment of hazardous waste at HRUK Chiddingfold Site, North Storage Depot, Chiddingfold Road, Dunsfold, GU8 4PB.

The term 'best available techniques' is defined in Article 2(11) of the Directive as 'the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole'.

Article 2(11) goes on to clarify further this definition as follows:

'best' means most effective in achieving a high general level of protection of the environment as a whole.

'available' techniques are those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;

'techniques' includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;

Furthermore, Annex IV of the Directive contains a list of 'considerations to be taken into account generally or in specific cases when determining best available techniques... bearing in mind the likely costs and benefits of a measure and the principles of precaution and prevention'.

¹ [Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

² [Best available techniques: environmental permits - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

This assessment has been undertaken to review the BAT implemented at the Hensel Recycling site, the areas of operation covered are as follows:

- Pre-acceptance and acceptance procedures;
- Reception, handling and storage of waste;
- Containment;
- A description of the treatment processes;
- Emissions and monitoring;
- Nuisance management;
- Raw material usage; and
- Energy Efficiency.

The following sections of this document and the accompanying spreadsheet identify and assess the relevant BAT conclusions (BAT 1 - 24 & 34) implemented at the Hensel Recycling site in relation to the above mentioned operations and demonstrate that they have been complied with.

2 RECEPTION, HANDLING AND STORAGE OF WASTE

The following section describes the operational techniques that are implemented on site to control the release of any potentially polluting substances to the environment with regard to the relevant BAT requirements outlined within the guidance document and the accompanying spreadsheet (Appendix A).

2.1 Pre-Acceptance Procedure

Hensel Recycling (UK) Ltd accepts hazardous and non-hazardous wastes from within the UK and other European countries at their site, consisting of waste exhaust systems, catalytic converters (both with and without Refractory Ceramic Fibre (RCF) matting) and surplus non-hazardous ceramic monolith (catalyst) direct from the producer. The types of wastes to be accepted at the site are identified in the List of Waste document (K245.2~09~005) accompanying the application (Section 08).

A pre-acceptance procedure is followed in accordance with S5.06 section 2.1.1.

When a new enquiry is received by Hensel Recycling the waste producer is asked to confirm the type of process where the waste is produced, the expected quantity of waste, and hazardous properties associated with the waste (e.g. HP07 for RCF matting). The enquiry information is allocated a unique reference (contract) code and retained as a record for a minimum of 3 years.

Waste is delivered and stored pending treatment (shearing and milling) in either intermediate bulk bags, metal cages, IBCs, drums, or barrels. These are usually supplied by the Operator.

2.2 Reception

Upon arrival at Hensel Recycling's site the incoming load is directed to the site office. The containers are visually inspected to confirm the type and quantity of waste is correct to that agreed and specified by the waste producer, and to remove any contaminants, prior to acceptance at the site.

The waste transfer note/consignment note is then completed by Hensel Recycling, dependent on the nature of the waste, stating the date and time of the delivery of the container, details of the delivery vehicle, a description of the waste by type and quantity, EWC, SIC and all other 'duty of care' requirements.

The delivery drivers are then directed to the waste reception unloading area (see Site Layout Plan K245.2~20~003) by a site foreman. The unloading of delivery vehicles is undertaken using a forklift or pallet truck, operated by a suitably qualified person.

2.3 Handling & Storage

A final visual inspection of the waste is then undertaken, where single category loads (e.g. those under 16 01 22) have been received these are unloaded, weighed on suitably calibrated scales and stored in suitable containers on the concrete floor in the designated storage area (see Site Layout Plan K245.2~20~003) within the enclosed building.

Where mixed loads are received (under 16 01 21*), the waste converters with and without RCF matting are visually identified by looking down the pipe and segregated by hand sorting (where this is not possible, the segregation occurs following the de-canning process). These are then weighed, issued a unique reference (usually the contract number) and stored in suitable containers on the concrete floor in the designated storage area (see Site Layout Plan K245.2~20~003) within the enclosed building.

Where ceramic monolith (with or without RCF matting) is also present within the same load, it is segregated by visual inspection and hand sorting, weighed, issued a unique reference (usually the contract number) and stored in rigid containers (lined with 1,000-gauge polyethylene bag) directly on the concrete floor in the designated storage area (shown in) within the enclosed building.

Source-segregated Printed Circuit Boards (PCBs) are also received and are stored on site 'as received' prior to dispatch for recycling at suitably permitted facilities.

Any non-conforming waste types (other than those listed in K245.2~09~005, Section 08) will be rejected upon visual identification. Rejected wastes will be relocated to the designated quarantine area (shown in Site Layout Plan K245.2~20~003), the customer will be informed (usually via telephone/email) and arrangements will be made to remove these items from site within 72 hours.

All hazardous and non-hazardous waste types are stored in rigid containers on the concrete floor in the designated storage area (shown in Site Layout Plan K245.2~20~003) within the enclosed building. Where wastes are stored within containers (lined with 1,000-gauge polyethylene bag), these are labelled appropriately with a unique reference, date and hazardous property (HP07 for RCF matting), if appropriate.

A record is kept of all waste received at, or rejected from, the site. These records contain:

- Date of arrival;
- Producers details;
- Previous holders;
- A unique reference number;

- Container type and size;
- Intended permitted treatment/disposal route;
- Accurate nature and quantity of waste, including hazardous properties; and
- Storage location.

All records are maintained for a minimum of 3 years following recovery or disposal.

Waste reception and storage is undertaken within an enclosed building. There are no internal drains within the building and as such, any spillages will be allowed to pool on the surface prior to being cleaned up and disposed of at suitably permitted facilities. Spill kits are strategically placed within the building.

Daily site checks are undertaken to ensure that all structures are in good repair and recorded in the site diary. A comprehensive inspection of the site impermeable surface is undertaken monthly, repairs are organised where defects are found to maintain the integrity of the surface and prevent the transmission of fluids.

No liquid fuel is stored on site. All forklifts are gas powered and spare cylinders are securely stored outside the main building.

Hydraulic and lubricating oils, including waste oils, will be stored in appropriate containers or removed by the service engineer. The container is provided with secondary containment, to prevent the leakage from any of the drums contained within it.

All drums and containers stored within the site will be clearly marked with their contents and capacity. Drum openings will be securely sealed before being moved to or from the site to prevent spillages.

Spill response kits shall be available during the transfer of all substances at the site.

The external drainage gullies are inspected monthly to ensure they are free flowing, and the integrity has not been breached. If found to be blocked, immediate action will be taken to remove and dispose of the blockage.

3 TREATMENT PROCESS

All site treatment processes are undertaken in accordance with BAT requirements and are described in detail below and with the flow diagram presented in Figure 1.

3.1 Shearing of Catalytic Converters

The catalytic converters are removed from the rest of the exhaust system by hydraulic shearing (so-called 'top and tailing' a recognised industry standard treatment method), where not already removed by the waste producer. Catalytic converters are subject to the same hydraulic shearing process to open up the metal casing and extract the ceramic monolith (containing the precious metal catalyst) and the metal or RCF matting which provides thermal insulation and physical support to the ceramic monolith. The equipment is allied to a Local Exhaust Ventilation (LEV) system (certificate pending) to extract and collect any dust/fibres released.

Metal casings, ceramic monolith and RCF matting are segregated and stored on the concrete floor in appropriate containers (lined with 1,000-gauge polyethylene bag) in designated areas within the enclosed building (as shown in Site Layout Plan K245.2~20~003). Only clean, uncontaminated scrap metal is stored outside in a sheeted 40-yard skip during the working day. At night, the skip is brought inside the enclosed building.

3.2 Milling of Ceramic Monolith

Ceramic monolith is accepted with and without RCF matting attached. RCF matting is removed by hand and mechanically milled in a ball mill (a recognised industry standard treatment method) within the enclosed building allied to a certified LEV system. Any remaining fragments of RCF are again removed by hand before being bagged (using 1,000-gauge polyethylene) and stored in the adjacent designated storage area prior to disposal. Dust extracted and collected from LEV systems allied to the shearing and milling processes is added to the bulk bags for each batch/consignment.

3.3 Automotive Electronic Waste

Other associated electronic wastes including, but not limited to, engine control units (ECUs) and oxygen/lambda sensors are also accepted and are stored in a designated area within the enclosed building pending transfer to suitably permitted facilities in the UK and elsewhere in Europe.

3.4 Removal of Refractory Ceramic Fibre (RCF) matting

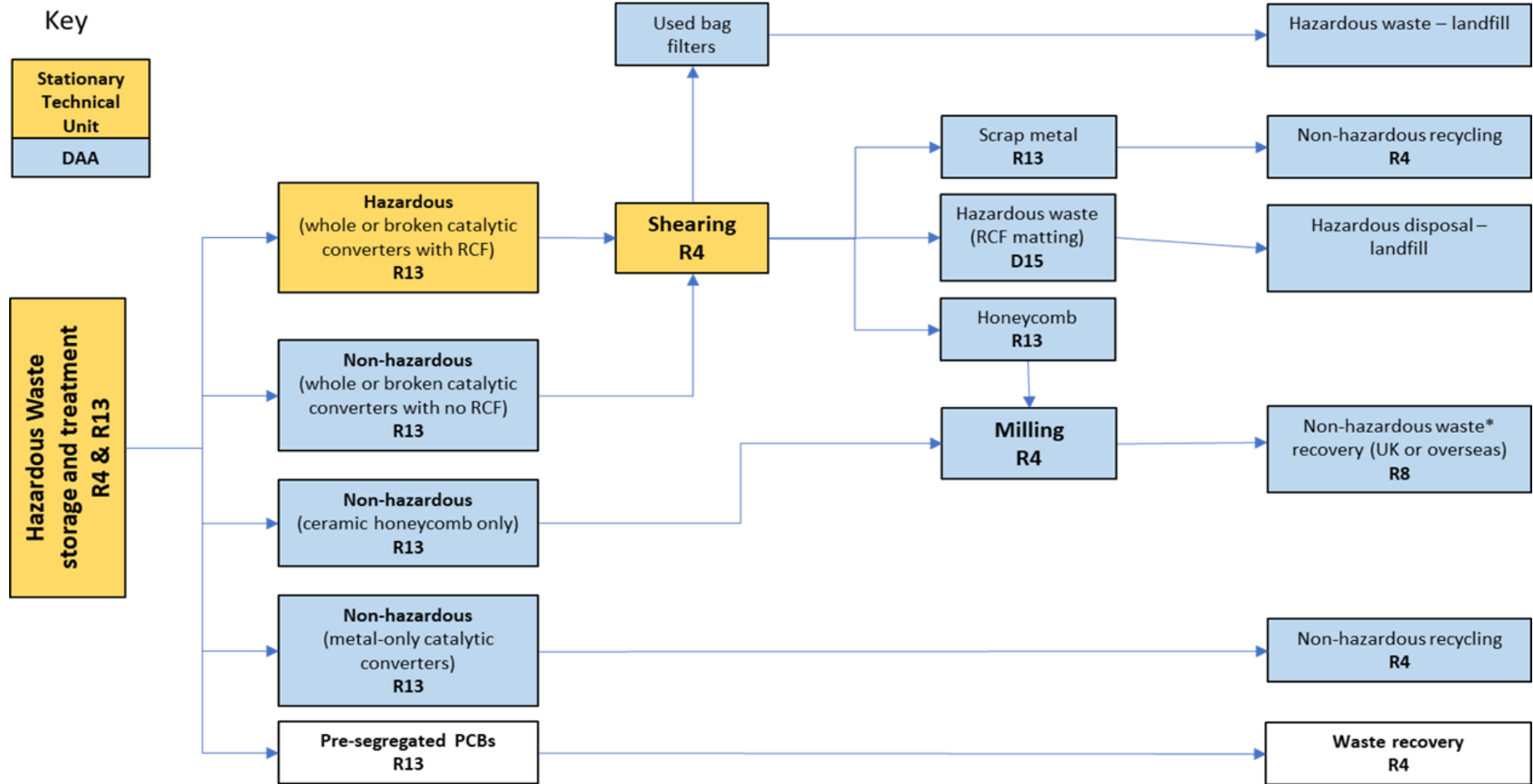
RCF is classified as a Category 1B carcinogen and has properties akin to asbestos, this is the primary reason why mixed or unsorted catalytic converters are classed as hazardous waste.

The RCF matting is removed by hand during the shearing and milling processes and stored in labelled, rigid containers (e.g. plastic barrels lined with 1,000-gauge polyethylene bag) in a designated area adjacent to the ball mill (see Site Layout Plan K245.2~20~003), prior to disposal to a suitably permitted landfill. All employees potentially exposed to this material are suitably trained and wear the required respiratory protective equipment (RPE) and/or operate under a LEV system fitted with a high-efficiency particulate absorbing (HEPA) filter.

3.5 Printed Circuit Boards (PCBs)

There is no treatment of PCBs on site. PCBs are received already separated and pre-segregated by the waste producer and are stored on site 'as received' prior to dispatch for recycling at suitably permitted facilities.

Figure 1: Process Flow Diagram



* Dust collected from LEV and HEPA filters during the process will be subject to a WM3 Assessment by the waste producer

4 EMISSIONS AND MONITORING

4.1 Emissions to Water

There are no point source emissions to surface water except clean, uncontaminated runoff from the building's roof.

4.2 Emissions to Air

The nature of the wastes accepted at the site means that no odorous emissions should arise. The shearing and milling processes are dry processes which can create dust and particulate matter. Local Exhaust Ventilation (LEV) allied with HEPA filters is fitted to all shearing stations and the ball mill to capture any potentially emitted dust/fibres and as an additional precaution, all employees working at these locations wear the appropriate RPE. Dust collection vessels (e.g. cyclone) and HEPA filters are cleaned between batches to prevent any unnecessary build up. A ceiling-mounted misting system is also in operation to further suppress the generation of dust and any other particulate matter.

The LEV systems have been installed and inspected by a certified contractor and will be maintained in accordance with the manufacturer's recommendations and the HSE's *Clearing the air* (INDG408) and therefore considered as BAT. Only clean, filtered air is discharged to atmosphere within the building. There are no discharges to air outside the building.

During periods of dry weather external site surfaces shall be inspected to ensure dust is not generated. If dust is found to arise it shall be suppressed with mains water.

4.3 Monitoring and Records

All site processes (including dust generation) are monitored daily to ensure that there is no breach in site infrastructure, or generation of emission, which could cause a detrimental impact to the environment or human health. A record of daily inspections is maintained in the site diary.

A dust assessment will be carried out to assess occupational exposure limits for employees at significant potential risk and to evaluate the performance of the LEV systems allied to the shearing stations and ball mill. Dust samples will also be collected and analysed to determine waste classification and any special handling requirements. An assessment will also be made to determine the applicability of Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR).

5 NUISANCE MANAGEMENT

The site has the potential to generate noise or dust but given its location, it is unlikely to adversely affect neighbouring receptors. Risk controls are described within the Environmental Risk Assessment (K245.2~09~004) and informed by an external Noise Impact Assessment (ref: SA – 6377-4). As described previously the types of wastes received at the site are unlikely to give rise to issues relating to odour or pests.

The site is located in a rural area, adjacent to another permitted facility (Ref EPR/EB3301LP) undertaking the same treatment processes and operates only during the daytime. The previously permitted facility (EPR/EP3439DW) conducting an identical activity did not receive complaints regarding a fugitive emission or nuisance.

The potential of nuisance is managed through daily site operations. Control measures employed for dust have been described in previous sections of this review.

5.1 Noise

It is not anticipated that excessive noise levels will arise from the site operations as they are contained within an enclosed building and machinery appropriately enclosed to minimise noise break out. The site is situated within a rural area and surrounded by trees. Surrounding land use does have both residential and agricultural uses and therefore, an external noise impact assessment, conducted by Sound Advice Acoustics Ltd (Appendix B) has been conducted to assess any potential impacts. It confirms that the activities on site will not generate a higher noise level than those background activities.

Noise monitoring will be undertaken within the building to determine workplace exposure limits for employees at significant potential risk and inform site management of the potential need for hearing protection areas.

To manage noise impact from the operations, site activities are currently only conducted during operational hours:

08:00 to 17:00 Monday – Friday

09:00 to 13:00 Saturday

Closed Sundays & Bank Holidays

5.2 Pests

It is not anticipated that pests, birds or vermin will be attracted to the site due to the non-biodegradable nature of the waste.

The site shall be inspected for the presence of pests, and where pest infestations are found actions will be taken to investigate, control and remove their presence.

All records of investigations and actions will be maintained in the site diary.

5.3 Complaints

If complaints are received due to site activities the following procedure is followed:

- When a complaint is received the site manager will record all details of the complaint in the site diary.
- An immediate investigation into the complaint will be conducted.
- Where found to be necessary, remedial action will be undertaken.
- Follow up contact will be made with the complainant.

6 RAW MATERIAL USAGE

Raw materials used at the site include bottled propane gas for the forklifts, oils and other lubricants, cleaning products, and energy (electricity and wood pellets for the biomass boiler). Wood pellets are purchased from sustainable sources.

The use of raw materials is monitored and reviewed annually to ensure efficient management and operation of the site.

Where possible materials are reused to reduce the consumption of raw materials but there is currently no rainwater harvesting or grey water recycling system installed

7 ENERGY EFFICIENCY

The main facility processes with energy yields are mobile plant, mechanical equipment (including dust abatement systems) and lighting. To maintain an efficient process, the site is inspected and maintained in accordance with manufacturer's recommendations and all relevant statutory legislation to ensure optimum operating conditions. Portable appliances and fixed wiring installations are inspected and tested as required and any defects rectified.

Energy efficiency is reviewed annually and where electrical items are in need of replacement, consideration is given to the procurement of low energy alternatives (e.g. replacing light bulbs with LEDs).

Site operatives have numerous procedures to follow to ensure high maintenance standards and are trained in these areas of the operation.

8 STANDARDS

Hensel Recycling (UK) Ltd operates the site in accordance with their Environmental Management System (K245.2~09~001) and associated documentation.

They also follow appropriate Environment Agency guidance and legislation:

- Environmental Permitting (England and Wales) Regulations 2016 (as amended);
- Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste;
- Waste Treatment BREF (August 2018);
- The Controlled Waste Regulations 2012 (as amended);
- The Hazardous Waste (England and Wales) Regulations 2005;
- The Waste (England and Wales) Regulations 2011 (as amended);
- [Waste: export and import - GOV.UK \(www.gov.uk\)](http://www.gov.uk);
- [Control and monitor emissions for your environmental permit - GOV.UK \(www.gov.uk\)](http://www.gov.uk);
- [Best available techniques: environmental permits - GOV.UK \(www.gov.uk\)](http://www.gov.uk); and
- [Develop a management system: environmental permits – GOV.UK \(www.gov.uk\)](http://www.gov.uk).



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