

Bridgnorth Recycling Facility Operating Procedure

Bridgnorth Recycling Facility

Operating procedure

April 2024

Version 2

Document control

Document Version	Revision notes
V1 May 2020	Variation to change from SR to bespoke permit
V2 April 2024	Variation to increase waste list

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1.0 INTRODUCTION

The operational control of the Bridgnorth Recycling Facility 'BRF' is governed by the Business Management System and is undertaken to comply with all the requirements of the Facility's Environmental Permit and in accordance with other statutory and contractual requirements. Effective management of the BRF is vital in ensuring that the potential environmental impacts of their operations are minimised. The correct management and operation of the BRF is also vital in ensuring the provision of the desired services to the Company's customers.

The BRF is located at Bridgnorth IWMF, Faraday Drive, Bridgnorth, Shropshire, WV15 5BA. The facility is co-located with a HWRC and a transfer station. The BRF with the co-located activities, shall be operated in compliance with the relevant Environmental Permit(s), planning conditions and other regulatory provisions including those detailed in the Other Requirements Register and in accordance with the plant manufacturer's recommendations in the Operation and Maintenance manual.

The Location Manager shall, where required in this procedure, ensure that written procedures are in place to adequately manage the activities. These Tier 4 documents are to be developed and managed at the facility. Copies of Tier 4 procedures shall be held locally.

2.0 SCOPE

This procedure covers the following:

- Processes
- Management and Abatement of Mercury
- Operating Procedures
- Plant Maintenance
- Storage and Transport
- Secure destruction

3.0 REFERENCES

4.0 DEFINITIONS

BRF: Bridgnorth Recycling Facility

AATF: Approved Authorised Treatment Facility

AE: Approved Exporter

CCFL: Cold Cathode Fluorescent Lamp

FSDU: Flat Screen Display Unit

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PCB: Printed Circuit Boards

PMMA: Poly methyl methacrylate also known as acrylic or acrylic glass as well as by the trade names

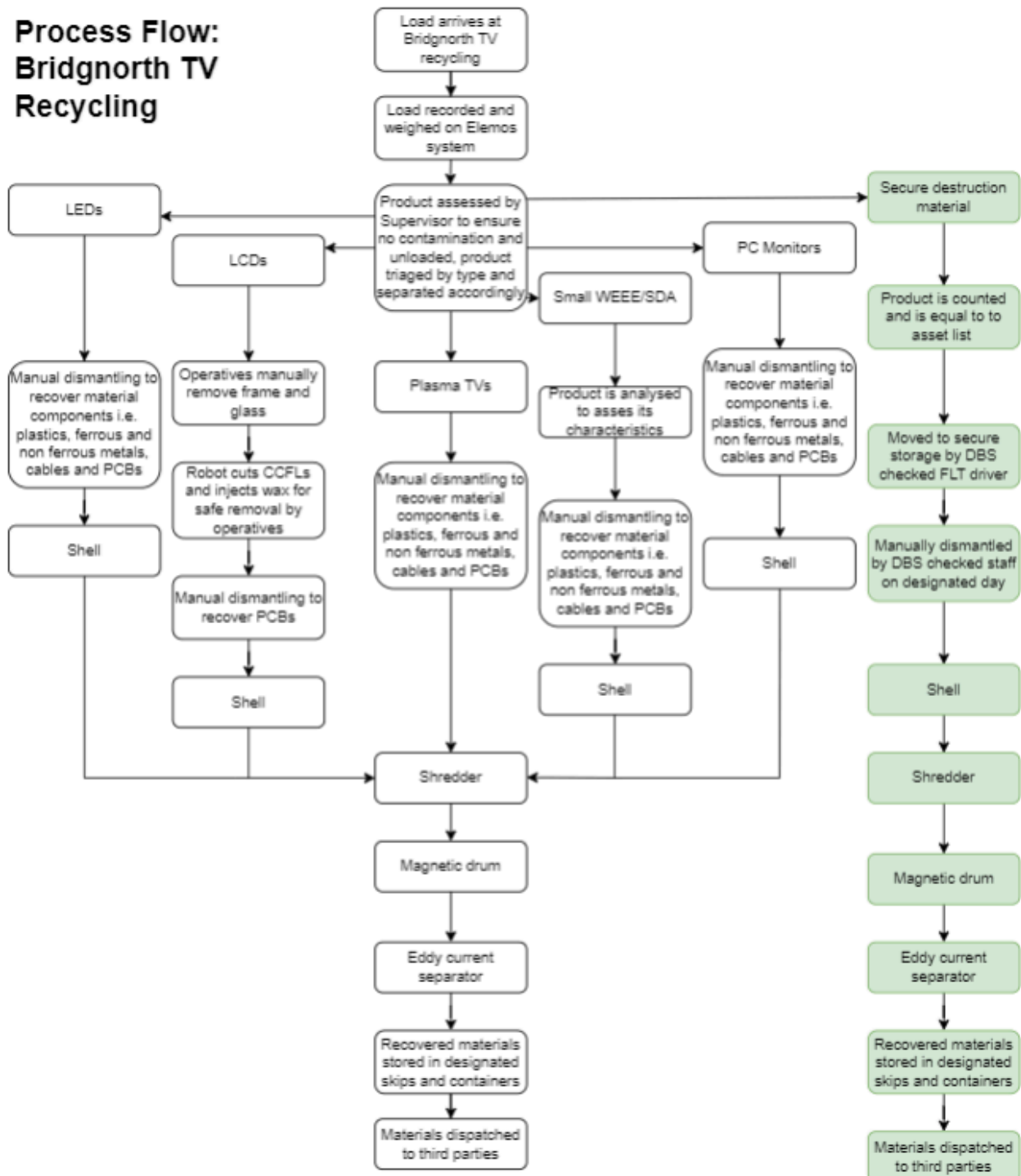
Plexiglas

WIMS: Waste information management system

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5.0 PROCEDURE

Process Flow: Bridgnorth TV Recycling



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5.1 Processes

LCD televisions

LCD televisions are recycled through a semi-automated process which features manual and automated separation techniques:

- **Cutting / sealing cell:** The robot acts by cutting CCFL backlighting tubes containing mercury into two and simultaneously injecting a hot wax and glue mixture (that dries instantly) to contain mercury inside. The bisected CCFLs including the end caps containing the electrodes can then be manually removed safely from the lampholders by operators and sent to suitably licensed disposal routes. This robot operates under continuous extraction to contain any fugitive mercury emissions.

The recycling process for the LCD televisions is as follows:

1. LCD televisions are prepared (plugs, speakers and plastic base stands are manually removed by an operative) and are manually dismantled to remove the plastic bevel screen layer (glass, filters, PMMA and some printed circuit boards) exposing the tube array.
2. The screen is placed on a conveyor to the cutting / sealing robot, CCFLs facing upwards.
3. The robot cuts the CCFLs backlight tubes (which contain mercury) in two under extraction and simultaneously injects a hot wax / glue mixture into the cut ends of the tubes to contain mercury inside and prevent any mercury release. The robot operates under continuous extraction to contain any gaseous emissions including mercury particles and vapour.
4. The screens are removed from the robot cell by a conveyor, CCFLs at the top. The ends of each CCFL remain attached to the lampholders.
5. Operatives can safely remove the CCFLs including end caps under extraction which are transferred and stored under negative pressure prior to recycling by a third party.
6. CCFL tube removal can also be carried as a manual operation under extraction. In this case FSDU with exposed tube arrays are placed into a booth with negative extraction and the tubes are detached manually and transferred into a lidded container.
7. Extracted CCFL tubes are transferred manually to either drums or stillages which are kept within an enclosed booth which is maintained under negative pressure.
8. Dismantling and storage activities which could result in the release of mercury vapour are carried out under negative pressure with extracted air being treated through a carbon filter.

PC monitors

PC monitors are partly manually dismantled at a workstation. Then an automated saw cuts the edges of the screens to remove the Cold Cathode Fluorescent Lamp (CCFL) backlighting, these

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contain mercury. The saw operates under extraction and cuts away the CCFLs (keeping them inside the edge of the screen) so no mercury vapour is released. Some printed circuit boards, Poly Methyl Methacrylate (PMMA), plastic casing and filters are manually recovered.

Because the 3 saws are producing dust and particles as well, this aspirated air needs to be purified by a dust filter installation in order to protect the Activated Carbon Filter and prolong the lifespan of the filter medium.

The rest of the screen panel is processed through the shredding line. The shredding line includes magnets to recover ferrous components, a picking line to recover the printed circuit boards (PCBs) and an eddy current to recover the non-ferrous components. The remaining output is plastic and residue.

Plasma televisions

Plasma televisions are initially manually dismantled at a workstation. The plastic casing is manually recovered for recycling as well as the plasma glass. The circuit boards, the ferrous and non-ferrous are extracted and kept separate for recycling. Once manually dismantled carcasses can be introduced to the shredder.

LED televisions

LEDs are manually dismantled at a workstation. The plastic casing is manually recovered for recycling. The circuit boards, the ferrous and non-ferrous are extracted and kept separate for recycling. Once manually dismantled carcasses can be introduced to the shredder.

Small Mixed WEEE / SDA

Small mixed WEEE / SDA inputs, as a more diverse input type, are subject to a processing trial and product analysis. If it is deemed that the proposed input stream can be processed then specific waste acceptance criteria are established with the client e.g. source segregation of whole WEEE and components. Batteries are removed from all products manually before further processing. Depending on the product, SMW / SDA may be initially manually dismantled following shredding of the shell for further recovery. Alternatively SMW / SDA may be shredded without a manual dismantling stage. In some cases sorting of loads will be undertaken for partial manual and mechanical processing.

Other wastes including Secure destruction

The processing capabilities at the site including manual and mechanical stages can be tailored to

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a wide portfolio of incoming material and the activities can be modified to yield high quality recyclable material streams. Other wastes include non hazardous and non WEEE items. Waste types are likely to include pre or post consumer products or components composed mainly of plastic and metals. Other materials could include items such as clothes / textiles and wooden furniture.

Bespoke waste treatment requests are subject to a processing trial and product analysis to establish suitability for the techniques available on site. If a processing trial is successful where required a site specific protocol will be issued for product processing.

Shredding - main shredder

The shredding equipment can be used for material size reduction and separation where suitable. In the case of television units once the manual dismantling stages are completed a shell with plastic, ferrous, non-ferrous and PCB components is then shredded to recover the remaining components. The shredding line includes magnets to recover ferrous components, a picking line to recover the PCBs and an eddy current to recover the non-ferrous components. The remaining output is plastic and residue. Small WEEE items may also be processed through the shredder in a similar manner to television units. The shredder may also be used for non WEEE items which will principally be those composed of metal and plastic. The shredder may be used for other items such as textiles subject to successful trial. The shredder will not be used for any waste types likely to generate more dust than the TV shredding activity.

Shredding - secondary shredder

The facility has space for a mini slow speed shredder capable of small items such as SD cards, mobile phones and hard drives. This is principally for the secure destruction activity which may be required to demonstrate compliance with a maximum fraction size.

5.2 Management and Abatement of Mercury

Air abatement systems

Processing stages (either manual or mechanical) which require the manipulation of CCFLs are undertaken in an enclosed environment, under negative pressure and connected to a local exhaust ventilation (LEV) system. The LEV network is connected to an abatement system to control emissions to air comprising a Keller VARIO 2 Eco fabric filter with continuous pulse jet cleaning and a Desotec Aircon H activated carbon filter. Exhaust from the abatement system is then released to the atmosphere via a 7m tall stack. Robot 2 has an interlock at the access door timed to allow for one air change to occur before opening.

A detailed dispersion modelling assessment has been undertaken to quantify the impact of particulate and mercury emissions from the abatement system. Impacts to air quality were

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modelled conservatively assuming the plant runs continuously during normal operational hours at the relevant upper BAT-AEL emission limit for particulates (5 mg/Nm³) and mercury (7 µg/Nm³) specified in the 2018 BAT Reference document for the waste treatment sector. The assessment concluded that emissions from the abatement system will not cause a breach of relevant air quality assessment limits at any and will not have a significant impact on local air quality, the general population or the local community. Previously completed stack monitoring campaigns demonstrate that the abatement system can achieve the specified limits for particulates and mercury.

Emissions to air from the abatement system are monitored at the specified frequency in the permit using MCERTS accredited methods for dust (BS EN 13284-1) and mercury (BS EN 13211).

The performance of the carbon filter is assessed through regular MCERTS accredited monitoring of the stack outlet concentration. Exchange of the carbon filter is reviewed with the supplier on a 12 monthly basis or following two consecutive monitoring results for either mercury or dust at above 80% of the specified emission limit, whichever is sooner. Should a breach of permitted emission limit occur this will be investigated and the approach to monitoring carbon filter performance will be reviewed and updated.

The exchange of the carbon filter will be carried out by a specialist contractor. Emptying of the residues from the fabric filter is carried out in accordance with a procedure which controls the release of fugitive mercury.

Use of a portable mercury monitor

A portable mercury monitor will be used to determine whether fugitive mercury emissions are occurring in storage or processing areas. The mercury meter will be used in the following general manner:

- 1.) A minimum of once weekly to proactively assess mercury levels around incoming containers in reception areas (see also section on 'CCFLs damaged on arrival').
- 2.) A minimum of once weekly to proactively assess mercury levels in any lamp treatment and storage areas.

Should fugitive emissions be detected the root cause will be investigated and the requirement for corrective actions assessed. The monitor will be calibrated in accordance with the manufacturer's recommendations.

Fugitive mercury

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The Facility has specialist vacuum cleaner with HEPA filters which can be utilised for cleaning operational areas as part of routine housekeeping where required.

Summary of use:

- 1.) To clean and decontaminate any area following an accidental spillage which could contain mercury.
- 2.) Periodic deep cleaning of processing and storage areas where it is appropriate as a precaution to treat any accumulated dust as if they could contain mercury.

The emptying of residues collected by the vacuum cleaner is performed in a controlled environment under extraction. Emptying of the residues from the unit is carried out in accordance with a procedure which controls the release of fugitive mercury.

Mercury extraction booths are cleaned at the end of every shift by damping down the surface area and sweeping any residues into mercury containers for recovery along with CCFL back lights.

CCFLs damaged on arrival or in process

Depending on how they are handled prior to arrival at the facility display screen CCFLs could be damaged on arrival. Internal damage affecting CCFL integrity is not always readily apparent by visual inspection alone, as internal backlights may have been broken by a shock pulse from dropping or shunting a container.

Damaged or dropped LCDs are more likely to contain broken backlights and are therefore prioritised for processing to minimise the time period they pose an increased risk of fugitive emissions. Appropriate measures are also in place to ensure CCFL tubes are not further damaged during onsite processing and handling activities.

The following controls are in place:

1. A portable mercury monitor is used periodically to monitor mercury levels around containers in reception areas. Where a container is identified to be a source of fugitive mercury emissions the units within that container will be prioritised for processing (in line with point 3 below). Where it is established that incoming loads from a particular source or origin site or supplier, this will trigger a review to determine the root cause and requirement for any corrective actions.
2. From receipt to the site the site display screens are handled sympathetically to avoid any shock pulse which could cause a breakage.

Movement and storage of CCFL tubes

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All CCFL tubes whether broken or intact are handled and stored either in a negative pressure environment or in a closed container with a well fitting lid.

Mercury emissions to water and sewer

There are no drains internal to the facility and therefore no pathway to surface water or sewer. Mixed flat screen displays arriving at the facility are temporarily stored externally prior to processing. Triage of display units into input streams by technology type prior to further processing is also carried out externally. These units are stored under a weatherproof covering (tarpaulin) until they are ready for processing to prevent fugitive emissions to the water environment via washing with rainwater.

Storage of residues (ferrous, non-ferrous and PCB boards) is via a covered chute from the shredding operation into two RORO containers and a bulk bag situated externally.

To avoid the fugitive emissions of any substances (including mercury) into the surface water network, external areas for temporary storage of incoming units, triage by technology type and storage of residuals are drained into the foul sewer network controlled by a discharge consent.

There are no extracted CCFL tubes stored externally.

5.3 Operating Procedures

The location manager will ensure that suitable Tier 4 'T4' e.g. site specific procedures are in place and adopted which identify and minimise risks of pollution, and danger, including those arising from operations, maintenance, accidents, incidents and non-conformances.

5.4 Plant Maintenance

The location manager will ensure that the company SAP maintenance computer based maintenance management system is used to manage and record all planned and unplanned maintenance activities and calibration records.

5.5 Storage and Transport

Storage

All recovered materials from the recycling process will be inspected prior to despatch to confirm their description and composition matches the quality criteria set in our protocols and the

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destination is on Veolia's material sales department approved list.

Separated material fractions will be loaded in an appropriate manner for safe transportation.

This may include:

- loose into 40 yard containers (e.g. ferrous, non-ferrous, glass, filters, mixed plastic)
- bagged and palletised for loading on curtain siders (e.g. PCBs)
- in rigid stillages for loading on curtain siders (e.g. PMMA, PCBs from display equipment)

The method for loading will be adapted to each container and material to be transported, and clear procedures will be defined and operatives trained on them.

Transport

Each load will only be allowed to leave the site with the relevant documentation for the journey and after visual inspection. All loads will be weighed, and mixed loads will have a weight for individual materials. All loads will be recorded on our Waste Input Monitoring System (WIMS). Where appropriate, photographs of the load will be taken and saved on the Veolia server in the designated folder.

For international waste shipment, Annex VII paperwork will be completed at the site and the seal details recorded. Declaration of receipt of the waste by the consignee and recovery facility is received by signature of section 13 and 14 of the Annex VII form.

Veolia Materials Sales department will work closely with the site to identify competent and compliant partners for materials recovery. Material sales department will share with the site copies of licences of each third party the site will be dealing with a stringent quality and duty of care protocol has been developed for our Material Recovery Facilities. Our flat screen facility in Bridgnorth will benefit from this knowledge and a similar protocol will be applied.

Veolia Material Sales will also request details of final destinations and processing losses. These are held on file. All information is entered into and available on WIMS.

5.9 Processes

All items delivered are checked off via asset list accompanying each load, once

6.0 DOCUMENTATION

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- Fire Prevention Plan
- AATF Application Document
- AE Application Document
- Waste Treatment BREF 2018
- (BATRRRT) and treatment of Waste Electrical and Electronic Equipment (WEEE): an AATF must comply with BATTRT guidance
- Storage and Treatment of Flat Panel Displays - quick guide EA 2017
- Completing Annex VII Documents – International Shipments
- Annex VII template

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List of wastes

Further restrictions, where applicable, are square bracketed in red text. Wastes indicated with a ‘ * ’ will be subject to enhanced approval.

Waste code	Description of waste	*
01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, PHYSICAL AND CHEMICAL TREATMENT OF MINERALS	
01 03	wastes from physical and chemical processing of metalliferous minerals	
01 03 99	wastes not otherwise specified	*
01 04	wastes from physical and chemical processing of non-metalliferous minerals	
01 04 99	wastes not otherwise specified	*
01 05	drilling muds and other drilling wastes	
01 05 99	wastes not otherwise specified	*
02	WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING	
02 01	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing	
02 01 04	waste plastics (except packaging)	
02 01 08*	agrochemical waste containing hazardous substances	
02 01 09	agrochemical wastes other than those mentioned in 02 01 08	
02 01 10	waste metal	
02 01 99	wastes not otherwise specified	*
02 02	wastes from the preparation and processing of meat. Fish and other foods of animal origin	
02 02 99	wastes not otherwise specified	*
02 03	wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, teas and tobacco preparation and processing, conserve production, yeast and yeast extraction production, molasses preparation and fermentation	
02 03 99	wastes not otherwise specified	*
02 04	wastes from sugar processing	
02 04 99	wastes not otherwise specified	*
02 05	wastes from the dairy products industry	

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02 05 99	wastes not otherwise specified	*
02 06	wastes from the baking and confectionery industry	
02 06 99	wastes not otherwise specified	*
02 07	wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)	
02 07 99	wastes not otherwise specified	*
03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD	
03 01	wastes from wood processing and the production of panels and furniture	
03 01 04*	sawdust, shavings, cuttings, wood, particle board and veneer containing hazardous substances	
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04	
03 01 99	wastes not otherwise specified	*
03 02	wastes from wood preservation	
03 02 99	wood preservatives not otherwise specified	*
03 03	wastes from pulp, paper and cardboard production and processing	
03 03 99	wastes not otherwise specified	*
04	WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES	
04 01	wastes from the leather and fur industry	
04 01 99	wastes not otherwise specified	*
04 02	wastes from the textile industry	
04 02 09	Wastes from composite materials (impregnated textile, elastomer, plastomer)	
04 02 15	Wastes from finishing other than those mentioned in 14 02 14	
04 02 21	Wastes from unprocessed textile fibres	
04 02 22	Wastes from processed textile fibres	
04 02 99	wastes not otherwise specified	*
05	WASTES FROM THE PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLITIC TREATMENT OF COAL	
05 01	wastes from petroleum refining	

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05 01 99	wastes not otherwise specified	*
05 06	wastes from the pyrolytic treatment of coal	
05 06 99	wastes not otherwise specified	*
05 07	wastes from natural gas purification and transportation	
05 07 99	wastes not otherwise specified	*
05 07	05 07 wastes from natural gas purification and transportation	
05 07 01*	Wastes containing mercury	
06	WASTES FROM INORGANIC CHEMICAL PROCESSES	
06 01	waste from the manufacture, formulation, supply and use (MFSU) of acids	
06 01 99	wastes not otherwise specified	*
06 02	wastes from the MFSU of bases	
06 02 99	wastes not otherwise specified	*
06 03	wastes from the MFSU of salts and their solutions and metallic oxides	
06 03 99	wastes not otherwise specified	*
06 04	metal-containing wastes other than those mentioned in 06 03	
06 04 99	wastes not otherwise specified	*
06 06	wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes	
06 06 99	wastes not otherwise specified	*
06 07	wastes from the MFSU of halogens and halogen chemical processes	
06 07 99	wastes not otherwise specified	*
06 08	wastes from the MFSU of silicon and silicon derivatives	
06 08 99	wastes not otherwise specified	*
06 09	wastes from the MFSU of phosphorous chemicals and phosphorous chemical processes	
06 09 99	wastes not otherwise specified	*
06 10	wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture	
06 10 99	wastes not otherwise specified	*

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06 11	waste from the manufacture of inorganic pigments and opacifiers	
06 11 99	wastes not otherwise specified	*
06 13	wastes from inorganic chemical processes not otherwise specified	
06 13 99	wastes not otherwise specified	*
07	WASTES FROM ORGANIC CHEMICAL PROCESSES	
07 01	wastes from the MFSU of basic organic chemicals	
07 01 99	wastes not otherwise specified	*
07 02	wastes from the MFSU of plastics, synthetic rubber and manmade fibres	
07 02 13	waste plastic	
07 02 99	wastes not otherwise specified	*
07 03	wastes from the MFSU of organic dyes and pigments (except 06 11)	
07 03 99	wastes not otherwise specified	*
07 04	wastes from the MFSU of organic plant protection products (except 02 01 08 and 02 01 09) , wood preserving agents (except 03 02) and other biocides	
07 04 99	wastes not otherwise specified	*
07 05	wastes from the MFSU of pharmaceuticals	
07 05 99	wastes not otherwise specified	*
07 06	wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics	
07 06 99	wastes not otherwise specified	*
07 07	wastes from the MFSU of fine chemicals and chemical products not otherwise specified	
07 07 99	wastes not otherwise specified	*
08	WASTES FROM THE MFSU OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	
08 02	wastes from MFSU of other coatings (including ceramic materials)	
08 02 99	wastes not otherwise specified	*
08 03	wastes from MFSU of printing inks	
08 03 99	wastes not otherwise specified	*
08 04	wastes from MFSU of adhesives and sealants (including waterproofing products)	

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08 04 99	wastes not otherwise specified	*
08 04	wastes from MFSU of adhesives and sealants (including waterproofing products)	
08 04 99	wastes not otherwise specified	*
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	
09 01	Wastes from the photographic industry	
09 01 07	photographic film and paper containing silver or silver compounds	
09 01 08	photographic film and paper free of silver or silver compounds	
09 01 10	single use cameras without batteries	
09 01 11*	Single-use cameras containing batteries included in 16 06 01, 16 06 02 or 16 06 03	
09 01 12	Single-use cameras containing batteries other than those mentioned in 09 01 11	
09 01 99	wastes not otherwise specified	*
10	WASTE FROM THERMAL PROCESSES	
10 01	wastes from power stations and other combustion plants (except 19)	
10 01 99	wastes not otherwise specified	*
10 02	wastes from the iron and steel industry	
10 02 99	wastes not otherwise specified	*
10 03	wastes from aluminium thermal metallurgy	
10 03 02	anode scraps	
10 03 05	waste alumina	
10 08	wastes from other non-ferrous thermal metallurgy	
10 08 14	anode scrap	
10 03 99	wastes not otherwise specified	*
10 04	wastes from lead thermal metallurgy	
10 04 99	wastes not otherwise specified	*
10 05	wastes from zinc thermal metallurgy	
10 05 99	wastes not otherwise specified	*
10 06	wastes from copper thermal metallurgy	

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10 06 99	wastes not otherwise specified	*
10 07	wastes from silver, gold and platinum thermal metallurgy	
10 07 99	wastes not otherwise specified	*
10 08	wastes from other non-ferrous thermal metallurgy	
10 08 14	anode scrap	
10 08 99	wastes not otherwise specified	*
10 09	wastes from casting of ferrous pieces	
10 09 99	waste not otherwise specified	*
10 10	wastes from casting of non-ferrous pieces	
10 10 99	wastes not otherwise specified	*
10 11	wastes from manufacture of glass and glass products	
10 11 99	wastes not otherwise specified	*
10 12	wastes from manufacture of ceramic goods, bricks, tiles and construction products	
10 12 99	wastes not otherwise specified	*
10 13	wastes from manufacture of cement, lime and plaster and articles and products made from them	
10 13 99	wastes not otherwise specified	*
10 11	wastes from manufacture of glass and glass products	
10 11 03	waste glass-based fibrous materials	
10 11 11*	waste glass in small particles and glass powder containing metals (e.g cathode ray tubes)	
10 11 12	waste glass other than those mentioned in 10 11 11	
10 12	wastes from manufacture of ceramic goods, bricks, tiles and construction products	
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)	
10 12 11*	wastes from glazing containing heavy metals	
10 12 12	wastes from glazing other than those mentioned in 10 12 11	
11 Wastes from Chemical Surface Treatment and Coating of Metals and Other Materials, Non-Ferrous HydroMetallurgy		
11 01	wastes from chemical surface treatment and coating of metals and other materials (e.g.	

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	galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising)	
11 01 99*	waste not otherwise specified	*
11 02	wastes from non-ferrous hydrometallurgical processes	
11 02 99	wastes not otherwise specified	*
11 05	wastes from hot galvanising processes	
11 05 99	wastes not otherwise specified	*
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 03	Non-ferrous metal filings and turnings	
12 01 05	plastic shavings and turnings	
12 01 99	wastes not otherwise specified	*
	13 Oil Wastes and Wastes of Liquid Fuels (except edible oils and those in chapters 05,12 and 19)	
13 08	oil wastes not otherwise specified	
13 08 99*	wastes not otherwise specified	*
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 01	paper and cardboard packaging	
15 01 02	plastic packaging	
15 01 03	wooden packaging	
15 01 04	Metallic packaging	
15 01 05	composite packaging	
15 01 06	Mixed packaging	
15 01 07	glass packaging	
15 01 09	textile packaging	

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15 01 10*	packaging containing residues of or contaminated by hazardous substances	
15 02	absorbents, filter materials, wiping cloths and protective clothing	
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST	
16 01	End-of-life vehicles from different means of transport [including offroad machinery] and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13,14, 16 06 and 16 08)	
16 01 08*	components containing mercury	
16 01 17	Ferrous metal	
16 01 18	Non-ferrous metal	
16 01 19	plastic	
16 01 20	glass	
16 01 21*	hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14	
16 01 22	Discarded components not otherwise specified	
16 01 99	wastes not otherwise specified	*
16 02	Wastes from electrical and electronic equipment	
16 02 13*	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12	
16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	
16 02 15*	Hazardous components removed from removed from discarded equipment	
16.02 16	Components removed from discarded equipment other than those mentioned in 16 02 15	
16 03	Off-specification batches and unused products	
16 03 03*	inorganic wastes containing hazardous substances	
16 03 04	inorganic wastes other than those mentioned in 16 03 03	
16 03 05*	organic wastes containing hazardous substances	
16 03 06	organic wastes other than those mentioned in 16 03 05	
16 04	waste explosives	
16 04 01*	waste ammunition [where explosives and powders have been removed]	

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16 04 02*	fireworks wastes [where explosives and powders have been removed]	
16 04 03*	other waste explosives [where explosives and powders have been removed]	
16 07	wastes from transport tank, storage tank and barrel cleaning (except 05 and 13)	
16 07 99	wastes not otherwise specified	*
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	
17 02	wood, glass and plastic	
17 02 02	glass	
17 02 03	plastic	
17 02 04*	glass, plastic and wood containing or contaminated with substances	
17 04	metals (including their alloys)	
17 04 01	Copper, bronze, brass	
17 04 02	Aluminium	
17 04 03	Lead	
17 04 04	Zinc	
17 04 05	Iron and steel	
17 04 06	Tin	
17 04 07	Mixed metals	
17 04 09*	Metal waste contaminated with dangerous substances	
17 04 10*	Cables containing oil, coal tar and other dangerous substances	
17 04 11	Cables other than those mentioned in 17 04 10	
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE	
19 01	Wastes from incineration or pyrolysis of waste	
19 01 02	Ferrous materials removed from bottom ash	
19 01 99	wastes not otherwise specified	*
19 02	wastes from physico/chemical treatment of waste (including dechromatation, decyanidation, neutralisation)	
19 02 99	wastes not otherwise mentioned	*

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19 05	wastes from aerobic treatment of solid wastes	
19 05 99	wastes not otherwise specified	*
19 06	wastes from anaerobic treatment of waste	
19 06 99	wastes not otherwise specified	*
19 08	wastes from waste water treatment plants not otherwise specified	
19 08 99	wastes not otherwise specified	*
19 09	wastes from the preparation of water intended for human consumption or water for industrial use	
19 09 99	wastes not otherwise specified	*
19 11	wastes from oil regeneration	
19 11 99	wastes not otherwise specified	*
19 10	Wastes from shredding of metal-containing wastes	
19 10 01	Iron and steel waste	
19 10 02	Non-ferrous waste	
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 01	paper and cardboard	
19 12 02	Ferrous metal	
19 12 03	Non-ferrous metal	
19 12 04	plastic and rubber	
19 12 05	glass	
19 12 08	textiles	
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 02	Glass	
20 01 10	Clothes	
20 01 11	Textiles	
20 01 21*	Fluorescent tubes and other mercury-containing waste	

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20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	
20 01 39	Plastics	
20 01 40	Metals	
20 01 99	other fractions not otherwise specified	*
20 03	other municipal wastes	
20 03 99	municipal wastes not otherwise specified	*