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Contents

1	Introduction	4
1.1	General.....	4
1.2	Process Description.....	4
1.3	Assessment of BAT.....	4
2	TECHNIQUES FOR POLLUTION CONTROL.....	5
2.1	In-Process Controls	5
2.1.1	Pre-Acceptance Procedures.....	5
2.1.2	Waste Acceptance Procedures	5
2.1.3	Waste Storage.....	6
2.1.4	Waste Treatment – General Principals	8
2.2	Emissions Control.....	8
2.2.1	Point Source Emissions to Air	8
2.2.2	Point Source Emissions to Surface Water and Sewer	9
2.2.3	Point Source Emissions to Groundwater	9
2.2.4	Fugitive Emissions to Air	9
2.2.5	Fugitive Emissions to Surface Water, Sewer and Groundwater	10
2.2.6	Odour	10
2.3	Management.....	10
2.4	Raw Materials	11
2.4.1	Raw Material Selection	11
2.4.2	Waste Minimisation	11
2.4.3	Water Use	12
2.5	Waste Handling.....	12
2.6	Waste Recovery or Disposal.....	12
2.7	Energy	13
2.7.1	Basic Energy Requirements.....	13
2.7.2	Basic Energy Requirements (2)	14
2.7.3	Further Energy Efficiency Requirements	14
2.8	Accidents.....	14
2.9	Noise	15
2.10	Monitoring	15
2.10.1	Emissions Monitoring.....	15
2.10.2	Environmental Monitoring Beyond Installation.....	15

2.10.3	Monitoring of Process Variables	15
2.10.4	Monitoring Standards	15
2.11	Closure	15
3	EMISSION BENCHMARKS	16
3.1	Emissions Inventory	16
4	Impact Assessment	16

1 Introduction

1.1 General

Cleantank Ltd (the applicant) has requested that Reva Environmental Ltd (the agent) prepares an Environmental Permit (EP) application, for its recycling facility at Amsterdam Road, Sutton Fields Industrial Estate, Hull, Humberside, HU7 0XF.

The site is located in an commercial/industrial area, at National Grid Reference TA 10246 32508. The site setting is described on **Drawing CLNT-HULL-EP03** provided in **Appendix D** of this application (2021). Access to the facility is off Amsterdam Road.

The objective of the 2021 application is to obtain a bespoke Waste Operation Environmental Permit (EP) which allows the applicant to:

- Accept hazardous and non-hazardous empty packaging (e.g. IBCs, small plastics, drums) that cannot be reconditioned, to enable plastic recycling by subjecting it to physical treatment comprising shredding, granulation and cleaning.

The materials are those that have been discarded or don't pass quality assurance (QA) tests for being reconditioned; instead they are shredded and granulated so that the processed materials can be recovered.

The physical treatment in Building 2 will take place in up to two lines that will run in parallel (and can run independently from each other). If only one line is operational, this can process batches of IBCs and drums/small containers; if both lines are operational it is likely that one will be dedicated for IBCs and one for drums/other containers. In that scenario, this will not be limited as maximum flexibility will be key to achieving full efficiency so both plants remain able to process either waste stream. If run to their maximum operating capacities, 20 hours a day, 7 days a week, the 2 lines could process 8 tonnes per day combined; the likely split would be 2.4 tonnes non-hazardous and 5.6 tonnes hazardous waste (a 30:70 split).

1.2 Process Description

The key process areas are described in detail in Section 1.4 of the Application Supporting Statement, which includes a process flow diagram as Figure SS2. Site plans are in **Appendix D** of this application. The key activities are as follows:

- Acceptance and storage of waste pending treatment
- Pre-treatment preparation of IBCs comprising de-bottling, cutting and draining, and draining of small plastics/drums
- Treatment of all waste streams by shredding, granulation and pre-washing
- Storage of separated fractions pending transfer off site for recovery or disposal

1.3 Assessment of BAT

As required by Question 3 of EA Application Form Part B4, a best available techniques (BAT) assessment is required to support the operating techniques set out in this application.

The activities have been assessed against indicative best available techniques (BAT), in accordance with the relevant sections of the following guidance:

- Sector Guidance Note 5.06 "Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste";

- Non-hazardous and inert waste: appropriate measures for permitted facilities; and
- Chemical waste: appropriate measures for permitted facilities.

The BAT assessment has been written on the basis of information provided to the agent by the applicant.

2 TECHNIQUES FOR POLLUTION CONTROL

2.1 In-Process Controls

BAT guidance recognises that the implementation of pre-acceptance and acceptance procedures for waste, waste storage and waste treatment will prevent the acceptance of unsuitable wastes and therefore limit the likelihood of adverse reactions or uncontrolled emissions. Systems and procedures are required to be in place to ensure that incoming wastes are subject to appropriate review and deemed suitable for the proposed treatment route.

It also requires that an operator should have in place systems and procedures to ensure that incoming wastes can be transferred to appropriate storage and in a safe manner. Segregation of storage may be required where containers that have incompatible residues within them are accepted.

2.1.1 Pre-Acceptance Procedures

BAT and appropriate measures guidance refers to the need for a screening step whereby the operator obtains information on the incoming waste.

Cleantank operates in accordance with a waste acceptance procedure which requires the following:

- A waste declaration document (WDD) to be provided by the waste producer (customer/supplier). The WDD may also be accompanied by a safety data sheet (SDS) and other documentation. The information provided must describe the nature and properties of the waste – this includes the type of process producing the waste, the quantity of waste to be delivered, and the hazards associated with the waste
- The WDD and accompanying documentation to be checked by a technically competent person to ensure that the waste complies with the permit and the site's operational process capability and that it can be stored safely.

Cleantank provides instruction to any new customer/waste producer confirming the requirements that need to be met in terms of the types of waste that can be accepted. It is specified within the Cleantank policy that all wastes destined for the site are securely transported to ensure they meet ADR regulations (where applicable) and securely sealed to prevent residue or contaminant escape during transit and handling.

Waste pre-acceptance records are kept at the site for verification at the waste acceptance stage and for a minimum of 3 years.

2.1.2 Waste Acceptance Procedures

Prior to acceptance of waste once it arrives at the site, Cleantank will ensure that it is accompanied by a written description (consignment / transfer note) of the waste describing:

- The physical and chemical composition of the waste (including EWC code)
- Hazard characteristics and handling precautions
- The quantity of waste (weight and/or number of containers) in the load
- Information specifying the original waste producer

The applicant has an electronic system (a database) into which information from waste transfer or consignment notes is transferred at the point of acceptance. Upon arrival all waste containers are individually inspected for labelling, contents, and soundness of the container to ensure compliance. Unsafe or incorrect containers shall be quarantined and/or rejected, a non-conformance report raised and the customer duly informed. If any container is received which is not in compliance then the member of staff off-loading it will report it to their line manager and follow the relevant Safe System of Work Procedure. The quarantined waste will then be either collected by the customer, delivered back to the customer or a suitable disposal outlet found within 5 working days of receipt.

All containers received at the site must be labelled by the supplier/customer (so remain traceable up to the point of treatment). If not already labelled with a date, the applicant will do so, in order to enable the processing of older waste first, so as to ensure that proposed storage periods are not exceeded.

Once accepted, the containers are offloaded in the reception area and are subject to visual checks to confirm that the waste conforms to the pre-acceptance and acceptance documentation and can be accepted for storage and treatment in accordance with the EP. This includes assessment of the condition of the containment and any evidence of damage.

2.1.3 Waste Storage

The layout of the site activities, including waste storage areas, is shown on **Drawing CLNT-HULL-EP02** provided in **Appendix D** of this application. The storage location of any one waste material is determined by its potential hazard(s) and each 'pile' is kept separate from the next. Appropriate labelling of the piles is used to ensure that locations are clear to all operatives.

All offloading areas and storage areas at the site have an impervious surface with a sealed drainage system which prevents any spillage escaping off site. Instead spillages can be captured and pumped out into appropriate storage for off-site disposal/recovery.

Quarantined waste is stored in a dedicated area (referred to as Pile 8) in the north-eastern corner of the yard. In relation to quarantined waste, an appropriate stand-off is retained between this area and the storage of other wastes (pre-and post-treatment), in order to prevent spread of fire, mixing of incompatible wastes, and to allow access to fight any fire.

Section 2.3.1 of the Supporting Statement for the application presents the proposed EWC codes for wastes to be accepted. For clarity, the list is reproduced here in **Table BAT1** to detail the storage/process location(s), the maximum volume to be stored at any one time, and the maximum storage duration.

Table BAT1: Waste Storage Arrangements

EWC Code	Description	Storage Location	Max. Volume (m ³)	Storage Duration (months)
07 Wastes from organic chemical processes				
07 02	Wastes from the MFSU of plastics, synthetic rubber and man-made fibres			
07 02 13	Waste plastic from the MFSU of plastics, synthetic rubber and man-made fibres	Pile 1 or 2	680	3
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 02	Plastic packaging	Pile 1 or 2	680	3

EWC Code	Description	Storage Location	Max. Volume (m ³)	Storage Duration (months)
15 01 05	Composite packaging	Pile 2, 5 or 7	720	3
15 01 06	Mixed packaging	Pile 1 or 2	680	3
15 01 10*	Packaging containing residues of, or contaminated by, hazardous substances	Pile 2, 5 or 7	720	3
16 Wastes not otherwise specified in the list				
16 01	End-of-life vehicles from different means of transport and wastes from dismantling of end-of-life vehicles and vehicle maintenance			
16 01 19	Plastic from end-of-life vehicles	Pile 1 or 2	680	3
16 01 21*	Plastic from end-of-life vehicles contaminated by hazardous substances	Pile 1 or 2	680	3
17 Construction and demolition wastes				
17 02	Wood, glass and plastic			
17 02 03	Plastic from construction and demolition wastes	Pile 1 or 2	680	3
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 not otherwise specified			
19 12 04	Plastic and rubber from the mechanical treatment of waste (plastic component only)	Pile 1 or 2	680	3
20 Municipal wastes (household and similar commercial, industrial wastes) including separately collected fractions				
20 01	Separately collected fractions			
20 01 39	Plastic as a separately collected fraction of municipal waste	Pile 1 or 2	680	3

Site personnel carry out a daily walkaround and record any findings in the site daily diary. Checks include a visual inspection of all waste being stored. This is carried out at the end of each shift, and any possible issues identified are recorded, investigated and actioned.

Records will be maintained at the site relating to the pre-acceptance, acceptance, storage, treatment and transfer off-site. These records will be kept up to date on an on-going basis to reflect deliveries, on site treatment and despatches. The record system will include, as a minimum, the following:

- Date of arrival on site;
- Producer's details;
- Quantity of waste;
- The nature and quantity of wastes held on site, including all hazards and identification of primary hazards; and
- Where the waste is physically located (shown on a site plan).

The recording system will be capable of reporting on all of the following:

- The total quantity of waste present on site at any one time;
- Indication of where the waste is located on site (shown on a site plan);
- Comparison of the quantity on site against the total allowed by the EP; and

- Comparison of time the waste has been on site against any limit specified in the EP.

These records will be maintained on the computer system within the site office and a backup copy of all computer records will be maintained off site. Records are kept for a minimum of 3 years.

2.1.4 Waste Treatment – General Principals

IPPC S5.06 states that treatment involves a change in, or modification to, the characteristics of a substance to make it suitable for another means of disposal. The proposed treatment process enable the majority of the waste to be recovered/recycled; the only exception being the bulked residual contents of the incoming containers and the recirculated effluent and sludge. The key issues dealt with in IPPC S5.06 and in other relevant appropriate measures guidance are as follows:

- Ensuring that the waste is suitable for the activity (this is covered by pre-acceptance procedures);
- Adequately characterising the waste (this is covered by acceptance procedures);
- Appropriately and safely storing the waste;
- Providing and maintaining suitable infrastructure;
- Ensuring operational control of the treatment processes; and
- Disposal of effluents.

It is confirmed that the treatment process proposed to be undertaken at the site is physico-chemical (mechanical treatment with a chemical wash). As described in the Supporting Statement, treatment is limited to manual preparation, then shredding and granulation and pre-washing.

The proposed treatment equipment is recognised as being BAT for the treatment of plastics. The plant will be supplied with an operating manual that will set out the designed operational parameters in relation to waste feed rate and cycle length, to ensure that the waste is processed correctly and meets the post-treatment criteria for classification as non-waste.

The treatment plant will be located within the building, as shown on the site layout plan, **Drawing CLNT-HULL-EP02** provided in **Appendix D** of this application.

The plant comprises fully automated, enclosed units which all have built-in safety mechanisms that meet health and safety legislative requirements. BAT guidance notes that container washing, crushing, shredding and cutting must take account of the former contents and any residues that may be present. For the Amsterdam Road operations, any residues (likely to be minimal or none) are drained out of the container prior to treatment. The shredder units have a mains-supplied misting system which will control both dust and heat; the granulator is enclosed and has a caustic wash system.

2.2 Emissions Control

2.2.1 Point Source Emissions to Air

Point source emissions are those that result from the collection of gas from a vessel or area and are passed either via abatement or direct to a stack or vent.

There are no point source emissions to air from the shredder, granulator or wash plant; instead the building benefits from passive roof vents; whilst a local exhaust ventilation (LEV) system is proposed for the preparation, and shredding and granulation plants. This comprises a hood extraction over the shredders and granulators, as well as extraction over the IBC conveyor line. All feed to a common local exhaust ventilation (LEV) system which will include filtration. Particulates are not considered to be of concern with the plastic treatment activity, instead the primary focus is on potential VOCs from

the waste residues in the containers being processed. The LEV system will therefore provide VOC abatement by way of a carbon filtration system.

Emission of the filtered extract is marked as **Emission Point A1** on the Site Layout Plan.

Air extraction and LEV systems will be inspected daily for functionality and condition. This includes checking the integrity of joints, pipework, motors, fans, seals etc. Fabric filters (if applicable) will be removed and inspected weekly and changed as required but at a minimum quarterly. The details of the checks carried out are recorded on the Daily Operational Check Form.

2.2.2 Point Source Emissions to Surface Water and Sewer

The primary consideration is always to prevent releases of harmful substances to the aquatic environment, whether this is direct to the watercourse or via a sewage treatment works. Emissions from the site comprise the following:

- Rainwater falling on the roof and clean yard run-off will go to surface water drain.
- Contaminated rain water run-off will be collected in a series of sumps around the yard area. The contents of these sumps are pumped out regularly and transferred off site for treatment.

There is no direct discharge to foul sewer from any of the individual processing activities; instead any spillages are contained within the building in drainage channels which can be pumped out into IBCs for disposal off site.

Full details of the drainage network at the site are provided on **Drawing CLNT-HULL-EP04**.

2.2.3 Point Source Emissions to Groundwater

There are no direct discharges to groundwater from the site and its activities.

2.2.4 Fugitive Emissions to Air

BAT recognises that the level of detail relating to fugitive emissions should be in keeping with the risk of causing annoyance at sensitive receptors. Common sources of fugitive emissions are storage areas, waste loading and unloading activities, transferring/bulking up of materials from one vessel to another, pipework and ductwork systems, poor building containment and extraction, wastewater storage, spillages and accidental loss of containment from failed plant and equipment.

Standard control measures at the site include the location of the treatment processes within a building. The activities undertaken include shredding and granulation however both are within an enclosed proprietary unit, with LEV, and the waste is not generally dust-producing so there is minimal potential for the fugitive emission of dusts. The activities include waste storage so there is the potential for the emission of odours; there is also the potential for dust generation produced through on-site vehicle movements. Internal roads are kept clean and if needed can be dampened down to prevent the generation of dust. Litter could be a potential hazard from the storage of waste however all wastes are stored in suitable containers and the waste is not generally litter-producing in nature.

Regular site boundary walkovers are carried out and include the inspection of the fence and open areas for any sign of litter or dust escaping the operational areas. Litter picking will be carried out if the inspection deems it necessary.

Fugitive emissions to air are considered in the qualitative Environmental Risk Assessment provided in **Appendix H** of this application (ref. DLR_2021/02.05). An H1 assessment has also been carried out for the exhaust from the filtered LEV system based on published environmental limits representing a worst case scenario. This is also provided in Appendix H.

2.2.5 Fugitive Emissions to Surface Water, Sewer and Groundwater

Potential fugitive emissions are considered in the qualitative Environmental Risk Assessment and summarised here:

- Spillage of residues from containers during receipt, handling and sorting. The applicant recognises that a proportion of containers received contain a hazardous residue. Emissions are prevented through the implementation of acceptance and rejection procedures, spill kits, bunding and sealed drains in the yard/waste storage area, and regular inspection of containment.
- Spillage of raw materials from containers/tanks etc. or bunds. Diesel is used for the forklifts however this is taken from the tanks used by the unpermitted (non-waste) activities which are not within the EP boundary but are in the adjacent Building 1. Up to 1 tonne of caustic is stored on the site, within Building 1, which is controlled by Cleantank and is outside of this EP boundary. Spillage procedures (and kits) are in place, and personnel are fully trained in spill response).

2.2.6 Odour

BAT recognises that the level of detail relating to fugitive emissions e.g. odour should be in keeping with the risk of causing annoyance at sensitive receptors. Potential fugitive odour emissions are considered in the qualitative environmental risk assessment and summarised here:

- Odour from the storage of waste. Waste pending treatment is stored in the yard area and is fully contained (lidded, sealed) and the integrity of the containment is subject to regular inspection.
- Odour from the treatment of waste, e.g. decanting of residues into bulk containers. All processing activities take place in Building 2. An LEV system is in place for the preparatory treatment of the IBCs and the shredder and granulator plants.

Regular olfactory monitoring is carried out, at set points around the site boundary, including one moveable point that is selected based on the wind direction at the time of the monitoring.

Any odour complaints are processed in accordance with the complaints procedure in the applicant's EMS which is to be implemented at the site. Odour emissions are considered in the qualitative Environmental Risk Assessment provided in **Appendix H** of this application (ref. DLR_2021.02/05).

2.3 Management

The applicant recognises that an effective management system is a key technique for ensuring that pollution prevention and control techniques are implemented and support compliance with BAT. Appropriate Measures guidance is that an operator must have a written management system. IPPC S5.06 notes that the EA strongly supports the operation of a formal environmental management system (EMS) and recommends certification to a recognised standard such as ISO 14001 or EMAS.

The applicant will operate the site in accordance with a set of internal documents and procedures that comprise the integrated management system (IMS) generated by its holding company, Clean Eco Group. This has been written in accordance with ISO 9001 (quality), ISO 14001 (environment) and ISO 45001 (health and safety) and is certified at the Cumberland Street site to ISO 14001 by UKAS accredited certifying body CfA (certificate no. 20/0298).

The system is in the process of being reviewed and adapted to make it specifically relevant and applicable to the Amsterdam Road site. Using the existing certified system as a basis provides confidence that it will also meet the requirements of the ISO standard. The intention is to obtain accreditation at the Amsterdam site in the future. The system matrix is provided in **Appendix C** of this application. An additional document has been produced that demonstrates that the EA guidance on management systems is satisfied by the existing EMS. This should be considered as a cover document for Appendix C and read alongside the EMS Matrix.

It is also a requirement that the management of the site is controlled by a person who is a ‘fit and proper person’. Details of the applicants ability as an operator are provided in Section 2.2.2 of the Application Supporting Statement and certificates are provided in **Appendix B** of this application.

2.4 Raw Materials

BAT recognises that a proportion of raw materials (including auxiliary chemicals) used will end up as a waste or in the effluent.

2.4.1 Raw Material Selection

Details of the raw materials used in support of the operation of the proposed facility are provided in **Table BAT2**. These do not include energy and water (the main raw materials used at the site; these are addressed separately in other sections of this BAT Assessment) but the chemicals and other materials required to undertake the permitted activities.

Table BAT2: Raw Materials

Raw Material	Maximum Stored	Annual Use	Use and Hazards
Gas Oil	1000 litres	<25,000 litres	Fuel for forklift and jet washer, standard application
Steam			Granulator and pre-wash system – uses existing on-site boiler (20% of total supply)
Sodium Hydroxide	1 tonne	2-3 tonnes	Caustic additive for hotwell water dosing – for granulator and pre-waste system. SDS provided in Annex BAT1
Activated carbon			LEV filter media, BAT (no current suitable alternative). Usage to be confirmed once operational and quantifiable
Hydraulic oil	100 litres	300 litres	Bulk lubricant for plant/machinery, standard application. Stored in 25 litre containers in the Building 1 Maintenance Room outside of the EP boundary

The applicant will maintain a list of the raw materials in use and their properties (as set out in Table BAT2 above). In accordance with the standard requirements in the EP, a review of raw material use will be carried out at least every four years. This will seek to identify if there are suitable alternative materials that could reduce the environmental impact, or identify opportunities to improve the efficiency of the existing raw material being used.

A Safety Data Sheet (SDS) for the caustic additive is provided in **Annex BAT1**.

2.4.2 Waste Minimisation

Waste minimisation is where a systematic approach is taken to reduce waste at source through an understanding of, and applying changes to, processes and activities in order to prevent and reduce waste. This section relates to ensuring efficient use of raw materials and other substances in order to reduce gaseous, liquid and solid emissions.

In accordance with the standard requirements in the EP, a waste minimisation audit will be carried out at least every four years. This will seek to analyse the use of raw materials, assess the

opportunities for reductions and the generation of an action plan to implement identified improvements.

The quantity of chemicals used at the site are recorded and will be tracked during the lifetime of the EP and assessed at regular intervals.

2.4.3 Water Use

The site is a medium scale user of water, which is primarily used for the misting systems around the shredders and conveyors (when operational) and for the boiler feeding the granulator and pre-wash system in place at the site. Water use is metered from the mains supply; there is one meter at the site. The expected water use for Building 2 is 2 m³ per week. Based on the maximum possible waste throughput for the same period (56 tonnes per week), this is 0.036 m³/tonne. The EMS for the site requires the applicant to set annual Objectives and Targets, one of which is the reduction in water use per tonne of waste processed.

In order to minimise water use, dry clean up techniques are used where appropriate as a primary means of housekeeping. Where water hoses are used, these are fitted with trigger controls to avoid unnecessary water use. Water used for the granulator and pre-wash system is recirculated a number of times, until it is needs replenishing.

Rainwater run-off is currently directed to foul sewer or surface water drain, depending on its source.

In accordance with the standard requirements in the EP, a review of water use will be carried out at least every four years. This will seek to analyse the use of water, assess the opportunities for reductions and the generation of an action plan to implement identified improvements.

2.5 Waste Handling

See Section 2.1 above for details of waste pre-acceptance, waste acceptance and waste storage.

2.6 Waste Recovery or Disposal

The fundamental purpose of the facility is to recover materials from the incoming waste stream; this includes the initial recovery of IBC cages which can be re-used, and the post-treatment recovery of the plastic.

The use of a pre-wash system after the shredding and granulating means that the processed material is in a suitable condition to meet the requirements for non-waste status, and therefore to be transferred off-site as a product not a waste, for use as a recycled raw material. The applicant has considered available guidance on turning waste into a non-waste product or material in order to classify the output from the treatment process proposed for Building 2.

The first step was to identify if the material complies with an EU End of Waste Regulation. It is confirmed that there is no regulation that covers plastic packaging. The next step, in light of this, was to consider if it could meet the end of waste test through compliance with a Quality Protocol (QP). Whilst a plastic QP is available, this is specifically for non-packaging plastics therefore cannot be used for the Cleantank material.

The final option available to demonstrate end of waste status was instead used; carrying out an individual assessment. Whilst the EA's Definition of Waste (DoW) service remains closed, the applicant has carried out a self-assessment using the relevant Defra guidance (August 2012), specifically Part 2. This prompts the operator to:

- Identify whether the material has become a waste
- Consider when the waste ceases to be a waste

In relation to the first point, it is recognised that at the point of being received at the permitted site, the material is a waste. This is based on consideration of Questions 1 to 8 in Part 2 of the guidance, the answers to which are set out below:

1. The incoming IBCs/packaging containers are not initially produced with the intention of being re-used for the same purpose as originally conceived
2. The containers are not a production residue, nor are they a by-product
3. The containers need to be disposed of (as they have been deemed non-recoverable)
4. The containers are being transferred to the permitted facility for disposal or recovery

The assessment was discontinued at this point as the material has already met the 'waste' definition on the basis of answers to Questions 1 to 4.

The second point then considers when the material, having been received and accepted as a waste, ceases to be a waste; this can be as the result of minor processing. Cleantank considers the material to cease being a waste at the end of the processing proposed; this is based on consideration of Questions 9 to 15 in Part 2 of the guidance, the answers to which are set out below:

9. The waste has been fully recovered, no further treatment is required in order for the material to be reusable
10. The material cannot be described as having met end-of-waste criteria as no EU Regulation currently exists for plastic packaging
11. All unwanted substances (i.e. contamination) have been removed at the point of leaving Building 2. This is ensured through the use of the pre-wash system after the shredding and granulation
12. The material is suitable as a replacement for non-waste material
13. The material has not only been fully recovered but will certainly be used (contracts are in place with customers). There is a genuine market for the use of recycled plastic and this is unlikely to diminish in the future.

The assessment was discontinued at this point as the material has already met the 'may have ceased to be a waste' definition on the basis of answers to Questions 9 to 13.

2.7 Energy

The requirements of BAT depend on whether the operator is a participant to a Climate Change Agreement. Cleantank is not, and as such for the purposes of this BAT Assessment is required to demonstrate that it meets both the basic energy requirements set out in Sections 2.7.1 and 2.7.2 of BAT 2018, and the additional requirements in Section 2.7.3.

2.7.1 Basic Energy Requirements

In accordance with the standard requirements in the EP, the applicant will provide an annual report on energy consumption relating to the use of electricity, oil and any other energy source. This will be submitted to the EA as required by the EP.

The site operates a series of straightforward processes which, whilst they enable the recovery of waste materials, do not seek to generate any energy or recover any heat energy as the techniques in place do not lend themselves to this. The plant will make use of the steam generated by an existing on-site gas fired boiler by way of using the hotwell water for the granulator and pre-wash system. This is not otherwise needed elsewhere on site.

The applicant has a scheduled maintenance programme that focuses on the key energy users (process plant, generators, pumps, air compressors, motors etc.). This ensures that all plant and equipment is operating at its optimum efficiency.

2.7.2 Basic Energy Requirements (2)

Electricity, gas oil and diesel usage is monitored at the site and reported as usage per tonne of waste processed. This is the Specific Energy Consumption (SEC) and is as follows:

- Gas oil. This is used for one of the forklifts and for the jet washers. Typically the facility will use 200 litres per week. Assuming the worst case scenario, this is 73,000 litres per year. Based on the anticipated maximum waste throughput for a year (as per estimate in Section 1.3 of the Supporting Statement) of 2920 tonnes, this is 25 litres/tonne.
- Electricity. Based on the electricity bills received historically, the typical monthly usage is 23,000 kWh for the whole site. Building 2 is anticipated to require 30 – 40% of this. Based on the worst case of 40% and the waste throughput for a year, this is 37.8 kWh/tonne.
- Gas oil. This is used for forklifts. Typically the entire facility will use 900 litres per week. Building 2 is estimated to require <40% of this but, assuming worst case of 40%, this is 18,720 litres per year. Based on the anticipated maximum waste throughput for a year (2912 tonnes) this is 6.43 litres/tonne.

The applicant's EMS requires the establishing of annual Objectives and Targets, and these include the reduction in energy use per tonne of waste processed from the previous calendar year.

2.7.3 Further Energy Efficiency Requirements

There are limited opportunities for energy efficiency measures to be applied at the site, but a number of initiatives are proposed to minimise unnecessary energy usage, as follows:

- The CCTV in place at the site will have a night vision mode of operation, negating the need for lighting to be on outside of operational hours;
- There will be PIR sensors on key external lights for example access routes.

2.8 Accidents

BAT requires the applicant to have an accident management plan that identifies the likelihood and consequence of accidents and action to prevent and mitigate these. BAT guidance also sets out the general management requirements for operators under the EP regime. This is based on three components: the identification of hazards posed by the permitted activities; an assessment of the risks of accidents and possible consequences; and the implementation of measures to reduce the risk, as well as consideration of contingency measures in the event that accidents do occur.

The applicant operates its other sites in accordance with an EMS; this will be implemented at the proposed Amsterdam Road site. The EMS includes an Emergency Preparedness and Response procedure that recognises that the operator has to establish and maintain procedures to identify the potential for, and respond to, accidents and emergency situations. It also includes measures to prevent and mitigate any environmental impacts that may be associated with those.

The EMS also includes consideration of accidents by way of emergency scenarios in the Aspects and Impacts Register. This is supported by emergency plans (i.e. business continuity). It is recognised that the typical environmental risks for the site are the potential for spillages of bulked residual hazardous materials as a result of leaks, spillages or mis-handling of wastes. A summary of the EMS is provided in **Appendix C** of the EP application.

Processes will be in place for staff to report environmental incidents (including near misses). These are handled in accordance with the non-conformance procedure. This applies to accidents, non-compliance raised during audits, breaches of any licence or permit limits, and complaints.

Details of provisions made for the minimisation of fire risk, for fire detection, and for fire suppression are given in the Fire Prevention Plan provided in **Appendix G** of the EP application (ref. DLR_2021.02/04).

It is confirmed that the site is not a COMAH site.

2.9 Noise

BAT Guidance recognises that the level of detail relating to fugitive emissions e.g. noise and vibration should be in keeping with the risk of causing annoyance at sensitive receptors.

With regards to noise, the potential noise sources, the pathway for propagation, and the sensitivity of the receptors have been considered in the qualitative risk assessment (a copy of which is provided in **Appendix H** of the EP Application (ref. DLR_2021.02/05)). Due to the presence of a residential receptor (a public house with dwelling, at 80 m to the west), a noise impact assessment has been carried out. A copy of this, and the noise management plan, is provided in **Appendix K** of the application.

Records will be retained of any complaints received, including those relating to noise. All complaints will be fully investigated and action taken where substantiated.

The location of sensitive receptors, relative to the site, is shown on **Drawing CLNT-HULL-EP04: Site Setting**.

2.10 Monitoring

2.10.1 Emissions Monitoring

There are no direct point source emissions from the plant; it is a fully enclosed process.

2.10.2 Environmental Monitoring Beyond Installation

No monitoring is required beyond the EP boundary.

2.10.3 Monitoring of Process Variables

Regular visual inspection will be carried out and recorded for the treatment plant and associated equipment and hardstanding.

2.10.4 Monitoring Standards

For England and Wales, the Environment Agency has established its Monitoring Certification Scheme (MCERTS) to deliver quality environmental measurements. MCERTS provides for the product certification of monitoring systems (for example, instruments, analysers and equipment), the competency certification of personnel and the accreditation of laboratories under the requirements of European and International standards.

No effluent is discharged from the process to sewer or otherwise. The consolidated residues collected from the incoming waste containers are transferred off site for disposal or recovery whilst used pre-wash water is collected and stored in IBCs for transfer off site. Any other contaminated liquids that are collected by the drainage system (e.g. spillage or fire water) would be pumped out and transferred off site similarly.

2.11 Closure

There will be a site closure plan for the site which details how the site would be decommissioned to return it to a satisfactory state upon the cessation of activities on the site.

It will cover the following:

- Plans showing the position of underground pipework, culverts or other structures, the location of watercourses and drains, and the permeability of the underlying ground structure;
- Identification of potentially hazardous materials located in above or underground structures;
- Identification of how those structures will be de-contaminated, in addition to consideration of any other hazards that dismantling the structures may pose; and
- Identification of any other pertinent issues that might need addressing at the point of decommissioning.

This will be subject to regular review and update, including after any significant changes to the site that could impact the context of the closure plan.

3 EMISSION BENCHMARKS

3.1 Emissions Inventory

In accordance with EA guidance, the nature and sources of foreseeable emissions will be identified.

There are no direct point source emissions from the plant; it is a fully enclosed process.

Monitoring of emissions at the site is limited to the recording of the quantity and composition of waste transferred off the site, recorded as tonnes per month.

4 Impact Assessment

EA guidance indicates that an assessment is required to look at the significant environmental effects of foreseeable emissions. The EA guidance also indicates that the depth to which this assessment should go should be discussed with the Regulator.

It is considered that the nature of the proposed activities is such that emissions will be very limited, if occurring at all, and thus the overall environmental impact of the site will be minimal. As the site is operated with the purpose of recovering waste that would otherwise be disposed of, the site is having an overall positive impact on the environment. As such, it is not considered that an in-depth impact assessment is required.

The location of sensitive receptors, relative to the site, is shown on **Drawing CLNT-HULL-EP04: Site Setting**. This defines the receiving environment in terms of potential receptors of pollution, and the potential impact is considered in the qualitative environmental risk assessment in **Appendix H** of the EP Application (ref. DLR_2021.02/05). Due to the presence of a residential receptor (a public house with dwelling, at 90 m to the west), a noise impact assessment has been carried out. A copy of this, and the noise management plan, is provided in **Appendix K** of the application.

A screening request was made to the EA at the pre-application stage; this identified no habitat sites within the screening distance of the site (see **Appendix A** for a copy of EA pre-application advice letter).

**EP Application EPR/KB3607SG/A001
(Re-submission)**

Annex BAT1: Raw Material SDS

DLR_2021.02/06_August 2022



SAFETY DATA SHEET

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	Caustic Soda (Sodium Hydroxide Solution), 5 - 51%
Synonyms; trade names	Caustic Soda Liquor, Sodium Hydroxide Solution, Lye
REACH registration number	01-2119457892-27
CAS number	1310-73-2
EC number	215-185-5

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Treatment of drinking water, has received approval by the European Committee for Standardisation. Treatment of waste water. Raw material. Neutralising agent. pH regulating agent. Manufacture of substances. Absorbant for gases and liquids. Manufacturing soaps. Washing and cleaning products.
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1.3. Details of the supplier of the safety data sheet

Supplier	Industrial Chemicals Limited Hogg Lane Grays Essex RM17 5DU United Kingdom T:+44 (0)1375 389000 F:+44 (0)1375 389110 sds@icgl.co.uk
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1.4. Emergency telephone number

Emergency telephone	+44 (0)1865 407333 (24-hour)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Met. Corr. 1 - H290
Health hazards	Skin Corr. 1A - H314 Eye Dam. 1 - H318
Environmental hazards	Not Classified

Classification (67/548/EEC or 1999/45/EC) C;R35.

Human health	Corrosive. Prolonged contact causes serious eye and tissue damage.
Environmental	The product may affect the acidity (pH) of water which may have hazardous effects on aquatic organisms.

2.2. Label elements

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

EC number 215-185-5

Hazard pictograms



Signal word Danger

Hazard statements H314 Causes severe skin burns and eye damage.
H290 May be corrosive to metals.

Precautionary statements P234 Keep only in original packaging.
P260 Do not breathe vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/ doctor.
P321 Specific treatment (see medical advice on this label).
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
P405 Store locked up.
P406 Store in a corrosion-resistant container with a resistant inner liner.
P501 Dispose of contents/ container in accordance with national regulations.

Contains SODIUM HYDROXIDE

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

SODIUM HYDROXIDE	30-60%
CAS number: 1310-73-2	EC number: 215-185-5
Classification	Classification (67/548/EEC or 1999/45/EC)
Met. Corr. 1 - H290	C;R35
Skin Corr. 1A - H314	
Eye Dam. 1 - H318	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments Diaphragm grade contains up to 1.3% sodium chloride, which increases the density of the solution.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information Get medical attention immediately. CAUTION! First aid personnel must be aware of own risk during rescue!

Inhalation Rinse nose, mouth, and throat with running water.

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

Ingestion	Do not induce vomiting. If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water. If substance has been swallowed, give water or milk to drink immediately. Get medical attention immediately.
Skin contact	Remove contaminated clothing and rinse skin thoroughly with water. Get medical attention immediately.
Eye contact	Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Continue to rinse for at least 15 minutes.

4.2. Most important symptoms and effects, both acute and delayed

General information	Strong corrosive action on all body tissue, causing burns and frequently deep ulceration, and ultimately scarring.
Inhalation	Mist/droplets are irritating to the respiratory tract, and will cause a burning sensation in the throat, coughing, and breathing difficulties. Pulmonary oedema (excessive liquid in the lungs) can occur after inhalation of higher amounts.
Ingestion	Causes severe damage to gastrointestinal tract. Can cause perforation and scarring.
Skin contact	Burning pain and severe corrosive skin damage. Causes burns, deep ulceration, and scarring. Frequent contact with lower concentrations may cause eczema.
Eye contact	Corrosive to eyes. May cause severe corneal damage, reduced vision, or even blindness.

4.3. Indication of any immediate medical attention and special treatment needed

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media The product is non-combustible. Use fire-extinguishing media suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products Contact with some metals can liberate flammable hydrogen gas.

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. In case of spills, beware of slippery floors and surfaces.

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground. Contain spillage with sand, earth or other suitable non-combustible material. Release to rivers will cause a strong increase in pH, resulting in death to aquatic organisms. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Small Spillages: Neutralise with weak acid and wash away with water. Alternately, drench spill with water and wash away. Large Spillages: Isolate and pump into a tank. Dispose of via a licensed hazardous waste contractor. Keep people and animals away from contaminated areas.

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Following prolonged storage in metal tanks, a black sludge will collect at the bottom of the tank. This will contain iron and sodium carbonate. Appropriate care must be taken when removing and handling this sludge. Handle with care as an alkaline material. Take care when diluting with water (heat generation). Avoid contact with skin and eyes. Avoid generation of sprays or mists.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in vessels of mild steel. Keep away from acids and other chemicals that react with this product. Build-up of white metal carbonate crystals may occur if tank is open to air.

7.3. Specific end use(s)

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

SODIUM HYDROXIDE

Long-term exposure limit (8-hour TWA): WEL

Short-term exposure limit (15-minute): WEL 2 mg/m³

WEL = Workplace Exposure Limit

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

The following protection should be worn: Chemical splash goggles or face shield.

Hand protection

Wear protective gloves. Rubber or plastic.

Other skin and body protection

Chemical suit and boots if handling large quantities.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Colourless liquid.
Odour	Odourless.
pH	pH (concentrated solution): >14
Melting point	12°C For 50% Membrane grade
Initial boiling point and range	142°C @ For 50% Membrane grade
Relative density	1525 @ 20°C For 50% Membrane grade
Solubility(ies)	Miscible with water.
Viscosity	78 cP @ 20°C For 50% Membrane grade

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

9.2. Other information

Surface tension

SECTION 10: Stability and reactivity

10.1. Reactivity

10.2. Chemical stability

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Conditions to avoid Vessels should not be open to air; substance absorbs water and carbon dioxide. In extreme cases, the carbonate can form white floating crystals. Do not store adjacent to incompatible materials, such as acids and amphoteric metals eg aluminium, magnesium, zinc, tin and bronze - may release hydrogen gas.

10.5. Incompatible materials

Materials to avoid Reaction with ammonium compounds releases ammonia. May react violently with acrolein, acrylnitrile, and allyl alcohol. Heating with trichloroethylene will form explosive mixtures of dichloroacetylene. Some plastics, leather and textiles are destroyed on contact. Mixture with water or acids will release large quantities of heat.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermally stable to boiling point; does not decompose. Precipitation of metal hydroxide crystals can occur below 12C.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

General information Strong corrosive action on all body tissue, causing burns and frequently deep ulceration, with ultimate scarring.

Inhalation Mist/droplets are corrosive to the respiratory tract, and will cause a burning sensation in the throat, coughing and breathing difficulties. Pulmonary oedema (excessive liquid in lungs) can occur after inhalation of higher amounts.

Ingestion If ingested will cause severe damage to gastrointestinal tract. Can cause perforation and scarring.

Skin contact Corrosive to body tissue, causing burns, deep ulceration, and scarring. Frequent contact with lower concentrations may cause eczema.

Eye contact Vapour or spray may cause eye damage, impaired sight or blindness.

SECTION 12: Ecological information

Ecotoxicity Spillage will cause localised damage to animals and plants on the ground. Do not allow release into controlled waters; resulting high pH will affect aquatic life forms. If allowed to enter drains will damage effluent treatment organisms. Neutralisation and dilution will greatly reduce these effects. Product is chemically degradable into sodium carbonate.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: 45.4 mg/l, Fish

12.2. Persistence and degradability

12.3. Bioaccumulative potential

12.4. Mobility in soil

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Neutralise with dilute acid and wash away with large amounts of water. Confirm disposal procedures with environmental engineer and local regulations.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID)	1824
UN No. (IMDG)	1824
UN No. (ICAO)	1824
UN No. (ADN)	1824

14.2. UN proper shipping name

Proper shipping name (ADR/RID)	SODIUM HYDROXIDE SOLUTION
Proper shipping name (IMDG)	SODIUM HYDROXIDE SOLUTION
Proper shipping name (ICAO)	SODIUM HYDROXIDE SOLUTION
Proper shipping name (ADN)	SODIUM HYDROXIDE SOLUTION

14.3. Transport hazard class(es)

ADR/RID class	8
ADR/RID classification code	C5
ADR/RID label	8
IMDG class	8
ICAO class/division	8
ADN class	8

Transport labels



14.4. Packing group

ADR/RID packing group	II
IMDG packing group	II
ICAO packing group	II
ADN packing group	II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Caustic Soda (Sodium Hydroxide Solution), 5 - 51%

EmS	F-A, S-B
ADR transport category	2
Emergency Action Code	2R
Hazard Identification Number (ADR/RID)	80
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

General information	The material must only be loaded and unloaded from tankers by trained personnel, such as those with a Hazchem certificate. Sodium hydroxide solution is used as a chemical for the treatment of drinking water, as approved by the European Committee for Standardisation under EN 896:2005. This data sheet was prepared in accordance with EC 1907/2006 concerning REACH.
Revision comments	Updated Section(s) 3 and 7,
Issued by	D.Kelly
Revision date	07/06/2019
Revision	12
Supersedes date	19/03/2019
Risk phrases in full	R35 Causes severe burns.
Hazard statements in full	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

SAFETY DATA SHEET

Revision date 16.12.2016

Revision 16

Review date 19.01.2018

Date of print 23.02.2017

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product Identifier**

Product name	Sodium Hydroxide Solution >5%
Synonyms; trade names	Caustic Soda Solution, VO-PH 8150, Caustic Soda 10% Sol, Caustic Soda 20% Sol, Caustic Soda 25% Sol, Caustic Soda 30% Sol, Caustic Soda 30% Sol TSO, Caustic Soda 32% Sol AKO, Caustic Soda 33% Sol, Caustic Soda 33% Sol SLY, Caustic Soda FG 30% Sol, Caustic Soda 50% SLY, Caustic Soda 42% Sol, Caustic Soda Sol 10/13%, Caustic Soda 15% Sol, Caustic Soda 50% Sol SLY, Sodium Hydroxide Solution 20%, Sodium Hydroxide Solution 30.5%, Sodium Hydroxide Solution 34%, Sodium Hydroxide Solution 35%, Sodium Hydroxide Solution 40%, Sodium Hydroxide Solution 48%, Sodium Hydroxide Solution 50%, Sodium Hydroxide 6% Solution, Caustic Soda Liquid 47% Membrane CSL, Sodium Hydroxide 7% Solution, Caustic Soda 50% Membrane Sol TSO, Caustic Soda 50% Sol Vestolith, Sodium Hydroxide 45% Solution, Caustic Soda Rayon 47%, Caustic Soda 16% Sol, Caustic Soda Rayon 22.5% Sol, Caustic Soda 22% Membrane Sol, Sodium Hydroxide Sol 30.5%, Sodium Hydroxide Sol 15% UNI 896 : 2005, Sodium Hydroxide Solution 50% FCC ED.7, Sodium Hydroxide Solution 33% FCC ED.7, Sodium Hydroxide Solution 25% FCC ED.7, Sodium Hydroxide Solution 30% FCC ED.7, Sodium Hydroxide Solution 18%, Sodium Hydroxide Solution 6.5%, Sodium Hydroxide Solution 23%, Caustic Soda 50% Rayon, Caustic Soda 50% Sol, Caustic Soda 50% Sol O&G, Stemecare B7, Caustic Soda Membrane 5.5%, Caustic Soda Membrane 11.5%, Caustic Soda 47%, Caustic Soda 32%, Caustic Soda 20.5%, Sodium Hydroxide 4 MOL, Caustic Soda 27%, Caustic Soda 50% Sol INV, Hydrex 3952, Caustic Soda 45%, PH Plus Liquide, Caustic Soda 50% Mem Sol VST, Sodex SK-5, DEPTAL TCH, Caustic Soda 50% Sol FG, Caustic Soda Rayon 10% Sol

REACH registration number 01-2119457892-27-XXXX**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses	Detergent. Textiles Lab Reagent pH control Catalyst. Cleaning agent. Etchant/cleaner.
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1.3 Details of the supplier of the safety data sheet

Supplier	Woburn Chemicals Ltd. Chesney Wold Bleak Hall Milton Keynes MK6 1LQ
Tel	01908 670081
E-mail	enquiries@woburnchemicals.co.uk

1.4. Emergency telephone number

Emergency contact number (office hours)	01908 670081
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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (EC/1272/2008)

Physical hazards	Met. Corr. 1 - H290
Health hazards	Skin Corr. 1A - H314 Eye Dam. 1 - H318
Environmental hazards	Not Classified

Classification (67/548/EEC or 1999/45/EC) C;R35.

2.2 Label Elements

Pictogram



Signal word

Danger

Hazard statements

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements

P234 Keep only in original container.
P260 Do not breathe vapour/ spray.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501 Dispose of contents/ container in accordance with national regulations.

Contains

SODIUM HYDROXIDE

2.3 Other Hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

SODIUM HYDROXIDE

> 5

CAS number: 1310-73-2

EC number: 215-185-5

REACH registration number: 01-2119457892-27-XXXX

Classification

Met. Corr. 1 - H290
Skin Corr. 1A - H314
Eye Dam. 1 - H318

Classification (67/548/EEC or 1999/45/EC)

C; R35

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments

The data shown are in accordance with the latest EC Directives.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.

Ingestion	Rinse nose and mouth with water. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Give plenty of water to drink. Get medical attention immediately.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

4.2 Most important symptoms and effects, both acute and delayed

Ingestion	May cause chemical burns in mouth, oesophagus and stomach.
Skin contact	Causes severe burns.
Eye contact	Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.
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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products	When heated, vapours/gases hazardous to health may be formed.
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5.3 Advice for firefighters

Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.
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6. ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Follow precautions for safe handling described in this safety data sheet Avoid inhalation of vapours and contact with skin and eyes. Provide adequate ventilation.
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6.2 Environmental precautions

Environmental precautions	Avoid discharge into water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.
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6.3 Methods and material for containment and cleaning up

Methods for cleaning up	Absorb spillage with inert, damp, non-combustible material. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.
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6.4 Reference to other sections

Reference to other sections	For personal protection, see Section 8. For waste disposal, see Section 13.
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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Usage precautions	Avoid inhalation of vapours and contact with skin and eyes. Provide adequate ventilation.
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7.2 Conditions for safe storage, including any incompatibilities

Storage precautions	Store in tightly-closed, original container in a dry, cool and well-ventilated place. Store at temperatures between 15°C and 25°C. Use containers made of the following materials: Stainless steel. Plastics
Storage class	Corrosive storage.

7.3 Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits	Long-term exposure limit (8-hour TWA): WEL 1 mg/m ³ Short-term exposure limit (15-minute): WEL 2 mg/m ³
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SODIUM HYDROXIDE

Short-term exposure limit (15-minute): WEL 2 mg/m³
WEL = Workplace Exposure Limit

Ingredient comments	WEL = Workplace Exposure Limits
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SODIUM HYDROXIDE (CAS: 1310-73-2)

Ingredient comments	WEL = Workplace Exposure Limits
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DNEL	Consumer - Inhalation; Long term local effects: 1 mg/m ³ Industry - Inhalation; Long term local effects: 1 mg/m ³
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8.2 Exposure controls

Protective equipment



Appropriate engineering controls	Provide adequate ventilation. Avoid inhalation of dust. Observe any occupational exposure limits for the product or ingredients.
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Eye/face protection	The following protection should be worn: Chemical splash goggles. EN 166
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Hand protection	To protect hands from chemicals, gloves should comply with European Standard EN374. Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. For exposure up to 8 hours, wear gloves made of the following material: Nitrile rubber. (0.65 mm) Chloroprene rubber. (0.65 mm)
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Other skin and body protection	Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact. Wear rubber apron.
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Hygiene measures	Provide eyewash station. Wash hands at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap and water if skin becomes contaminated.
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Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. EN 136/140/145/143/149
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9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on the basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.

Odour	Odourless.
Odour threshold	No information available.
pH	pH (concentrated solution): 13.5
Melting point	0 - 22°C
Initial boiling point and range	> 100°C @ 760 mm Hg
Flash point	No information available.
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	No information available.
Other flammability	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	1.05 - 1.55 @ 20°C
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	No information available.
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	75 mPa s @ 20°C
Explosive properties	No information available.
Explosive under the influence of a flame	No information available.
Oxidising properties	Not available.

9.2 Other information

Refractive index	No information available.
Particle size	No information available.
Molecular weight	40.01
Volatility	No information available.
Saturation concentration	No information available.
Critical temperature	No information available.
Volatile organic compound	No information available.

10. STABILITY AND REACTIVITY

10.1 Reactivity

Reactivity Reactions with the following materials may generate heat: Acids.

10.2 Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3 Possibility of hazardous reactions

Possibility of hazardous reactions Reacts violently with water.

10.4 Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time.

10.5 Incompatible materials

Materials to avoid Strong acids. Other halogenated organics.

10.6 Hazardous decomposition products

Hazardous decomposition products When heated, vapours/gases hazardous to health may be formed.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity - oral

Notes (oral LD₅₀) No information available.

Skin corrosion/irritation

Animal data Corrosive.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

Germ cell mutagenicity

Genotoxicity - in vitro No information available.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility No information available.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT – repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

Inhalation

Vapours irritate the respiratory system.

Ingestion

May cause chemical burns in mouth, oesophagus and stomach.

Skin contact

Causes severe burns.

Eye contact

Causes serious eye damage.

12. ECOLOGICAL INFORMATION

Ecotoxicity

The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment. The product may affect the acidity (pH) of water which may have hazardous effects on aquatic organisms.

12.1 Toxicity

Toxicity

Not considered toxic to fish.

Acute toxicity - fish

LC₅₀, 96 hours: 55.6 mg/l, Fish

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 156 mg/l, Daphnia magna

12.2 Persistence and degradability

Persistence and degradability The product contains inorganic substances which are not biodegradable.

12.3 Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient No information available.

12.4 Mobility in soil

Mobility The product is soluble in water.

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6 Other adverse effects

Other adverse effects Not determined.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

General information Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

14. TRANSPORT INFORMATION

General Wear protective clothing as described in Section 8 of this safety data sheet.

14.1 UN number

UN No. (ADR/RID) 1824

UN No. (IMDG) 1824

UN No. (ICAO) 1824

UN No. (ADN) 1824

14.2 UN proper shipping name

Proper shipping name (ADR/RID) SODIUM HYDROXIDE SOLUTION

Proper shipping name (IMDG) SODIUM HYDROXIDE SOLUTION

Proper shipping name (ICAO) SODIUM HYDROXIDE SOLUTION

Proper shipping name (ADN) SODIUM HYDROXIDE SOLUTION

14.3 Transport hazard class(es)

ADR/RID class 8

ADR/RID classification code C5

ADR/RID label 8

IMDG class 8

ICAO class/division 8

ADN class 8

Transport labels



14.4 Packing group

ADR/RID packing group II

IMDG packing group II

ADN packing group II

ICAO packing group II

14.5 Environmental hazards

Environmentally hazardous substance/marine pollutant No.

14.6 Special precautions for user

EmS F-A, S-B

ADR transport category 2

Emergency Action Code 2R

Hazard Identification Number (ADR/RID) 80

Tunnel restriction code (E)

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information required.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
COMMISSION REGULATION (EU) 2015/830 of 28 May 2015.

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out.

Inventories EU - EINECS/ELINCS
All the ingredients are listed or exempt.

16. OTHER INFORMATION.

Abbreviations and acronyms used in the safety data sheet
ATE: Acute Toxicity Estimate.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.

IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

ECHA Disseminated REACH Dossier

Risk phrases in full

R35 Causes severe burns.

Hazard statements in full

H290 May be corrosive to metals.
 H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.

This information is based on our present knowledge and is intended to describe our products from point of view of the safety requirements. It should not be construed as guaranteeing specific properties.
 The user must satisfy himself that the product is entirely suitable for his purpose.