



Havant Thicket Reservoir – Main Pipeline

Pollution Management and Mitigation Plan

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For Construction

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HTR – Main Pipeline

Pollution Management and Mitigation Plan

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Portsmouth Water

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1 Abbreviations and Definitions

Client	=	Portsmouth Water Limited
CMP	=	Communications Management Plan
Contractor	=	Ward and Burke Construction Limited
CQP	=	Contractors Quality Plan
CSFs	=	Critical Success Factors
EA	=	Environment Agency
ECoW	=	Ecological Clerk of Works
EnvCoW	=	Environmental Clerk of Works
ES	=	Environmental Statement
HSWE	=	Health, Safety and Wellbeing Environment
HTR MPW	=	Havant Thicket Reservoir Main Pipeline Works
HTR MRW	=	Havant Thicket Reservoir Main Reservoir Works
INNSA	=	Invasive Non-Native Species Association
MPW	=	Main Pipeline Works
NWR	=	Network Rail
OCI	=	Optimised Contractor Involvement
PCA	=	Property Care Association
PMMP	=	Pollution Management and Mitigation Plan
POR	=	Portsmouth Water Limited
RAMS	=	Risk Assessment and Method Statement
REAC	=	Register of Environmental Actions and Commitments
SAC	=	Solent Maritime Special Area for Conservation
SINC	=	Sites of Importance for Nature Conservation
SPA	=	Special Protection Areas
SPZ1	=	Source Protection Zone 1
SWS	=	Southern Water Services
TBT	=	Toolbox Talk
TBM	=	Tunnell Boring Machine
WAB	=	Ward and Burke

2 Introduction and Scope

The objective of the Havant Thicket Reservoir Project is to provide a new resource to supply drinking water in the water-stressed Southeast of England, while maximising the community and environmental benefits of a new raw water reservoir.

Ward and Burke (WAB) have been appointed by Portsmouth Water Limited (POR) to design, construct, and commission a new pipeline connecting Bedhampton Pumping Station to Havant Thicket Reservoir, including an emergency discharge structure at the Hermitage Stream, culvert upgrades and an Under Track Crossing.

The pipeline corridor extends from the Portsmouth Water pumping station at the Bedhampton works, northwards to the proposed control house within the reservoir site. It passes through the Leigh Park Estate under local roads and open spaces. The corridor also runs north along the Hermitage Stream before turning north-east and broadly following the Riders Lane Stream towards the reservoir site. The southernmost point of the pipeline is located approximately 1km north of Chichester Harbour and Langstone Harbour, which are Special Protected Areas (SPA) and Solent Maritime Special Area for Conservation (SAC).

Construction of Shaft W1 at Bedhampton Pumping Station and subsequent tunnelling activities into the shaft, which is located within a Groundwater Source Protection Zone, will require additional control measures to ensure groundwater quality is not adversely affected by the works.

A combination of open cut and micro-tunnelling techniques will be used for the construction of the pipeline. Open cut techniques will take place in two locations: the council playing fields adjacent to Havant Rugby Club; and land in the southwest of Staunton Country Park. Micro-tunnelling will be used for the remainder of the pipeline construction facilitated by eight construction shafts and the emergency discharge chamber.

2.1 Project Drivers

Portsmouth Water have outlined seven strategic drivers for this project to ensure continued focus on meeting the Project's objectives. These project drivers are:

- **Quality:** Quality in procurement, design, and delivery to deliver an exemplar project to serve Customers in the short, medium, and long term,
- **Timeliness:** In service and operating by 2029 to support a major bulk transfer to Southern Water,
- **Innovation:** Develop best practice in the largest new reservoir project in the southeast for decades. Capture learning from companies working in partnership to deliver better value for Customers,
- **Flexibility:** Create a project that offers multiple uses and enables Portsmouth Water to be a strategic water supplier for the South over the medium and long term,
- **Responsibility:** Realise and build upon our health, safety, and well-being goals,
- **Connectivity:** Positive connection for all stakeholders – Customers, the local community, regulators, staff, contractors, shareholders, commercial partners, environmental groups, and individuals with a passion for the environment, and
- **Environment:** A positive contribution to local and internationally important habitats. Direct support for Government's objective to reduce the damaging abstraction of water from rivers.

2.2 Scope of Pollution Management and Mitigation Plan

The Pollution Management and Mitigation Plan (PMMP) details how the organisation will protect the surrounding environment in the event of pollution resulting from construction activity. These range from noise to the local residents, traffic and machine movement that could damage or degrade the landscape, ground/surface water

pollution, and construction dust. This guidance will respond to the hazardous substance, oil, sewage spills that may threaten or impact ground, surface or piped stream waters. This plan is designed to promote timely and effective response to spill events and the likely pollution that could affect the area. It summarizes procedures, policies, and responsibilities for assessing, mitigating, cleaning up, and following up on spills, and for recovering costs for impacts to natural resources. It also clarifies the responsibilities and required responses with respect to the water quality-related aspects of a spill incident, thereby enhancing coordination among the local council, and environment agency and other responders. Works will be carried out in accordance with the Best Practicable Means, as defined in Section 72 of the Control of Pollution Act 1974 ¹ and Section 79 of the Environment Protection Act 1990, and noise control measures, as suggested by BS 5228 Part 1.

There are several subsequent documents that go into further detail on the management different pollution events that are possible as a result of construction activity on the project. The following documents will be referenced throughout the PMMP in relation to the associated polluting event.

- Biosecurity Management Plan (HTR-WAB-PI-XX-HS-W-0012)
- Drainage Management Plan (HTR-WAB-PI-W1-PL-W-0004)
- Dust Assessment and Management Plan (HTR-WAB-PI-ZZ-RP-W-0012)
- Ecological Mitigation and Management Plan (HTR-WAB-PI-ZZ-PL-0010)
- Lighting Strategy Plan (HTR-WAB-PI-ZZ-RP-W-0013)
- Material Management Plan (HTR-WAB-PI-ZZ-PL-W-0008)
- Noise & Vibration Management Plan (HTR-WAB-PI-ZZ-PL-W-0005)
- Site Waste Management Plan (HTR-WAB-PI-XX-HS-W-0008)
- Spill Response Plan (HTR-WAB-PI-ZZ-PL-W-0007)

3 Environmental Management System

Best practice guidance encourages the establishment of an Environmental Management System (EMS). WBCL has developed an Integrated Management System which incorporates Environmental Management based on the requirements of BS EN ISO 14001:2015 Environmental Management Systems. The Environmental Management System (EMS) complying with BS EN ISO 14001, has been established to control the activities to be undertaken during the project. It defines and documents the projects objectives, policy, and commitment to environmental control. Further information on the WAB Environmental Management System can be found within the Shaft 1 RMA CEMP (HTR-WAB-PI-W1-HS-W-0001) under section 4.0 and within the main works CEMP (HTR-WAB-PI-XX-HS-W-0006).

¹ (No date). Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents>.

4 Air Quality

4.1 Overview

For this scheme, Sweco have produced a Dust Assessment and Management Plan, based upon the Air Quality chapter of the Environmental Statement (ES) (HTR-ATK-ZZ-ZZ-RP-Z-0107), which considered construction dust emission magnitude and the sensitivity of the surrounding areas (see table 1 and 2 below). The outcomes of the assessments were used to develop specific dust management plans for each phase of the scheme. With the mitigation measures in place, the works on the pipeline will not result in a significant residual effect on air quality at the identified receptors within 250m of the scheme's redline boundary.

If there are any issues with dust anticipated during the execution of the works, the project team will implement control measures such as damping down to prevent the spread of airborne particulates. If harmful particulates are to be disturbed (e.g. man-made mineral fibres) more stringent controls will be enforced in accordance with the legislation outlined in Appendix B of the CEMP (HTR-WAB-PI-XX-HS-W-0006) and/or Client procedures. Compliance against these requirements will be checked as part of the weekly environmental inspection and the results recorded.

No demolition works are required for this project. Dust from construction material is predicted to be small, as the pipeline will be below ground and will not require significant infrastructure works. Dust from earthworks is expected to be the largest contributor, as there will be relatively large quantities of materials excavated for shaft construction. HGV movements for the construction of the scheme are expected to be less than 50 outward movements a day. The following table estimates the magnitude of dust produced from each activity.

Table 1 - Dust emissions magnitude

Activity	Dust emission magnitude
Demolition	n/a
Earthworks	Large
Construction	Small
Material track-out (HGV movement)	Medium

Table 2- Summary of pipeline expected dust risk.

Sensitivity of surrounding area		Summary of dust risk			
		Demolition	Earthworks	Construction	Track out
Dust Soiling	High	N/A	High Risk	Low Risk	Medium Risk
Human Health	Medium	N/A	Medium Risk	Low Risk	Low Risk
Ecological	Low	N/A	Low Risk	Negligible	Low Risk

The MPW scheme does not fall within any designated Air Quality Management Area (AQMA) however, works will be carried out in accordance with the Best Practicable Means, as described in Section 79 (9) of the Environmental Protection Act (EPA) 1990 to reduce fumes or emissions which may impact upon air quality. With the appropriate mitigation measures listed below in place, any adverse effects resulting from the construction works is to be minimised such that there would not be any significant ongoing or residual effect on receptors. WBCL will implement mitigation measures to address construction dust from the site, considering the direct and indirect impacts of site preparation and construction works on residential and business uses, and ecological receptors such as flora and fauna.

4.2 Air Quality Mitigation Measures

The measures summarised below are summarised from the documents listed below. This section should be read in conjunction with the following:

- Dust Assessment and Management Plan (HTR-WAB-PI-ZZ-RP-W-0012)
- Material Management Plan (HTR-WAB-PI-ZZ-PL-W-0008)
- Site Waste Management Plan (HTR-WAB-PI-XX-HS-W-0008)

4.2.1 Material Storage

Areas designated for stockpiling of friable materials or materials susceptible to generating wind borne dust will be positioned away from sensitive receptors, where possible. As far as is reasonably practicable, stockpiles intended for long-term storage (duration of construction for embankment and landscaping) will be placed directly in their planned position rather than via temporary storage to avoid the need for double handling that could give rise to emissions. Stockpiles of materials that are consumed as part of a construction process will be assessed to determine the necessity for dust suppression techniques to minimise dust generation. In each case, stockpiles will be shaped to avoid steep sides and sharp edges to reduce entrainment of dust by exposure to wind. Stockpiles stored over 6 months may also be seeded to prevent wind whipping of material.

4.2.2 Site Area and Management

All construction work activities will be undertaken within the designated construction site boundaries; including areas designed to accommodate stockpiles and haul routes.

Mitigation measures in relation to Site Management are as follows:

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked; and
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the logbook.
- Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas. Any unsurfaced haul roads and unsurfaced areas that will carry construction traffic will be regularly dampened down to prevent dust rising.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dust producing activities or the site boundary that are at least as high as any stockpiles on site, which will aid in preventing the dust being transported by the wind. Stockpiles can also be dampened down using water to prevent dust from rising. Stockpiles will also be seeded if they are to remain in place over a period of 6 months to prevent wind whipping.
- All stockpiles to be located at a minimum 10m from any watercourse or open drain.
- Cutting tools that produce dust must have a Local Exhaust Ventilation (LEV) attached which collects the dust produced preventing the dust from escaping into the atmosphere. Wet cutting methods will also be used to dampen down dust produced whilst cutting materials such as concrete.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible (sawdust from wood cutting, concrete, bricks, silica etc.) unless being re-used on site. If they are being re-used on-site cover as described below; and
- Cover, seed, or fence stockpiles to prevent wind whipping.
- Avoid site run-off of water or mud through Drainage Management Plans.

4.2.2.1 Dust Suppression

Examples of triggers that require the use of dust suppression include:

- Cutting/grinding of materials that produce dust such as concrete and timber.
- Dry weather can create dusty conditions on haul roads.
- Excavating dry material.
- Dry aggregates stored in stockpiles.
- Shaft excavation in dry weather

4.2.3 Control Measures

The following measures will be taken to avoid or reduce any unnecessary production of emissions from site activities:

- Engines of vehicles and equipment shall not be left running unnecessarily.
- Vehicles and equipment shall be maintained by a programme of routine servicing in accordance with the manufacturers' recommendations, with records kept of the work undertaken.

Dust and particulate matter control measures:

- The burning of material and or waste on-site shall be avoided.
- Ensure an adequate supply of water and means of deployment is available at all work areas for dust suppression measures.
- Maintain all dust control equipment in good condition and record maintenance and servicing activities.
- Provide easily cleaned hard standing for vehicles.

- Provide and ensure the use of wheel wash facilities near the site exit wherever there is a potential for carrying dust or mud out of the work areas onto the public highways.
- Inspect haul routes for integrity and instigate necessary repairs to the surfaces as soon as is reasonably practicable.
- Ensure that appropriate spill kits, clean up and containment materials are available and that they are used immediately in the event of a spillage.
- Identify work activities that have a high potential for dust emissions, enclose fully and maintain the enclosure for the duration that the specific work activity is in operation.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

4.2.4 Monitoring

- Weekly environmental management site inspections will be carried out by the EnvCoW to monitor compliance with Dust Management outlined in this document and record inspection results. The EnvCoW will make their inspection log available to the local authority when requested.
- An Air Quality checklist has been developed for construction which includes requirements outlined in the REAC table from the CEMP (HTR-WAB-PI-XX-HS-W-0006) under the Air Quality section.
- This checklist will be completed each day by a member of site management to ensure compliance with the commitments outlined in the REAC table.
- Dust monitoring will be conducted at each site compound and method of monitoring to be confirmed prior to beginning of construction.
- The frequency of site inspections by the EnvCoW for air quality and dust issues on site will increase when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

5 Land Contamination

Works will be carried in accordance with CDM Regulations (2015)² along with measures outlined in the REAC table of the CEMP (HTR-WAB-PI-XX-HS-W-0006) to mitigate any potential land contamination.

See the following documents for further detail on Land Contamination:

- Biosecurity Management Plan (HTR-WAB-PI-XX-HS-W-0012)
- Drainage Management Plan (HTR-WAB-PI-W1-PL-W-0004)
- Dust Assessment and Management Plan (HTR-WAB-PI-ZZ-RP-W-0012)
- Material Management Plan (HTR-WAB-PI-ZZ-PL-W-0008)
- Site Waste Management Plan (HTR-WAB-PI-XX-HS-W-0008)
- Spill Response Plan (HTR-WAB-PI-ZZ-PL-W-0007)

In the event of unexpected contamination, incident response procedures will be enacted. Refer to section 5 of the Spill Response plan for a detailed breakdown of spill response procedure.

5.1 Construction Compounds and Plant

WAB Welfare compounds will be secured from unauthorised access. When the compound is not in active use (out of core hours), materials stores and plant will be locked to prevent unauthorised use which could cause a pollution incident. Mobile plant parked overnight within the site will also be locked to prevent unauthorised use.

5.2 Generators/Static Diesel-Powered Plant

All generators and static diesel-powered plant used on-site will either be fully bunded to contain spills from operation and refuelling or placed on drip trays to prevent contamination of the ground. This requirement will apply to all generator sets, pumps and static mobile plant used across the site.

5.3 Imported Filled Material

Where it is necessary to import any fill or engineering fill materials to site for either permanent or temporary works from recycled or reused sources, these shall have been produced to the WRAP Quality Protocol standard. The acceptance criteria for the recycler who provides the material shall state that it may only accept clean uncontaminated rock, subsoil, brick rubble, crushed concrete and ceramic or other materials deemed acceptable.

5.4 Excavated Materials

Excavated materials will be stored within a concrete block bunded area to prevent any cross-contamination with any imported materials. Bund will prevent any potential run-off from stockpiled material. Stockpiles to be located at a minimum 10m from any watercourse or open drain.

² [Construction - Construction Design and Management Regulations 2015 \(hse.gov.uk\)](https://www.hse.gov.uk/construction/)

5.5 Concrete Washout

Wash out of concrete wagons or concrete handling equipment will be restricted to dedicated facilities within site compounds where systems such as Silt-buster will be installed and operated. This also applies to grouting and bentonite contaminated equipment. All concrete washouts will be located at least 10m away from drains/streams.

5.6 Biological Contamination

All mobile plant brought onto the site for use in soil excavation and or transportation, including excavators, dump trucks, tractors and water bowzers, will be inspected for accumulation of soil within the chassis, wheels or tracks. Any such contamination will be jet washed on a concrete hardstanding area to ensure that no invasive plant seeds or rhizomes are accidentally imported. Any plant which tracks within a 7m offset from INNS must be decontaminated on site to prevent any cross-contamination. A Biosecurity Management Plan (HTR-WAB-PI-XX-HS-W-0012) has been produced for the Main Pipeline Works which focuses on the control and biosecurity measures to be taken when working in areas in/adjacent to Invasive Non-Native Species. This plan is to be briefed to all operatives during site inductions to raise awareness of any INNS in working areas and to outline the biological control measures to be followed.

5.7 Fuel Handling

No refuelling shall occur within 10m of a watercourse or indicative floodplain without protective refuelling measures set out in the Environment Agency's Pollution Prevention Guidelines PPG5.

Storage of Oil, Fuel and chemicals

Any facility for storing oils, fuels, concrete, or chemicals will be sited on an impervious base and either graded to drain to a sump/collector or surrounded by impervious walls. The volume of the bunded compound must be at least equal to the capacity of the largest storage tank plus 10% or 25% of the total storage volume.

5.8 Shaft W1 Additional control measures

Due to shaft W1, and the surrounding compound, being in close vicinity to the Bedhampton springs complex, and the associated SPZ 1 zone, further control measures are required. These are detailed in the following section.

Concrete washout:

- Concrete washouts are to be located at least 10m away from drains and watercourses within the area.
- The washout will be established within a bunded area on top of a membrane to avoid contaminated washout water entering ground or surface water.
- Concrete washouts will be specified to retain washout water from concrete lorries which will then allow for the water to be recycled and re-used where possible. When water is deemed unsuitable for re-use, it will then be removed from site via a licensed waste carrier or discharged via a silt buster to the Southern Water sewer once within agreed parameters (such as pH).
- The concrete washout will be located within the W1 site compound, away from the springs on site.

Shutter washdown:

- Shutter washdown to be carried out within a bunded area on top of a membrane to prevent run-off into both ground and surface water sources. Water from the shutter washdown area to be collected within the bund

and pumped through a silt buster prior to discharge to sewer or tankered away if sewer discharge is not possible.

- In the W1 compound an area designated for fuel storage will have a membrane in the ground to prevent any spills or leaks entering the ground water.
- COSHH store to be set up on a membrane to reduce chances of groundwater contamination as a result of spills. Spill kits and fire extinguishers to be located beside COSHH store in the event of any emergency.
- Storage of timber/steel/materials used for construction to be separate from COSHH.
- COSHH store will be inspected on SHEQ advisory visits to ensure the correct storage of materials and that manufacturers guidelines are followed.
- Any other tools used for construction will be stored in a separate lockable container.

Wet waste:

- Wet excavated material is to be stored within a bunded area incorporated with a membrane to prevent any excess water run-off entering water sources.
- There will be a sump installed into the corner of the bunded area which will enable the installation of a water pump which then will be used to remove excess water from the bunded area.
- Water pumped from the area will then pass through a silt buster to remove sedimentation before discharging into the Southern Water sewer.

Wheel wash:

- This will be completed in a bunded area on top of membrane to avoid contamination. Water from the wheel washdown area to be collected within the bund and pumped through a silt buster prior to discharge to sewer/surface water or tankered away if sewer discharge is not possible.
- Discharge to sewer permission has been submitted to SWS and a flow rate of 1 l/s has been agreed. Permit details are included in the consents register (HTR-WAB-PI-ZZ-RE-W-0002).

6 Sources of disturbance

Please see the following documents for further detail on nuisances:

- Dust Assessment and Management Plan (HTR-WAB-PI-ZZ-RP-W-0012)
- Lighting Strategy Plan (HTR-WAB-PI-ZZ-RP-W-0013)
- Noise & Vibration Management Plan (HTR-WAB-PI-ZZ-PL-W-0005)

6.1 Noise and Vibration

For the Main Pipeline Works, a Noise and Vibration (N&V) Management Plan (HTR-WAB-PI-ZZ-PL-W-0005) has been submitted in support of the planning application. The N&V Management Plan outlines the measures to be taken to reduce the generation of noise and vibration during the Main Pipeline Works for the Havant Thicket Reservoir. It is essential to adequately control noise and vibration to reduce the risk to the local environment as well as the local community and amenities. All staff and sub-contractors will be required to follow the measures outlined in the N&V management plan and the measures will be delivered via site inductions and regular toolbox talks. Measures outlined in the Noise and Vibration chapter (HTR-ATK-ZZ-ZZ-RP-Z-0112) of the Environmental Statement have been adopted in the N&V Management Plan.

A summary of the N&V Management plan is provided below. The minimisation of noise in the N&V Management Plan considers the following noise hierarchy:

- Eliminate the source of the noise – Outlining measures to fully eliminate unnecessary noise being produced.
- Substitute for quieter methods of working – Investigate different methods and use different equipment where practicable to reduce the level of noise being produced.
- Isolate source of the noise – Limit noisy activities to certain areas where practicable.
- Engineering controls, i.e. barriers, silencers, insulation – Implement the use of acoustic screens to minimise the volume of noise being produced.
- Restriction of working hours – This is to be done via a section 61 application which is to be agreed with the Local Authority.

During works, noise monitoring will be undertaken daily at the closest receptor identified for each working location. Results will be compared with noise thresholds outlined in the Noise and Vibration chapter of the ES. If works are found to be exceeded the thresholds, working methods will be assessed to reduce noise levels where practicable.

Monitoring requirements have been agreed in principle with the LPA and EHO.

The N&V Management Plan outlines the sensitive receptors that may be affected by vibration during the pipeline construction. Vibration thresholds have been set in the N&V assessment which WAB will adhere to during the pipeline construction works. Vibration monitoring will be carried out at receptors closer than 5m from works and results will be compared with the thresholds outlined in the Noise and Vibration chapter of the ES. If works are found to be exceeding the thresholds, working methods will be investigated to determine how this can be mitigated.

Further information can be found in the N&V Management Plan (HTR-WAB-PI-ZZ-PL-W-0005).

6.2 Light

Any temporary lighting required during construction will be designed to minimise light spill from the site. All external lighting shall be positioned and angled to prevent any light spillage or glare beyond the site boundary. This is to

safeguard the occupiers of the neighbouring properties and the owners and users of the local amenities. Avoid night-time works where possible, particularly in proximity to receptors on Swanmore Road. Toolbox talks will be carried out with all staff working on the project to raise awareness on nuisance from light spill.

It should be noted that, where night-time works cannot be avoided, screens should be erected to block line-of-sight between the plant and receptors to minimise impacts.

Lighting will be monitored by the EnvCoW during weekly environmental management reports for compliance against the agreed lighting strategy plan.

6.3 Pre-works agreement

The working hours, levels of disturbance caused by the works, and control measures defined in the N&V Management Plan are being discussed with the local planning authority (LPA), as part of the planning application for the works, and a Section 61 agreement will be agreed and in place before the works start. This will define the acceptable levels to be incorporated into the N&V management plan.

7 Excavated Materials

See the following documents for further detail on excavated materials:

- Dust Assessment and Management Plan (HTR-WAB-PI-ZZ-RP-W-0012)
- Material Management Plan (HTR-WAB-PI-ZZ-PL-W-0008)
- Site Waste Management Plan (HTR-WAB-PI-XX-HS-W-0008)

In determining the suitability of site derived materials for reuse, a number of parameters will be assessed to enable the project to make informed and considered decisions as to the reuse of these materials. This section will set out the means of assessing the potential to reuse site-derived material in terms of its risks to human health and the environment. The testing and analysis of site-derived materials needs to provide sufficient information to enable relevant risk assessments to be undertaken on the potential impacts of its reuse.

7.1 Protection of Health and Environment

Assessment of the material's chemical properties should be relevant to the likely contaminants present, typically determined by the site's current and historical uses. For sites where no previous industrial activities have been undertaken, this may involve a more simplistic desk-based review of the potential for contaminants to exist, followed by a minimal number of samples obtained to qualify the absence of potential contaminants. For the purposes of human health risk assessment, the Environment Agency's Soil Guideline Values (SGVs) and any available and derived Soil Screening Values (SSVs) will apply.

7.2 Suitability for Use

Suitability for use means that a material must be suitable for its intended purpose in all respects. Both its chemical and geotechnical properties have to be demonstrated to be suitable, and the relevant specification for its use must be met. Certain excavated materials would be suitable for their intended use without any treatment at all. If used in this way, these materials are unlikely to be waste. For example, some materials may be assessed as being suitable for direct use, e.g. engineered backfill beneath cover layers, capping layers and hard standing or for site re-grading. Use for the purposes of reclamation, restoration or landscaping may also fall within this category. Some materials, although they do not require treatment to make them suitable for use, may nonetheless be re-graded or compacted before or during their use as part of the development of a site. This re-grading or compacting does not prevent the material being regarded as a non-waste. A Material Management Plan (HTR-WAB-PI-ZZ-PL-W-0008) will be produced for the Main Pipeline Works in accordance with the CL:AIRE DoWCoP³ which will set out the uses and end locations for excavated material generated during construction works and will assess whether excavated materials will be classified as waste or not. The Material Management Plan will be validated by a competent person before application to ensure the end use of materials is accurate and applicable. The re-use of materials will be applied wherever possible for the backfilling of shafts and any open-cut pipeline sections across the scheme. Materials to be re-used will be sampled and tested to ensure no new chemical contaminants are introduced during any backfilling process. Materials being removed as waste from site will also be subject to Waste Acceptance Criteria (WAC) testing to determine acceptance into appropriate landfill sites.

³ [DoW CoP Main Document \(claire.co.uk\)](https://www.claire.co.uk)

8 Water Quality

8.1 Overview

This section has been developed using measures outlined in the REAC table as part of the CEMP (HTR-WAB-PI-W1-HS-W-0001) and has been further guided by latest EA Pollution guidance, Construction Industry research and Information Associated guidance and Guidelines for Pollution Prevention. A Drainage Management Plan (HTR-WAB-PI-ZZ-PL-W-0011) will be developed for the main pipeline works which will include a set of main design principles for foul and surface water drainage including details of how increased surface water runoff from new areas of hardstanding (i.e. access roads, visitor centre, car parks etc) will be managed to ensure no increase in flood risk. Sustainable Drainage Systems (SuDS) should be included in the drainage design where possible. The drainage design will follow the SuDS manual and guidance from the Local Plans/SFRAs will be incorporated. The Drainage Management Plan was not issued at the time the PMMP was written.

The risk of pollution to watercourses and groundwater will be reduced by the adoption of good working practices. Pollution prevention measures have been included within the REAC table as a part of the CEMP (HTR-WAB-PI-W1-HS-W-0001). Care will be taken with pipeline excavations at the southern end of the pipeline corridor where shallow groundwater in the South Hants Lambeth Group groundwater body and artesian Chalk groundwater from the East Hants Chalk groundwater body may be encountered. Trench excavations and any shafts will need to be designed in accordance with industry standards. A risk assessment will need to be carried out to ensure the selected excavation method does not introduce contamination pathways into the aquifer. The design will include a contingency plan if artesian groundwater flow is encountered. For access roads, road runoff drainage systems will be designed to minimise runoff soakaway drainage to ground, and pollution control measures will be installed on all access roads.

Construction will be undertaken when flows are at or below the mean average as far as practicable to reduce the potential for sediment release and risk of scour and using appropriate methods to reduce the risk of pollution if flows were to increase suddenly. There will be no storage/stockpiling of fuels earth, gravel or other materials that may cause pollution within the pipeline corridor. All soils/materials excavated within the pipeline corridor are directly placed into a vehicle and taken away for offsite storage.

8.2 Water Quality Control Measures

To minimise the risk of groundwater contamination across the project, the following control measures have been implemented:

- Shafts have been designed as open dug caissons. This removes the requirement for ground improvement and dewatering in all but artesian groundwater conditions.
- Groundwater level and quality monitoring is being undertaken at shafts with high groundwater tables (W1, W4, ED, W5).
- Shafts will be water-tight during tunnelling operations, reducing the risk of spills to groundwater.
- Oil interceptors will, as a minimum, serve surface drainage from impermeable surfaces such as vehicle parking areas etc.
- Sanitary wastewater disposal from the on-site facility will be routed into a bunded container that will be collected on a regular basis by a licenced waste removal contractor.
- Storage of Fuels and Oils: Fuels, oils and lubricants should be stored in a secured bunded area at a site located at a minimum 10 metres from watercourses and water mains where reasonably practicable as per REAC requirement (W1) (HTR-WAB-PI-XX-HS-W-0006). These hydrocarbons will be stored on areas of hardstanding with a drainage system that includes oil separators and emergency shut-off valves.

- Use of Biodegradable Oils and Lubricants: Biodegradable oils and lubricants will be used, where practicable and available, in construction plant and mechanical equipment. This is of particular importance for plant working near water mains and watercourses.
- Drainage management plan.
- Health and safety RAMS and appropriate PPE to be implemented for the protection of construction workers in accordance with the COSHH Regulations 2002 (as amended).
- Stockpile management (such as water spraying and covering) to reduce windblown dust and surface water run-off.
- Clear segregation between stockpiled material including imported material, excavated material stockpiled for re-use and excavated waste material stockpiled for treatment and / or off-site disposal.

Implementation of working methods during earthworks to manage groundwater and surface water appropriately and ensure that there is no uncontrolled run-off from the works, any material / waste stockpiles, and storage containers into adjacent surface watercourses. It should be noted that additional control measures are implemented at shaft W1, where the risk is higher. A Design Risk Assessment (Appendix A) has been carried out to ensure excavation methods do not introduce contamination pathways into the aquifer as per REAC W1 (HTR-WAB-PI-XX-HS-W-0006).

Additionally, the RAMs documents for activities will cover task specific mitigations.

Discharge consents

Shaft 1 discharge consent and the remaining scheme discharge consents have been submitted and are awaiting approval from Southern Water. Discharge flows must comply with any associated permits granted as per REAC W1 requirements (HTR-WAB-PI-XX-HS-W-0006). Central to these design features are the surface water drainage systems. The principal approach for preventing discharge of hydrocarbon contaminated surface water into drainage features will be via oil separators within the system. At Shaft W1, water is to be pumped into a silt buster and then discharged into the Southern Water storm drain at a rate of 1 litre per second. The site layout is shown in Figure 1.

The remaining scheme discharge consents arrangements are still to be agreed.

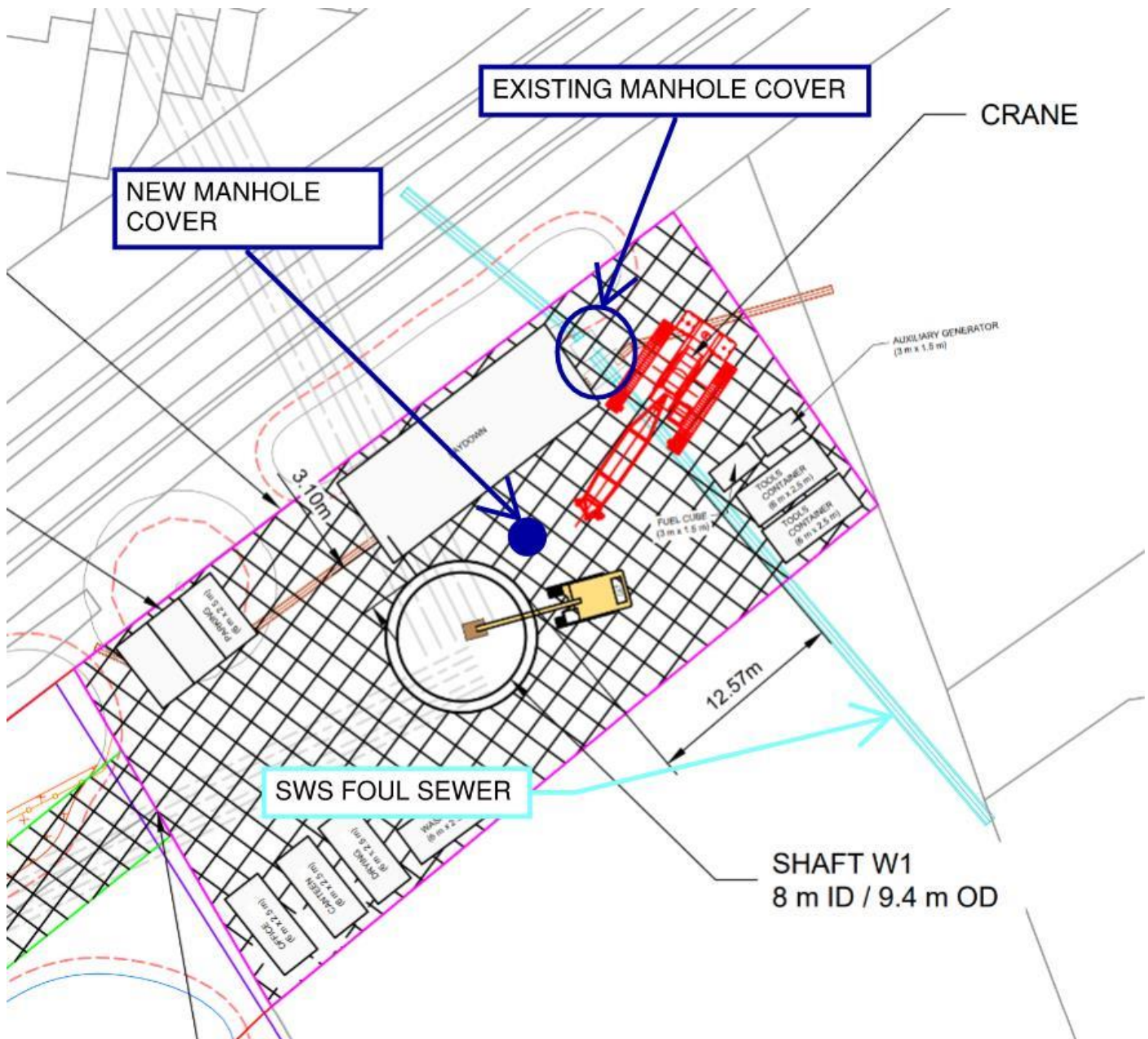


Figure 1: Discharge consent (permanent) at Shaft W1

8.3 Sediment Control Measures

The management of suspended sediment in any application can be broadly broken down into the following three components:

- mitigation at source.
- mitigation during the drainage transportation phase; and
- mitigation subsequent to the transportation phase and prior to site discharge.

Following this approach, WAB have implemented the following:

- Silt collection fencing where required on haul roads (P2, P9)
- Wet dug shaft construction to reduce ground dewatering requirements and potential silt transport to rivers.

- Geosocks on pumping boreholes to reduce fines ingress.
- Appropriately sized siltbusters (or similar) at each discharge location.
- Drainage plan implemented on each site to contain surface water within site.
- Appropriate soakaways on sites without connection to surface / foul water drainage.
- Bunded muck bays for shaft and tunnel construction with screened sump pumps discharging water via a siltbuster or similar.
- Flood risk activity permits in place for works in-channel, or within the flood zone.

In addition to the above, specific measures maybe detailed in RAMs documents for silt producing tasks.

8.4 Protecting Exposed Soil

Where soil slopes or embankments are exposed for a prolonged period during site construction works, erosion will be reduced by covering the surface. Mitigation measures to be included in works with potential to expose soil are to include, at a minimum:

- Sequencing of the works to avoid prolonged stockpiling where possible,
- Covering with terram cloth or other suitable material.
- Minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to prevent soil erosion and reduce temporary effects on soil compaction.
- Stockpile management (such as water spraying and avoiding over stockpiling to reduce compaction of soil and loss of integrity) to reduce soil erosion, windblown dust and surface water run-off.
- Stockpiles to be stored over 6 months are to be seeded with a grass mixture to be agreed with the client.
- Implementation of appropriate dust suppression measures to prevent soil erosion.
- Implementation of working methods during earthworks to ensure that there is no uncontrolled run-off from the material / waste stockpiles.

9 Protection of Source Protection Zones (SPZ)

9.1 Overview

Much of the pipeline corridor lies within a SPZ1c (inner protection zone subsurface activity area). The southern tip of the pipeline corridor lies within a SPZ1 (inner protection zone) covering the area immediately around the Havant and Bedhampton springs where the Chalk aquifer discharges, including Shaft W1 working area.

The SPZ1 is defined as the area where groundwater in the aquifer has a 50-day or less travel time to the source/abstraction. The SPZ1c extends where the aquifer is confined and unlikely to be affected by surface activities but may be impacted activities at depth, such as deep drilling. As the pipeline corridor is largely confined by Clay, the SPZ1c category applies. The construction of Shaft W1 will largely be in the clay, however the base will be sat against a sand layer. Below this sand is the chalk, which links to the aquifer. A link is present between the sand and chalk, and mitigation measures have been put in place to prevent pollution from construction works entering the SPZ.

9.2 General control measures

To protect the SPZ areas within the scheme, the following measures will be adopted during construction in line with requirements outlined in the water quality section of the REAC (W2) (HTR-WAB-PI-XX-HS-W-0006):

- The proposed construction works will remain fully above the chalk aquifer within the cohesive head deposits/Reading formation.
- Monitoring will be conducted at the Bedhampton Springs to check that no contaminants are introduced into these production water, see Section 9.5.
- Shafts will be constructed as caissons. Shafts W1, W4, W5, ED, will be constructed in the wet to formation. This will reduce the need for de-watering and reduce the risk of fines migration away from the shafts into the water supply.
- A closed face slurry type TBM will be utilised for all tunnelling works. This sealed system allows the operator to control face pressures to ensure that tunnelling fluid is not lost to the ground or that ground water is not drained from the ground. Flowmeters and pressure sensors will be installed on the feed and return slurry lines to verify that there is no loss slurry to the ground or ground water being drained from the ground.
- The annulus between the tunnels or shafts and surrounding ground will be grouted upon completion of each structure to close off any potential new permanent flow paths. Grouted volumes will be monitored to ensure they match the overall volume of the annulus.
- Bentonite is used as a lubricant during tunnelling and shaft sinking. It has the potential to block existing flow pathways and cause turbidity in the groundwater. Volumes of bentonite injection will be observed to identify any potential excessive losses of material as per REAC requirement (W1) (HTR-WAB-PI-XX-HS-W-0006). Note that Bentonite is a non-Newtonian fluid and therefore after injection will become immobile in the aquifer, reducing the risk of contamination to the abstraction springs.
- Chemicals to be used in construction, and predicted volumes, are detailed in the following section.
- All fuels will be stored in double skinned bowser housed in bunded area. Fuel storage will be kept to minimum volumes required.
- Drip trays/plant nappies will be placed under any parked machinery.
- Any wet excavated material will be temporarily stockpiled within a bunded area to prevent any water escaping into any water courses or into the groundwater. There will be a sump with separation baffle within the bund

to allow water to be removed via a pump and discharged in accordance with the relevant permit/consent as outlined above.

- Bunded areas will be inspected weekly to ensure performance integrity, and no overloading of bunds is occurring.
- All COSHH materials will be stored in a bunded area.

9.3 Construction Materials

Construction Materials and Chemicals used in shaft and tunnel construction which need to be controlled by Groundwater Activities Permits will be agreed with both the client and the EA. This will control the chemicals that can be used, the methodology for use and the imposed controls.

9.3.1 Introduction

Specific details of the materials to be used during construction of shaft W1 and the P1 tunnel drives, the anticipated volumes, and the risk / potential pathways for them to impact on the SPZ water quality are given in the following sections.

9.3.2 Bentonite (Tunnel Gel Plus)

9.3.2.1 Usage and concentration

Tunnel Gel, manufactured by Cebo Holland, is a pre-mixed Sodium Bentonite produced in Greece. It contains additional polymers in the pre-mixed Bentonite, but specific details of these are an industry secret. The Technical and material safety data sheets are contained in Appendix B:. It is used as a lubricant during shaft sinking and pipe-jacked tunneling because of its thixotropic and filter-cake forming qualities.

The Bentonite clay powder will be mixed at a typical maximum of 8% concentration by mass with potable water. It will be allowed to hydrate before injection into either the tunnel or shaft annulus.

Expected usages are given below:

W1 Shaft sinking: 20 m³ (1.2 x the 50 mm annulus volume in predominantly clay soils)

P1 Fill Tunnel: 149 m³ (2 x the 30 mm annulus around the tunnel pipe, total volume over the 424 m length)

P2 Return Tunnel: 192 m³ (2 x the 32 mm annulus around the tunnel pipe, total volume over the 426 m length)

9.3.2.2 Pathways to enter groundwater & mitigations

During shaft sinking the following pathways for the Bentonite to enter the ground water have been identified:

Table 3 - Shaft Construction Pollution Risks

Pathway	Mitigation	Likelihood / risk
Shaft sinking – groundwater flow	Shaft sunk only through superficial layers above the chalk aquifer.	Low due to ground conditions
Shaft sinking – permeable layers	Shaft sinking through sand layer close to formation level. Groundwater level monitoring (HTR-WAB-PI-W1-SP-W-0004_BH01 DATA) has shown that this layer has a lower head than the chalk beneath. Therefore, any Bentonite lost into this layer will not migrate into the aquifer. Bentonite will form filter-cake and seal in sand layer, preventing further penetration. Bentonite volumes injected during shaft sinking will be recorded and excessive loss into the ground identified. Reasons to be identified in shift review meetings and lubrication practice updated to minimise loss.	Low risk to entering chalk aquifer. Medium risk to sand layer in immediate vicinity of shaft, low risk far field due to filter-cake forming and thixotropic nature of Bentonite.
Shaft sinking – surface spills	Superficial soils are cohesive & low permeability. Site drainage plan collects surface run off. Surface spills to be cleaned on site and moved to muck bay for disposal	Low risk.
Flush during grouting	Bentonite will flush to ground level up the annulus. Will be collected and stored in muck bay for removal from site.	Low risk.

During tunnelling the following pathways and mitigations have been identified:

Table 4 - Tunnel Construction Pollution Risks

Pathway	Mitigation	Likelihood / risk
Groundwater flow	Significant GI works completed along tunnel alignment show the tunnel is primarily within cohesive (low permeability) clay strata. Any sand layers encountered are expected to be in the first 100 m of the tunnel drive. 300 m from the W1 shaft.	Low due to ground conditions
Permeable layers	Groundwater level monitoring (HTR-WAB-PI-W1-SP-W-0004_BH01 DATA) has shown that this layer has a lower head than the chalk beneath. Therefore, any Bentonite lost into this layer will not migrate into the aquifer. Bentonite will form filter-cake and seal in sand layer, preventing further penetration. Bentonite volumes injected during tunnelling will be recorded and excessive loss into the ground identified. Reasons to be identified in shift review meetings and lubrication practice updated to minimise loss.	Low risk to entering chalk aquifer. Medium risk to sand layer in immediate vicinity of tunnel, low risk far field due to filter-cake forming and thixotropic nature of Bentonite.
Surface spills	Spills will be at W2 location. Outside of the SPZ1 zone.	Low risk.
Flush during grouting	Bentonite will be mixed with grout during grouting process outside of tunnels and immobilised. Volume of Bentonite and grout injected to be recorded during drive and reviewed to ensure no excessive losses occurring. Response plan to be developed as part of RAMs for grouting works.	Low risk.

9.3.2.3 Consequences of contamination

The key risks to the groundwater quality are:

- Turbidity increase.
- Chemical makeup changes of water.

9.3.3 Tunnelling Polymers (TK-60, PAC-L)

Material Safety Data Sheet available in the Appendix B:.

9.3.3.1 Usage and concentration

TK-60 and PAC-L are polymers used to increase viscosity and reduce filter loss of Bentonite lubricant, respectively. They are used in small concentrations (typically < 0.4% and 0.8 % concentration by mass respectively) and are mixed into the Bentonite during batching.

9.3.3.2 Pathways to enter groundwater and mitigations

As per the Bentonite above.

9.3.3.3 Consequences of contamination

As per Bentonite above.

9.3.4 Excavated material conditioner (DryAdd – Calcium Oxide (Lime))

9.3.4.1 Usage and concentration

DryAdd or Lime is mixed with wet excavated material to stiffen the soil and make it suitable for transport as a “last resort” when the centrifuges are unable to sufficiently thicken the excavated material during tunnelling, or the excavated shaft material is too wet to be transported by road. It is spread into the sealed muck bay and mixed into the excavated material to be treated. Treatment ranges from 5-15kg/tonne depending on the wetness of the material.

9.3.4.2 Pathways to enter groundwater and mitigations

Run-off from excavated wet material can enter both ground and surface water if not stored correctly. Incorrect storage of this material can result in dust hazard which may be carried in the wind and enter surface water sources. Mitigation measures for storage of excavated material are outlined in section 5.7 under Shaft W1 Additional Control Measures.

9.3.4.3 Consequences of contamination

DryAdd is a non-hazardous, non-toxic, biodegradable additive. Consequences of contamination from using DryAdd or Lime can increase the pH level of water, but the source of contamination rather comes from any potential run-off from other contaminants within the excavated material that the DryAdd substance is mixed with which can lead to possible pH increase of the groundwater as a result of inadequate storage of excavated material. There is a very low risk of contamination, however it will only be used at launch shafts and within bunded muck bays to prevent it from entering the SPZ.

9.3.5 Centrifuge Polymer (TK-50, T-CAT)

TK-50 and T-CAT are mixed with slurry in the inlet to the centrifuge to promote flocculation (and separation) within the centrifuge). This operation will take place only at the W2 site and is therefore unlikely to enter the groundwater or influence the SPZ as no pathway for the TK-50 to enter the ground has been identified.

9.3.6 Shutter release oil

9.3.6.1 Usage and concentration

Shutter oil will be used to ensure the laitance of the concrete does not stick to the shutter when striking. This shutter oil will be water-based and environmentally friendly so as not to contaminate the groundwater.

Approximately 4 litres of shutter oil will be used on the shutters per 2.4-metre-high concrete pour.

9.3.6.2 Pathways to enter groundwater and mitigations

Excessive use of this product increases the likelihood of oil running off the shutters on to the ground and possibly creating a pathway to the water. Spillages of this substance could lead to entering drains and surface water areas. This substance must only be used per manufacturers guidelines/depending on the size of shutter. Spill kits are to be located near areas where this oil is to be used to allow for quick response to any accidental spills of this oil. Spills of this oil is not to be flushed into surface water or sewer/drainage systems. Oil to be stored in secured COSHH container. Disposal of this product must be in line with COSHH waste disposal guidelines.

9.3.6.3 Consequences of contamination

Chemical contamination of ground/surface water. Hazardous to the environment and the aquatic environment.

9.3.7 Concrete Retarder

ADODTARD TF – by Adomast.

9.3.7.1 Usage and concentration

Approximately **the** same as shutter oil usage and concentration.

9.3.7.2 Pathways to enter groundwater and mitigations

Spillages and excessive use of substance can lead to entering groundwater. Spill kits are to be located nearby where this substance is being used to enable quick response to any spills.

9.3.7.3 Consequences of contamination

ADODTARD Liquid does not contain any environmentally hazardous components. It is a Water Regulations Advisory Scheme (WRAS) approved product—suitable for contact with flora, fauna and water – per MSDS.

9.3.8 Other Products

Other COSHH materials will be used during the construction of shaft W1. Examples of these may include petrol for saws and generators, oils, general cutting lubricants, etc. These materials will be accompanied by a MSDS and will be stored accordingly with manufacturers guidelines.

9.3.9 Summary

Section 9.3 has outlined the materials/chemicals to be used in construction of Shaft W1 and Tunnel Drive section P1. From analyzing the information provided, there is a risk that the chemicals and agents to be used can pose a risk of contamination to the SPZ areas and groundwater in general. Through careful consideration throughout the design phase of the works, works will be conducted with the aim of minimising any likelihood of water contamination. Tables 1 and 2 have outlined the potential contamination pathways of Bentonite but through the mitigation measures

outlined, the likelihood of contamination to groundwater is at low risk. The same measures for Bentonite also apply with the use of TK-60 and PAC-L as these polymer additives will be used in conjunction with the Bentonite.

The use of DryAdd is not determined to pose a risk to groundwater contamination and by following the correct stockpiling and storage of excavated materials outlined in Section 5.7, this will minimise the likelihood of contamination via stockpiled wet waste. TK-50 and T-CAT are not expected to pose a threat of water contamination as no pathways to groundwater has been identified for W1 works.

The main risk of water contamination from shutter oil and concrete retarder are from excessive use and accidental spillages. Following the mitigation measures outlined under these points minimises the risk of contamination from these two substances.

9.4 Shaft W1 Design Risk Assessment

See Appendix A:

9.5 Bedhampton Water quality monitoring

9.5.1 Overview

Mitigation measures are in place to prevent effects to groundwater in the groundwater source protection zone, but turbidity monitoring will also be installed on the Bedhampton 1 springs and collection chamber during shaft sinking and tunnelling works. The system (as shown in Figure 1, below, and detailed in HTR-WAB-PI-W1-TN-W-0003) will directly monitor the output from Little Blue Hole, Blue Hole, and St Chad's Well Springs, as well as the outlet from the Blue hole collection chamber to the suction tank. This will enable individual springs, or the collection chamber, to be isolated should a turbidity event occur.

The system will comprise the following elements:

- 1) Turbidity monitors installed into the pipework to continuously measure turbidity in the flows. These sensors will be capable of reading turbidity levels down to ~ 0.5 NTU in the flow.
- 2) A data logging and processing computer which will record all data and enable trending.
- 3) An automated "call-out" function that will alert a list of users (defined below) by email and/or SMS when a set turbidity level is breached in one of the sensors.
- 4) Power, communication, and other ancillary equipment.

The details of the proposal are included in the WAB Document "*HTR-WAB-PI-W1-TN-W-0003_Turbidity Monitoring System Proposal S4.P01*".

An Inspection and test plan (ITP) has been developed (HTR-WAB-PI-BD-SP-W-0003) to outline the testing, calibration, cleaning, reporting requirements for the turbidity system to ensure its correct operation and submitted for approval prior to the W1 shaft and P1 tunnelling works starting.

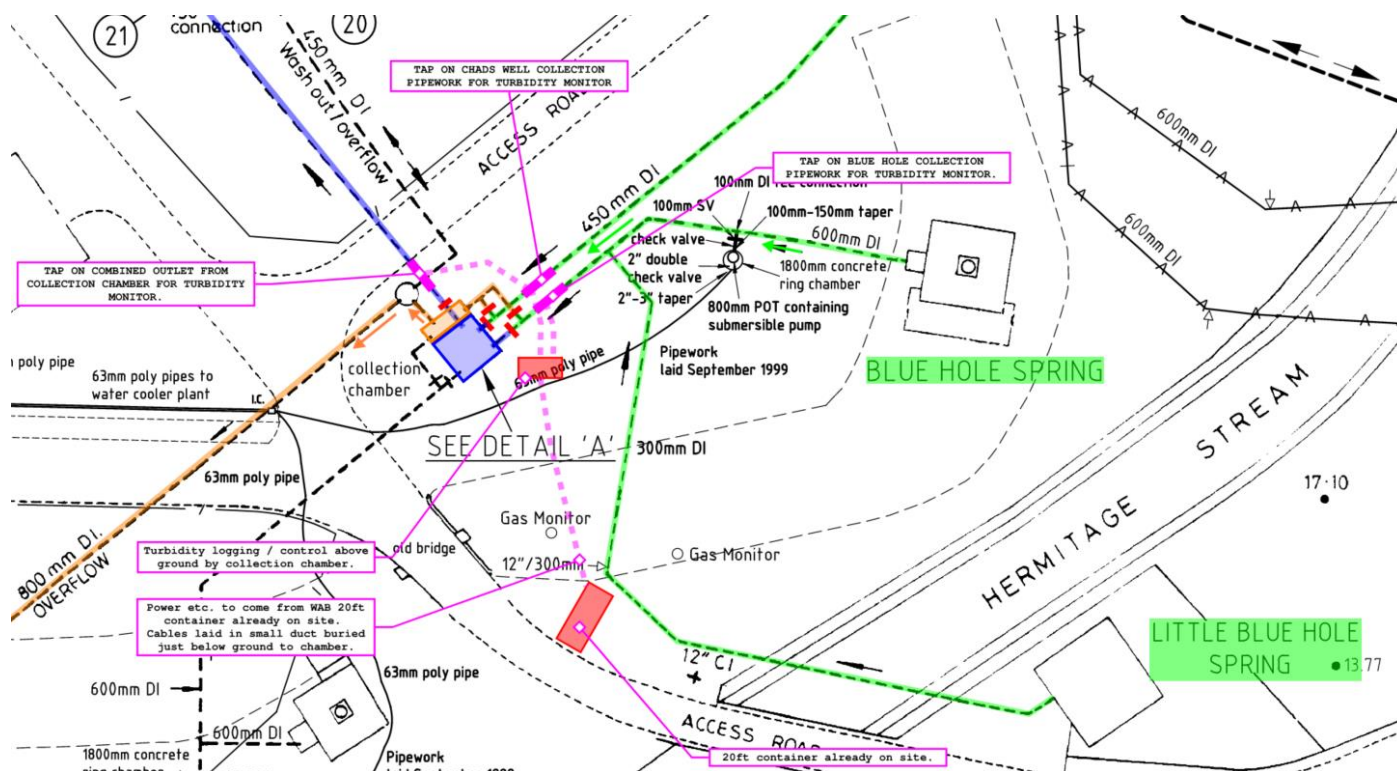


Figure 2: Water quality monitoring at Shaft W1

9.5.2 Agreed turbidity event responses and duration thresholds

For details of turbidity events and the agreed responses, see HTR-WAB-PI-W1-RP-W-0006, the Turbidity Monitoring Response Plan. The document will be periodically reviewed and updated with the agreed response procedures and limits on acceptable turbidity from the different sensors.

A dry run/test run of the alert trigger will be conducted before construction begins to ensure the system operates in the case of a turbidity event. Following this period, the system operation and baseline turbidity levels will be reviewed and any changes to the levels above agreed before works commence.

A baseline period of turbidity monitoring will be undertaken before excavation works begin. Before works start, a meeting will be held to review the data from this period and check the levels in HTR-WAB-PI-W1-RP-W-0006 are realistic. Daily meetings (unless otherwise agreed) will then be held to agree levels for the following 24 hours, to decide the threshold levels and WAB upcoming works. WAB will produce a graph for these meetings showing turbidity and rainfall in the last 24 hours.

10 Further Information

10.1 Sources of Information and Advice

<https://www.gov.uk/government/organisations/environment-agency/services-information>

<https://www.gov.uk/government/organisations/environment-agency>

https://www.ciria.org/ci/Civil_infrastructure/CIRIA_guidance.aspx

<https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/>

<https://cdn.havant.gov.uk/public/documents/Havant%20Borough%20Biodiversity%20Strategy.pdf>

<https://www.legislation.gov.uk/ukpga/1974/40/section/72>

<https://www.legislation.gov.uk/ukpga/1990/43/section/79>

ENVIRONMENT AGENCY

Environment Agency Inspectors have similar powers to HSE Inspectors. They can go anywhere on site, remove any evidence or sample for testing and investigation, take statements, photographs and documentation, and they can serve improvement/abatement notices, impose fines and prosecute offenders. They can also advise you of ways to comply with legislation and your Duty of Care

Emergencies EA & SEPA (Eng. Wales & Scot.): 0800 80 70 60

General Enquiries EA (Eng. and Wales): 03708 506 506

General Enquiries SEPA (Scotland): 01786 457700

General Enquiries EPA (Ireland): 053 916 0600

Waste Action Line SEPA (Scotland): 0800 389 5270

Waste Registration EA (England): 03708 502 858

Appendix A: Shaft W1 Design Risk Assessment

THE VERSION OF THIS DRA PRINTED BELOW IS NOT CONTROLLED. CHECK FILE HTR-WAB-PI-ZZ-RA-W-0001 FOR LATEST VERSION.

Should there be any additional work required to facilitate the progress of the job, and it can be completed in a single shift, then this can be undertaken using a Proactive Planning Form (PPF)

RISK RATING Likelihood (L) x Severity (S)		HAZARD SEVERITY (S)				
		1	2	3	4	5
		Negligible Negligible injury, no absence from work	Slight Minor injury requiring first aid treatment	Moderate Injury leading to a lost time accident	High Involving a single person's serious injury/death	Very High Multiple serious injuries/death
1	Very Unlikely: A freak combination of factors would be required for an incident/accident to result	LOW	LOW	LOW	LOW	LOW
2	Unlikely: A rare combination of factors would be required for an incident/accident to result	LOW	LOW	LOW	MEDIUM	MEDIUM
3	Possible: Could happen when accidental factors are present but otherwise unlikely	LOW	LOW	MEDIUM	HIGH	HIGH
4	Likely: Not certain to happen but an additional factor may result in an incident/accident	LOW	MEDIUM	HIGH	HIGH	HIGH
5	Very Likely: Almost inevitable that an incident/accident would result	LOW	MEDIUM	HIGH	HIGH	HIGH
Risk Assessment LOW RISK (Score 1 – 6)		May be acceptable, however, review task to see if risk can be reduced further				
MEDIUM RISK (Score 8 – 10)		Task should only proceed with appropriate consultation with specialist personnel and HS&E team. Where possible the task should be refined to take account of the hazards involved or the risks should be reduced further prior to task commencement.				
HIGH RISK (Score 12 – 25)		Task must not proceed. It should be refined, and further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to work commencement				

Likelihood: How often could the hazard occur? Consider the task, frequency, duration, method of work, employees involved.

Severity: How serious would the hazard's effects are if realised? Consider the type of hazard: Biological, ergonomic, physical and chemical.

Risk = Likelihood x Severity



C725 HTR - HAVANT Main Pipeline Works - DESIGN RISK ASSESSMENT

PROJECT TITLE:		HAVANT Main Pipeline Works				PREPARED BY:		M.Lahrache			3	Possible	3	Moderate	Likelihood	1	1	2	3	4	5	
PROJECT CONTRACT NUMBER:		C725				CHECKED BY:		J.Templeman			4	Likely	4	Major		2	2	4	6	8	10	
PROJECT LOCATION:		Havant				APPROVED BY:		B. Phillips			5	Almost Certain	5	Catastrophic		3	3	6	9	12	15	
DOCUMENT REFERENCE:		HTR-WAB-PI-ZZ-RA-W-0004_Pipeline Design Risk Assessment				ISSUE DESCRIPTION		DRA Issue Sections W1, P1, W2 for Form A			1-5	No Further Actions Required	12-15	Reduce Risk Further if Practicable		4	4	8	12	16	20	
AREA/SITE REFERENCE:		W1-Bedhampton				STATUS CODE		S4			6-10	Inform of Risk and Control	16-20	Re-Think Design		5	5	10	15	20	25	
		INITIAL EVALUATION			WORK PHASES AFFECTED (YES/NO)			REVISION:			P04			INITIAL RATING CALCULATED			ADDITIONAL			RESIDUAL RATING CALCULATED		
TASK	HAZARD	RISK	Construction & Testing	Operation & Maintenance	Extension & Demolition	INITIAL DESIGN CONTROL MEASURES			LIKELIHOOD	CONSEQUENCE	RISK RATING	CONTROL MEASURES		RESPONSIBILITY	LIKELIHOOD	CONSEQUENCE	RESIDUAL RISK RATING					
General site setup/works	Buried services in Bedhampton PS / Bellway site	Damage to potable/raw water mains, leading to temporary termination or pollution of water supply. Flooding of site/local area. Electrocution of operatives (HV cables)	Y	Y	Y	Design shaft location to be in Bellway site (not PW land) to minimise service proximity (28/10/2022 HTR-WAB-PI-W1-RP-W-0002 Bedhampton pumping station shaft optioneering report). Detailed survey of Bedhampton PS site to be undertaken, including desk study and trial holes. Location and depth of all services to be identified in areas of interest. Calculate allowable pressures over services. Obtain/consider utilities plans (16/03/2023 Utilities search recieved from Select Surveys), Undertake topographic and GPR survey of the areas around the shaft location (Surveys undrtaken by Select Surveys in 02-03/2023, survey drawings recieved 14/04/2023). Shaft initially planned to launch TBM and to be 11 m ID/13 m OD (see C725-MC-002 - Outline Pipeline route - S0.P01.2 on 16/08/2022). Switched to reception of TBM only at W1 to allow smaller diameter shaft to be used, increases clearance to services and lessens chance of service strike (see C725-MC-002 - Outline Pipeline route - S0.P01.3 on 14/09/2022). Using utility plans and GPR survey. Diameter of 8m ID/9.4 m OD selected - minimised to increase clearance to services, whilst allowing sufficient space for construction/permanent internal pipework. Position and size set by white route planning submission freeze 08/08/2023). Trial holes completed March 2024. Found unknown service at shaft location. Completed further trial holes to trace service through Bedhampton site. additional cable tracing survey. Contact with service providers (SSE/SGN/POW). SGN tested service and determined not gas or electric. Proximity to SW foul pipe to north of the shaft. Shaft moved approximately 0.5m south to get approximately 3.1m clearance. Ongoing engagement with SW regarding acceptable clearance.			2	5	10	Provision of additional service protection mats or slabs, where required. Possible diversions of services prior to works, where required. Capping arrangement for abundant service to be determined		PC	2	5	10					
General site setup/works	Unknown load rating for bridge access to Bedhampton PS site	Collapse of bridge during heavy vehicle movements	Y	Y	Y	Request original drawings of bridge from PW. Establish the maximum load bridge is exposed to at present by PW.			2	4	8	Limit maximum weight of vehicle movements over bridge, if required. Reinforce bridge structure, if required.		PC	2	4	8					
Shaft construction	Sinking shaft within Source Protection Zone 1, in close proximity to boreholes	Contamination of source, leading to temporary termination, pollution or turbidity of water supply.	Y	N	Y	Shaft and tunnelling to avoid vicinity of boreholes. Depth to chalk in shaft location to be determined by ground investigation. Shaft to be designed for wet excavation with no lubricant use, if possible.			4	4	16	Construction to involve wet excavation, either lubricant-free or with lubricants approved by EA and PW. Aim to maintain water level in shaft no higher than surrounding water table.		PC	3	4	12					
Shaft construction	Damage to suction tank or associated infrastructure	Temporary termination or pollution of water supply.	Y	N	Y	Shaft and tunnelling designed to avoid vicinity of suction tank. Shaft working area positioned to avoid any plant movements in vicinity of tank. TOPO survey of tand boundaries has been undertaken			2	4	8	Tank location to be included in drawings. Rams/lifting plans to account for tank		PC	2	4	8					
Shaft construction	Flooding	Operatives drowning due to shaft flooding from stream as well as risk of electrocution	Y	Y	Y	Monitoring of ground water levelin borehole near shaft - not artesian. Caisson construction method to be used, assumed to be excavating in the wet (i.e. groundwater allowed to enter/rise in shaft). Shaft to be located outside of flood zones 2 and 3. Shaft walls to be left above flood level during construction			2	5	10	Excavation to be from surface		PC	2	5	10					
General site setup/works	Interface with PW operations	Disruption to operations work.	Y	N	N	Site layout designed to maintain good vehicle access to Bedhampton PS and around Bedhampton site			5	2	10	Maintain regular communications with operations teams throughout construction and coordinate activities accordingly. Ensure required access to assets is maintained throughout works. Ensure clear demarcation of construction site boundaries.		PC	3	2	6					
Shaft construction	Settlement of Network Rail assets	Multiple fatalities and/or injuries caused by train derailment. Disruption to Network Rail operations	Y	N	N	Shaft switched from launch to reception (14/09/22) - enables smaller diameter shaft to be used, reduces settlement magnitude/extent. Diameter of 8/9.4 set in white route planning submission freeze 08/08/2023 - minimise size, whilst allowing sufficient space for construction/permanent internal pipework. Shaft depth minimised, subject to constraint of maintaining tunnel cover at UTX. Shaft position and depth is such that shaft is outside NR zone of influence. Dual pipeline configuration requires ~1 m increase in shaft depth (see HTR-WAB-PI-P1-DR-W-0002_RETURN PIPELINE P AND LS SHEET 1 S4.P04) - shaft still outside NR zone of influence. Use of caisson construction process with excavation in the wet - limits potential for settlement compared to other methods (no dewatering, use of cutting shoe and potentially lubrication).			1	5	5				1	5	5					
Shaft construction	Potential service strike	Electrocution, Explosion, Flooding, Damage to service, disruption of services	Y	N	N	Details provided in Buried services in Bedhampton PS / Bellway site.			3	5	15	Trial pit of unknown service to identify location/type. Investigation of removal or diversion. Use of safe excavation practices in RAMS. Use of CAT and genny before excavation.		PC	2	5	10					
Shaft construction	Damage to nearby services through sub-surface settlement of ground around shaft	Explosion, flooding, damage to service, disruption to services	Y	N	N	Details provided in potential services strike. Minimise shaft diameter and maximise shaft clearance from services (subject to constraints) - acts to reduce settlement potential.			3	5	15	Undertake settlement assessment on nearby services (combine with tunnel settlement assessment - more onerous). Identify material of service (trial pit?)		PC	2	5	10					



C725 HTR - HAVANT Main Pipeline Works - DESIGN RISK ASSESSMENT

WARD & BURKE		C725 HTR - HAVANT Main Pipeline Works - DESIGN RISK ASSESSMENT												
PROJECT TITLE:		HAVANT Main Pipeline Works				PREPARED BY:		M.Lahrache						
PROJECT CONTRACT NUMBER:		C725				CHECKED BY:		J.Templeman						
PROJECT LOCATION:		Havant				APPROVED BY:		B. Phillips						
DOCUMENT REFERENCE:		HTR-WAB-PI-ZZ-RA-W-0004_Pipeline Design Risk Assessment				ISSUE DESCRIPTION		DRA Issue Sections W1, P1, W2 for Form A						
AREA/SITE REFERENCE:		W1-Bedhampton				STATUS CODE		S4		REVISION:		P04		
							1	Rare	1	Negligible				
							2	Unlikely	2	Minor				
							3	Possible	3	Moderate				
							4	Likely	4	Major				
							5	Almost Certain	5	Catastrophic				
							1-5	No Further Actions Required	12-15	Reduce Risk Further if Practicable				
							6-10	Inform of Risk and Control	16-20	Re-Think Design				
Shaft construction	Pollution of nearby spring during shaft construction	Interruption of water supply to PW customers. Environmental impacts, if spring water is run to waste	Y	N	N	Shaft location selected to be in Bellway Homes land - moves shaft away from proximity to springs (28/10/2022 HTR-WAB-PI-W1-RP-W-0002 Bedhampton pumping station shaft optioneering report). Shaft switched from launch to reception (14/09/22) - enables smaller diameter shaft to be used, reducing potential impact on springs. Diameter of 8/9.4 set in white route planning submission freeze 08/08/2023 - minimise size, whilst allowing sufficient space for construction/permanent internal pipework. Shaft designed to be above the top of the chalk aquifer (see HTR-WAB-PI-P1-DR-W-0001_PLAN AND LONGSECTIONS SHEET 1 S4.P08 in white rote planning submission freeze on 05/06/23). This was informed by existing borehole (Structural soils: ATK-DS-222) close to shaft W1 location used for ground information. Identified depth of top of chalk head and presence of a zone of core loss above chalk. Additional GI obtained by several CPTs around the shaft (Lankelma on 21-22/02/23) - provided indication of any lateral change of top of chalk in proximity of shaft. Additional borehole undertaken (BH01 by Geotechnical Engineering on) - identified sand lens above chalk and provided ability to manually monitor ground water level in the chalk and sand. Shaft depth increased by ~1m to accomodate dual pipeline configuration - driven by constraint of cover depth under UTX in Section P1 tunnels (see HTR-WAB-PI-P1-DR-W-0002_RETURN PIPELINE P AND LS SHEET 1 S4.P04). Base of shaft is within sand lens - potentially risk of flow path to chalk. Use of caisson construction process with excavation in the wet - water level in shaft maintained at/close to in ground, minimises influence on groundwater flows. Tremie pour of plug? To seal shaft from groundwater, without pumping.	2	5	10	Lubrication strategy? If lubrication is used, selection of suitable fluid. Potential option of running nearby springs to waste during critical construction phase? May help with not polluting supply, but potential environmental discharge issues.	PC		5	0
Shaft construction	Interference of crane/other plant with railway during construction, maintenance, and valve replacement operations	Collision of plant with railway, interruption of services, potential derailment	Y	Y	Y	Plant outside of the collision zone during construction , Lifting during maintenance to be discussed during AIM Engagement with railway network	2	5	10		PC		5	0
Shaft construction	Artesian water pressure causing shaft overtopping	Drowning, electrocution, damage to plant, flooding of site, interruption of water supply, interruption of NR services	Y	N	N	Borehole ground water level monitoring over extended time period. Shaft wall left XXX mm above ground - provides additional buffer, can be increased if risk deemed greater.	2	3	6	Continued monitoring of borehole groundwater level. Pumping if required?	PC		3	0
Shaft construction	Differential settlement between pipework in shaft and open cut pipework towards Bedhampton	Damage to pipeline, leaks, interruption to water supply, contamination of springs (with res water, or recycled water)	Y	N	N	Transition to spigot-socket pipes to allow joint movements. Rocker pipe installed just outside shaft to accommodate ground movement. Dual pipe: rocker on both pipes. 10/2023 - Shaft walls now cut down below the open cut pipes, to allow for roof slab on other half of shaft. Move rocker pipe inside shaft wall onto the tee at the top of riser pipe - eliminate long flanged pipe where differential settlement can occur.	1	2	2				2	0
Shaft wall demolition	Risks associated with breaking out shaft wall for permanent state (vibration, dust, falling)	Injury or death for workers	N	N	Y	Make top pour sacrificial, adjust rebar design to allow cut outs for any open cut pipes passing through wall. Residual - RAMS to schedule backfill and breaking out to minimise work at height with no edge protection	2	4	8		PC		4	0
Shaft wall construction	Rebar risks (exposed bare rebar ends during shaft wall construction - impaling, cage stability)	Injury/death	Y	N	N	U bars used at top of wall pours to stop raw ends, Extension of U bars at the top of wall pours to form hand rail. Tie to pour below for stability.	2	4	8		PC		4	0
General site setup/works	Working at height	Injury/death by falling from height	Y	Y	Y	Shaft wall left 250 mm above ground to act as toe board. Hand rail/edge protection around shaft during construction ALM to be undertaken. Inclusion of floor inside half shaft at level to allow valve bonnet access. Hatches within floor to allow access to pipeline if required	2	5	10	Working at height procedures to be encorperated into RAMS	PC	1	5	5
General site setup/works	Confined space	Injury/death by suffocation	Y	Y	Y	Minimise amount of work at depth (excavate from surface, tremie plug pour?).	1	5	5	Residual: confined space working procedures in RAMS (egress routes, emergency proceures, gas monitors etc.)	PC	1	5	5
Pipeline operation	Confined space	Injury/death	Y	Y	Y	Confined space in parmanent state around low level pipework - half shaft. Minimise amount of low level work required by design steps (spindle extensions to ground on line isolation valves, move bypasses to high level, move all washout/air valve to ground level chamber). Some small valves remain at low level (only for isolation of small bore). Remaining low level valves to be accessible from open mesh floor level. Two sepearate access cover provided. Fixed ladders to be provided for shaft access. Use of open mesh floor to allow visual inspection without floor level access. Floor level access only for valve removal/ other non routine maintenance	1	5	5	Information on permanent access detailed in O&M manual/H&S file. Client to develop confined space work procedures. SOP for operatives	PC/Client	1	5	5
General site setup/works	Security of pipeline access covers	Injury to members of public from falling, potential contamination/interruption of water supply, damage to infrastructre	Y	Y	Y	Lockable/security covers to be used. Portable actuator required to operate main valves.	2	4	8		PC		4	0
General site setup/works	Manual Handling	Injury to workers	N	Y	N	ALM to be undertaken. Majority of air valves/washout valves moved to close to ground level - less manual handling at low level.	3	4	12	SOP for operatives	PC		4	0



C725 HTR - HAVANT Main Pipeline Works - DESIGN RISK ASSESSMENT

PROJECT TITLE:	HAVANT Main Pipeline Works				PREPARED BY:		M.Lahrache		3	Possible	3	Moderate	Likelihood	1	1	2	3	4	5
PROJECT CONTRACT NUMBER:	C725				CHECKED BY:		J.Templeman		4	Likely	4	Major		2	2	4	6	8	10
PROJECT LOCATION:	Havant				APPROVED BY:		B. Phillips		5	Almost Certain	5	Catastrophic		3	3	6	9	12	15
DOCUMENT REFERENCE:	HTR-WAB-PI-ZZ-RA-W-0004_Pipeline Design Risk Assessment				ISSUE DESCRIPTION		DRA Issue Sections W1, P1, W2 for Form A		1-5	No Further Actions Required	12-15	Reduce Risk Further if Practicable		4	4	8	12	16	20
AREA/SITE REFERENCE:	W1-Bedhampton				STATUS CODE	S4	REVISION:	P04		6-10	Inform of Risk and Control	16-20		Re-Think Design	5	5	10	15	20
General site setup/works	Lifting operation (valve replacement) during maintenance	Injury to workers	N	Y	N	ALM to be undertaken. Covers included for valve removal by crane from surface. Design freeze required breakout of ground down to roof slab to remove valve (excavation issues, work near bellway/railway, working at height around big opening). 10/10/23 move to large access cover at ground to remove the need to break it out.	3	4	12	SOP for operatives/lift plans	PC	4	0						
Shaft construction	Obstructions in shaft	Trip and injuries	Y	Y	Y	Small bore washout pipework moved up to below internal mesh floor level, to remove obstruction at low level. Moved low level pipework away from line valves.	2	3	6	PC	3	0							
Pipework	Sedimentation in pipeline	Risk of blockages, in main line or small bore pipework, impact on water supply	N	Y	N	Provision of washout at low point in shaft W1 to scour out. Provision of means to fully drain pipe from W1 (blank flange). Residual - unable to fully drain pipe without removing blank flange - lifting/manual handling/requires dropping submersible pump in/can only fully drain if line valve is open (both sides)	2	3	6	PC	3	0							
General site setup/works	Wahout activities	Discharge licence breach, fines, vehicle movements if using tanker	Y	Y	Y	Provision of direct link to surface water sewer to allow direct washout. White route design had washout directly into manhole with valves - moved away from this approach. Use of bauer fitting on surface water connection to give clear distinction from mains network.	3	3	9	PC	3	0							
General site setup/works	Traffic loading	Interruption of pedestrians movement during heavy vehicle flow, Damage to access covers	Y	Y	N	Put suitable access cover (Load ratings), Design of roof slab to account for vehicle loading	2	3	6	PC	3	0							
General site setup/works	Influence of Bellway work on shaft	Damage to shaft and pipeline through settlement, Damage to shaft through construction vehicle loading, damage to shaft through pilling activities	Y	Y	N	Engagement with Bellway throughout design, Sharing of design drawings, sizing of shaft 1 to fit with the building footprint, Assumed shaft to be constructed prior to Bellway works	3	4	12	Sharing As built drawings, Continued engagement with Bellway	PC	2	4	8					
General site setup/works	Trees	Damage or death of trees from construction activities	Y	Y	Y	Arboricultural survey to be undertaken by specialists. Location of any protected trees (e.g. TPOs) to be identified. Pipeline to be designed to avoid trees where possible	5	2	10	Works areas to avoid protected trees, where possible. Suitable tree protection to be erected, where required.	PC	2	0						
General site setup/works	Tree roots	Damage or death of trees from construction activities	Y	Y	Y	Arboricultural survey to be undertaken by specialists, including identification of root protection areas. Pipeline to be designed to avoid trees where possible	5	2	10	Suitable tree protection to be erected, where required. Load spreading measures to be provided, where required.	PC	2	0						
General site setup/works	Noise	Complaints from locals and school, Reputational and environmental damage	Y	Y	Y	Careful selection of time periods when noisy construction related activities are programmed to commence Consideration of site working hours when programming construction works Shaft changed to reception shaft - reduction in amount of construction activities and noise level	3	3	9	Work to be undertaken only in permitted hours (planning permission) Put accoustic panels around the area if required Move loud equipment far away as possible from the houses within site perimeter Communication to public of construction activities, meetings with local stakeholders	PC	2	3	6					
General site setup/works	Dust	Respiratory disease such as silicosis, lung cancer and asthma	Y	Y	Y	Reduce the operations that causes high level of dust	3	4	12	RAMS to limit dust exposure	PC	1	4	4					
Tunnel reception	Flooding of shaft during tunnel reception	(same risks as flooding above), potential settlement around shaft	Y	N	N	Reception shaft tunnel seal has double rubber layer. Provision of grouting ports on reception seal. Ensure TBM can be received without operatives in the shaft.	2	4	8	Consideration for receiving TBM in flooded shaft if required.	PC	1	4	4					
Pipeline operation	Falling from height	Injury/death of workers	Y	Y	Y	Fall protection to be installed on fixed access ladders (TBC). False floor to be provided around height level blank flange/ air valve.	2	5	10	Residual risks to be captured in Information on permanent access detailed in O&M manual/H&S file. Client to develop work at height procedures. SOP for operatives	PC/Client	2	5	10					
Shaft construction	Loading from construction plant on shaft walls	Injury, failure of shaft	Y	Y	Y	Design of working platform for crane during construction. Consideration of crane loading on shaft during shaft design. Determination of minimum distance between crane and shaft to be maintained.	3	4	12	Positioning of working platform to comply with design	PC	2	4	8					

Appendix B: Material Safety Data Sheets

Adomast Adostrike

Adomast Adotard

Bentonite (Tunnel Gel Plus)

Dryadd powder

Lime – Calcium Oxide

TK-60 Polymer

TK-50 Polymer

Section 1 ; Identification of the substance /mixture and of the company undertaking

1.1 Product Identifier

Product Name: ADOSTRIKE

Synonyms: Solvent based high performance formwork release agent

1.2 Relevant identified uses of the substance or mixture & uses advised against

High performance formwork release agent

1.3 Details of the supplier of the safety data

Company Name: Adomast Manufacturing Ltd
Barkston Road, Carlton Industrial Estate
Barnsley
S71 3HU
Tel: 01226 707863
Fax: 01226 718051
Email: sales@adomast.co.uk

1.4 Emergency telephone number

Emergency Telephone Number : 07887 416399 (24 hours)

Section 2: Hazards Identification

2.1 Classification of the substance or mixture

In compliance with EC Regulation No. EC 1272/2008 and its amendments

EUH066 Flam Liq 3 H226 – Flammable liquid & vapour
Asp. Tox 1 H304 – May be fatal if swallowed
Skin Irritation category 2 H315—causes skin irritation
STOT SE3: H335, H336 – May cause respiratory irritation; May causes drowsiness or dizziness
Aquatic Chronic 2 : H411- Toxic to aquatic life with long lasting effects

2.2 Label Elements

In compliance with EC Regulation No. EC 1272/2008 and its amendments

Contains: Kerosene,

Signal Words: DANGER

Hazard Phrases

H226 – Flammable liquid & vapour
H304 – May be fatal if swallowed
H315—Causes skin irritation
H335– May cause respiratory irritation
H336 – May causes drowsiness or dizziness
H411- Toxic to aquatic life with long lasting effects

Precautionary Phrases

P102– keep out of reach of children
P210-keep away from heat/sparks/open flame/ hot surfaces – No smoking
P260 –Do not breathe dust/fume/mist/vapours/spray
P271- Use in well ventilated area or outdoors
P273– Avoid release to the environment
P280-Wear protective gloves/clothing/eye protection
P301+P310– if SWALLOWED: Immediately call a POISON CENTER or Doctor/Physician
P305+P35+P358– IF IN EYE: Rinse cautiously with water for several minutes. Remove contact lenses, if present & easy to do so. Continue rinsing
P331-Do NOT induce vomiting
P403 + P233 – Store in a well ventilated place. Keep container tightly closed
P314 – Get medical attention if you feel unwell

Supplemental: EUH066 Repeated exposure may cause skin dryness or cracking



2.3 Other hazards:

PBT : This product is not identified as a PVT/vPvB substance

Section 3: Composition on ingredients

3.2 Mixtures

Chemical Name	EINECS	CAS	Classification –REGULATION (EC) No 1272/2008	Percent
Kerosene	232-366-4	8008-20-6	EUH066 Flam Liq 3 H226 Asp. Tox 1 H304 Skin Irritation category 2 H315 STOT SE3: H335, H336 Aquatic Chronic 2 : H411-	30-40%

Section 4 : First Aid measures

4.1 Description of first aid measures :

Skin contact: Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.

Eye Contact: Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention promptly if symptoms occur after washing.

Ingestion: Immediately rinse mouth and provide fresh air. DO NOT induce vomiting if swallowed chemical is dissolved in petroleum-based material. Danger of aspiration and development of chemical pneumonia. Get medical attention immediately!

Inhalation: Remove victim immediately from source of exposure. Move into fresh air and keep at rest. Perform artificial respiration if breathing has stopped. Get medical attention if any discomfort continues.

General Information: Remove victim immediately from source of exposure. Provide fresh air, warmth and rest, preferably in a comfortable upright sitting position. Perform artificial respiration if breathing has stopped. Do not give victim anything to drink if they are unconscious.

4.2 Most important symptoms and effects, both acute and delayed

Skin contact: Repeated exposure may cause skin drying or cracking

Eye Contact: May cause temporary eye irritation. Irritating and may cause redness and pain

Ingestion: Harmful if swallowed. The product may enter the lungs due to its low viscosity, and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). May cause stomach pain or vomiting.

Inhalation: Vapours inhaled in high concentrations have a narcotic effect on the central nervous system. Irritation of nose, throat and airway.

Delayed / Immediate effects :

4.3 Indication of any immediate medical attention and special treatment needed

Immediate /special treatment : Treat symptomatically

Section 5 : Fire-Fighting measures

5.1 Extinguishing media

Extinguishing media : Extinguish with foam, carbon dioxide or dry powder. Water spray, fog or mist.
Do not use water jet as an extinguisher, as this will spread the fire.

5.2 Special hazards arising from the substance or mixture

Exposure hazards: During fire, toxic gases (CO, CO₂) are formed. Vapours may form explosive mixture with air at room temperature.
Vapours may be ignited by a spark, a hot surface or an ember

5.3 Advice for fire-fighters

Advice for fire-fighters : Keep up-wind to avoid fumes. If possible, fight fire from protected position. Move container from fire area if it can be done without risk. Use supplied air respirator if product is involved in a fire. Cool containers exposed to flames with water until well after the fire is out. Keep run-off water out of sewers and water sources. Dike for water control. Avoid water in straight hose stream; will scatter and spread fire.

Protective equipment for fire-fighters : Self contained breathing apparatus and full protective clothing must be worn in case of fire

Section 6 : Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Ensure suitable personal protection (including respiratory protection) during removal of spillages in a confined area. Take precautionary measures against static discharges. Do not smoke, use open fire or other sources of ignition. Avoid inhalation of vapours and contact with skin and eyes

6.2 Environmental precautions

Environmental; precautions : Do not discharge onto the ground or into water courses. Do not allow ANY environmental contamination. Never use water by itself on spillage; this will spread the spill and cause further contamination.

6.3 Methods and material for containment and cleaning up

Clean up procedures: If leakage cannot be stopped, evacuate area. Clean-up personnel should use respiratory and/or liquid contact protection. Wash thoroughly after dealing with a spillage. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Absorb spillage with non-combustible, absorbent material. Do not contaminate water sources or sewer. Inform Authorities if large amounts are involved.

Section 7 Handling and storage

7.1 Precautions for safe handling :

Handling requirements: : Avoid spilling, skin and eye contact. Keep away from heat, sparks and open flame. Eliminate all sources of ignition. Static electricity and formation of sparks must be prevented. Storage tanks and other containers must be grounded. Protect electric equipment against sparking in case of risk of explosion. Wear full protective clothing for prolonged exposure and/or high concentrations. Contaminated rags and cloths must be put in fireproof containers for disposal. Do not eat, drink or smoke when using the product. Container must be kept tightly closed.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions : Keep away from heat, sparks and open flame. Keep containers tightly closed. Flammable/combustible - Keep away from oxidisers, heat and flames. Ground container and transfer equipment to eliminate static electric sparks.

Suitable packaging : Flammable liquid storage. Store in original supplied container in cool area

7.3 Specific end uses (s)

Specific end uses :

Section 8 : Exposure control / personal protection

8.1 Control parameters

Workplace exposure limits

Components	8 hour TWA	15 min STEL
Hydrocarbons C9	100ppm	125ppm
Kerosene	200 mg/m ³	

8.2 Exposure controls

Process Conditions : Use engineering controls to reduce air contamination to permissible exposure level.

Provide eyewash, quick drench

Engineering measures : Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded. Explosion-proof general and local exhaust ventilation.

Respiratory protection : If ventilation is insufficient, suitable respiratory protection must be provided. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used. Check that mask fits tight and change filter regularly.

Hand protection : Protective gloves must be used if there is a risk of direct contact or splash. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

Eye protection : Wear splash-proof eye goggles to prevent any possibility of eye contact. If risk of splashing, wear safety goggles or face shield

Skin protection : Use barrier creams to prevent skin contact. Provide eyewash station and safety shower.

Wear appropriate clothing to prevent repeated or prolonged skin contact.

Hygiene measures : Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes wet or contaminated.

Promptly remove any clothing that becomes wet or contaminated. DO NOT SMOKE IN WORK AREA!

Protective Equipment : Protective Goggles & Gloves must be worn when handling and using product

Section 9.0 Physical and Chemical properties

9.1 Information on basic physical and chemical properties

State: Liquid
Colour: Pale yellow/amber
Odour: Aromatic Hydrocarbons
Oxidising: NA
Solubility in water: Immiscible
Viscosity: 1.3-2.9 cSt(20°C)
Boiling point /range °C : 140-300°C
Relative density: 0.8-0.9
Flash Point: >35°C Flammability Limit –Lower (%) 0.7
Flammability Limit –Upper (%) 5
Vapour pressure 3Kpa (20°C)

9.2 Other information

Other information :

Section 10.0 Stability and reactivity

10.1 Reactivity :

Reactivity :

10.2 Chemical stability

Chemical stability : Stable under normal temperature conditions and recommended use.

10.3 Possibility of hazardous reactions

Possibility of hazardous reactions: No data available. Will NOT polymerise

10.4 Conditions to avoid

Conditions to avoid: Avoid heat, flames and other sources of ignition. Direct sunlight. Prevent accumulation of vapours.

10.5 Incompatible materials

Materials to avoid: Strong oxidising substances. (Chlorates of ammonium nitrate for example). Reducing agents

10.6 Hazardous decomposition products

None at ambient temperatures. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours—carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides

Section 11 Toxicological information

11.1 Information on toxicological effects :

Toxicity values:

	Route	species	Test	Value	Units
Aromatic hydrocarbons C9	Acute Toxicity	Rat	Oral LD50	3492	Mg/kg
Aromatic hydrocarbons C9	Acute Toxicity	Rabbit	Dermal LD50	>3160	Mg/kg
Kerosene	Acute Toxicity	Rat	Oral LD50	>5000	mg/kg
Kerosene	Acute Toxicity	Rabbit	Dermal LD50	>2000	Mg/kg

Symptoms / routes of exposure

Skin contact: Repeated exposure may cause skin dryness or cracking

Eye contact : Irritation of eyes and mucous membranes.

Ingestion : Harmful: may cause lung damage if swallowed. Pneumonia may be the result if vomited material containing solvents reaches the lungs.

Inhalation : Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia. Contains organic solvents which in case of overexposure may depress the central nervous system causing dizziness and intoxication.

Health Warnings

Prolonged or repeated contact leads to drying of skin. Prolonged and repeated contact with solvents over a long period may lead to permanent health problems.

Route of entry—Ingestion. Inhalation.

Target Organs—Brain Respiratory system, lungs Mucous membranes

General information

Prolonged and repeated contact with solvents over a long period may lead to permanent health problems

Medical Symptoms

Skin irritation. Irritation of eyes and mucous membranes. High concentrations of vapours may irritate respiratory system and lead to headache, fatigue, nausea and vomiting.

Medical Considerations

Skin disorders and allergies. Convulsive disorders, CNS problems. Risk of chemical pneumonia after aspiration.

Specific effects :

Prolonged or repeated contact with used oil may cause serious skin diseases, such as dermatitis and skin cancer. Prolonged or frequent inhalation of vapours in high concentrations may cause permanent damage to the nervous system, including the brain.

Section 12 Ecological information

12.1 Toxicity:

Eco toxicity values : Toxic to aquatic organisms

Species	Test	Value	Units
Algae	EC50 72 hours	2.9	Mg/l
Daphnia magna	EC50 48 hours	1.4	Mg/l
Fish	LC50 96 hours	9.2	Mg/l

12.2 Persistence and degradability

Persistence and degradability : Not evaluated at this time

12.3 Bioaccumulative potential

Bioaccumulative potential: Substance is a UVCB. Standard tests for this endpoint are not appropriate.

Partition Coefficient: Not applicable

12.4 Mobility in soil

Mobility : Substance is a UVCB. Standard tests for this endpoint are not applicable

12.5 Results of PBT and vPvB assessment

PBT identification : This product is not identified as a PVT/vPvB substance by current EU criteria

Section 13 Disposal considerations : Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority

13.1 Waste treatment methods

Disposal Operations: Dispose of waste and residues in accordance with local authority requirements.

Do not allow run off to sewer, waterway or ground.

Waste Class: Hazardous Waste EWC NUMBER: Allocation of a waste code number in accordance with the European Waste Catalogue, should be carried out in agreement with an EA authorised waste disposal company.

Disposal of packaging : Use an Authorised disposal company

NB: the users attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14 Transport information

14.1 UN number:

Un Number: 1263

14.2 UN proper shipping name

Shipping name : Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base

14.3 Transport Hazard Class

Transport class: 3

Class 3 : Flammable liquids

ADR label No. 3

14.4 Packing Group

Packing group : III

14.5 Environmental hazards

Environmentally hazardous : Environmentally Hazardous Substance/Marine Pollutant

Marine pollutant : Yes

14.6 Special precautions for user

Tunnel code: (D/E)

EMS

Emergency Action Code 3Y

Hazard No. (ADR)

Hazard No. (ADR)

F-E, S-E

30

30 Flammable liquid (flash-point between 23°C and 60°C, inclusive) or flammable liquid or solid in the molten state with a flash-point above 60°C, heated to a temperature equal to or above its flash-point, or self heating liquid.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Section 15 Regulatory information

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

Specific regulations: Workplace Exposure Limits EH40. UK Regulatory References: Chemicals (Hazard Information & Packaging) Regulations.

15.2 Chemical Safety Assessment

Chemical safety assessment : Chemical safety assessment has not been carried out

Section 16 Other information

16.1 Other information :

General information

Since empty containers retain product residue, follow label warnings, even after container is emptied. For further Health and Safety information contact: Health and Safety Officer. Residual vapours may explode on ignition, do not cut, drill, grind or weld on or near this container.

H226 – Flammable liquid & vapour
H304 – May be fatal if swallowed
H315 – Causes skin irritation
H335 – May cause respiratory irritation
H336 – May cause drowsiness or dizziness
H411 – Toxic to aquatic life with long lasting effects

Precautionary Phrases

P102 – keep out of reach of children
P210 – keep away from heat/sparks/open flame/ hot surfaces – No smoking
P260 – Do not breathe dust/fume/mist/vapours/spray
P271 – Use in well ventilated area or outdoors
P273 – Avoid release to the environment
P280 – Wear protective gloves/clothing/eye protection
P301+P310 – if SWALLOWED: Immediately call a POISON CENTER or Doctor/Physician
P305+P35+P358 – IF IN EYE: Rinse cautiously with water for several minutes. Remove contact lenses, if present & easy to do so. Continue rinsing
P331 – Do NOT induce vomiting
P403 + P233 – Store in a well ventilated place. Keep container tightly closed
P314 – Get medical attention if you feel unwell

Supplemental: EUH066 Repeated exposure may cause skin dryness or cracking

Legal disclaimer : The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The company shall not be held liable for any damage resulting from handling or from contact with the above product.

Section 1 ; Identification of the substance /mixture and of the company undertaking

1.1 Product Identifier

Product Name: ADOTARD TF

Synonyms:

1.2 Relevant identified uses of the substance or mixture & uses advised against

Use Of Substance /mixture : Proprietary concrete retarding solution / concrete aggregate exposing chemical

1.3 Details of the supplier of the safety data

Company Name: Adomast Manufacturing Ltd
Barkston Road, Carlton Industrial Estate
Barnsley
S71 3HU
Tel: 01226 707863
Fax: 01226 718051
Email: sales@adomast.co.uk

1.4 Emergency telephone number

Emergency Telephone Number : 07887 416399 (24 hours)

Section 2: Hazards Identification

2.1 Classification of the substance or mixture

In compliance with EC Regulation No. EC 1272/2008 and its amendments

Most Important adverse effect: No significant hazard. May cause mild skin irritation

2.2 Label elements

In compliance with EC Regulation No. EC 1272/2008 and its amendments

Hazard statements : No significant hazard. May cause very mild skin irritation

Signal words:

Hazard pictograms :

Precautionary statements :

P280 :Wear Protective gloves/clothing/eye protection

P303 +361 + 353; IF ON SKIN OR HAIR : remove all contaminated clothing. Rinse skin with water /shower

P304 +340 IF INHALED. Remove to fresh air and keep at rest in a position comfortable for breathing

P305 +351+338; IF IN EYES rinse carefully with water for several minutes. Remove contact lenses if present & easy to do so . Continue rinsing.

P501: Dispose of contents/container to: an approved waste facility

2.3 Other hazards:

PBT : This product is not identified as a PVT/vPvB substance

Section 3: Composition on ingredients

3.2 Mixtures

Hazardous ingredients : None

Chemical Name	EINECS	CAS	Classification – REGULATION (EC) No	Percent
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Section 4 : First Aid measures

4.1 Description of first aid measures :

Skin contact: Remove contaminated clothes and footwear immediately. Drench the affected skin with running water for 10 minutes

Eye Contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination if discomfort persists or adverse effects occur

Ingestion: Wash the mouth out with water. Do not induce vomiting. Get medical attention if adverse effects occur

Inhalation: Remove casualty from exposure. If unconscious check for breathing & apply artificial respiration if necessary. Get medical attention if adverse effects occur

4.2 Most important symptoms and effects, both acute and delayed

Skin contact: mild Irritation or discomfort may occur at site of contact.

Eye Contact: There may be irritation & redness.

Ingestion: There may be soreness & redness of the mouth & throat. Corrosive burns may appear around the lips. May cause throat burns. Nausea & stomach pains may occur. There may be vomiting.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest. May cause irritation to the mucous membrane and respiratory system.

Delayed / Immediate effects : Immediate effects can be expected after short term exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Immediate /special treatment : Eye bathing equipment should be available on the premises

Section 5 : Fire-Fighting measures

5.1 Extinguishing media

Extinguishing media : No known UNSUITABLE extinguishing media. Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2 Special hazards arising from the substance or mixture

Exposure hazards: The material is not flammable. In combustion, emits toxic fumes of carbon dioxide/carbon monoxide.

5.3 Advice for fire-fighters

Advice for fire-fighters : Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6 : Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Wear suitable protective clothing. Refer to section 8 of SDS for personal protection details

6.2 Environmental precautions

Environmental; precautions : Safetard Liquid does not contain any environmentally hazardous components. It is a WRAS approved product—suitable for contact with flora, fauna and water.

6.3 Methods and material for containment and cleaning up

Clean up procedures: Personal precautions: Mark out the contaminated area with signs and prevent access to unauthorised personnel. Do not attempt to take action without suitable protective clothing - see section 8 of SDS. Turn leaking containers leak-side up to prevent the escape of liquid. Any spillages can be treated by hosing down with plenty of clean water or using vermiculite or dry sand to absorb the solution. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

Section 7 Handling and storage

7.1 Precautions for safe handling :

Handling requirements: Avoid direct contact with the substance. Avoid the formation or spread of mists in the air

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions : Store in cool, well ventilated area. Keep container tightly closed

Suitable packaging : Plastic/ Plastic lined

7.3 Specific end uses (s)

Specific end uses : No special requirement

Section 8 : Exposure control / personal protection

8.1 Control parameters

Workplace exposure limits

Respirable Dust

Location	8 hour TWA	15 min STEL	8 Hour TWA	15 min STEL

Hazardous ingredients : None Applicable

UK 8 hour TWA 15 min STEL

DNEL / PNEC Values : No data available

Type	Exposure	Value	Population	Effect
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8.2 Exposure controls

Engineering measures:	Ensure there is sufficient ventilation of the area
Respiratory protection:	Respiratory protection is not normally required However suitable respiratory equipment may need to be provided for those operations which generate vapour, mists or fumes and where exposure cannot be adequately controlled by local exhaust ventilation or other means
Hand protection:	Protective gloves (alkali resistant)
Eye protection:	Tightly fitting safety goggles. Ensure eye bath is to hand.
Skin protection:	Protective clothing
Environmental:	No special requirement

Section 9.0 Physical and Chemical properties

9.1 Information on basic physical and chemical properties

State: Liquid

Colour: Dark Brown

Odour: Barely perceptible odour

Oxidising: Non oxidising

Solubility in water: Soluble

Viscosity: Non viscous

Boiling point /range °C :

Relative density: 1.084

pH : 6.8-7.2

9.2 Other information

Other information : Not applicable

Section 10.0 Stability and reactivity

10.1 Reactivity

Reactivity : stable under normal conditions

10.2 Chemical stability

Chemical stability : stable under normal conditions

10.3 Possibility of hazardous reactions

Possibility of hazardous reactions:

Hazardous reactions will not occur under normal transport or storage conditions

10.4 Conditions to avoid

Conditions to avoid: Heat

10.5 Incompatible materials

Materials to avoid: Strong oxidising agents

10.6 Hazardous decomposition products

Haz decomp products : This product may give rise to hazardous fumes in a fire.
(carbon monoxide/carbon dioxide)

Section 11 Toxicological information

11.1 Information on toxicological effects :

Toxicity values: Contains Sodium Gluconate

Route	species	Test	Value	Units
ORAL	RAT	LD50	> 2000	mg/kg

Relevant effect for mixture :

Effect	Route	Basis
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Symptoms / routes of exposure

Skin contact: Mild irritation or pain may occur at the site of contact.

Eye contact : There may be redness and irritation.

Ingestion : There may be soreness and redness of the throat. Nausea and stomach pains may occur

Inhalation : There may be irritation of the throat and a feeling of tightness in the chest. May cause irritation of the mucous membranes and respiratory system

Delayed / immediate effects: Immediate effects can be experienced after short term exposure

Other information: No other information available at this moment

Section 12 Ecological information

12.1 Toxicity:

Ecotoxicity values :

Species	Test	Value	Units
Algae	48H EC50	>1000	mg/l
Daphnia magna	96H LC50	>1000	mg/l
Fish	96H EC50	>1000	mg/l

12.2 Persistence and degradability

Persistence and degradability : READILY BIODEGRADABLE

12.3 Bioaccumulative potential

Bioaccumulative potential: There is no evidence of bioaccumulation

12.4 Mobility in soil

Mobility : Readily absorbed into soil. Fully soluble in water

12.5 Results of PBT and vPvB assessment

PBT identification : This product is not identified as a PVt/vPvB substance

12.6 Other adverse effects

Other adverse effects: Not expected to cause significant environmental impact

Section 13 Disposal considerations

13.1 Waste treatment methods

Disposal Operations: Normally can be flushed down sewers

Recovery operations : No information available at this time

Disposal of packaging : May be reused following decontamination. Where practical containers and packaging should be recycled by a licensed contractor

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14 Transport information . This product does not require a classification for transport

14.1 UN number:

UN Number: NA

14.2 UN proper shipping name

Shipping name : NA

14.3 Transport Hazard Class

Transport class: This product does not require a classification for transport. This product is not dangerous, not hazardous, and not restricted for transport by air

14.4 Packing Group

Packing group :

14.5 Environmental hazards

Environmentally hazardous : NO

Marine pollutant : NO

14.6 Special precautions for user

Special precautions: No special precautions

Tunnel code:

Transport category :

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Transport in bulk:

Section 15 Regulatory information

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

Specific regulations:

15.2 Chemical Safety Assessment

Chemical safety assessment : A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16 Other information

16.1 Other information :

Other information:

Phrases used in s.2 and s.3 :

Legal disclaimer : The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The company shall not be held liable for any damage resulting from handling or from contact with the above product.



SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 1

Compilation date: 16/02/2015

Revision date: 02/06/2016

Revision No: 1.1

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

1.1. Product identifier

Product name: BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

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

Use of substance / mixture: Construction materials.

1.3. Details of the supplier of the safety data sheet

Company name: Mudtech Ltd

Wyburn House

1 Crab Lane

Stafford

Staffordshire

ST16 1SB

UK

Tel: +44 (0)1929 551245

Fax: +44 (0)1929 554361

Email: sales@mudtech.co.uk

1.4. Emergency telephone number

Emergency tel: +01 813 248 0585

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: This product has no classification under CLP.

2.2. Label elements

Label elements: This product has no label elements.

2.3. Other hazards

Other hazards: These products may generate dust during handling and use. As any natural occurring mineral, bentonite may contain quartz (crystalline silica). Long term overexposure to crystalline silica dust may cause silicosis. These products, because of their coarse particle size, have very low respirable fraction and the content in respirable crystalline silica is negligible.

PBT: This product is not identified as a PBT/vPvB substance.

[cont...]

SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 2

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: BENTONITE (See also Section 16 below)

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

Ingestion: Wash out mouth with water. Do not induce vomiting. Consult a doctor.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. Consult a doctor.

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

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: Target Organs: Eyes and Skin (irritation risk). Pulmonary System (irritation and chronic risk)

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Do not create dust.

6.2. Environmental precautions

Environmental precautions: Not applicable.

[cont...]

SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 3

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Sweep up. Wash the spillage site with large amounts of water.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid the formation or spread of dust in the air. Wash any exposed skin immediately after any chemical contact, before breaks and meals, and at the end of each work period.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: No data available.

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: With normal ventilation and usage, respiratory protection is not required below exposure limits. Do not create and breath dust. If ventilation is insufficient, suitable respiratory protection must be provided.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: No special requirement.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Powder

Colour: Cream

Odour: Odourless

Evaporation rate: No data available.

[cont...]

SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 4

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Insoluble

Viscosity: No data available.

Boiling point/range°C: No data available.

Melting point/range°C: No data available.

Flammability limits %: lower: No data available.

upper: No data available.

Flash point°C: No data available.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: No data available.

Relative density: 2.1

pH: 10

VOC g/l: No data available.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: Target Organs: Eyes and Skin (irritation risk). Pulmonary System (irritation and chronic risk)

[cont...]

SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 5

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: No data available.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Deposit into or on to land (e.g. landfill, etc.)

Disposal of packaging: Dispose of as normal industrial waste.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

Transport class: This product does not require a classification for transport.

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

[cont...]

SAFETY DATA SHEET

BENTONITE (ALL GRADES, INCLUDING OCMA GEL AND BENTONITE PELLETS)

Page: 6

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Product	HS Commodity Code	Composition	CAS
BENTONITE (25 kg sacks)	250810	Sodium montmorillonite powder	1302-78-9

TARMAC BUXTON LIME & POWDERS

Tarmac Buxton Cement and Lime

PRODUCT SAFETY DATA SHEET

CALCIUM OXIDE

Prepared in accordance with Regulation EC 1907/2006 (REACH), Regulation (EC) 1272/2008 (CLP, as amended)

1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1: Identification of the substance or preparation

Substance Name:	Calcium Oxide, Burnt Lime
Synonyms:	Calcium Oxide, Lime, Burnt lime, Un-slaked lime, Chemical lime, Calcium monoxide, Calcined limestone.
Chemical Name and Formula:	Calcium Oxide – CaO
Trade Name:	Calbux, Biocal, Limbase
CAS N°:	1305-78-8
EINECS N°:	215-138-9
Molecular Weight:	56.08 g/mol
Reach Registration No:	01-2119475325-36-0121

1.2: Use of the substance

The substance is intended for the following non-exhaustive list of uses:

Building material industry, Chemical industry, Agriculture, Biocidal use, Environmental protection (e.g. flue gas treatment, waste water treatment, sludge treatment), Drinking water treatment, Feed, food and pharmaceutical industry, Civil engineering, Paper and paint industry

1.2.1 Identified uses

All uses listed in Table 1 of the Appendix of this SDS are identified uses

1.2.2 Uses advised against

No use identified in Table 1 of the Appendix of this SDS is advised against

1.3: Company Identification

Name:	Tarmac Cement & Lime
Address:	Buxton Lime & Powders Tunstead House Buxton Derbyshire SK17 8TG
Phone:	+44 (0)1298 768555

E-mail of competent person responsible for SDS : buxton.enquiry@tarmac.com

1.4: Emergency telephone

UK/European Emergency N°: 999/112
BL&C Transport Emergency Contact N°: +44 (0)1298 27500 (including out of hours)
Refer to Hospital Accident and Emergency Department

2: HAZARDS IDENTIFICATION

2.1: Classification of the Substance

2.1.1: Classification according to Regulation (EC) 1272/2008

STOT Single Exp. 3, H335 Route of exposure: Inhalation

Skin Irritation 2, H315

Eye Damage 1, H318

Additional information

For full text of H-statements and R-phrases; see SECTION 16

2.2: Label elements

2.2.1: Labelling according to Regulation (EC) 1272/2008

Signal word: Danger

Hazard pictogram:



Hazard statements:

H315: Causes skin irritation

H318: Causes serious eye damage

H335: May cause respiratory irritation

Precautionary statements:

P102: Keep out of reach of children

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P302+P352: IF ON SKIN: Wash with plenty of water

P310: Immediately call a poison centre or doctor/physician

P261: Avoid breathing dust/spray

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P501: Dispose of contents/container in accordance with local/regional/national/international regulation

2.3: Other hazards

The substance does not meet the criteria for PBT or vPvB substance.

No other hazards identified.

3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1: Composition

CAS number	EC number	Registration No	Identification name	Weight % content (or range)	Classification according to Regulation (EC) No 1272/2008 [CLP]
1305-78-8	215-138-9	01-2119475325-36-0121	Calcium Oxide	92-99%	Eye Dam 1 H318 Skin Irrit. 2 H315 STOT SE 3 (inhalation) H335

Impurities:

No impurities relevant for classification and labelling.

Small quantities of calcium carbonate and impurities. Impurities in lime products will vary from source to source.

4: FIRST-AID MEASURES

4.1: General Advice

No known delayed effects. Consult a physician for all exposures except for minor instances.

Following Eye Contact:

Rinse eyes immediately with plenty of water and seek medical advice.

Following Inhalation:

Move source of dust or move person to fresh air. Obtain medical attention immediately.

Following Ingestion:

Clean mouth with water and afterwards drink plenty of water. Do NOT induce vomiting. Obtain medical attention.

Following Skin Contact:

Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.

Self-protection of the first aider

Avoid contact with skin, eyes and clothing – wear suitable protective equipment (see section 8)

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

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

Calcium oxide is not acutely toxic via the oral, dermal, or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entails a risk of serious damage to the eye. There is no concern for adverse systemic effects because local effects (pH effect) are the major health hazard.

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

Follow the advice given in section 4.1

5: FIRE-FIGHTING MEASURES

5.1.1: Suitable extinguishing media

The product is not combustible. Use a dry powder, foam or CO₂ fire extinguisher to extinguish the surrounding fire.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.1.2: Unsuitable extinguishing media

Do not use water. Avoid humidification.

5.2: Special hazards arising from the substance or mixture

Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

5.3: Advice for fire fighters

Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

6: ACCIDENTAL RELEASE MEASURES

6.1: Personal precautions, protective equipment and emergency procedures

6.1.1: For non-emergency personnel

Ensure adequate ventilation.

Keep dust levels to a minimum.



Keep unprotected persons away.

Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

Avoid humidification

6.1.2: For emergency responders

Ensure adequate ventilation

Keep dust levels to a minimum

Keep unprotected persons away

Avoid contact with skin, eyes and clothing – wear suitable protective equipment (see section 8)

Avoid inhalation of dust - ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable equipment (see section 8)

Avoid humidification

6.2: Environmental precautions

Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

6.3: Methods and material for containment and cleaning up

In all cases avoid dust formation.

Keep the material dry if possible.

Pick up the product mechanically in a dry way.

Use vacuum suction unit, or shovel into bags.

6.4: Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13 and the Appendix of this safety data sheet.

7: HANDLING AND STORAGE

7.1: Precautions for safe handling

7.1.1: Protective Measures

Avoid contact with skin and eyes. Wear protective equipment (refer to section 8 of this safety data sheet). Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimise dust generation. Enclose dust sources, use exhaust ventilation (dust collector at handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC.

7.1.2: Advice on general occupational hygiene

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

7.2: Conditions for safe storage, including any incompatibilities

The substance should be stored under dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose-designed silos. Keep away from acids, significant quantities of paper, straw, and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage if there is a risk of contact with water.

7.3: Specific end use(s)

Please check the identified uses in table 1 of the Appendix of this SDS.

For more information please see the relevant exposure scenario, available in the Appendix, and check '2.1: Control of worker' in the relevant exposure scenario section in the Appendix.

8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1: Control parameters

DNELs:

Workers				
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	Not required			
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

Consumers				
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	No exposure expected	No hazard identified	No exposure expected	No hazard identified
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

PNECs:

Environment protection target	PNEC	Remarks
Fresh water	0.37 mg / L	
Freshwater sediments	No PNEC available	Insufficient data available
Marine water	0.24 mg / L	
Marine sediments	No PNEC available	Insufficient data available
Food (bioaccumulation)	No hazard identified	No potential for bioaccumulation
Microorganisms in sewage treatment	2.27 mg / L	
Soil (agricultural)	817.4 mg / kg soil dw	
Air	No hazard identified	

OELs:

8 hours limit value	1 mg/m ³ respirable fraction
Short-term limit value	4 mg/m ³ respirable fraction

According to Directive (EU) 2017/164 of 31 January 2017

United Kingdom:

Occupational Exposure Limits (OEL) (8hr TWA): 2 mg/m³

8.2: Exposure controls

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.

Please check the relevant exposure scenario, given in the Appendix available via your supplier

8.2.1: Appropriate engineering controls

If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits.

8.2.2: Individual protection measures, such as Personal Protective Equipment
8.2.2.1: Eye/face protection:

Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.


8.2.2.2: Skin protection:

Since calcium oxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.


8.2.2.3: Respiratory protection:

Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended, depending on the expected exposure levels - please check the relevant exposure scenario, given in the Appendix / available via your supplier.


8.2.2.4: Thermal Hazards:

The substance does not represent a thermal hazard, thus special consideration is not required.

8.2.3: Environmental exposure control

All ventilation systems should be filtered before discharge to atmosphere.

Avoid releasing to the environment.

Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.

For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available via your supplier.

For further detailed information, please check the Appendix of this SDS.

9: PHYSICAL AND CHEMICAL PROPERTIES

9.1: Information on basic physical and chemical properties

Appearance:	White or off-white (beige) solid material of varying sizes: Lump granular or fine powder
Odour:	odourless
Odour threshold:	not applicable
pH:	12.3 (saturated solution at 20 °C)
Melting point:	> 450 °C (study result, EU A.1 method)
Boiling point:	Not applicable (solid with a melting point > 450°C)
Flash point:	Not applicable (solid with a melting point > 450 °C)
Evaporation rate:	Not applicable (solid with a melting point > 450 °C)
Flammability:	Non flammable (study result, EU A.10 method)
Explosive limits:	Non explosive (void of any chemical structures commonly associated with explosive properties)
Vapour pressure:	Not applicable (solid with a melting point > 450 °C)
Vapour density:	Not applicable
Relative density:	3.31 (study result, EU A.3 method)
Solubility in water:	1337.6 mg/L (study results, EU A.6 method)
Partition coefficient:	Not applicable (inorganic substance)
Auto ignition temperature:	No relative self-ignition temperature below 400°C (study result, EU A.16 method)
Decomposition temperature:	Not applicable
Viscosity:	Not applicable (solid with a melting point > 450 °C)
Explosive properties:	Non explosive (considered to be "inert" in the context of explosivity, since it represents calcium and oxygen being already in their preferred oxidation state)
Oxidising properties:	No oxidising properties (Based on the chemical structure, the substance does not contain a surplus of oxygen or any structural groups known to be correlated with a tendency to react exothermally with combustible material)

9.2: Other Information

Not available

10: STABILITY AND REACTIVITY

10.1: Reactivity

Calcium oxide reacts exothermically with water to form Calcium dihydroxide

10.2: Chemical stability

Under normal conditions of use and storage (dry conditions), calcium oxide is stable

10.3: Possibility of hazardous reactions

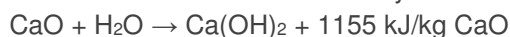
Calcium oxide reacts exothermically with acids to form calcium salts

10.4: Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

10.5: Incompatible materials

Calcium oxide reacts exothermically with water to form Calcium dihydroxide:



Calcium oxide reacts exothermically with acids to form salts.

Calcium dihydroxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen: $\text{CaO} + 2 \text{Al} + 7 \text{H}_2\text{O} \rightarrow \text{Ca[Al(OH)}_4\text{]}_2 + 3 \text{H}_2$

10.6: Hazardous decomposition products

None.

Further information: Calcium oxide absorbs moisture and carbon dioxide from air to form calcium carbonate, which is a common material in nature.

11: TOXICOLOGICAL INFORMATION

11.1: Information on toxicological effects

Acute toxicity:

Oral: $\text{LD}_{50} > 2000 \text{ mg/kg bw}$ (OECD 425, rat)

Dermal: $\text{LD}_{50} > 2500 \text{ mg/kg bw}$ (calcium dihydroxide OECD 402, rabbit); by read across these results are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.

Inhalation: no data available

Calcium oxide is not acutely toxic

Skin irritation / corrosion:

Calcium oxide is irritating to skin (in vivo, rabbit).

Calcium dihydroxide is not corrosive to skin (in vitro, OECD 4321) By read across these results are also applicable to calcium oxide.

Serious eye damage/irritation:

Calcium oxide entails a risk of serious damage to the eye (in vivo, rabbit)

Respiratory or skin sensitisation:

No data available.

Calcium oxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition.

Germ cell mutagenicity:

Calcium dihydroxide is not genotoxic (in vitro, OECD 471, 473 and 476) By read across these results are also applicable to calcium oxide.

In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, CaO is obviously void of any genotoxic potential.

Carcinogenicity:

Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect of calcium oxide does not give rise to a carcinogenic risk.

Human epidemiological data support lack of any carcinogenic potential of calcium oxide.

Reproductive toxicity:

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse).

The pH effect does not give rise to a reproductive risk.

Human epidemiological data support lack of any potential for reproductive toxicity of calcium dihydroxide.

Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium oxide is not toxic for reproduction and/or development.

STOT – single exposure:

From human data it is concluded that CaO is irritating to the respiratory tract. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium oxide is irritating to the respiratory system.

STOT – repeated exposure:

Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium.

Toxicity of CaO via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift).

Toxicity of CaO via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m³ fine fraction dust (see Section 8.1).

Aspiration hazard: Calcium oxide is not known to present an aspiration hazard.

12: ECOLOGICAL INFORMATION**12.1: Toxicity****12.1.1: Acute/Prolonged toxicity to fish:**

LC₅₀ (96h) for freshwater fish: 50.6 mg/l (calcium dihydroxide)

LC₅₀ (96h) for marine water fish: 457 mg/l (calcium dihydroxide)

12.1.2: Acute/Prolonged toxicity to aquatic invertebrates:

EC₅₀ (48h) for freshwater invertebrates: 49.1 mg/l (calcium dihydroxide)

LC₅₀ (96h) for marine water invertebrates: 158 mg/l (calcium dihydroxide)

12.1.3: Acute/Prolonged toxicity to aquatic plants:

EC₅₀ (72h) for freshwater algae: 184.57 mg/l (calcium dihydroxide)

NOEC (72h) for freshwater algae: 48 mg/l (calcium dihydroxide)

12.1.4: Toxicity to microorganisms e.g. bacteria:

At high concentration, through the rise of temperature and pH, calcium oxide is used for disinfection of sewage sludges.

12.1.5: Chronic toxicity to aquatic organisms:

NOEC (14d) for marine water invertebrates: 32 mg/l (calcium dihydroxide)

12.1.6: Toxicity to soil dwelling organisms:

EC 10/LC10 or NOEC for soil macroorganisms: 2000 mg/kg soil dw (calcium dihydroxide)

EC 10/LC10 or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium dihydroxide)

12.1.7: Toxicity to terrestrial plants:

NOEC (21d) for terrestrial plants: 1080 mg/kg (calcium dihydroxide)

12.1.8: General effect:

Acute pH effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH value of > 12 will rapidly decrease as result of dilution and carbonation.

12.1.9: Further information:

The results by read across are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.

12.2: Persistence and degradability

Not relevant for inorganic substance

12.3: Bioaccumulative potential

Not relevant for inorganic substance

12.4: Mobility in soils

Calcium oxide reacts with water and/or carbon dioxide to form respectively calcium dihydroxide and/or calcium carbonate, which are sparingly soluble, and presents a low mobility in most soils

12.5: Results of PBT and vPvB assessment

Not relevant for inorganic substances

12.6: Other adverse effects

No other adverse effects are identified

13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment:

Disposal of calcium oxide should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements. The used packing is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packing completely.

14: TRANSPORT INFORMATION

Calcium oxide is not classified as hazardous for transport (ADR (Road), RID (Rail), AND (inland waterways) and (IMDG (sea)). Calcium oxide is, however, classified as hazardous for air transport (ICAO/IATA).

14.1: UN No: UN 1910

14.2: UN Proper Shipping Name: Calcium Oxide

14.3: Transport Hazard classes: Class 8 (ICAO/IATA)

14.4: Packing Group: Group III (ICAO/IATA)

14.5: Environmental hazards: None

14.6: Special precautions for user: Avoid any release of dust during transportation, by using air-tight tanks for powders and covered trucks for pebbles.

14.7: Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not regulated

15: Regulatory Information

15.1: Safety, Health and Environmental Regulations/Legislation specific for the substance

Authorisations: Not required

Restrictions on use: None

Other EU regulations: Calcium oxide is not a SEVESO substance, not an ozone-depleting substance and not a persistent organic pollutant.

National regulations: None

15.2: Chemical Safety Assessment

A chemical safety assessment has been carried out for this substance.

16: OTHER INFORMATION

Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

16.1: Revision

New format has been issued, all sections have been updated to include new information. Review SDS with care. This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006.

16.2: Abbreviations

EC ₅₀ :	median effective concentration
LC ₅₀ :	median lethal concentration
LD ₅₀ :	median lethal dose
NOEC:	no observable effect concentration
OEL:	occupational exposure limit
PBT:	persistent, bioaccumulative, toxic chemical
PNEC:	predicted no-effect concentration
SCOEL:	Scientific Committee on occupational exposure limits
STEL:	short-term exposure limit
TWA:	time weighted average
vPvB:	very persistent, very bioaccumulative chemical

16.3: Key Literature References

Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document]

Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

16.4: Relevant H- statements

- H315: Causes skin irritation
- H318: Causes serious eye damage
- H335: May cause respiratory irritation

DISCLAIMER

This safety data sheet (SDS) is based on the legal provisions of the REACH Regulation (EC 1907/2006; article 31 and Annex II), as amended. Its contents are intended as a guide to the appropriate precautionary handling of the material. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. Information and instructions provided in this SDS are based on the current state of scientific and technical knowledge at the date of issue indicated. It should not be construed as any guarantee of technical performance, suitability for particular applications, and does not establish a legally valid contractual relationship. This version of the SDS supersedes all previous versions.

APPENDIX including Exposure Scenarios 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 9.11, 9.12, 9.13, 9.14, 9.15 and 9.16



Easy-Mixing "CA/40" Blend **DryAdd**TM

DRYADD CA/40TM

Product Data Sheet: Revision 3 - 10/01/2023.

Stabilising agent for safer storage, handling, and transportation of self levelling spoils and sludges.

Normal treatment for self-levelling sludges: 1 to 10 kg of DRYADDTM per cubic metre of spoil. For over-wet material, add DRYADDTM M to the bucket, sprinkle lightly over the muck, and work in. Use the newly stiffened muck to form bays so large expanses can be processed section by section. The process is near-instant.

Bulking is negligible and the pH of the material is not affected.

Consult attached Material Safety Data Sheet MSDS before use.

For further information email sales@mudtech.co.uk or call +44 (0) 780 117 9929.





SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

Page: 1

Compilation date: 17/02/2015

Revision No: 2

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

1.1. Product identifier

Product name: DRYADD POWDER (ALL GRADES)

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

Use of substance / mixture: Construction materials.

1.3. Details of the supplier of the safety data sheet

Company name: Mudtech Ltd

Wyburn House

1 Crab Lane

Stafford

Staffordshire

ST16 1SB

UK

Tel: +44 (0)1929 551245

Fax: +44 (0)1929 554361

Email: sales@mudtech.co.uk

1.4. Emergency telephone number

Emergency tel: +01 813 248 0585

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: This product has no classification under CLP.

2.2. Label elements

Label elements: This product has no label elements.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

[cont...]

SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

Page: 2

Ingestion: Wash out mouth with water.

Inhalation: Consult a doctor.

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

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: No symptoms.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Wash the spillage site with large amounts of water.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid the formation or spread of dust in the air.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area.

Suitable packaging: Must only be kept in original packaging.

[cont...]

SAFETY DATA SHEET
DRYADD POWDER (ALL GRADES)

Page: 3

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: The European Disposables and Non-Wovens Association (EDANA) recommends workplace limit of 0.05 mg/m³ for respirable dust of superabsorbent polymer (particle size under 10 microns), based on the NOEL (No Observed Effect Level) of the two-year inhalation study

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protective device with particle filter where WEL is exceeded and dust formed.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: No special requirement.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Powder

Colour: Red-brown

Odour: Odourless

Evaporation rate: No data available.

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Insoluble

Viscosity: No data available.

Boiling point/range°C: No data available.

Melting point/range°C: No data available.

Flammability limits %: lower: No data available.

upper: No data available.

Flash point°C: No data available.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: No data available.

Relative density: 670 kg/m³

pH: 6

VOC g/l: No data available.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

[cont...]

SAFETY DATA SHEET
DRYADD POWDER (ALL GRADES)

Page: 4

Reactivity: Stable under recommended transport or storage conditions.

[cont...]

SAFETY DATA SHEET
DRYADD POWDER (ALL GRADES)

Page: 4

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.
Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
ORAL	RAT	LD50	>2000	mg/kg

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: No symptoms.

Other information: Not applicable.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: Biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: No data available.

[cont...]

SAFETY DATA SHEET
DRYADD POWDER (ALL GRADES)

Page: 5

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Deposit into or on to land (e.g. landfill, etc.)

Disposal of packaging: Dispose of as normal industrial waste.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

Transport class: This product does not require a classification for transport.

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.



SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

Page: 1

Compilation date: 17/02/2015

Revision No: 2

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1.3. Details of the supplier of the safety data sheet

Company name: Mudtech Ltd

Wyburn House

1 Crab Lane

Stafford

Staffordshire

ST16 1SB

UK

Tel: +44 (0)1929 551245

Fax: +44 (0)1929 554361

Email: sales@mudtech.co.uk

1.4. Emergency telephone number

Emergency tel: +01 813 248 0585

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: This product has no classification under CLP.

2.2. Label elements

Label elements: This product has no label elements.

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

[cont...]

SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

Page: 2

Ingestion: Wash out mouth with water.

Inhalation: Consult a doctor.

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

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: No symptoms.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Wash the spillage site with large amounts of water.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid the formation or spread of dust in the air.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area.

Suitable packaging: Must only be kept in original packaging.

[cont...]

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DRYADD POWDER (ALL GRADES)

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7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: The European Disposables and Non-Wovens Association (EDANA) recommends workplace limit of 0.05 mg/m³ for respirable dust of superabsorbent polymer (particle size under 10 microns), based on the NOEL (No Observed Effect Level) of the two-year inhalation study

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protective device with particle filter where WEL is exceeded and dust formed.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: No special requirement.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Powder

Colour: Red-brown

Odour: Odourless

Evaporation rate: No data available.

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Insoluble

Viscosity: No data available.

Boiling point/range°C: No data available.

Melting point/range°C: No data available.

Flammability limits %: lower: No data available.

upper: No data available.

Flash point°C: No data available.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: No data available.

Relative density: 670 kg/m³

pH: 6

VOC g/l: No data available.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

[cont...]

SAFETY DATA SHEET
DRYADD POWDER (ALL GRADES)

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Reactivity: Stable under recommended transport or storage conditions.

[cont...]

SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

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10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.
Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
ORAL	RAT	LD50	>2000	mg/kg

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: No symptoms.

Other information: Not applicable.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: Biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: No data available.

[cont...]

SAFETY DATA SHEET

DRYADD POWDER (ALL GRADES)

Page: 5

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Deposit into or on to land (e.g. landfill, etc.)

Disposal of packaging: Dispose of as normal industrial waste.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

Transport class: This product does not require a classification for transport.

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.



SAFETY DATA SHEET

TK50 LIQUID

Page: 1

Compilation date: 22/05/2014

Revision date: 16/02/2016

Revision No: 1.1

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

1.1. Product identifier

Product name: TK50 LIQUID

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

Use of substance / mixture: Construction materials.

1.3. Details of the supplier of the safety data sheet

Company name: Mudtech Ltd

Wyburn House

1 Crab Lane

Stafford

Staffordshire

ST16 1SB

UK

Tel: +44 (0)1929 551245

Fax: +44 (0)1929 554361

Email: sales@mudtech.co.uk

1.4. Emergency telephone number

Emergency tel: +01 813 248 0585

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: This product has no classification under CLP.

2.2. Label elements

Label elements: This product has no label elements.

2.3. Other hazards

Other hazards: High risk of slipping due to leakage/spillage of product. In common with all mineral oils prolonged and frequent exposure may lead to skin rashes or dermatitis.

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

[cont...]

SAFETY DATA SHEET

TK50 LIQUID

Page: 2

Hazardous ingredients:

KEROSINE - UNSPECIFIED - DISTILLATES (PETROLEUM), HYDROTREATED LIGHT

EINECS	CAS	PBT / WEL	CLP Classification	Percent
265-149-8	64742-47-8	-	Asp. Tox. 1: H304; Aquatic Chronic 2: H411	1-10%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

Ingestion: Wash out mouth with water. Do not induce vomiting.

Inhalation: Not applicable.

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

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: No symptoms.

Delayed / immediate effects: No symptoms.

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

Immediate / special treatment: Not applicable.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. Turn leaking containers leak-side up to prevent the escape of liquid.

[cont...]

SAFETY DATA SHEET

TK50 LIQUID

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6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Ensure there is sufficient ventilation of the area. High risk of slipping due to leakage/spillage of product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed.

Suitable packaging: Not applicable.

7.3. Specific end use(s)

Specific end use(s): PC32: Polymer preparations and compounds.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits: No data available.

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protection not required.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: Prevent from entering in public sewers or the immediate environment.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid

Colour: Off-white

Odour: mineral oil-like

Evaporation rate: Not applicable.

[cont...]

SAFETY DATA SHEET

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Oxidising: Non-oxidising (by EC criteria)

Solubility in water: dispersible.

Viscosity: Not applicable.

Boiling point/range°C: >100

Melting point/range°C: Not applicable.

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: >100

Part.coeff. n-octanol/water: Not applicable.

Autoflammability°C: Not applicable.

Vapour pressure: Not applicable.

Relative density: 1.1 g/cm³

pH: 4.2

VOC g/l: Not applicable.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values: No data available.

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: No symptoms.

Delayed / immediate effects: No symptoms.

Other information: Not applicable.

[cont...]

SAFETY DATA SHEET

TK50 LIQUID

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Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: Only slightly biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Readily absorbed into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Deposit into or on to land (e.g. landfill, etc.)

Disposal of packaging: Dispose of as normal industrial waste.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

Transport class: This product does not require a classification for transport.

Section 15: Regulatory information

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

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

Phrases used in s.2 and s.3: H304: May be fatal if swallowed and enters airways.

H411: Toxic to aquatic life with long lasting effects.

[cont...]

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TK50 LIQUID

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Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.



ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP)

1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name TK60 Liquid
CAS No. Not applicable.
EC No. Not applicable.
REACH Registration No. Not known.

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

Identified Use(s) Construction materials.

1.3 Details of the supplier of the safety data sheet

Company Identification Mudtech Ltd
Address of Manufacturer 1 Crab Lane
Stafford
Postal code ST16 1SB
Telephone: +44 (0)1929 551245
E-mail sales@mudtech.co.uk
Office hours 09:00 - 18:00

1.4 Emergency telephone number

Emergency Phone No. +1-813-248-0585 or 1-800-255-3924 for callers from US and Canada.
Contact CHEMTEL – will accept call charge.

UK National response center
Address National Poisons Information Service (Birmingham Centre)
City Hospital
Dudley Road,
Birmingham,
United Kingdom
+00 448 706 006 266 NHS Direct - 0845 4647 or 111

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP) Eye Irrit. 2 :Causes serious eye irritation.

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Name TK60 Liquid

Hazard Pictogram(s)



GHS07

Signal Word(s) Warning

Hazard Statement(s) H319: Causes serious eye irritation.

Precautionary Statement(s) P264: Wash hands and exposed skin thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

2.3 Other hazards

Contaminated surfaces will be extremely slippery.
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

2.4 Additional Information

For full text of H/P Statements see section 16.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Anionic polyacrylamide in water-in-oil emulsion.

HAZARDOUS INGREDIENT(S)	CAS No.	EC No. / REACH Registration No.	%W/W	Hazard Statement(s)	Hazard Pictogram(s)
Hydrocarbons, C11-C14, n-alkanes, isoalkanes, cyclics, <2% aromatics,		01-2119456620-43	0 - 25%	Asp. Tox. 1 H304	GHS08
Hydrocarbons, C12-C15, n- alkanes, isoalkanes, cyclics, <2% aromatics		01-2119453414-43	0 - 25%	Asp. Tox. 1 H304	GHS08
Hydrocarbons, C13-C16, n-alkanes, isoalkanes, cyclics, < 0.03% aromatics		01-2119826592-36	0 - 25%	Asp. Tox. 1 H304	GHS08
Hydrocarbons, C13-C18, n-alkanes, isoalkanes, cyclics, < 2% aromatics		01-2119485032-45	0 - 25%	Asp. Tox. 1 H304	GHS08
Alcohols, C12-14, ethoxylated	68439-50-9	500-213-3	0 - 3%	Acute Tox. 4 H302 Eye Dam. 1 H318 Aquatic Chronic 3 H412	GHS07 GHS05
Alcohols, C10-16, ethoxylated	68002-97-1	500-182-6	0- 3%	Acute Tox. 4 H302 Eye Dam. 1 H318 Aquatic Chronic 3 H412	GHS07 GHS05
Alcohols, C12-16, ethoxylated	68551-12-2	500-221-7	0 - 3%	Acute Tox. 4 H302 Eye Dam. 1 H318 Aquatic Chronic 3 H412	GHS07 GHS05

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a doctor.
Skin Contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water. Wash contaminated clothing before reuse. Call a physician if irritation persists.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15



Ingestion minutes.
If swallowed, call a poison control centre or doctor immediately. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media Water may be ineffective.

5.2 Special hazards arising from the substance or mixture

No information available.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

Cool containers/tanks with water spray.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Where the exposure level is not known, wear approved, positive pressure, self-contained respirator.
Where the exposure level is known, wear approved respirator suitable for the level of exposure. For personal protection see SDS section 8. Chemical resistant boots.

6.2 Environmental precautions

This material and its container must be disposed of in a safe way. Discharge of neat or concentrated product into the environment must be avoided. Prevent product from entering drains.

6.3 Methods and material for containment and cleaning up

Absorb spillages onto sand, earth or any suitable adsorbent material. Use vacuum equipment for collecting spilt materials, where practicable. Shovel into suitable container for disposal. After cleaning, flush away traces with water. Use detergent if needed.

6.4 Reference to other sections

See Also Section 8, 13.

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Wash hands and exposed skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air.

7.2 Conditions for safe storage, including any incompatibilities



Storage temperature	Store at room temperature. To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment. Flashpoint determination was performed using a Pensky Martens type closed cup method. The method indicates a flash point greater than 93,3° C (200° F). Although there was no flashpoint detected below 93,3° C (200° F) some flammable vapours were evolved during the test as evidenced by the enlargement of the flame. Therefore caution should be exercised during storage and handling.
Storage life	Stable under normal conditions.
Incompatible materials	Strong oxidizing agents.
7.3 Specific end use(s)	Not listed.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

8.2.1. Appropriate engineering controls	Dose and handle in closed system if possible. Handle only in a place equipped with local exhaust (or other appropriate exhaust). Remove and wash contaminated clothing before re-use. Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands before breaks and immediately after handling the product. Ensure adequate ventilation.
8.2.2. Personal protection equipment	
Eye Protection	Tightly fitting safety goggles or face-shield.
Skin protection	Glove material: Nitrile rubber, Permeability tests are not available for this product. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Protective clothing.
Respiratory protection	Use the indicated respiratory protection if the occupational exposure limit is exceeded. (filter ABEK-P3).
8.2.3. Environmental Exposure Controls	Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid. Colour : Off-white.
Odour	Ammonia.
pH	6 - 8.
Melting point/freezing point	-18 – 0°C.
Initial boiling point and boiling range	80,6 – 126,7°C.
Flash Point	>93 °C (closed cup).
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper/lower flammability or explosive limits	No data available.
Vapour pressure	No data available.



Vapour density	No data available.
Density (g/ml)	1.
Relative density	No data available.
Solubility(ies)	Solubility (Water): Completely miscible with water.
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.
Decomposition Temperature (°C)	No data available.
Viscosity, kinematic	>25,5 mm ² /s (40°C).
Explosive properties	No data available.
Oxidising properties	The substance or mixture is not classified as oxidizing.

9.2 Other information

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical Stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerisation does not occur.

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides.
Ammonia.
Nitrogen oxides (NOx).

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity LD50/Oral/Rat: > 5 000 mg/kg
Remarks: estimated
LC50/Inhalation/4 h/Rat: > 20,0 mg/l
Remarks: estimated
LD50/Dermal/Rabbit: > 2 000 mg/kg
Remarks: estimated

Distillates (petroleum), hydrotreated light:

LD50/Oral/Rat: > 5 000 mg/kg
LC50/Inhalation/4 h/Rat: > 5,2 mg/l
LD50/Dermal/Rabbit: > 2 000 mg/kg

Skin corrosion/irritation
Serious eye damage/irritation
Skin sensitization data

Skin: OECD Test Guideline 439: No skin irritation
Self classification: Causes serious eye irritation.
Based on available data, the classification criteria are not met.

Distillates (petroleum), hydrotreated light: This substance is not classified as a sensitizer.

Germ cell mutagenicity
Carcinogenicity
Reproductive toxicity
STOT - single exposure

There is no evidence of mutagenic potential.
Based on available data, the classification criteria are not met.
Based on available data, the classification criteria are not met.
Not classified.



STOT - repeated exposure Not classified.
Aspiration hazard Not classified.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

This material is not classified as dangerous for the environment. The effects on aquatic organisms are due to an external (non-systemic) mode of action and are significantly reduced (by a factor of 7-20) within 30 minutes due to the binding of the product to dissolved organic carbon and inorganic sorbents such as clays and silts. Acute toxicity tests conducted using environmentally representative water.

LC50/96 h/Pimephales promelas (fathead minnow)/US EPA TSCA Test Guidelines: 21 mg/l
Remarks: Information given is based on data obtained from similar substances.

LC50/96 h/Oncorhynchus mykiss (rainbow trout)/US EPA TSCA Test Guidelines: 70,7 mg/l
Remarks: Information given is based on data obtained from similar substances.

LC50/96 h/Danio rerio (zebra fish)/OECD Test Guideline 203: > 100 mg/l

Remarks: Information given is based on data obtained from similar substances.

EC50/10 d/Corophium volutator (amphipoda)/PARCOM: 857 mg/l

EC50/48 h/Acartia tonsa (copepod)/PARCOM: 7,4 mg/l

EC50/48 h/Daphnia magna (Water flea)/Immobilization/OECD Test Guideline 202: > 100 mg/l

Remarks: Information given is based on data obtained from similar substances.

LC50/48 h/Daphnia magna (Water flea)/US EPA TSCA Test Guidelines: 1,96 mg/l

Remarks: Information given is based on data obtained from similar substances.

IC50/72 h/Skeletonema costatum (diatom)/ISO 10253: ca. 27 mg/l

IC50/72 h/Green algae (Selenastrum capricornutum)/Growth inhibition/OECD Test Guideline 201: > 100 mg/l

Remarks: Information given is based on data obtained from similar substances.

12.2 Persistence and Degradation

Biological degradability:

Modified Sturm Test/OECD Test Guideline 301B:

The polymeric ingredient is not readily biodegradable.

Seawater Shake Flask Method/OECD Test Guideline 306/28 d: 13 %.

12.3 Bioaccumulative potential

Because of the high molecular weight of the polymer diffusion through biological membranes is very small. Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water: Not applicable.

12.4 Mobility in soil

Water solubility: completely miscible

Surface tension: No data available.

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

No data available

Additional ecological information: Ecotoxicological information provided is based on a structurally or compositionally similar product.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods



Disposal should be in accordance with local, state or national legislation.

13.2 Additional Information

Packages that cannot be cleaned must be disposed of the same way as the unused product..

14. SECTION 14: TRANSPORT INFORMATION

Not classified as hazardous for transport.

15. SECTION 15: REGULATORY INFORMATION

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

All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.

All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).

All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).

All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.

All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.

All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.

All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

All components of this product are included on the Taiwan Toxic Chemical Substances Control Act Inventory.

This product's New Zealand Inventory of Chemical Substances (NZIoC) status has NOT been determined.**15.2 Chemical Safety Assessment**

A REACH chemical safety assessment has not been carried out.

16. SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements:

LEGEND

Hazard Pictogram(s)



GHS07

Hazard Statement(s)

H319: Causes serious eye irritation.

Precautionary Statement(s)

P264: Wash hands and exposed skin thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Full text of H-Statements referred to



SAFETY DATA SHEET
TK60 Liquid

05-08-2016

under section 3

H304: May be fatal if swallowed and enters airways.

H302: Harmful if swallowed.

H318: Causes serious eye damage.

H412: Harmful to aquatic life with long lasting effects.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Mudtech Ltd gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Mudtech Ltd accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

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according to Regulation (EC) No. 453/2010

Revision Date: 29-May-2018
Preparation Date 29-May-2018

Revision Number: 12
Internal ID Code HM006204

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

1.1. Product Identifier

Product Name TUNNEL-GEL® PLUS
Internal ID Code HM006204

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

Recommended Use Viscosifier
Sector of uses SU2 - Mining, (including offshore industries)
Product category(ies) PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process categories PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom
+44 1224 776888

www.halliburton.com

For further information, please contact

E-mail Address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Global Incident Response Access Code: 334305

Contract Number: 14012

Emergency telephone - Article 45 - (EC)1272/2008	
Turkey	Ulusal Zehir Danisma Merkezi (UZEM) :114 Acil Saglik Hizmetleri : 112
Europe	112
Bulgaria	Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	00357 22 88 7171
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Portugal	CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 271
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Not classified

2.2. Label Elements

Not classified

Hazard Pictograms

Signal Word: None

Hazard Statements:

Not Classified

Precautionary Statements:

None

Contains

Substances

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

CAS Number

NA

2.3. Other Hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH Reg. No
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	NA	60 - 100%	Not classified	No data available

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Ingestion

Under normal conditions, first aid procedures are not required.

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

No significant hazards expected.

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

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Notes to Physician Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards in a fire

Not applicable

5.3. Advice for firefighters

Special protective equipment for firefighters

Not applicable

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Product has a shelf life of 36 months.

7.3. Specific end use(s)

Exposure scenario No information available

Other Guidelines No information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Contains no hazardous substances in	NA	Not applicable	Not applicable	Not applicable	Not applicable

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concentrations above cut-off values according to the competent authority					
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Substances	CAS Number	Germany	Spain	Portugal	Finland
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable	Not applicable

Derived No Effect Level (DNEL)
Worker

No information available

General Population

Predicted No Effect Concentration (PNEC)

No information available.

8.2. Exposure controls

Engineering Controls

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and chemical properties

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9.1. Information on basic physical and chemical properties

Physical State: Solid **Color:** Various
Odor: Odorless **Odor Threshold:** No information available

<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>
pH:	9.9
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.65
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Hydrofluoric acid.

10.6. Hazardous decomposition products

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	None known.
Ingestion	None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
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Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available
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SECTION 12: Ecological information

12.1. Toxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	Not applicable

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods

Contaminated Packaging

Bury in a licensed landfill according to federal, state, and local regulations.

Follow all applicable national or local regulations.

SECTION 14: Transport information

IMDG/IMO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADN

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group	Not applicable
Environmental Hazards:	Not applicable

ADR/RID

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

14.1. UN Number Not restricted

14.2. UN proper shipping name: Not restricted

14.3. Transport Hazard Class(es): Not applicable

14.4. Packing Group Not applicable

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User None

14.7. 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

International Inventories

EINECS (European Inventory of Existing Chemical Substances)

US TSCA Inventory

This product, and all its components, complies with EINECS

All components listed on inventory or are exempt.

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Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 0: Generally not water endangering.

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

None

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures

EC – European Commission

EC10 – Effective Concentration 10%

EC50 – Effective Concentration 50%

EEC – European Economic Community

ErC50 – Effective Concentration growth rate 50%

IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL0 – Lethal Loading 0%

LL50 – Lethal Loading 50%

MARPOL – International Convention for the Prevention of Pollution from Ships

mg/kg – milligram/kilogram

mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NOEC – No Observed Effect Concentration

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

PC – Chemical Product category

PEL – Permissible Exposure Limit

ppm – parts per million

PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

STEL – Short Term Exposure Limit

SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

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Revision Date: 29-May-2018
Revision Note
SDS sections updated:
2

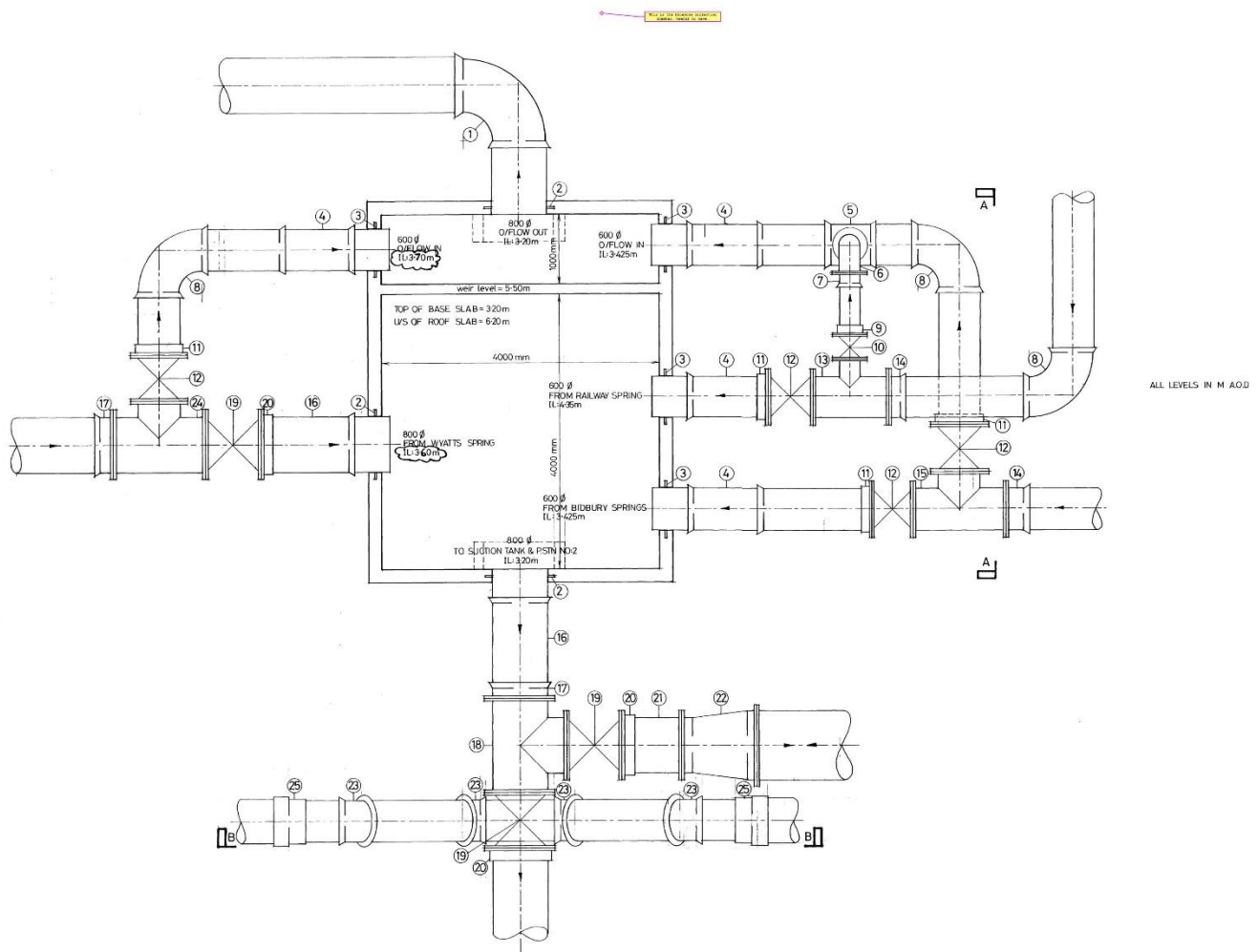
This safety data sheet complies with the requirements of Regulation (EC) No. 2015/830

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End of Safety Data Sheet

Appendix C: As Laid Drawing



Appendix D: Air Quality Checklist

Dust checklist	
If there has been an exceptional incident causing dust, what action was taken to resolve this?	Text box
Equipment	
Are machinery and dust causing activities located away from receptors?	Tick box
Are solid screens erected around dusty activities?	Tick box
Are operations producing dust fully enclosed?	Tick box
Are dust suppression techniques being used for cutting, grinding or sawing equipment?	Tick box
Is there an adequate water supply available for dust suppression?	Tick box
Where applicable, are enclosed chutes, conveyors and covered skips being used?	Tick box
Have all measures been taken to minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment? Are fine water sprays being used on such equipment wherever appropriate?	Double tick box
Is equipment readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods?	Tick box
Has drying sweeping of large areas been avoided?	Tick box
Are stockpile management techniques (such as water spraying and covering) being utilised?	Tick box
Are appropriate dust suppression measures being used to prevent migration of contaminated dust?	Tick box
Transport	
Are water-assisted dust sweeper(s) in use, when necessary, to remove material tracked out of site onto the access and local roads?	Tick box
Are all vehicles entering and leaving sites covered to prevent escape of materials during transport?	Tick box
Are haul route inspections being undertaken? Are all necessary repairs to the surface being conducted as soon as reasonably practicable?	Double tick box
Are all inspections of haul routes and any subsequent action being recorded in a site log book?	Tick box
Are haul roads hard surfaced, regularly damped down with sprinkler systems, or mobile water bowzers and regularly cleaned?	Tick box
Is a wheel washing system, with rumble grids to dislodge accumulated dust and mud prior to leaving the site, where reasonably practicable, in use on site?	Tick box
Is there is an adequate area of hard surfaced road between the wheel wash facility and the site exit?	Tick box
Storage	
Is dust producing materials removed from site or covered?	Tick box
Are sand and other aggregates stored in bunded areas and prevented from drying out, unless required for a particular process?	Tick box
Are stockpiles covered, seeded or fenced to prevent windwhipping?	Tickbox
External factors	
Is the site experiencing dry or windy conditions?	Tick box
Has baseline dust monitoring been conducted at least three months before work commencing on site?	Tick box
Environmental	
Has the use of diesel- or petrol-powered generators been avoided where practicable?	Tick box
Confirm no bonfires or burning of waste material has been conducted on site.	Mandatory tick box ***
Other	
Any additional information	Text box