

**Hazardous Materials Management Plan
Dundee Precious Metals Krumovgrad
Krumovgrad Gold Project, Bulgaria**



Submitted to
Dundee Precious Metals


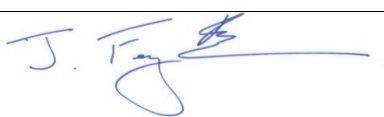


Submitted By
AMEC Earth & Environmental UK Ltd.



HAZARDOUS MATERIALS MANAGEMENT PLAN
SUPPLEMENTARY LENDER'S INFORMATION PACKAGE (SLIP)
DUNDEE PRECIOUS METALS ADA TEPE DEPOSIT
KRUMOVGRAD PROJECT - BULGARIA
OCTOBER 2014

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1.0 INTRODUCTION

Dundee Precious Metals (DPM) has negotiated an amended financial package with a consortium of banks for which the European Bank for Reconstruction and Development (EBRD) acts as environmental agent. According to the EBRD's Environmental and Social Policy (2008), and its associated Performance Requirements (PRs), a project of this type and scale requires a full Environmental and Social Impact Assessment (ESIA). The Project undertook a local national environmental impact assessment (EIA) to Bulgarian standards in 2010 and an environmental permit No. 18-8, 11/2011 was issue. Following an independent review of the local EIA reports, the EBRD required a number of supplementary environmental and social studies and documents to fill the gaps necessary to meet the EBRD PRs and international good practice. In addition to the EBRD PRs, some of the consortium banks refer to the Equator Principles and therefore the Project also references the IFC's Performances Standards (2012). The package of supplementary environmental and social documents as well as the local EIA reports together form the Project ESIA. The Project ESIA is summarised in a Non-Technical Summary.

This document, comprising a Hazardous Materials Management Plan (HMMP), has been prepared by AMEC Earth and Environmental UK Ltd (AMEC) on behalf of the operator Dundee Precious Metals Krumovgrad (DPMK). The HMMP has been produced in relation to the mining and processing of gold ores from the Ada Tepe deposit in the Khan Krum Deposit, Krumovgrad Municipality in the District of Kardzhali.

This document aims to ensure a proactive approach to the effective management of hazardous materials during the mining and processing works of the Ada Tepe deposit.

This HMMP prescribes the procedures and protocols that will be adopted during the mining and processing works, ensuring compliance with environmental legislation, environmental contractual requirements and other environmental obligations.

The HMMP includes the auditing and reporting procedures and approach to avoid or, when avoidance is not feasible, minimize uncontrolled releases of hazardous materials or accidents, with a commitment to continually monitor and review environmental performance and procedures during the mining and processing works.

The HMMP is considered a 'live' document that should be reviewed during the programme of works.

The HMMP therefore includes the following elements:

- Scope, roles and responsibilities of site staff;
- Project standards
- Mitigation measures and management controls;
- Implementation schedule
- Training

- Audit and Reporting
- Document Control
- Plan updates procedures.

The HMMP relies on the Emergency Preparedness and Response Plan as well as on standard occupational health and safety management procedures to be implemented by DPMK. DPMK will develop a non-mineral waste disposal management plan that will include the management of hazardous waste. DPMK will also implement a preventive maintenance programme.

1.1 Guidance

The following regulations and guidance has been followed:

- Bulgarian Act for Protection Against the Harmful Impact of Chemical Substances and Mixtures Act (Title amended SG No. 114/2003, SG No. 63/2010, effective 13.08.2010, last amended SG No. 61/25.07.2014, effective 25.07.2014)
- Bulgarian Regulation on the procedure and method of classification, packaging and labelling of chemical substances and mixtures (Government Decree 182/2010, effective date 31.08.2010, last amendment SG No 84/27.09.2013, effective 1.07.2013).
- IFC General Environmental, Health and Safety (EHS) Guidelines :Environmental Hazardous Materials Management (2007)
- Blasting Safety Ordinance issued by the Ministry of Labour and Social Works (SG issue 3/10.02.1997)
- Regulation on Packaging and Packaging Wastes (SG No 85/06.11.2012, amended, SG No 76/30.08.2013)
- Regulation I3-1971/29.10.2009 on the Construction and Technical Standards to Ensure Fire Safety.

1.2 Scope

This document outlines the methods by which DPMK will reduce risks to soils and water quality from the storage and handling of hazardous substances during construction, operation and closure. It will serve to aid the decision-making process on the choice of controls, general site design and operational practice in line with current international industry best practice and guidance.

The HMMP is a working document with the specific aim of ensuring that:

- Hazardous materials (Hazmats) are considered as part of routine management, operation and inspections;
- The risk of incidents that could result in releases of Hazmats are reduced as much as possible ; and
- Hazmats are stored and handled following regulations and international best practice.

To achieve these objectives, the HMMP is structured to identify the following:

- Acknowledge the level of risk associated with the type and amounts of hazmats present in the project;
- Analysis of potential spill and release scenarios;
- Analysis of the potential for uncontrolled reactions such as fire and explosions; and
- Analysis of potential consequences based on the geographical characteristics of the project site, including aspects such as its distance to settlements, water resources, and other environmentally sensitive areas.

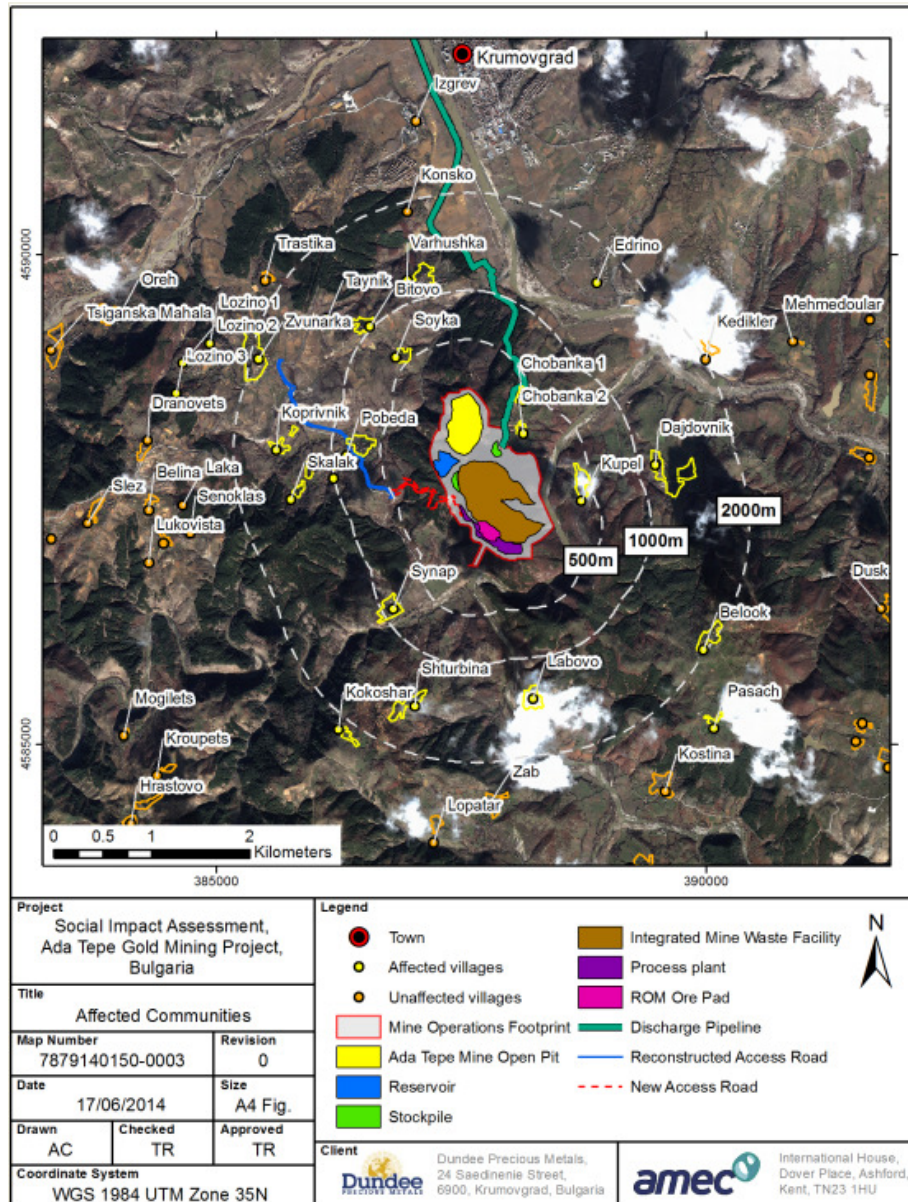
A Hazard assessment will be carried out by DPMK when the project engineering is sufficiently advanced for this purpose and will be the basis for an update of the HMMP

2.0 SITE BACKGROUND

2.1 Site Setting

The main site required for the implementation of the Ada Tepe Prospect project proposal is located some 3 km south of the municipal center Krumovgrad and approximately 100 m west of the Krumovitsa river. The total area required for the implementation of the project is approximately 85 ha. The location of the site boundary and site features is shown in Figure 2-1 below.

Figure 2-1: Site Boundary, Feature and Receptors



2.2 Project Overview

The Ada Tepe mine plan currently being considered is based on an 850 000 tpa operation extending over a 9 year period (excluding the overburden removal), which gives a process plant throughput rate of 106 tph at 8,000 operating hours per annum.

The main activities as part of the project are:

- The auriferous ore at Ada Tepe will be open-pit mined. The mining method will be a conventional open cut drill, blast, load and haul operation. The mined ore will be loaded by two hydraulic back-pull shovels serving up to five 40 t off-road dump trucks hauling the ore to the ore stockpile (ROM pad);
- Processing of ore at the process plant and production of gold-silver concentrate. The ore from the stockpile will be delivered by a front-end loader to a feed hopper and from there into an outdoor jaw crusher. The crushed product will be discharged onto a fully-enclosed inclined belt conveyor leading to the grinding section. The grinding section of the plant will be located inside the main plant building. The grinding of the crushed ore will be a wet process. Flotation will be the main process for recovery of the gold and silver values from the ore.
- Construction of an Integrated Mine Waste Facility; the mining and processing operations will generate mine rock (waste rock from mining) and flotation process tailings. The rock material with no economic gold and silver values is classified as waste rock, which is generated in the process of exposure/access to the ore body, and the expected total quantity during Ada Tepe mining activities is 14.95 Mt. The process (or flotation) tailings are the waste material rejected from the flotation plant after the recoverable valuable minerals have been extracted from the ore feed. A total of approximately 7,235 Mt of tailings are expected to be generated by the end of the project life.
- A soil material stockpile; prior to construction, all areas planned for construction or mining will be stripped of topsoil, which will be stockpiled for further use at the closure and rehabilitation stage.
- Construction of project infrastructure; includes the construction of the main building of the process plant, administrative building, domestic wastewater treatment plant, plant for chemical treatment of process and contaminated storm waters (discharged into the Krumovitsa river), two fuel stores, diesel fuel tanks, reagents store, car wash, roads, water/sewage and power services.

Hazardous materials will be used in the open pit for blasting operations and in the ore processing plant.

2.2.1 Blasting

ANFO type explosives will be used (e.g. Dynolite™, a mixture of ammonium nitrate and 6% of diesel by weight) for the mining of the oxidized ore in the Upper Zone and waterproof emulsion for the mining of the ore in the Wall Zone (e.g. Fortis™ Advantage 80). The above materials are indicative and will be further specified as the Project engineering advances.

An explosives manufacturer will supply the blasting materials. Explosives will be safely delivered from the explosives manufacturing plant to the minesite by a designated mobile manufacturing unit (MMU) vehicle. This vehicle will deliver the products to the pit blast area, where they will be mixed to form explosives and immediately poured into the blast holes. The blasting works will be fully compliant with the requirements of the Blasting Safety Ordinance issued by the Ministry of Labour and Social Works (SG issue 3/10.02.1997). DPMK will *not* construct and operate an explosives magazine.

2.2.2 Mineral Processing

The flowsheet of the process plant is shown in Figure 2-2 (next page).

Flotation

Flotation will be the main process for recovery of the gold and silver values from the ore. The process will be performed in flotation banks, where the recovery of the payable components from the waste rock is achieved by conditioning the surfaces of mineral grains based on the different surface chemistry of the gold and rock particles. Air is introduced to the bottom of the banks and dispersed by an impeller driven by an electric motor. The air bubbles rise to the surface of the flotation cell colliding with the pulp particles. The hydrophobic particles attach to the rising air bubbles to form froth on the surface, which overflows the flotation cell and advances to the next stage.

A direct selective flotation flowsheet consisting of one rougher stage, three cleaner stages and two scavenger stages was selected. The nature of the floated material requires extended conditioning of the surfaces prior to discharge to the flotation banks, which is achieved by:

- addition of copper sulphate (a surface sulphidising reagent) into the SAG grinding stage;
- addition of collector reagents for conditioning prior to flotation.

The bulk of the flotation reagents will continuously be metered into the process throughout the circuit.

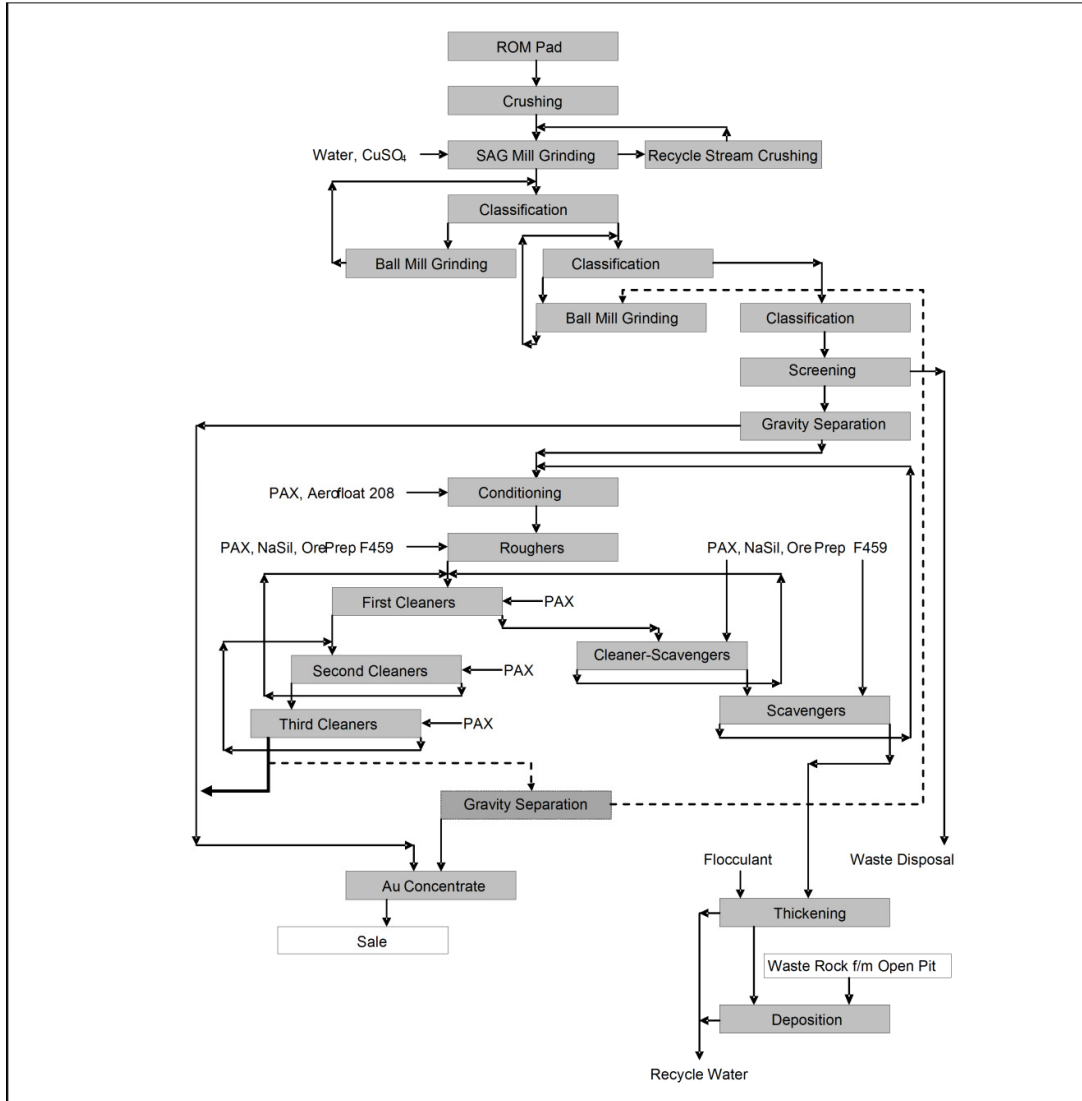
The following reagents will be used in the flotation process:





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- Collector: PAX (potassium amyl xanthate) and a minimum amount of dithiophosphate (Aerofloat 208);
- Frother: Cytec OrePrep F 549; Dispersant: Sodium silicate ($\text{Na}_2\text{O}_x\text{nSiO}_2$, also known as water glass or liquid glass);
- Sulphidiser: Copper sulphate ($\text{CuSO}_4 \times 5\text{H}_2\text{O}$).

Figure 2-2 Process Flow sheet for DPMK



Project Krumovgrad Gold Project, Bulgaria		Legend	
Title Process Flowsheet			
Drawing Number 7879140150-0000		Revision 0	
Date 09/10/2014		Size A4 Fig.	
Drawn AC	Checked MD	Approved JFA	 Dundee Precious Metals, 24 Saedinie Street, 6900, Krumovgrad, Bulgaria  International House, Dover Place, Ashford, Kent, TN23 1HU

2.2.3 Ancillary Plants and Facilities

The reagent preparation facilities will be located within an annex to the main process building. The containers of reagent will be moved from the delivery point into this annex with an overhead crane and a telescopic forklift.

The reagents packaging, transportation to and from the site, handling and preparation, and waste packaging handling will conform to the requirements of the Regulation on Packaging and Packaging Wastes (Government Decree 41/2004).

- Xanthate Mixing Plant

The xanthate will be delivered as pellets in 200 kg lots in Poly-Ethylene Terephthalate (PET) bags enclosed in steel drums, which will be stored in the reagent storage facility. The drums will be delivered to the reagents mixing annex and lifted by a crane to the reagents mixing level.

The drums will be lifted by a trolley hoist to a xanthate solution preparation deck. The ready solution will then be fed by gravity to an agitating tank. The xanthate will be diluted to 5% solution strength. The solution will be pumped into a feed tank in the flotation section, from where it will be dispensed into the flotation cells through dispensing meters.

A dry filter will be installed above the xanthate mixing deck to collect the airborne particulate matter. A general ventilation system will be installed in the facility.

The empty drums and PET bags will be returned to the supplier.

- Sodium Silicate (Liquid Glass) Delivery Plant

The sodium silicate ($\text{Na}_2(\text{SiO}_2)_n\text{O}$) will be bulk-delivered in 20 t tanker trucks. The load will be pumped into a storage tank capable of containing two truck loads.

The solution will be pumped into a feed tank in the flotation section, from where it will be dispensed into the flotation cells through dispensing meters.

- Copper Sulphate Mixing Plant

The copper sulphate will be delivered as powder packed in 25 kg multi-layer paper bags grouped on polymer shell covered wooden pallets with a lifting eye. It will be stored in the reagent storage facility. The pallets will be delivered to the reagent preparation annex and lifted by a crane to the reagent mixing level. Individual bags will be hand removed from the pallet and loaded into the feed hopper of the appropriate mixing tank, where raw water will be added continuously to produce a 20% by-weight solution. A metering pump will deliver the copper sulphate solution upstream of the SAG mill where it will be added into the process. The empty bags and polymer packaging will be collected separately as packaging wastes.

- Dithiophosphate Mixing Plant

Dithiophosphate (such as Aerofloat 208, which is the trade name of a similar product) will be delivered in 1 m³ packaging (combining a PET container on a wooden pallet). The deliveries will be handled by a crane and stored in the reagent storage facility. A mobile pump will deliver the reagent to a feed tank in the flotation section. The mobile pump handling operations will be performed while the pallet is placed over a secondary containment arrangement having an effective retaining capacity of 1.2 m³. A dispensing meter will dispense the 20% by-weight solution of dithiophosphate into the flotation process (the conditioning tank upstream of the flotation circuit). The packaging will be managed on a rotation basis and the full packages will be delivered in exchange for the re-usable empty packaging.

- Frother Mixing Plant

The frother (OrePrep F-549, which is the trade name of a similar product) is a liquid delivered in 180 kg drums which will be handled by a crane and stored in the reagent storage facility. The frother storage area will be provided with a concrete secondary containment structure whose retaining capacity will be 20% greater than the maximum frother stock at any time. A mobile pump will deliver the reagent to a feed tank in the flotation section. A dispensing meter will dispense the reagent into the flotation process. The empty drums will be returned to the supplier.

- Flocculant Mixing Plant

Flocculant will be delivered to the site in powder form packed in 25 kg multi-layer paper bags grouped on wooden forklift pallets covered by shrink wrapped plastic. These will be kept in the reagent store area. The pallets will be delivered to the reagents preparation annex and lifted by a crane to the reagents mixing level.

Individual bags will be hand removed from the pallet and loaded into the feed hopper of the appropriate mixing tank where raw water will be added continuously to produce flocculant at 0.5% solution strength.

Mixed flocculant will gravity flow from the mixing machine to the storage/surge tank beneath. It will be delivered to the thickener by metering pumps and diluted down to 0.025% strength solution with recycled water immediately before its addition to the pulp stream entering the thickener.

2.2.4 Infrastructure

The infrastructure includes construction of the main process plant building, warehouses/storage areas, roads, water/sewage and power services, etc.

The main process plant building will also accommodate the reagents plant and associated ancillary equipment.

The car wash will be a steel frame structure with polycarbonate wall and roof panels on a concrete base. It will have three bays: a dry cleaning bay with a powerful vacuum-cleaner to clean the interior of vehicles and two exterior wash bays.

The concrete base surface will be provided with a suitable downward slope to drain the wastewaters containing oils and petroleum products. An underdrainage pipe system will collect and convey the wastewaters to a collecting sump near the car wash. The sump will be a conventional mud and oil trap design. Its capacity will be sufficient to ensure collection of wastewaters, oils and petroleum products and efficient solids and oil/water separation. The lighter oil phase will be pumped to a waste oil container. Full containers will be replaced and stored in the area for temporary storage of hazardous wastes. The waste oil will then be handed over to waste management recycling companies that have permits for this type of waste. The settled solids (mostly rock material) will be lifted and deposited into the IMWF together with the thickened tailings. The wastewater stream reclaimed from the mud and oil trap at an expected flow rate of 0.2 L/s will be advanced to the reclaimed water tank.

The fuel store (2 tanks) will be set up between the workshop and the tailings thickener. It will include two surface steel or reinforced concrete storage tanks. Each of them will have a storage capacity of 50 m³. A secondary containment system constructed from materials having a Class A1 fire rating will ensure safe containment of accidental spills from the fuel tanks. The fuel tanks' design and construction will be fully compliant with the requirements under Regulation I-209/22.11.2004 on the Fire Safety Rules at Operational Sites SG, №107 / 07.12. 2004r.

2.3 Hazardous Materials

The characterisation of the chemical substances is presented in Table 2-1. According to the provisions under the Protection against Harmful Impact of Chemical Substances, Preparations and Products Act, the chemical substances are classified on the basis of their principal properties. The classification is done to enable risk assessment of their impact on human health and the environment.

Table 2-1 Classification of Reagents for the Project

Code	Classification	Description	Chemical and physical properties	R-phrases	S-phrases	Tonnage
C, O, Cl	F+, Xn	Diesel Fuel CAS No. 68334-30-5		R40	S(2-) 36/37	200 000 t/y
C	F+	Propane CAS No. 74-98-6		R12	S: (2-)9-16	N/A
C	F+	Butane CAS No. 106-97-8		R12	S: (2-)9-16	N/A
C	F+	Butadiene-containing Butane (0.1%) CAS No. 106-97-8		R45-46-12	S: 53-45	N/A
O		Dynolite CAS No. TSC 48.2	Granules with light yellow colour and diesel fuel odour	R 3/5	S35	N/A
O		Fortis Advantage 80	Homogeneous paste with gray-beige colour containing white granules			700 t/y
C, o, Cl	F, N	Motor Oils CAS No. 64742-19-4		R45	S26	170 000 t/y
C, O, Cl	T	Grease CAS No. 74869-21-9		R45	S53-45	1 t/y
O	Xn– harmful; Xi - irritant	Potassium amyl xanthate CAS No – 2720-73-2; EC No (EINECS): 220-329-5	Appearance: powder, flakes or pellets; Colour: pale yellow, grey-yellow, yellow-green; Odour: strong, unpleasant odour;	R22 R36/37/38	S26, S36	102 t/y
O	Xi - , C - Corrosive	Dithiophosphate	Yellow to amber liquid, stable	R41, R34 R3, R35	S26, S45, S50A, S36/37/39	17 t/y
O	Xn – Harmful	Copper sulfate pentahydrate	Solid, odourless, blue substance Stable under normal conditions of use and storage	R: 22-36/38-50/53	S (1/2-) 22-60-61	85 t/y

C – construction, O – operation and Cl- closure, N/A – Not available, t/ y – tonnes per year

Safety Data Sheets are presented in the Appendix A



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Operation of the project will aim to reduce inventory on site of Hazmats. The closure plan will describe the procedure to be followed with the limited tonnage on site of the Hazmats at closure.

The reagents that will be used in the ore processing must be provided with Material Safety Data Sheets (MSDS) (presented in Appendix A) which should contain information about:

- chemical composition;
- emergency response;
- emergency phone;
- other information from the manufacturer.

The characterisation of the chemical substances is presented in Table 2-1. Following the provisions under the Protection against Harmful Impact of Chemical Substances, Preparations and Products Act, the chemical substances are classified on the basis of their principal properties.

The fuel used on the site must be certified for concentrations of lead, sulphur and other environmentally hazardous substances. The stock of chemical substances and products listed in Table 2-1 should not exceed the maximum legal allowable stock levels.



3.0 PROJECT STANDARDS

DPM Krumovgrad will comply with the DPM Environmental Policy. DPM Krumovgrad will comply with all Bulgarian and EU laws, regulations and standards as a minimum and aim to achieve international best practice. The HMMP will aim to follow EBRD Performance Requirements No 1 and IFC Performance Standards. No 3.



4.0 ROLES AND RESPONSIBILITIES

This HMMP is a 'live' document and the monitoring procedures, responsibilities and compliance actions should be updated as appropriate. It is the responsibility of the Environmental Manager or designated deputy to be fully aware of its contents, to provide relevant training to staff and to ensure that procedures are being implemented to achieve compliance with this Plan.

The General Manager is responsible to provide the resources necessary to implement this management plan and to monitor its implementation.

Staff involved in the handling hazmats will be adequately trained and should follow procedures inclusive of using PPE when and where required.

5.0 MITIGATION MEASURES AND MANAGEMENT CONTROL

5.1 Overarching Management Responsibility

The Environmental Manager will have overall responsibility for ensuring the implementation of and compliance with the requirements set out in the HMMP. This will include ensuring all site personnel are made aware of the scope and contents of the HMMP. The Site Manager, or an assigned deputy, will also be responsible for undertaking spot checks on-site to ensure compliance with requirements set out in the HMMP. The Environmental Manager will undertake internal audits to monitor the requirements of the HMMP and identify any improvements that can be incorporated into the HMMP, as well as any defined obligations.

5.2 Measures to Reduce Risks

- DPMK will notify competent authority for quantity and quality of hazardous materials and will be classified as per the requirements of Environmental Protection Act (art.104) once when design approval (visa) is obtained ;
- Company will ensure that the chemical substances that are classified as hazardous, whether as individual substances or as ingredients in mixtures, are stored in accordance with the requirements of the Law on Protection from the Effects of Chemical Substances and the Regulation on the Terms and Procedures for Storage of Hazardous Chemical Substances and Mixtures (Adopted with CoM Decree 152 dated 30.05.2011, prom. SG 43 dated 7.06.2011).
- Secure storage and labelling substances in line with Bulgarian and manufacturer's recommendations and measures to prevent contact with untrained personnel, birds, animals or fish
- Secondary containment designed and managed to ensure rainwater does not reduce the minimum capacity requirements
- Secondary containment for storage of hazmats must provide minimum 110% containment of the largest tank or 25% of the total volume of a tank farm
- Location of equipment, containers and distribution lines, containing hazmats above ground and provision of appropriate containment
- Any installation of hazmats below ground will require risk assessment and Project approval
- Storage areas and fuelling stations will be situated at a safe distance from distance from sensitive areas including mitigation based on risk assessment
- Storage facilities and pipelines carrying hazmats will have spill detection systems installed

- Transfer points will have secondary containment
- Installations of oil and water separators and grease traps at fixed refuelling facilities, workshops, washing bays, parking areas and fuel storage areas
- Use of drip trays and other temporary measures during servicing or fuelling of vehicles and equipment on site
- All spent solvents, liquid wastes and spent fuels/ lubricants will be stored in lined, bunded areas, and transported off-site for safe disposal using accredited contractors
- Vehicle re-fuelling, washing and maintenance will only take place within designated areas
- All vehicles, plant and equipment will be regularly checked and maintained to minimise the risk of fuel or lubricants leakage
- All runoff from potentially hydrocarbon contaminated surfaces will be diverted to a treatment facility and either recycled for operational use or released to the environment only when discharge standards are met; and
- Site staff will be trained in safe storage and handling practices for hazardous materials and in the use of spill kits
- Checks for damage and leaks at least once a day. Containers to be stacked to facilitate finding leaks, and
- Repackaging and labelling, or disposal of the contents of leaking containers as soon as possible.

5.3 Storage

An evaluation of hazardous substances and mixtures was carried out by DPM in order to comply with Bulgarian regulations and as guidance for the future storage of the substances. The evaluation is reproduced in Appendix B.

The design and location of the storage of Hazmats will follow the following general good practice for the storage of chemicals:

- Restrict access to the chemical store.
- Provide a store with sufficient space, well organised, well lit and well ventilated.
- The store should have an impervious floor that is resistant to the chemicals used and is easy to clean.
- Store incompatible materials safely. Define the areas and put up clear signs.



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- Keep tanks and containers in defined, banded areas.
- Label tote tanks, containers and lines clearly.
- Provide bulk storage with dust filtration or air cleaning for the displaced air.
- Provide explosion relief where necessary.
- Vent air displaced from bulk liquids to a safe place.
- Eliminate or control ignition sources.



6.0 IMPLEMENTATION SCHEDULE

The HMMP will be implemented prior to construction and during operation. The closure plan will manage the handling and disposal of Hazmats.

7.0 TRAINING

7.1 General HMMP Worker Training Requirements

The overall training process to be implemented for the DPMK Project activities will address the identification of training requirements by job description and will provide basic procedures for conducting and documenting training activities.

As part of their standard job-specific training, employees directly involved with Hazmats management tasks will also receive specific training on how their job responsibilities must be performed to prevent unplanned releases of Hazmats, and to minimize Hazmats-related risks to their own health and safety and the health and safety of their co-workers and the general public. Training topics will, at a minimum include a general introduction to this Hazardous Materials Management Plan, the standard operating procedures applicable to individual work assignments, applicable portions of the Emergency Preparedness and Spill Contingency Plan, and emergency response requirements as detailed in Section 6.2. Training will include recognition of the Hazmats or Hazmats-bearing materials that may be present at the site. The documents will be made available to all DPMK staff via the controlled document distribution to be developed.

Training will be provided by knowledgeable personnel who are experienced in effective communication techniques. All employees receiving Hazmats worker training will be required to pass a written test to ensure their understanding of the subject matter covered. Refresher training will also be conducted for all Hazmats workers on at least an annual basis.

7.2 Emergency Response Training Requirements

Workers having access to or handling of Hazmats will receive training in the procedures to be followed if a release is discovered, including notification of the appropriate site personnel, ensuring co-worker and public safety, and taking direct action to control or contain the release wherever possible.

Site personnel who may be called upon to respond to workplace releases will be trained in this, as well as in the first aid procedures noted in the Emergency Preparedness and Response Plan, Appendix 5 Response Plan for Cases of Accidental Leak of Hazardous Chemical Substances. This training will include the procedure for notifying appropriate site personnel and will stress that the responder must first ensure their own protection through use of personal protective equipment. Specialized training will also be provided to those workers designated as Emergency Response Coordinators and members of the Emergency Response Team. 11.3 Training Records

Records documenting all levels of training related to the use of Hazmats in the workplace will be retained in accordance with procedures to be developed by DPMK. Training records will include the names of the employee and the trainer, the date of training, the topics covered, and employee proficiency test results, where required.



8.0 MONITORING, AUDITING AND REPORTING

A monitoring programme will be developed once the hazard assessment is carried out.

The hazard assessment will form the basis to describe relevant written process safety parameters, standard operation procedures and compliance audit procedures.

DPM will request from the blasting company providing the Mobile Manufacturing Unit (MMU) for explosives deployment to provide information regarding their continue compliance with Bulgarian Legislation reference the handling of Hazmatz.

Auditing related to Hazmats will be carried out as part of the internal and external environmental audits to be adopted by DPMK.

Any non-conformance reported will be investigated and immediate corrective action undertaken.



9.0 DOCUMENT CONTROL

DPM Krumovgrad will develop a document control procedures and the HMMP will adopt this procedure.



10.0 REVIEW AND UPDATING OF HMMP

This HMMP will be reviewed annually following the compliance audit and also following any incidents on-site or changes in site operations.

The updates will be agreed between the Environment Manager and the General Manager.



HAZARDOUS MATERIALS MANAGEMENT PLAN
SUPPLEMENTARY LENDER'S INFORMATION PACKAGE (SLIP)
DUNDEE PRECIOUS METALS ADA TEPE DEPOSIT
KRUMOVGRAD PROJECT - BULGARIA
OCTOBER 2014

APPENDIX



HAZARDOUS MATERIALS MANAGEMENT PLAN
SUPPLEMENTARY LENDER'S INFORMATION PACKAGE (SLIP)
DUNDEE PRECIOUS METALS ADA TEPE DEPOSIT
KRUMOVGRAD PROJECT - BULGARIA
OCTOBER 2014

APPENDIX A

Safety Data Sheets

Fortis™ Advantage 80

SDS no. : 3008
Issue : 01
Date : 2008-05-05

1st Identification of the substance / preparation and of the company / undertaking**1.1 Identification of the substance or preparation****1.1.1 Trade name**

Fortis™ Advantage 80

1.1.2 Chemical name

Not applicable, preparation

1.2 Use of the substance / preparation

Emulsion explosive for industrial use

1.3 Company / undertaking identification

ORICA Med Bulgaria AD / Dyno NitroMed AD

PO Box 103

BG-4500 Panagyurishte

Phone: +359 34 408-410; + 359 34 448-842

E-mail address of the competent person responsible for the Safety Data Sheet:

klaus.ehresmann@orica.com alexander.gurari@orica.com

1.4 Emergency telephone

+49 (0) 2241 / 89-1555 +359 34 408-415 +359 89 986-2535

2nd Hazards identification

Risk of explosion by shock, friction, fire or other sources of ignition.



Fortis™ Advantage 80

SDS no. : 3008
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3rd Composition / information on ingredients

<i>Dangerous contents</i>	<i>CAS no.</i>	<i>EINECS no.</i>	<i>Contents</i>	<i>Code letters of danger symbol</i>	<i>R phrases</i>
Ammonium nitrate	6484-52-2	229-347-8	75 - 85 % w/w	O	8-9
Sodium nitrate	7631-99-4	231-554-3	0 - 10 % w/w	O	8

R8 - Contact with combustible material may cause fire

R9 - Explosive when mixed with combustible material

Remarks:

Further the preparation contains mineral oil (no dangerous substance according to 67/548/EG), water, emulsifiers and sensitizing additives.

4th First aid measures**4.1 General references**

Medical help necessary in case of symptoms, e. g. irritation of the respiration tract, which might have been caused by inhalation of dust, vapours or combustion gases.
Bring casualty out of danger as quickly as possible.
Symptoms do not necessarily appear immediately with persons who have inhaled combustion gases. Therefore patients should be kept under medical observation for at least 48 h.

4.2 After inhalation

In case of inhalation of combustion bring victim to fresh air, consult doctor.
If possible provide Dexamethason spray by inhalation.
Give oxygen if necessary.
If unconscious hold and transport in stable side position.
If breathing stops apply artificial respiration.
In case of dust inhalation bring victim to fresh air.
If symptoms do not stop, as e.g. cough, consult physician.

4.3 After skin contact

Wash off with water, consult doctor if necessary.

4.4 After eye contact

Rinse with water, consult ophthalmic doctor if necessary.

4.5 After swallowing

Flush mouth with plenty of water; consult doctor

4.6 Special references

None

Fortis™ Advantage 80

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5th Fire-fighting measures**5.1 General references**

Keep off unauthorised persons.
Warn neighbourhood announcing risk of explosion.

5.2 Measures in case of adjacent fire (Fire has not yet reached product)

Fight adjacent fire with all available means (water, extinguishing powder etc.).
Prevent fire from reaching product.
Drive vehicle away from fire zone, if applicable.

5.3 Measures in case of product fire (Fire has just reached the product or is about to reach it)

Do not try to extinguish, due to risk of explosion. Immediately evacuate danger zone and seek safe cover.
Warn neighbourhood announcing risk of explosion.

5.3.1 Suitable extinguishing media

No fire-fighting attempts, risk of explosion.

5.3.2 Extinguishing media which shall not be used for safety reasons

Not applicable

5.4 Special exposure hazards arising from the substance or preparation itself, combustion products or resulting gases

Besides the explosion risk in case of fire or heat toxic/harmful gases, vapours and pyrolysis products will be formed of the substance, e. g. Carbon monoxide; Nitrogen oxides (nitrous gases); Ammonia.
Do not inhale combustion-gases/vapours/smoke.
Danger of toxic pulmonary oedema formation.

5.5 Special protective equipment for fire-fighters

None

6th Accidental release measures**6.1 Personal precautions**

Avoid skin and eye contact with unpackaged explosives.

6.2 Environmental precautions

Prevent substance from soaking into soil, waters or drains.

6.3 Methods for cleaning-up

Collect spilled explosives with wood-brooms and plastic-or brass shovels.
Do not use any spark-producing tools (e.g. made of iron or steel).
Transfer into certified labeled containers with foil-bags inside, lock foil with tie-clip or cord.
However do not lock containers themselves (no lid or cover or similar), risk of confinement.
Dispose professionally (see section 13).

Fortis™ Advantage 80

SDS no. : 3008
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7th Handling and storage**7.1 Handling****7.1.1 Precautions for safe handling**

Avoid impact, shock and friction; protect from humidity.
Protect from heat, keep away from sources of heat.
Do not use any spark-producing tools.

7.1.2 Advice on technical measures

Technical measures should only be taken in accordance with national legal requirements on explosives.
If necessary consult the responsible authorities or the manufacturer.

7.2 Storage**7.2.1 Conditions for a safe storage**

The explosive form of Fortis™ Advantage 70 is formed by sensitization after pumping into the borehole. The unsensitized transported Ammonium nitrate emulsion is not an explosive. If, in special cases, the sensitized explosive must be stored, it is classified as storage group 1.1 and compatibility group D.

7.2.2 Recommendations regarding quantity limits

Maximum storage volume should be agreed with national authorities.

7.3 Specific use(s)

Substance is an explosive! Usage only according to existing laws and official permissions.

Only for releasing

Fortis™ Advantage 80

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8th Exposure controls / personal protection**8.1 Exposure limit values**

Presently no exposure limit values for ammonium nitrate and sodium nitrate published.

For hydrocarbons used as solvents the following limit values apply in Germany:

C5-C8	aliphatic hydrocarbons	-	1500 mg/m ³
C9-C15	aliphatic hydrocarbons	-	600 mg/m ³
C7-C8	aromatic hydrocarbons	-	200 mg/m ³
C9-C15	aromatic hydrocarbons	-	100 mg/m ³

Also compare with national limit values.

8.2 Exposure controls**8.2.1 Occupational exposure controls****a) Respiratory protection**

Not necessary when properly handled. If limit values might be exceeded use respiratory protection mask with filter A2.

b) Hand protection

Gloves of NBR (Nitrile), Neopren or Viton; Permeation level 5-6 Cat. II according to EN 388. Not necessary if only packaged material is handled.

c) Eye protection

Protective goggles (framed).

d) Skin protection

Work clothes of cotton.

e) General protective measures

Do not eat, drink, and smoke when working.

Change dirty or soaked clothing.

Always wash hands before breaks and at end of work.

Avoid substance contact with skin and eyes.

Avoid spillage and leakage, immediately collect spilled substance (see chapter 6.3).

8.2.2 Environmental exposure controls

Actually no exposure limit values available. Prevent substance from soaking into waters, soil or drains.

Fortis™ Advantage 80

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9th Physical and chemical properties

9.1 General information

Appearance (state of aggregation, colour) Pasty mass, light beige containing red or white granules

Odour Like mineral oil

9.2 Important health, safety and environmental information

pH Not applicable

Boiling point / boiling range Not applicable

Flash point Not applicable

Flammability Not applicable

Explosive properties Explosive, especially when confined, under initiation or strong heat

Oxidizing properties Not applicable

Vapour pressure Not applicable

Relative density $1.2 \pm 0.05 \text{ g/cm}^3$

Solubility No information available

Water solubility Not applicable

Partition coefficient: (n-octanol / water) Not applicable

Viscosity Incapable of measurement

Vapour density Not applicable

Evaporation rate Not applicable

9.3 Other information

Thermal decomposition beginning >150 °C

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10th Stability and reactivity**10.1 Conditions to avoid**

Mechanical influences (e.g. shock, pressure, impact, friction).
Fire, sparks or other ignition sources.
Electrostatic discharges.
Temperatures above 50 °C.
Substance contact with substances mentioned in chapter 10.2.

10.2 Materials to avoid

Lyes; strong acids.
Product contact with lyes / alkaline substances leads to liberation of ammonia (corrosive).

10.3 Hazardous decomposition products

Carbon monoxide; Nitrogen oxides (nitrous gases); Ammonia.

11th Toxicological information**Ammonium nitrate**

Acute toxicity (LD₅₀ oral, rat (mg/kg)) 2217

Slightly irritant (to skin and eyes).

In case of oral uptake gastrointestinal effects and formation of methemoglobin possible, after reduction of nitrate to nitrite, cyanosis.

Sodium nitrate

Acute toxicity (LD₅₀ oral, rat (mg/kg)) 3430

Primary mucosa irritation rabbit Not irritant

In case of oral uptake formation of methemoglobin can not be excluded.

Mineral oil

Acute toxicity (LD₅₀ oral, rat (mg/kg)) >5000

Acute toxicity (LD₅₀ dermal, rabbit (mg/kg)) >3000

Under testing-conditions found to be not irritant to skin or eyes, not sensitizing (skin and respiratory tract).

Practical experience

Repeated substance contact, especially after drying-in of the substance, can lead to skin- and eye-irritation.

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12th Ecological information**12.1 Ecotoxicity****Ammonium nitrate**

Toxicity to fish:
Generally depending on the species tested.

LC₅₀ = 74 mg/l /48 h (Cyprinus carpio)

Toxicity to daphnia:

EC₅₀ = 555 mg/l (Daphnia magna)

Toxicity to algae:

IC₅₀ = 83 mg/l (Scenedesmus quadricauda)

General remark: Feeding of waters and soil with ammonium nitrate may lead to an overfertilization.

Sodium nitrate

Toxicity to fish:

LC₅₀ > 1000 mg/l/96h (Oncorhynchus mykiss)

Toxicity to daphnia:

EC₅₀ > 1000 mg/l/24h (Daphnia magna)

Mineral oil

Toxicity to fish:

LD₅₀ / 96 h 10 – 100 ppm

Mineral oils are toxic to various aquatic organisms

12.2 Mobility

Nobelit components dissolved in water generally show the mobility that is common for all good water-soluble substances. Therefore keep product away from water. In case of accidental release the measures described in chapter 4 have to be taken.

12.3 Persistence and degradability

Ammonium nitrate and sodium nitrate are substances the ionogenic components of which are elements of natural circuits, (e.g. the nitrogen circuit). So they can easily be transformed into other elements of this circuit. But also compare section 12.6. The mineral oil component is looked upon being not easily degradable under normal testing-conditions. But under environmental conditions mineral oils are generally regarded to be well biodegradable after adaption of the microorganisms.

12.4 Bio accumulative potential

The substance does not have any relevant bio accumulative potential.

12.5 Results of PBT assessment

No PBT-assessments carried out up to now.

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12.6 Other adverse effects

Excessive exposure of ammonium nitrate, Sodium nitrate or Nobelit can lead to an over-fertilization of soil and waters. Therefore a careful handling of the substance is mandatory.

13th Disposal considerations

- Substance/preparation** Wastes and receptacles afflicted with explosives must be eliminated in a safeguard manner, according to the national regulations for explosives by persons authorized to handle this substances.
- Contaminated packaging** To be handled in the same way as the substance.

14th Transport information

Not applicable, as Fortis™ Advantage 80 is not transported on public ways.

15th Regulatory information

Labelling according to Directives 67/548/EEC and 1999/45/EC

Hazard symbols and indications of danger for the substance / product

E, Explosive

Preparation contains the following hazardous components

Ammonium nitrate; Sodium nitrate

R- Phrases

2 - Risk of explosion by shock, friction, fire or other sources of ignition.

S- Phrases

35 - This material and its container must be disposed of in a safe way.

Other regulations

Compare national regulations for handling of explosives

Fortis™ Advantage 80

SDS no. : 3008
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16th Other information

Hommel; Handbuch der gefährlichen Güter : Bulletins no.28 and 147

Responsible department for this Data sheet

Productdocumentation	For Bulgaria
Dr. Hans-Heinz Heidbüchel	Alexander Gurari
Phone number: +49 (0) 2241 / 4829-1095	+359 34 408-415 and/or +359 89 986-2535

This Safety Data Sheet is handed only in the form of a machine-written original document, any copies are not authorized.

The information contained is based on the present state of our knowledge.

It characterizes the product with regard to the appropriate safety precautions, but does not represent any guarantee with regard to product properties fixed by contract.

As being machine-written this Safety Data Sheet is not signed.

Only for releasing



SAFETY DATA SHEET

Safety Data Sheet according to regulation (EC) No 1907/2006 and amendments

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

Product Name: AEROFLOAT® 208 Promoter, Aqueous
Product Description: Mixture of dithiophosphate salts in water
Intended/Recommended Use: Mining chemical

Company: Cytec Industries Inc., Five Garret Mountain Plaza, Woodland Park, New Jersey 07424, USA. For Product Information call 1-800/652-6013. Outside the USA and Canada call +1-973/357-3193 or your local Cytec contact point. E-mail: custinfo@cytec.com

Local Contact Information: Cytec Industries Inc. Adenbury Way LL 139UZ Wrexham (UK) +44/1/97.866.5200

EMERGENCY PHONE (24 hours/day) - For emergency involving spill, leak, fire, exposure or accident call:

Asia Pacific Region:

Australia - +61-3-9663-2130 or 1800-033-111
China (PRC) - +86(0)532-8388-9090 (NRCC)
New Guinea - +61-3-9663-2130
New Zealand - +61-3-9663-2130 or 0800-734-607
All Others - +65-633-44-177 (CareChem24 Singapore)

Canada: 1-905-356-8310 (Cytec Welland, Canada plant)

Europe/Africa/Middle East: +44-(0)208-762-8322 (CareChem24 UK)

Latin America:

Brazil - 0800 0111 767 (SOS Cotec)
Chile - +56-2-247-3600 (CITUC QUIMICO)
All Others - +52-376-73 74122 (Cytec Atequiza, Mexico plant)

USA: +1-703-527-3887 or 1-800-424-9300 (CHEMTREC)

® indicates trademark registered in the U.S. Outside the U.S., mark may be registered, pending or a trademark. Mark is or may be used under license.

2. HAZARDS IDENTIFICATION

HUMAN AND ENVIRONMENTAL HAZARDS

Causes burns.
Risk of serious damage to eyes.
Contact with acids liberates very toxic gas.

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

Component / CAS No.	% (w/w)	EC-No	Classification
Sodium di sec butyl-dithiophosphate 33619-92-0	~ 25.0	251-598-7	Xi; R41 C; R34 R32
Sodium hydroxide 1310-73-2	~ 0.5	215-185-5	C;R35
Diethyldithiophosphoric acid, sodium salt, hydrolyzed 3338-24-7	~ 25.0	222-079-2	Xi; R41 C; R34 R32

See Section 16 for Ingredient Risk Phrase Text

4. FIRST AID MEASURES

Ingestion:

If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Skin Contact:

Remove contaminated clothing and shoes without delay. Wear impermeable gloves. Wash immediately with plenty of water and soap. Pay particular attention to skin crevices, nail folds, etc. Do not reuse contaminated clothing without laundering. Do not reuse contaminated leatherware. Obtain medical attention.

Eye Contact:

Rinse immediately with plenty of water for at least 15 minutes. Obtain medical attention immediately.

Inhalation:

Remove to fresh air. If breathing is difficult, give oxygen. Apply artificial respiration if patient is not breathing. Obtain medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Use water spray or fog, carbon dioxide or dry chemical.

Protective Equipment:

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:

Sulphur dioxide or hydrogen sulphide may be formed under fire conditions. Do not flush to sewer which may contain acid. This could result in generation of toxic and explosive hydrogen sulphide gas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Where exposure level is known, wear approved respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:

Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

7. HANDLING AND STORAGE

Handling

Precautionary Measures: Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

Special Handling Statements: Large quantities of undiluted product should not be mixed with acids, since evolution of toxic and explosive hydrogen sulphide gas could result. In particular, precautions must be taken to avoid the accidental discharge of large volumes of the product in acid storage tanks or any tank or containment containing acidic materials. This precaution does not, of course, apply to addition of this reagent to flotation pulps in amounts customarily used in flotation, were the reagent amounts are small and instantly diluted to concentrations well below the solubility limits.

Storage

Keep from freezing.

Storage Temperature: Room temperature

VCI Storage Class: 8 B

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures:

Utilize a closed system process where feasible.

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

Respiratory Protection:

Where exposures are below the established exposure limit, no respiratory protection is required.

Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure.

Eye protection:

Prevent eye and skin contact.

Provide eye wash fountain and safety shower in close proximity to points of potential exposure.

Wear eye/face protection such as chemical splash proof goggles or face shield.

Skin Protection:

Prevent contamination of skin or clothing when removing protective equipment.

Wear impermeable gloves and suitable protective clothing.

Additional Advice:

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use.

Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

Exposure limit(s)

1310-73-2 Sodium hydroxide

United Kingdom: WEL (Workplace Exposure Limits) 2 mg/m³ (STEL)

Europe ILV (Indicative Limit Values): Not established

Other Value: Not established

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour: yellow to amber

Appearance: liquid

Odor: noticeable

Boiling Point: Not available

Melting Point: -21 °C (freezing point)

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure:	Similar to water
Specific Gravity/Density:	1.1175 @ 25 °C
Vapour density:	Similar to water
Percent Volatile (% by wt.):	~50(water)
Solids Content:	Not available
pH:	11.0(minimum)
Saturation In Air (% By Vol.):	Similar to water
Evaporation Rate:	Similar to water
Solubility In Water:	Complete
Acid Number (mg KOH/g):	Not available
Hydroxyl Value (mg KOH/g):	Not available
Volatile Organic Content (1999/13/EC):	Not applicable
Flash point:	>93 °C closed cup
Flammable Limits (% By Vol):	Not available
Autoignition temperature:	Not available
Decomposition Temperature:	Not available
Partition coefficient (n-octanol/water):	Not available
Fat Solubility (Solvent-Oil):	Not available
Viscosity (Kinematic):	Not available
Viscosity (Dynamic):	Not available

10. STABILITY AND REACTIVITY

Stability:	Stable
Conditions To Avoid:	None known
Polymerization:	Will not occur
Conditions To Avoid:	None known
Materials to avoid:	This product contains a neutralized dithioacid. Avoid contact with strong oxidizing agents and mineral acids.
Hazardous Decomposition Products:	Carbon monoxide (CO) Carbon dioxide hydrogen sulfide (H ₂ S) oxides of sulfur (includes sulfur di and tri oxides) oxides of phosphorus

11. TOXICOLOGICAL INFORMATION

Potential health effects

Causes burns.
Risk of serious damage to eyes.

PRODUCT TOXICITY INFORMATION

ACUTE TOXICITY DATA

oral	rat	Acute LD50	8460 mg/kg
dermal	rabbit	Acute LD50	5610 mg/kg
inhalation	rat	Acute LC50 4 hr	>20 mg/l

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	dermal	Corrosive
Acute Irritation	eye	Causes serious damage

ALLERGIC SENSITIZATION

Sensitization	dermal	Not sensitizing
Sensitization	inhalation	Not sensitizing

GENOTOXICITY**Assays for Gene Mutations**

Ames Salmonella Assay	No data
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HAZARDOUS INGREDIENT TOXICITY DATA**ACUTE TOXICITY DATA**

Sodium hydroxide

Oral rat Acute LD50 (Actual) 104 - 340 mg/kg

dermal rabbit Acute LD50 (Actual) 1250 mg/kg

Diethyldithiophosphoric acid, sodium salt, hydrolyzed

oral (gavage) rat Acute LD50 (Actual) 18000 mg/kg

LOCAL EFFECTS ON SKIN AND EYE

Sodium hydroxide

Acute Dermal Irritation Corrosive

Acute Eye Irritation Causes serious damage

Diethyldithiophosphoric acid, sodium salt, hydrolyzed

Acute Eye Irritation Causes serious damage

Acute Dermal Irritation Corrosive

Sodium di sec butyl-dithiophosphate

Acute Dermal Irritation rabbit Corrosive

Acute Eye Irritation rabbit Causes serious damage

12. ECOLOGICAL INFORMATION

This material is not classified as dangerous for the environment.
Predicted to be not readily biodegradable.

FISH TEST RESULTS**Test:** Acute toxicity, freshwater (OECD 203)**Duration:** 96 hr.**Species:** Rainbow Trout (*Oncorhynchus mykiss*)

>125 mg/l LC50

INVERTEBRATE TEST RESULTS**Test:** Acute Immobilization (OECD 202)

12. ECOLOGICAL INFORMATION

Duration: 48 hr

Species: Water Flea (*Daphnia magna*)
>100 mg/l EC50

13. DISPOSAL CONSIDERATIONS

The Company encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, The Company recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

ADR/RID

Dangerous Goods? X

Proper Shipping Name: Caustic alkali liquid, n.o.s.
Class: 8
UN Number: UN1719
Packing Group: II
Transport Label Required: Corrosive
Technical Name (N.O.S.): Contains dithiophosphate salt
Tunnel restriction code: E

IMO

Dangerous Goods? X

Proper Shipping Name: Caustic alkali liquid, n.o.s.
Hazard Class: 8
UN Number: UN1719
Packing Group: II
Transport Label Required: Corrosive
Technical Name (N.O.S.): dithiophosphate salt

ICAO / IATA

Dangerous Goods? X

Proper Shipping Name: Caustic alkali liquid, n.o.s.
Hazard Class: 8
Packing Group: II
UN Number: UN1719
Transport Label Required: Corrosive
Packing Instructions/Maximum Net Quantity Per Package:
Passenger Aircraft: 809; 1 L
Cargo Aircraft: 813; 30 L
Technical Name (N.O.S.): Contains dithiophosphate salt

15. REGULATORY INFORMATION

15. REGULATORY INFORMATION

LABELING ACCORDING TO EC DIRECTIVES

Symbol(s): C - Corrosive

Risk Phrases:

R34 - Causes burns.

R41 - Risk of serious damage to eyes.

R32 - Contact with acids liberates very toxic gas.

Safety Phrases:

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S50A - Do not mix with acids or aqueous solutions of acids since evolution of poisonous and flammable hydrogen sulfide gas could result. This precaution does not apply to addition of this material to flotation pulps in the amounts normally used in flotation.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

HAZARDOUS INGREDIENTS

Component / CAS No.

1310-73-2 Sodium hydroxide

3338-24-7 Diethyldithiophosphoric acid, sodium salt, hydrolyzed

33619-92-0 Sodium di sec butyl-dithiophosphate

Water Endangering Class (Germany): 1 Classification on the basis of Annex 4.

Inventory Information

United States (USA):

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

Canada:

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

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

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

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

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

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

16. OTHER INFORMATION

Reasons for Issue: Revised Section 7
Revised Section 11

Component Risk Phrases

Sodium di sec butyl-dithiophosphate

R34 - Causes burns.

R41 - Risk of serious damage to eyes.

R32 - Contact with acids liberates very toxic gas.

Sodium hydroxide

R35 - Causes severe burns.

Diethyldithiophosphoric acid, sodium salt, hydrolyzed

R32 - Contact with acids liberates very toxic gas.

R41 - Risk of serious damage to eyes.

R34 - Causes burns.

Randy Deskin, Ph.D., DABT +1-973-357-3100 E-mail: custinfo@cytec.com

This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.

MATERIAL SAFETY DATA SHEET

TEOCOM OOD

Issued: 09.02.2009

69 St. Kliment Ohridsky Blvd., Sofia

Revision: 02

BULSTAT: 831223742

Supercedes: 01/31.01.2008 г.

Pages: 8

COPPER (II) SULPHATE PENTHAHYDRATE

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product name

COPPER (II) SULPHATE PENTHAHYDRATE

REACH Pre-Registration Number: 05-2115526251-59-0000

1.2. Use of the substance/mixture

Reagent for analysis; chemical production; mineral dyes manufacturing; wood impregnation; pest control; leather industry; medicine; galvanisation: etc.

1.3. Manufacturing/importing/supplying company

Made in Bulgaria.

Supplied to the market by TEOCOM OOD.

69 St. Kliment Ohridsky Blvd., Sofia .

1.4. Emergency telephones:

02 / 962-42-27 ; 02 / 962-42-37

2. Hazard Identification

Harmful if swallowed. Causes skin and eye irritation. Very toxic to aquatic life with long lasting effects.

3. Composition/Information on Ingredients

3.1. General characterization of ingredients/components and their percentage

	Name EC No. CAS No. EC Index No.	%	Classification	Hazard Symbol R-phrases S-phrases
1.	Copper (II) Sulphate Pentahydrate (CuSO₄*5H₂O) 231-847-6 7758-99-8 029-004-00-0	> 98%	Xn; R22 Xi; R36/38 N; R50	Xn; N R: 22-36/38-50/53 S: (2-)22-60-61

See Section 15 for full text of R- and S-phrases.

4. First Aid Measures

4.1. Inhalation

If inhaled, remove to fresh air.

4.2. Skin contact

Remove contaminated clothing/shoes and wash affected skin areas with plenty of water and soap.

4.3. Eye contact

In case of contact, immediately flush eyes with plenty of water for at least 10 minutes keeping eyelids open. Seek immediate medical attention (ophthalmologist).

4.4. Ingestion

Ingestion may cause stomach ache, nausea, vomiting, diarrhea, blood pressure to drop, tachycardia, and unconsciousness. Immediately make victim drink plenty of water (several litres). Do not induce vomiting. Seek immediate medical attention.

5. Fire Fighting Measures

5.1. Suitable extinguishing media

Use extinguishing media that are appropriate to local circumstances and surrounding environment. Use of Class A fire extinguishers is recommended.

5.2. Special hazards related to exposure to the substance/mixture and its combustion products and gases

Non-flammable. Ambient fire may evolve hazardous fumes and gases. Fire may cause evolution of sulphur oxides (SO, SO_x).

5.3. Special protective equipment for fire-fighters

Fire-fighting, which may cause exposure to heat, smoke and secondary products of combustion, requires wearing self-contained breathing apparatus and a full fire suit. Use a B-300 air-purifying gas mask respirator or a Saturn or Draeger full face gas mask.

5.4. Further information

Do not discharge fire extinguishing water into surface waters or groundwater. Suppress gases/vapours/mists with a water spray jet.

6. Accidental Release Measures

6.1. Personal precautions

Avoid generation and inhalation of dust. Avoid direct contact with the substance. Ensure adequate ventilation of enclosed areas.

6.2. Environmental precautions

Do not discharge into drains.

6.3. Средства за почистване

Take up dry avoiding generation of dust. Clean up affected area well.

7. Handling and Storage

7.1. Handling

Avoid generation and inhalation of dust.

7.2. Storage

Store tightly closed in dry premises. Without specific limitations to storage temperature.

8. Exposure Controls and Personal Protection

8.1. Exposure limits

Maximum allowable concentration of copper compounds (PM in air): 1 mg/m³

8.2. Exposure controls

8.2.1. Workplace exposure control

Ensure adequate natural and/or pressure/exhaust ventilation. Ensure appropriate PPE.

8.2.1.1. Respiratory protection

Required when dust is generated. Recommended filter type P2 (according to DIN 3181) for solid and liquid particles of harmful substances.

8.2.1.2. Hand protection

Full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Breakthrough time:	> 480 min

Splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Breakthrough time:	> 480 min

The protective gloves to be used must comply with the specifications under Directive 89/686/EEC and associated standard EN374.

8.2.1.3. Eye protection

Use safety glasses.

8.2.1.4. Skin and body protection

Immediately change protective clothing, wash hands and face after working with the substance.

9. Physical and Chemical Properties

9.1. General

Solid form, odourless, blue colour.

9.2. Important HSE information

Molecular weight:	249.68 g/mol
pH (aqueous solution, 50 g/L):	3.5 – 4.5 (20°C)
Melting point:	not applicable
Boiling point:	not applicable
Ignition point:	not applicable
Flash point:	does not flash
Explosive limits:	
lower	not applicable
upper	not applicable
Density (20°C):	2.29 g/cm ³ at 20°C
Water solubility:	317 g/L
Thermal decomposition:	88 – 245°C (elimination of water of crystallisation) 340 – 650°C

10. Stability and Reactivity

10.1. Conditions to avoid

Heating (decomposition).

10.2. Materials to avoid

Possible violent reactions when contacting strong oxidising agents, hydroxylamine and magnesium in powder form.

10.3. Hazardous decomposition products

In the event of fire, see Section 5.

10.4. Additional information

Elimination of water of crystallization occurs when heated.

11. Toxicological Information

Acute Toxicity:	LD ₅₀ (route: dermal, rat): > 2,000 mg/kg (RTECS) LD ₅₀ (route: oral, rat): 960 mg/kg (HSDB) LDLo (route: oral, human): 1,088 mg/kg (RTECS)
Genotoxicity in vivo:	Mutagenicity: micronucleus. Result: negative
Further information:	
Inhalation:	Causes irritation of mucous membranes, coughing, shortness of breath.
Skin contact:	Causes skin irritation.
Eye contact:	Causes eye irritation.
Ingestion:	Causes stomach pain, vomiting, diarrhea, drop in blood pressure, tachycardia, collapse. After a latency period: death

Handle with care in accordance with good industrial hygiene and safety practice.

12. Ecological Information

12.1. Ecotoxicity

Very toxic to aquatic life with long lasting effects. Fungicide.

Onchorhynchus mykiss LC₅₀: 0,03 mg/l /96 h (ECOTOX database)

Daphnia magna EC₅₀: 0.2 mg/l /48 часа (ECOTOX database)

12.2. Mobility

No data available.

12.3. Stability and degradability

Slow self-degradation. Not readily degradable.

12.4. Bioaccumulation potential

No data available.

Do not release to surface waters, wastewaters or soils!

13. Disposal Considerations

- Product:** Treat substance as hazardous waste if not possible to be reclaimed for subsequent re-use/treatment. Waste must be disposed of in accordance with the respective area-specific regulations pertaining to chemical waste handling and disposal. Code 06.03.03 - solid salts containing sulphates, sulphites or sulphides. There are no uniform EU Regulations for the disposal of chemicals or residues. Chemical residues are generally classified as special waste. Their disposal is regulated in the EU member states through general laws and regulations. We recommend that you contact either the authorities in charge or licensed waste disposal companies that will advise you on how to dispose of special waste.
- Packaging:** Handle contaminated packaging in the same way as the substance itself. Dispose of in compliance with applicable local chemicals disposal regulations.

14. Transport Information

Road transport: ADR/RID

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (COPPER(II) SULPHATE), Hazard class: 9, Packing group: III; Classification code: M7

River transport: ADN, ADNR: not tested yet

Sea transport: IMDG-Code

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (COPPER(II) SULPHATE), Hazard class: 9, Packing group: III; Classification code: M7; Marine pollutant: PP; Segregation group: 7

Ems F-A S-F

Air Transport: CAO/PAX

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (COPPER(II) SULPHATE), Hazard class: 9, Packing group: III; Classification code: M7

15. Regulatory Information

This MSDS is prepared in accordance with the requirements under:

- the Chemical Substance/Mixture Hazards Protection Act (the Chemicals Act) (SG issue 10/04.02.2000);
- the Regulation on the Rules and Procedures for Classification, Packaging and Labelling of Chemical Substances/Mixtures (SG issue 5/17.01.2003).

Labelling according to EC directives:

Hazard symbols:

Xn – harmful;

N – Dangerous for the environment.



Standard statements relating to the nature of special risks attributed to dangerous substances and preparations (R-phrases):

R: 22-36/38-50/53 Harmful if swallowed. Irritating to eyes and skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Standards statements relating to safety advice concerning dangerous substances and preparations (S-phrases):

S (1/2-)22-60-61 Keep locked up and out of the reach of children. Do not breathe dust. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheet.

16. Other Information

Revision 02 (supersedes Revision 01 dated 31.01.2008)

Reasons for revision:

1. Inclusion of the REACH pre-registration number in Section 1;
2. Reversing the order of Sections 2 and 3;
3. Adding information to Sub-Section 1.2.

This document is intended to provide reference information to suitably trained personnel using the substance about how to work with the substance correctly and safely. Users should use their own judgment to determine the suitability of the information for their particular purposes.

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

Sodium Silicate Solution

1. Product Identification

Synonyms: Water Glass; Soluble Glass; Silicate of Soda; Egg Preserver

CAS No.: Not applicable to mixtures.

Molecular Weight: Not applicable to mixtures.

Chemical Formula: Na₂O(SiO₂)_x.(H₂O)_x

Product Codes: 3877

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
Hazardous		
Sodium Silicate	1344-09-8	35 - 40%
Water	7732-18-5	60 - 65%

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES SEVERE IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;
PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Diluted solutions of sodium silicate are strong alkaline irritants. The solid sodium silicate is corrosive. Exposure to alkaline corrosives may result in severe burns depending on the concentration and duration of exposure. Sodium silicate is a type of amorphous silica and does not cause pulmonary silicosis.

Inhalation:

A strong alkaline irritant. Inhalation can cause severe irritation of mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. High concentrations may cause lung damage.

Ingestion:

A strong alkaline irritant. Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Solid sodium silicate: Alkaline corrosive ingestion may produce burns to the lips, tongue, oral mucosa, upper airway, esophagus and occasionally stomach.

Skin Contact:

A strong alkaline irritant. Causes severe irritation. Symptoms include redness, itching and pain. Dries to form a glass film which can cut skin. Solid sodium silicate: Dermal contact with alkaline corrosives may produce pain, redness, severe irritation or full thickness burns.

Eye Contact:

A strong alkaline irritant. Alkaline eye exposures produce severe irritation with effects similar to those of dilute caustics. Inflammation or burns with possible damage to the eye tissues can occur together with tearing and considerable pain.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give

anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Caution! Floor and other surfaces may be slippery. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Amorphous Silica, including natural diatomaceous earth:

- OSHA Permissible Exposure Limit (PEL):

(80 mg/m³) / (%SiO₂) (TWA).

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear to cloudy, viscous liquid.

Odor:

Odorless.

Solubility:

Complete (100%)

Specific Gravity:

1.3 - 1.5

pH:

11 - 12.5

% Volatiles by volume @ 21C (70F):

ca. 70

Boiling Point:

102C (216F)

Melting Point:

No information found.

Vapor Density (Air=1):

Not applicable.

Vapor Pressure (mm Hg):

18 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

No information found.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Fluorine, mineral acids, organic acids, organic materials. May produce hydrogen gas on prolonged contact with metals. Gels when mixed with acids. Solution is a strong base; reacts with acids, organic anhydrides, alkylene oxides, epichlorohydrin, aldehydes, alcohols, glycols, phenols, cresols, caprolactam solution. Attacks chemically active metals.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Sodium silicate:

Oral rat LD50: 1960 mg/kg;

Skin rabbit LD50: > 4640 mg/kg;

Standard Draize Test: skin rabbit 500 mg/24H severe; eye rabbit 10 mg/24H severe.

-----\Cancer Lists\-----

Ingredient Category	---NTP Carcinogen---		IARC
	Known	Anticipated	
----- ---	-----	-----	-----
Sodium Silicate (1344-09-8)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

Sodium silicate:

96 Hr LC50 *Lepomis macrochirus*: 301-478 mg/L;

96 Hr LC50 *Brachydanio rerio*: 3185 mg/L [semi-static];

96 Hr EC50 *Daphnia magna*: 216 mg/L.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change

the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Sodium Silicate (1344-09-8)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	Canada DSL	NDSL	Phil.
Sodium Silicate (1344-09-8)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient Catg.	-SARA 302-		-----SARA 313--	
	RQ	TPQ	List	Chemical
Sodium Silicate (1344-09-8)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Sodium Silicate (1344-09-8)	No	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
 Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES SEVERE IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT.

Label Precautions:

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Label First Aid:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)



MSDS: 0010171
Print Date: 05/31/2007
Revision Date: 05/31/2007

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: OrePrep® F-549 Frother
Synonyms: None
Product Description: Mixture of polyglycols
Intended/Recommended Use: Frother

Supplied By: CYTEC CANADA INC., 9061 GARNER ROAD, P.O. BOX 240,
NIAGARA FALLS, ONTARIO, CANADA L2E 6T4 1-905/356-9000
EMERGENCY PHONE: In CANADA: 905/356-8310 In USA: 1-800/424-9300 or 1-703/527-3887.

Manufactured By: CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA,
WEST PATERSON, NEW JERSEY 07424, USA - 973/357-3100

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2. COMPOSITION/INFORMATION ON INGREDIENTS

WHMIS REGULATED COMPONENTS

No Permissible Exposure Limits (PEL/TLV) have been established by OSHA or ACGIH.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR:

Color: yellow to brown
Appearance: liquid
Odor: mild ether

STATEMENTS OF HAZARD:

CAUTION! MAY CAUSE EYE AND SKIN IRRITATION

POTENTIAL HEALTH EFFECTS

EFFECTS OF EXPOSURE:

The acute oral (rat) LD50 and dermal (rabbit) LD50 values are estimated to be >2000 mg/kg and >2000 mg/kg, respectively. Direct contact with this material may cause mild eye and skin irritation.

4. FIRST AID MEASURES

Ingestion:

If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Skin Contact:

Wash immediately with plenty of water and soap.

Eye Contact:

Rinse immediately with plenty of water for at least 15 minutes.

Inhalation:

Material is not expected to be harmful if inhaled. Remove to fresh air.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Use water spray, carbon dioxide or dry chemical.

Protective Equipment:

Firefighters, and others exposed, wear self-contained breathing apparatus.

Special Hazards:

Keep containers cool by spraying with water if exposed to fire.

Mechanical/Static Sensitivity Statements:

None

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Where exposure level is known, wear approved respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:

Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

7. HANDLING AND STORAGE

HANDLING

Precautionary Measures: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Special Handling Statements: None

STORAGE

Store in a cool, dry, well-ventilated area.

Storage Temperature: Store at <100 °C 212 °F

Reason: Integrity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:

Engineering controls are not usually necessary if good hygiene practices are followed.

Respiratory Protection:

For operations where inhalation exposure can occur, use an approved respirator recommended by an industrial hygienist after an evaluation of the operation. Where inhalation exposure can not occur, no respiratory protection is required.

Eye Protection:

Wear eye/face protection such as chemical splash proof goggles or face shield.

Skin Protection:

Avoid skin contact. Wear impermeable gloves.

Additional Advice:

Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	yellow to brown
Appearance:	liquid
Odor:	mild ether
Boiling Point:	245 °C 473 °F
Melting Point:	Not available
Vapor Pressure:	<0.02mm Hg
Specific Gravity/Density:	0.98
Vapor Density:	Low
Percent Volatile (% by wt.):	Not available
pH:	Not available
Saturation In Air (% By Vol.):	Not available
Evaporation Rate:	<0.01(Butyl acetate = 1)
Solubility In Water:	Complete
Volatile Organic Content:	Not available
Flash Point:	104.4 °C 220 °F Cleveland Open Cup
Flammable Limits (% By Vol):	Not applicable
Autoignition Temperature:	Not available
Decomposition Temperature:	Not available
Partition coefficient (n-octanol/water):	Not available
Odor Threshold:	Not available

10. STABILITY AND REACTIVITY

Stability:	Stable
Conditions To Avoid:	None known
Polymerization:	Will not occur
Materials To Avoid:	Strong oxidizing agents.
Hazardous Decomposition Products:	Carbon monoxide (CO) Carbon dioxide Acrid smoke and irritating fumes.

11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION.
Toxicological information on the regulated components of this product is as follows:

This product contains no WHMIS regulated (hazardous) components.

12. ECOLOGICAL INFORMATION

This material is not classified as dangerous for the environment.
The ecological assessment for this material is based on an evaluation of its components.

13. DISPOSAL CONSIDERATIONS

The Company encourages the recycle, recovery and reuse of materials, where permitted, as an alternative to disposal as a waste. The Company recommends that organic materials classified as hazardous waste according to the relevant local or national regulations be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Proper Shipping Name: Not applicable/Not regulated
Hazardous Substances:
Not applicable

TRANSPORT CANADA

Proper Shipping Name: Not applicable/Not regulated

ICAO / IATA

Proper Shipping Name: Not applicable/Not regulated
Packing Instructions/Maximum Net Quantity Per Package:
Passenger Aircraft: -
Cargo Aircraft: -

IMO

Proper Shipping Name: Not applicable/Not regulated

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled products Regulations and this Material Safety Data Sheet contains all the information required by the Controlled Products Regulations.

WHMIS CLASSIFICATION:

Not WHMIS Controlled

INVENTORY INFORMATION

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

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

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

Australia: All components of this product are included in the Australian Inventory of Chemical Substances (AICS).

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

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

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

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

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 1 - Materials that, under emergency conditions, can cause significant irritation.

Fire: 1 - Materials that must be preheated before ignition can occur.

Reactivity: 0 - Materials that in themselves are normally stable, even under fire exposure conditions.

Reasons For Issue:

Revised Section 9

Prepared By: Randy Deskin, Ph.D., DABT +1-973-357-3100
05/31/2007

This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.

1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY / UNDERTAKING

1.1. Identification of the substance

Name of the substance: potassium O-pentyl dithiocarbonate

Synonyms: potassium amyl xanthate, PAX

Trade name: potassium amyl xanthate

Molecular formula: C₆H₁₂OS₂.K

EINECS: 220-329-5

CAS: 2720-73-2

REACH: pre-registration number: 05-2114276335-46-0000

1.2. Use of the substance

reagent in the mining, metallurgical, chemical industry

1.3. Company/undertaking identification

The substance is put on the market by Polymet 99 Ltd., address: 60-B Bulgaria Blvd, 1680 Sofia, Bulgaria

tel +359-2-9581760, fax: +359-2-9586784

e-mail: tomov@polymet-bg.com

1.4. Emergency telephone

Bulgaria:

+359-2 862 60 75 Civil protection

+359-2 960 10 262

2. HAZARDS IDENTIFICATION

The substance is not included in Annex I to Directive 67/548/EEC / Annex VI to Regulation (EC) No 1272/2008

Classification: Xn – harmful

Xi - irritating

R22 - Harmful if swallowed

R36/37/38 - Irritating to eyes, respiratory system and skin.

Self-heating material. Spontaneously combustible. Can form explosive air-dust mixtures.

Inhalation: Inhalation of dust can cause irritation of the nose, throat and respiratory tract. Inhalation of decomposition fumes (carbon disulphide) can cause severe behavioral disorder, incl. anxiety, anger, hallucinations.

Ingestion: Moderately toxic and irritating. Can cause moderate to severe irritation of mouth, throat and digestive tract, including nausea, vomit, diarrhoea. When in the stomach, this substance releases carbon disulphide.

Skin contact: Dust and fumes may be irritating. Xanthate solutions cause severe skin irritation. No data is available for skin absorptivity.

Eye contact: Dust and fumes are irritating. Xanthate solutions cause severe eye irritation.

Chronic exposure: Can cause anxiety, anger, hallucinations, fever, hearing and visual abnormalities and liver nuisance. Carbon disulphide has severe acute effect on the central nervous system. Xanthate salts may cause respiratory irritation.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Dangerous ingredients	CAS No	EC No	contents	Hazard symbols	R-phrases
Potassium amyl xanthate	2720-73-2	220-329-5	90 – 100%	Xn - harmful	R22-36/37/38

4. FIRST AID MEASURE

Consult a physician and/or the nearest toxicological center in any (except the most negligible) case of inhalation or skin contact.

Inhalation: Move the victim to fresh air. If breathing is difficult give oxygen, warm up and keep silence. If the victim is not breathing, apply artificial respiration mouth-to-mouth. If the victim has no pulse, give external heart massage. Seek medical advice.

Ingestion: If the victim is conscious, flush mouth with plenty of water. DO NOT induce vomiting. Give the victim at least 500 ml water to drink and immediately seek medical advice. If natural vomiting occurs, bend the victim forward so that not to suffocate and give water again. Immediately seek medical advice.

Skin contact: Remove all contaminated clothing. Flush skin with soapy water, do not use solvents. Use 3% tartaric acid solution. Note: this solution can be used for the skin only, not for the eyes. If irritation develops, seek medical attention.

Eye contact: Flush with plenty of water for at least 15 minutes. Keep the eyelids open. Use 2% boric acid solution. Seek immediate medical attention.

Notes to the doctor: There is no specific antidote, the treatment depends on the symptoms and clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: carbon dioxide, dry chemical powder, foam. When not available, use water jet, mist or spray, but not in small premises where toxic fumes can build up – in this case use dry chemical and be cautious for re-ignition.

Extinguishing media which shall not be used for safety reasons: no data

Special exposure hazards arising from the substance, combustion products, resulting gases: this material can suddenly ignite; in combination with certain organic chemicals can form combustible dust cloud in the air. In the process of aging, when in contact with water, or when heated it can liberate carbon disulphide – extremely flammable toxic gas. Heating can also cause the material to expand and decompose, leading to destruction of the container. Cool the containers with water spray. If possible, remove the containers from the line of fire.

Special protective equipment for fire-fighters: Use independent breathing apparatus and wear full set of protective clothing.

Note: Consider any flammable material close to or above the ignition point having in mind that hot air can circulate to distant ignition source and back.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Wear approved, positive pressure, self-contained respirator. Wear full protective equipment – impervious gloves, apron, trousers, long-sleeve shirt, boots, impervious goggles or face mask for protection against skin and eye contact. Remove all sources of ignition. Evacuate personnel without protective equipment from the area. Cleaning up is performed only by trained personnel.

Environmental precautions: Do not let in the sewers!

Methods for cleaning up: Do not use water on the spillage as this will generate heat.

Small spillage of dry material – collect mechanically. When xanthate solution is spilled, cover with absorbent material, collect and place in approved metallic container for dangerous waste and dispose of as prescribed. Pick up contaminated soil in distinguished containers for disposal as a chemical waste. Do not use flammable materials, like saw-dust. When the spillage is collected, flush the area with water. If no fire occurs on the site, use water to disperse the fumes and protect the personnel.

Large spillage – evacuate the untrained personnel off the area. Extinguish or remove all sources of ignition. Contain the spillage if safe. Dyke the area to prevent access to the drains and surface waters (potential danger for aquatic organisms). Collect as much as possible from the solution or dry material for reuse. Treat the remains as small spillage.

Additional information: see p.7 – handling and storage , p.8 – personal protection, p.13 – disposal consideration.

7. HANDLING AND STORAGE

7.1. Handling

Attention! As a result of decomposition, the container can hold flammable and toxic fumes. This product is irritating to skin, eyes and respiratory tract.

In areas where contact is possible, install proper equipment for eye-washing and shower. Use only in well ventilated areas. Avoid any contact with eyes or skin, as well as inhaling fumes. Keep away from heat, sparks and open flame. Use only spark-proof tools. Ground all equipment to prevent static electrical charge. Be cautious when opening containers with aged xanthate as they can contain built up carbon dioxide fumes. All electronic equipment should be set up for operation in explosive conditions of carbon disulphide. Do not smoke. Wash thoroughly after work.

7.2. Storage

Store solid xanthates in the original, properly sealed containers in a cool, dry and ventilated area. Keep away from heat, flame, fire, sunshine and moisture. When in contact with water, the material is destroyed freeing toxic flammable gas. Keep the containers tightly closed at all times and check regularly for spillage.

7.3. Specific use(s)

no data

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Exposure limit values

no data

8.2. Exposure controls

8.2.1. Occupational exposure controls

Engineering controls: Where contact is possible, place operating suitable equipment for eye-washing and shower. Local or general ventilation is recommended to keep the risk for workers at lowest possible level. Usually a local ventilation is preferred in order to control the emissions at source, keeping down the possible spread to general working areas.

Respiratory protection: If respiratory protection is necessary, apply full program – incl. Approved respirator with dust filter for organic gases and fumes, as well as protective mask with screens for organic gases and fumes. In case of apparent presence of dust or fumes and lack of proper engineering control, a breathing apparatus may be used (with N95 type filters or better). In

case of emergency and when exposure is unknown, use full-piece respirator with positive pressure. ATTENTION: Air filtering respirators do not provide protection in low-oxygen atmosphere.

Hand / skin protection: Wear impervious protective clothing, incl. rubber or PVC boots, impervious rubber/neoprene/PVC gloves, overcoat, apron or overalls (chemically impervious and made of spark-proof materials)

Eye protection: Use chemical protective goggles and/or full-piece facial mask when dusting or solution dispersion is possible. DO NOT wear contact lenses. Provide equipment for eye washing and rapid water spraying in the working areas.

8.2.2. Environmental exposure controls

no data

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General information

Appearance: powder, flakes, pellets / granules

Color: light-yellow, gray-yellow, yellow-green

Odor: unpleasant

9.2. Important health, safety and environmental information

pH in water solution: 13 (10% solution)

Boiling point/boiling range: no data

Flash point: no data

Flammability: no data

Explosive properties: no data

Vapour pressure: no data

Relative density : 0.6

Water solubility: 535 g/l (25 °C), 350 g/l (20 °C)

Solubility: no data

Partition coefficient: n-octanol/water : no data

Viscosity: no data

Vapour density: no data

Evaporation rate: no data

9.3. Other information

Melting point/melting range: >150 °C

Auto-ignition temperature: no data

Explosive limits (carbon disulphide vapors): lower – 1.25, upper – 50

10. STABILITY AND REACTIVITY

Solid xanthates are stable for long periods of time when stored at cool and dry area and properly sealed air-tight in the original package. When exposed to heat or moisture, they decompose. In solution xanthates decompose slowly even at room temperature. Acids and oxidizing agents speed up decomposition.

10.1 Conditions to avoid : heat, flame, fire, sunshine, moisture

10.2. Materials to avoid : strong oxidizing agents, strong bases, strong acids

10.3. Hazardous decomposition products : sulphur oxides, carbon oxide, carbon dioxide

11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity

Inhalation: Harmful when inhaled. Irritates the mucous membranes and upper respiratory tract

Ingestion: Harmful when swallowed

LD50 oral, rat = 1700 mg/kg

LD50 oral, mouse = 308 mg/kg

LD50 peritoneum, mouse > 500 mg/kg

LD50 vein, mouse = 199 mg/kg

Skin contact: causes skin irritation. Harmful when absorbed through the skin.

Eye contact: causes eye irritation.

Exposition symptoms: nausea, headache, vomiting.

11.2 Chronic toxicity

Inhalation: no data

Ingestion: no data

Skin contact: no data

Sensibilization: no data

Carcinogenicity: no data

Mutagenicity: no data

Toxic for reproduction: no data

12. ECOLOGICAL INFORMATION**12.1. Ecotoxicity**

no data

12.2. Mobility

no data

12.3. Persistence and degradability

no data

12.4. Bioaccumulative potential

no data

12.5. Results of PBT assessment

no data

12.6. Other adverse effects

no data

13. DISPOSAL CONSIDERATIONS**Methods of disposal:** According to local regulations.**Waste:** According to local regulations.**Contaminated packaging:** According to local regulations.**14. TRANSPORT INFORMATION**

	class	label	Suitable transport name
ADR	4.2	Spontaneously combustible	XANTHATES
IMDG	4.2	Spontaneously combustible	XANTHATES
ICAO	4.2	Spontaneously combustible	XANTHATES

UN number: 3342

Packing group: II

15. REGULATORY INFORMATION**Classification:** Xn; R36/37/38 – harmful, Xi; R22 - irritating**Labelling:**

F: Spontaneously combustible



Xn: Harmful

R-phrases **R22** – Harmful if swallowed**R36/37/38** - Irritating to eyes, respiratory system and skin.S-phrases **S26** – In case of contact with eyes, flush immediately with plenty of water and seek medical advice.**S36** – Wear suitable protective clothing**ECC index:** not available**Dangerous waste:** yes**Narcotic precursors** (Regulation EC No 273/2004): no**Chemical weapons convention:** no**Export and import of dangerous chemicals** (Regulation EC No 304/2003): no

Dual use (Regulation EC No 1334/2000): no

16. OTHER INFORMATION

Usage restriction: To be used only by technically qualified specialists.

List of applicable R phrases: **R22** - Harmful if swallowed

R36/37/38 - Irritating to eyes, respiratory system and skin.

Uses advised against: no data

Changes since last revision: new SDS

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Date: _____



HAZARDOUS MATERIALS MANAGEMENT PLAN
SUPPLEMENTARY LENDER'S INFORMATION PACKAGE (SLIP)
DUNDEE PRECIOUS METALS ADA TEPE DEPOSIT
KRUMOVGRAD PROJECT - BULGARIA
OCTOBER 2014

APPENDIX B

Compatibility of Hazardous Substances and Mixtures

Inventory List of Chemical Substances

January 2014

Name of natural/legal person: Dundee Precious Metals Krumovgrad Ltd.

Subject of activity: mining and processing of auriferous ores

Industrial sector: mining and processing

Headquarters and address of management: 2087 Chelopech village, Chelopech municipality, Sofia district

Contact person (phone, fax, e-mail): Ivan Ivanov, tel: 03641/6804

fax: 03641/70 93; e-mail: Ivan.T.Ivanov@Dundeeprecious.com

Table with hazardous chemical substances

№	Name of the substance	CAS number	EU number	Identification number from Part 3 of Annex VI to Regulation (EO) № 1272/2008	Hazard and precautionary statements under Regulation (EU) № 1272/2008 (CLP)	Risk phrases and safety advice according to the Ordinance on the terms and for the classification, packaging and labeling of chemical substances and mixtures
1	Copper sulphate	7758-99-8	231-847-6	029-004-00-0	Acute Tox. 4 * H302 Eye Irrit. 2 H319 Skin Irrit. 2 H315 Aquatic Acute 1 H400 Aquatic Chronic 1 H410	Xn; R22 Xi; R36/38 N; R50-53
2	Diesel fuel lighth distilled fuel for heating systems	68334-30-5	269-822-7	649-224-00-6	Flam. Liq. 3;H226, Asp. Tox. 1;H304, Skin Irrit. 2;H315, Acute Tox. 4;H332, Carc. 2;H351,	Carc. Cat. 3;R40, Xn;R20-65, Xi;R38, N;R51-53
3	Diesel fuel	68334-30-5	269-822-7	649-224-00-6	Flam. Liq. 3;H226, Asp. Tox. 1;H304, Skin Irrit. 2;H315, Acute Tox. 4;H332, Carc. 2;H351,	Carc. Cat. 3;R40, Xn;R20-65, Xi;R38, N;R51-53
4	Nitric acid (technical)	7697-37-2	231-714-2	007-004-00-1	Met. Corr 1 ; H290 Skin Corr. 1A ; H314	C; R35
5	Мазут (мазутно гориво от пряка дестилация) горивно масло, остатъчно (fuel oil, residual)	68476-33-5	270-675-6	649-024-00-9	Carc. 1B H350	Carc. Cat. 2; R45
6	Оксалова киселина/oxalic acid	144-62-7	205-634-3	607-006-00-8	Acute Tox. 4 * H302 Acute Tox. 4 * H312	Xn; R21/22
7	Негасена калциева вар/calcium oxide	1305-78-8	215-138-9		Skin Irrit. 2 H315 Eye Dam. 1 H318 STOT SE 3 H335	Xi; R41
8	Propane-Butane mixture	68476-85-7	270-704-2	649-202-00-6	Flammable Gas, Category 1 H220 Gases under pressure H280	F+; R12
9	Calcium chloride	10043-52-4	233-140-8	017-013-00-2	Eye Irrit. 2 H319	Xi; R36
10	Ethane	74-84-0	200-814-8	601-002-00-X	Flam. Gas 1 Press. Gas H220	F+; R12
11	Cement	65997-15-1	266-043-4			Xi;R37/38, R41, R43

Inventory List of Chemical Mixtures

January 2014

Name of natural/legal person: Dundee Precious Metals Krumovgrad Ltd.

Subject of activity: mining and processing of auriferous ores

Industrial sector: mining and processing

Headquarters and address of management: 2087 Chelopech village, Chelopech municipality, Sofia district

Contact person (phone, fax, e-mail): Ivan Ivanov, tel: 03641/6804

fax: 03641/70 93; e-mail: Ivan.T.Ivanov@Dundeeprecious.com

Table with hazardous chemical mixtures

№	Name of the mixture	Hazard and precautionary statements under Regulation (EU) № 1272/2008 (CLP)	Risk phrases and safety advice according to the Ordinance on the terms and for the classification, packaging and labeling of chemical substances and mixtures
1	Aerofloat 208		C R32-R41-R34
2	Cleaning mixture: 1. солна киселина 15-30% (HCL) 2. вода/water		R35
3	Sodium hypochlorite - up to 15%, sodium hydroxide - up to 1,2%		R31 R34 R50
4	Calc Rumivar 1. Citric Acid 2. ortho-phosphoric acid 3. C 12-18 alkyl amido dimetilaminbetayn 4.Parfum		R36/38 R34

Hazardous categories

January 2014

Name of natural/legal person: Dundee Precious Metals Krumovgrad Ltd.

Subject of activity: mining and processing of auriferous ores

Industrial sector: mining and processing

Headquarters and address of management: 2087 Chelopech village, Chelopech municipality, Sofia district

Contact person (phone, fax, e-mail): Ivan Ivanov, tel: 03641/6804

fax: 03641/70 93; e-mail: Ivan.T.Ivanov@Dundeeprecious.com

Hazardous categories

№	Substances/mixtures	Explosive	Flammable	Oxidized	Toxic	Corosive	Aerosols and compressed or liquefied gases
1	Propane-Butane - mixture from technical propane, propylene, butane, butylene.		X				X
2	Ethane		X				X
3	8154 Spray /Antibloking LOCTITE SPRAY /Mounting paste spray: 1. CO2 /propellant; 2. /aliphatic hydrocarbon		X				
4	Diluent (/acetone, /butyl acetate)		X				
5	AMBERTRON Petroleum gas		X				
6	Alkyd paint: alkyd polish, /dispersant, /desiccants, /fillers, /pigments, /anti precipitants, /thinners, /antiskingenerator		X				
7	/Thinner for polyuretan systems: 1. Ortho-xylene (80%); 2. Butyl acetate (6%)		X				
8	Nitric Acid (technical)					X	
9	Aerofloat 208 (dithiophosphate)					X	
10	Феродор 107 Почистващ препарат: 1. солна киселина /HCl 15-30% 2. вода/water 1. хлороводород (hydrogen chloride) 2. вода (water)					X	
11	Sodium hypochloride - up to 15%, Sodium hydroxide - up to 1,2%					X	
12	Calc Rumivar 1. Citric Acid 2. ortho-phosphoric acid 3. C 12-18 alkyl amido dimetilaminbetayn 4.Parfum					X	

Compatibility of hazardous substances and mixtures

January 2014

Name of natural/legal person: Dundee Precious Metals Krumovgrad Ltd.

Subject of activity: mining and processing of auriferous ores


Industrial sector: mining and processing

Headquarters and address of management: 2087 Chelopech village, Chelopech municipality, Sofia district

Contact person (phone, fax, e-mail): Ivan Ivanov, tel: 03641/6804

fax: 03641/70 93; e-mail: Ivan.T.Ivanov@Dundeeprecious.com

Compatibility of hazardous substances and mixtures

Category of hazard under Regulation on the terms and procedures for storage of hazardous chemical substances and mixtures or Reglament (EO) 1272/2008 CLP	Explosive	Extremely flammable, highly flammable, flammable	Oxidized	Highly toxic and toxic	Corrosive	Aerosols and compressed or liquefied gases
Priority of hazard under p.7 from Appendix of Regulation on the terms and procedures for storage of hazardous chemical substances and mixtures 						
Explosive						
Extremely flammable, highly flammable, flammable		3, 4, 5, 6, 7			8, 9, 10, 11, 12	
Oxidized						
Highly toxic and toxic						
Corrosive						
Aerosols and compressed or liquefied gases						1, 2