

Dy-Mark Markal Paintstik H Red **Dy-Mark**

Chemwatch: 5489-26 Version No: 2.1.15.10 Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements Chemwatch Hazard Alert Code: 2 Issue Date: 27/08/2021 Print Date: 30/08/2021

S.GHS.AUS.EN

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

Product Identifier

Product name	Dy-Mark Markal Paintstik H Red
Chemical Name	Not Applicable
Synonyms	34024402
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains sodium acid pyrophosphate)
Chemical formula	Not Applicable
Other means of identification	Not Available

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

Relevant identified uses	Marking crayon for hot metal surfaces.
Relevant lacintinea abee	Manung orayon for not motal banaces.

Details of the supplier of the safety data sheet

Registered company name	Dy-Mark
Address	89 Formation Street Wacol QLD 4076 Australia
Telephone	+61 7 3327 3004
Fax	+61 7 3327 3009
Website	http://www.dymark.com.au
Email	info@dymark.com.au

Emergency telephone number

Association / Organisation	Dy-Mark
Emergency telephone numbers	+61 7 3327 3099
Other emergency telephone numbers	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

ChemWatch Hazard Ratings

	Min	Max	
Flammability	1		
Toxicity	1		0 = Minimum
Body Contact	2	1	1 = Low
Reactivity	1		2 = Moderate
Chronic	0		3 = High 4 = Extreme

Poisons Schedule	Not Applicable
Classification ^[1]	Serious Eye Damage/Eye Irritation Category 2A, Hazardous to the Aquatic Environment Long-Term Hazard Category 1
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

Label elements

Hazard pictogram(s)	<
3 ()	



Hazard statement(s)		
H319	Causes serious eye irritation.	
H410	Very toxic to aquatic life with long lasting effects.	

Precautionary statement(s) Prevention

Signal word Warning

P273	Avoid release to the environment.	
P280	Wear protective gloves, protective clothing, eye protection and face protection.	
P264	Wash all exposed external body areas thoroughly after handling.	

Precautionary statement(s) Response

P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
P337+P313	If eye irritation persists: Get medical advice/attention.	
P391	Collect spillage.	

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

P501 Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
7758-16-9	10-30	sodium acid pyrophosphate
1309-37-1	10-30	red iron oxide
Not Available	balance	Ingredients determined not to be hazardous
Legend:	 Classified by Chernwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L * EU IOELVs available 	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	 If this product comes in contact with the eyes: Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	 If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
Ingestion	 If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

Indication of any immediate medical attention and special treatment needed

for phosphate salts intoxication:

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.
- Ingestion of large quantities of phosphate salts (over 1.0 grams for an adult) may cause an osmotic catharsis resulting in diarrhoea and probable abdominal cramps. Larger doses such as 4-8 grams will almost certainly cause these effects in everyone. In healthy individuals most of the ingested salt will be excreted in the faeces with the diarrhoea and, thus, not cause any systemic toxicity. Doses greater than 10 grams hypothetically may cause systemic toxicity.
- Treatment should take into consideration both anionic and cation portion of the molecule.
- + All phosphate salts, except calcium salts, have a hypothetical risk of hypocalcaemia, so calcium levels should be monitored.

Treat symptomatically.

For acute or short term repeated exposures to iron and its derivatives:

- Always treat symptoms rather than history.
- In general, however, toxic doses exceed 20 mg/kg of ingested material (as elemental iron) with lethal doses exceeding 180 mg/kg.
- Control of iron stores depend on variation in absorption rather than excretion. Absorption occurs through aspiration, ingestion and burned skin.
- Hepatic damage may progress to failure with hypoprothrombinaemia and hypoglycaemia. Hepatorenal syndrome may occur.

- Iron intoxication may also result in decreased cardiac output and increased cardiac pooling which subsequently produces hypotension.
- Serum iron should be analysed in symptomatic patients. Serum iron levels (2-4 hrs post-ingestion) greater that 100 ug/dL indicate poisoning with levels, in excess of 350 ug/dL, being potentially serious. Emesis or lavage (for obtunded patients with no gag reflex) are the usual means of decontamination.
- Activated charcoal does not effectively bind iron.
- Catharsis (using sodium sulfate or magnesium sulfate) may only be used if the patient already has diarrhoea.
- Deferoxamine is a specific chelator of ferric (3+) iron and is currently the antidote of choice. It should be administered parenterally. [Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 Firefighting measures

Extinguishing media

- Foam.
- Dry chemical powder.BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog Large fires only.

Special hazards arising from the substrate or mixture

Fire Incompatibility	Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result						
Advice for firefighters							
	 Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water courses. 						

Fire Fighting	 Prevent, by any means available, spillage from entering drains or water courses. Use water delivered as a fine spray to control fire and cool adjacent area. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	 Solid which exhibits difficult combustion or is difficult to ignite. Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited; once initiated larger particles up to 1400 microns diameter will contribute to the propagation of an explosion. A dust explosion may release large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people. Usually the initial or primary explosion takes place in a confined space such as plant or machinery, and can be of sufficient force to damage or rupture the plant. If the shock wave from the primary explosion enters the surrounding area, it will disturb any settled dust layers, forming a second dust cloud, and often initiate a much larger secondary explosion. All large scale explosions have resulted from chain reactions of this type. Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by bonding and grounding. Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting. All movable parts coming in contact with this material should have a speed of less than 1-metre/sec. Decomposes on heating and produces: carbon monoxide (CO) carbon dioxide (CO2) phosphorus oxides (POX) metal oxides other pyrolysis products typical of burning organic material.
HAZCHEM	2Z

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	 Remove all ignition sources. Clean up all spills immediately. Avoid contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Use dry clean up procedures and avoid generating dust. Place in a suitable, labelled container for waste disposal. Environmental hazard - contain spillage.
Major Spills	 Environmental hazard - contain spillage. Moderate hazard. CAUTION: Advise personnel in area. Alert Emergency Services and tell them location and nature of hazard. Control personal contact by wearing protective clothing. Prevent, by any means available, spillage from entering drains or water courses. Recover product wherever possible. IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal. ALWAYS: Wash area down with large amounts of water and prevent runoff into drains. If contamination of drains or waterways occurs, advise Emergency Services.

SECTION 7 Handling and storage

Safe handling	 Avoid all personal contact, including inhalation. Wear protective dothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT allow material to contact humans, exposed food or food utensils. Avoid contact with incompatible materials. Wohn handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Athrosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions) Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame. Establish good housekeeping practices. Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds. Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 132 In (0.8 mm) thick canb e sufficient to warrant immediate cleaning of the area.
Other information	 Store in original containers. Keep containers securely sealed. Store in a cool, dry area protected from environmental extremes. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS. For major quantities: Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams). Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation witl local authorities.

Conditions for safe storage, including any incompatibilities

Sui	itable contair		 Polyethylene or polypropylene container. Check all containers are clearly labelled and free from leaks. 								
Storage	e incompatibil		id reaction with id strong acids,	oxidising agents bases.	3						
+	x	+	°	+		+	>				

X — Must not be stored together

— May be stored together with specific preventions 0

- May be stored together +

Note: Depending on other risk factors, compatibility assessment based on the table above may not be relevant to storage situations, particularly where large volumes of dangerous goods are stored and handled. Reference should be made to the Safety Data Sheets for each substance or article and risks assessed accordingly.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	red iron oxide	Iron oxide fume (Fe2O3) (as Fe)	5 mg/m3	Not Available	Not Available	Not Available

Ingredient	TEEL-1 TEEL-2			TEEL-3		
sodium acid pyrophosphate	9.2 mg/m3 100 mg/m3			600 mg/m3		
sodium acid pyrophosphate	4.7 mg/m3	52 mg/m3		320 mg/m3		
sodium acid pyrophosphate	4.3 mg/m3	48 mg/m3		290 mg/m3		
red iron oxide	15 mg/m3	360 mg/m3		2,200 mg/m3		
Ingredient	Original IDLH		Revised IDLH	Revised IDLH		
sodium acid pyrophosphate	Not Available		Not Available	Not Available		
red iron oxide	2,500 mg/m3		Not Available			
Occupational Exposure Bandi	ng					
Ingredient	Occupational Exposure Band	Rating	Occupational	Exposure Band Limit		
sodium acid pyrophosphate	E		≤ 0.01 mg/m³			
Notes:	Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.					
xposure controls						
	be highly effective in protecting v The basic types of engineering c	vorkers and will typically be independer	t of worker interact	nd the hazard. Well-designed engineering controls can ions to provide this high level of protection.		

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.

Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:

(a): particle dust respirators, if necessary, combined with an absorption cartridge;

(b): filter respirators with absorption cartridge or canister of the right type;

(c): fresh-air hoods or masks

Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.

Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Appropriate engineering controls

 Type of Contaminant:
 Air Speed:

 direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)
 1-2.5 m/s (200-500 f/min.)

 grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).
 2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Personal protection	
Eye and face protection	 Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]
Skin protection	See Hand protection below
Hands/feet protection	The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

	 The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hyginer is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitabiliy and durability of glove type is dependent on usage. Important factors in the selection of gloves include: frequency and duration of contact. chemical resistance of glove material. glove thickness and When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. When only brief contact is expected, a glove with a protection class of 5 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use. Contaminated gloves should be replaced. As defined in ASTM F-7.39-96 in any application, gloves are rated as: Excellent when breakthrough time > 480 min Good when breakthrough time > 20 min Poor when glove work in dickness typically greater than 0.35 mm, are recommended. Its when breakthrough time > 20 min Gregored applications, gloves with a notecostion of the glove model. Therefore, the manufacturers' technical data should also be based on consideration of the task. Requirements and knowledge of breakthrough times. Gore which should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be depend
	Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
Body protection	See Other protection below
	► Overalls.
Other protection	 P.V.C apron. Barrier cream. Skin cleansing cream. Eye wash unit.

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	-	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.

The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).

Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended

Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.

Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)

Use approved positive flow mask if significant quantities of dust becomes airborne.

Try to avoid creating dust conditions.

Class P2 particulate filters are used for protection against mechanically and thermally generated particulates or both. P2 is a respiratory filter rating under various international standards, Filters at least 94% of airborne particles

Suitable for:

Relatively small particles generated by mechanical processes eg. grinding, cutting, sanding, drilling, sawing. Sub-micron thermally generated particles e.g. welding fumes, fertilizer and bushfire smoke. Biologically active airborne particles under specified infection control applications e.g. viruses, bacteria, COVID-19, SARS

Continued...

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Red coloured solid cylindrical crayon; insoluble in wat	er.	
Physical state	Solid	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	570
pH (as supplied)	Not Applicable	Decomposition temperature	Not Available
Melting point / freezing point (°C)	66	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	151	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	0 (VOC)
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7	
Chemical stability	 Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur. 	
Possibility of hazardous reactions	See section 7	
Conditions to avoid	See section 7	
Incompatible materials	See section 7	
Hazardous decomposition products	See section 5	

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.		
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual. Inorganic polyphosphates are used extensively in domestic and industrial products. Experiments on rats showed kidney damage, growth retardation, and tetany due to low calcium. As absorption of phosphates from the bowel is poor, poisoning this way is less likely. Effects can include vomiting, tiredness, fever, diarrhoea, low blood pressure, slow pulse, cyanosis, spasms of the wrist, coma and severe body spasms.		
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.		
Eye	This material can cause eye irritation and damage in so	me persons.	
Chronic	Substance accumulation, in the human body, may occur In long-term animal studies, inorganic polyphosphates p the parathyroid gland, inorganic phosphate in the urine, have not been shown to cause cancer, genetic damage Sodium phosphate dibasic can cause stones in the kidn	use cancer or mutations but there is not enough data to make an assessment. r and may cause some concern following repeated or long-term occupational exposure. rroduced growth inhibition, increased kidney weights, bone decalcification, enlargement of focal necrosis of the kidney and alterations of muscle fibre size. Inorganic phosphates or reproductive or developmental damage in animal tests. ey, loss of mineral from the bones and loss of thyroid gland function. with damage to the liver and pancreas. People with a genetic disposition to poor control	
Dy-Mark Markal Paintstik H	ΤΟΧΙΟΙΤΥ	IRRITATION	
Red	Not Available	Not Available	
	ΤΟΧΙCITY	IRRITATION	
	TUXICITY	IRRITATION	

	Inhalation(Rat) LC50; >0.58 mg/l4h ^[2]	Eye (rabbit): 66.5/110 SEVERE		
	Oral(Rat) LD50; >300<2000 mg/kg ^[1]	Eye: adverse effect observed (irritating) ^[1]		
		moderately irritating		
		practically non-irritating		
		Skin (rabbit): 0.0/8.0		
		Skin (rabbit): 0.7/8.0 - slight		
		Skin: no adverse effect observed (not irritating) $\left[1 \right]$		
	ΤΟΧΙΟΙΤΥ	IRRITATION		
red iron oxide	Oral(Rat) LD50; >5000 mg/kg ^[2]	Eye (rabbit): non-irritant		
		Skin (rabbit): non-irritant 24h		
Legend:	specified data extracted from RTECS - Register of Toxic No birth defects were reported in mice, hamsters, or rabl	bits given sodium acid pyrophosphate during pregnancy. No adverse genetic effects v		
	specified data extracted from RTECS - Register of Toxic No birth defects were reported in mice, hamsters, or rabl reported in standard tests using animals or bacterial and For pyrophosphate salts:	Effect of chemical Substances bits given sodium acid pyrophosphate during pregnancy. No adverse genetic effects v I yeast cells		
	No birth defects were reported in mice, hamsters, or rabl reported in standard tests using animals or bacterial and For pyrophosphate salts: Oral toxicity was for three pyrophosphate (diphosphate) i doses. Acute dermal toxicity was not found for any of the diphosphate. This underlines the low potential of the three probably caused by their basic nature and their high buff concentrations (which were the highest attainable) differ concentrations animals died. The available repeated dose studies confirm that the kidi induced tubulorrhexis (localized necrosis of the epithelial degrees in rats if administered subchronically at high con-	Effect of chemical Substances		

Genetic toxicity:

Notes:

SODIUM ACID

PYROPHOSPHATE

A number of studies are available to assess the genotoxic potential of tetrapotassium pyrophosphate and the analogous substances tetrasodium pyrophosphate and disodium dihydrogen pyrophosphate. Sodium and potassium pyrophosphates are considered to be non-genotoxic in all studies performed.

Toxicity to reproduction:

Tetrasodium pyrophosphate administered to pregnant mice for 10 days up to a dose level of 130 mg/kg bw showed no maternal or developmental toxicity. The NOAEL for both maternal and foetotoxicity was > 130 mg/kg bw.

Tetrasodium pyrophosphate administered to pregnant rats for 10 days up to a dose level of 138 mg/kg bw showed no maternal or developmental toxicity. The NOAEL for both maternal and foetotoxicity is > 138 mg/kg bw.

When disodium dihydrogen pyrophosphate was administered to pregnant mice for 10 days up to a dose level of 335 mg/kg bw there were no signs of maternal or developmental toxicity. The NOAEL for both maternal and foetotoxicity in mice is > 335 mg/kg bw. When this material was administered to pregnant rats for 10 days up to a dose level of 169 mg/kg bw no maternal toxicity or developmental toxicity was observed. The NOAEL for both maternal and foetotoxicity is > 169 mg/kg bw.

When the test material was administered to pregnant hamsters for 10 days up to a dose level of 166 mg/kg bw no maternal toxicity or developmental toxicity was observed. The NOAEL for both maternal and fetotoxicity is > 166 mg/kg bw.

When the test material was administered to pregnant rabbits for 10 days up to a dose level of 128 mg/kg bw no maternal toxicity or developmental toxicity was observed. The NOAEL for both maternal and fetotoxicity is > 128 mg/kg bw.

Pyrophosphate salts are also known as diphosphates and Group 2i Substances (inorganic diphosphates). The diphosphate ion is the simplest form of a condensed phosphate group. A condensed phosphate anion has one or several P-O-P bonds. As the group contains only two phosphate groups, both of the phosphorus ions are classified as "terminal phosphorus". The diphosphate can undergo ionisation with loss of H+ from each of the two –OH groups on each P and therefore can occur in the -1, -2 -3 or -4 state. The degree of ionisation is dependent upon the associated cations and the ambient pH (if in solution).

No partition coefficient value was determined for Group 2i Substances as they are inorganic diphosphates that are highly ionic (depending on ambient pH). Because of this ionic nature the passive passage across biological membranes will be negligible. However as sodium and potassium are key elements in various cellular processes their import and export over cell membranes is regulated via pore systems and usually tightly regulated. Diphosphate is an anion that occurs in all living cells and is formed mainly by the synthesis of DNA from Nucleotide triphosphates (DNAn + Deoxyribonucleotide triphosphate > DNAn+1 + diphosphate). Usually it is cleaved into two orthophosphate molecules by

one of the different members of the alkaline phosphatase family which are present in all tissues. Diphosphate nevertheless is generally relatively stable against uncatalyzed hydrolysis (half life = 10 d in autoclaved sediment)

As the substances are of ionic nature and dissociate readily into the cations and anions in water

Diphosphates are registered as food additives under the No. E 450 and are used in the food chemistry mainly as emulsifiers but also as parting agent, baking agent preservative agent and anti-oxidising agent. It is used also as carrier for pharmaceuticals.

Diphosphate is rapidly transferred into orthophosphate by intestinal alkaline phosphatase. So the majority of diphosphate is probably absorbed as orthophosphate. Orthophosphate then takes part in various physiological processes including formation of Deoxyribonucleotide phosphates (e.g. AMP, cAMP, ADT, ATP). In addition direct uptake of diphosphate via diffusion or pinocytosis might add to the total uptake. Specific transmembranal transport proteins exist for diphosphate. Autosomal dominant familial calcium diphosphate diphosphate deposition disease is caused by mutation in the transmembrane protein ANKH. But whether comparable proteins are also involved in intestinal uptake of diphosphate

is not clear. Diphosphate is excreted via specialized cell in the kidneys into the urine, probably in order to inhibit kidney stone formation from high urinary calcium concentrations. A dose dependent rise of pyrophosphate excretion occurred after feeding healthy and kidney stone forming human

calcium concentrations. A dose dependent rise of pyrophosphate excretion occurred after feeding healthy and kidney stone forming human volunteers with defined diets that provided 1.5, 3.0 or 4.5 g/d/person orthophosphate in three successive weeks. Pyrophosphate excretion was comparable in the two groups and ranged from 3.5 - 13 mg/24 h in the 1.5 g diet phase to 15 – 40 mg/24 h in the 4.5 g diet phase The bioavailability of orthophosphate from diphosphate has also been demonstrated. In one study supplementation of a basic diet with 1-3 g of either ortho- or diphosphate to comparable uptake and excretion of orthophosphate.

Acute Toxicity	×	Carcinogenicity	×
Skin Irritation/Corrosion	×	Reproductivity	×
Serious Eye Damage/Irritation	×	STOT - Single Exposure	×
Respiratory or Skin sensitisation	×	STOT - Repeated Exposure	×
Mutagenicity	×	Aspiration Hazard	×
			available or does not fill the criteria for classification to make classification

SECTION 12 Ecological information

Toxicity

Dy-Mark Markal Paintstik H Red	Endpoint	Test Duration (hr)		Species		Value	Source
	Not Available	Not Available		Not Available		Not Available	Not Available
	Endpoint	Test Duration (hr)	S	pecies	Valu	le	Source
	LC50	96h	Fi	ïsh	>10	0mg/l	2
odium acid pyrophosphate	EC50	48h	С	Crustacea	>10	0mg/l	2
	EC50(ECx)	48h	A	lgae or other aquatic plants	>=1	00<=200mg/l	2
	EC50	72h	A	lgae or other aquatic plants	>10	0mg/l	2
	Endpoint	Test Duration (hr)		Species		Value	Source
	EC50	72h		Algae or other aquatic plants		18mg/l	2
red iron oxide	EC50	48h		Crustacea		>100mg/l	2
	LC50	96h		Fish		0.05mg/l	2
	NOEC(ECx)	504h		Fish		0.52mg/l	2
Legend:	V3.12 (QSAR)	1. IUCLID Toxicity Data 2. Europe ECH/ - Aquatic Toxicity Data (Estimated) 4. US Iapan) - Bioconcentration Data 7. METI (S EPA, Ecoto	ox database - Aquatic Toxicity Data 5.			

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. **DO NOT** discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients
Bioaccumulative potential		

Ingredient	Bioaccumulation
	No Data available for all ingredients
Mobility in soil	
Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 Disposal considerations

Waste treatment methods			
Product / Packaging disposal	 DO NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority. 		

SECTION 14 Transport information

Labels Required



Marine Pollutant

2Z

HAZCHEM

Land transport (ADG)

Eand transport (ADO)			
UN number	3077		
UN proper shipping name	INVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains sodium acid pyrophosphate)		
Transport hazard class(es)	Class 9 Subrisk Not Applicable		
Packing group	II		
Environmental hazard	Environmentally hazardous		
Special precautions for user	Special provisions274 331 335 375 AU01Limited quantity5 kg		

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in;

(a) packagings;

(b) IBCs; or

(c) any other receptacle not exceeding 500 kg(L).

- Australian Special Provisions (SP AU01) - ADG Code 7th Ed.

Air transport (ICAO-IATA / DGR)

	,			
UN number	3077			
UN proper shipping name	Environmentally hazardous substance, solid, n.o.s. * (contains sodium acid pyrophosphate)			
	ICAO/IATA Class	9		
Transport hazard class(es)	ICAO / IATA Subrisk	Not Applicable		
	ERG Code	9L		
Packing group		III		
Environmental hazard	Environmentally hazardous			
	Special provisions		A97 A158 A179 A197 A215	
	Cargo Only Packing Instructions		956	
	Cargo Only Maximum Qty / Pack		400 kg	
Special precautions for user	Passenger and Cargo	Packing Instructions	956	
	Passenger and Cargo Maximum Qty / Pack		400 kg	
	Passenger and Cargo	Limited Quantity Packing Instructions	Y956	
	Passenger and Cargo Limited Maximum Qty / Pack		30 kg G	

Sea transport (IMDG-Code / GGVSee)

UN number	3077		
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains sodium acid pyrophosphate)		
Transport hazard class(es)	IMDG Class 9 IMDG Subrisk Not Applicable		
Packing group	II		
Environmental hazard	Marine Pollutant		
Special precautions for user	EMS NumberF-A , S-FSpecial provisions274 335 966 967 969Limited Quantities5 kg		

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
sodium acid pyrophosphate	Not Available
red iron oxide	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
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Dy-Mark Markal Paintstik H Red

Product name	Ship Type
sodium acid pyrophosphate	Not Available
red iron oxide	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture			
sodium acid pyrophosphate is found on the following regulatory lists			
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals	Australian Inventory of Industrial Chemicals (AIIC)		
red iron oxide is found on the following regulatory lists			

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) -Schedule 4 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) -Schedule 5 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) -Schedule 6

Australian Inventory of Industrial Chemicals (AIIC) International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

National Inventory Status

National Inventory	Status	
Australia - AIIC / Australia Non-Industrial Use	Yes	
Canada - DSL	Yes	
Canada - NDSL	No (sodium acid pyrophosphate; red iron oxide)	
China - IECSC	Yes	
Europe - EINEC / ELINCS / NLP	Yes	
Japan - ENCS	Yes	
Korea - KECI	Yes	
New Zealand - NZIoC	Yes	
Philippines - PICCS	Yes	
USA - TSCA	Yes	
Taiwan - TCSI	Yes	
Mexico - INSQ	Yes	
Vietnam - NCI	Yes	
Russia - FBEPH	Yes	
Legend:	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.	

SECTION 16 Other information

Revision Date	27/08/2021
Initial Date	27/08/2021

SDS Version Summary

Version	Date of Update	Sections Updated
2.1.15.9	27/08/2021	Fire Fighter (fire/explosion hazard)
2.1.15.10	29/08/2021	Template Change

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC – TWA: Permissible Concentration-Time Weighted Average PC – STEL: Permissible Concentration-Short Term Exposure Limit IARC: International Agency for Research on Cancer ACGIH: American Conference of Governmental Industrial Hygienists STEL: Short Term Exposure Limit TEEL: Temporary Emergency Exposure Limit. IDLH: Immediately Dangerous to Life or Health Concentrations ES: Exposure Standard OSF: Odour Safety Factor NOAEL: No Observed Adverse Effect Level LOAEL: Lowest Observed Adverse Effect Level COTV: Odour Threshold Value BCF: BioConcentration Factors

BEI: Biological Exposure Index AIIC: Australian Inventory of Industrial Chemicals DSL: Domestic Substances List NDSL: Non-Domestic Substances List IECSC: Inventory of Existing Chemical Substance in China EINECS: European INventory of Existing Commercial chemical Substances ELINCS: European List of Notified Chemical Substances NLP: No-Longer Polymers ENCS: Existing and New Chemical Substances Inventory KECI: Korea Existing Chemicals Inventory NZIoC: New Zealand Inventory of Chemicals PICCS: Philippine Inventory of Chemicals and Chemical Substances TSCA: Toxic Substances Control Act TCSI: Taiwan Chemical Substance Inventory INSQ: Inventario Nacional de Sustancias Químicas

NCI: National Chemical Inventory FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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