

SAFETY DATA SHEET

1240 FPA Silver Solder

www.vpgsensors.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

Date of Issue: 23 May 2023
Date of First Issue: 24 August 2015
Version: 1.0

SECTION 1: IDENTIFICATION

Product identifier

Product Name 1240 FPA Silver Solder

Other Means of Identification

Not applicable

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

Identified Use(s) Welding and soldering products
Uses Advised Against Anything other than the above.

Details of the supplier of the safety data sheet

Supplier VISHAY MEASUREMENTS GROUP, INC.
Post Office Box 27777
Raleigh, NC 27611
USA
Telephone 919-365-3800
Fax 919-365-3945
E-Mail (competent person) mm.us@vpgsensors.com

Emergency telephone number

Emergency Phone No. +1 800-262-8200 (for spills and releases) CHEMTREC (24 hours)
Languages spoken English

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200

Physical hazards

Health hazards

Acute toxicity (Oral), Category 4
Skin corrosion/irritation, Category 1C
Serious eye damage/irritation, Category 1
Skin sensitization, Category 1
Carcinogen, Category 1
Specific target organ toxicity - Repeated exposure, Category 1
Reproductive toxicity, Category 2

Environmental hazards

Hazardous to the aquatic environment, Acute, Category 1
Hazardous to the aquatic environment, Chronic, Category 1

Label elements

Hazard Pictogram(s)



Signal Word(s)

DANGER

Hazard Statement(s)

Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.
Suspected of damaging fertility or the unborn child if inhaled.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

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Precautionary Statement(s)

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist/vapours/spray.
Wash hands and exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/eye protection/face protection.
Use personal protective equipment as required.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER/doctor.
Get medical advice/attention if you feel unwell.
Specific treatment (see on this label).
Rinse mouth.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Collect spillage.
Store locked up.
Dispose of contents in accordance with local, state or national legislation.

Other hazards

Thermal decomposition will evolve toxic and corrosive vapours.
Contact with reducing agents may form explosive gases.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity:

0% of the mixture consists of ingredients of unknown acute inhaled toxicity.
0% of the mixture consists of ingredients of unknown acute oral toxicity.
0% of the mixture consists of ingredients of unknown acute dermal toxicity.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

not applicable

Mixtures Substances in preparations / mixtures

Classification: OSHA HCS (29 CFR 1910.1200)

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Silver	≥20 - ≤60	7440-22-4	231-131-3	Hazardous to the aquatic environment, Acute, Category 1 Hazardous to the aquatic environment, Chronic, Category 1
Copper	≥10 - ≤40	7440-50-8	231-159-6	Hazardous to the aquatic environment, Acute, Category 1 Hazardous to the aquatic environment, Chronic, Category 2
Boron Potassium Fluoride Hydroxide Oxide	≤35	2787482-26-0	-	Skin corrosion/ irritation, Category 1C Serious eye damage/irritation, Category 1 Acute Toxicity (Oral), Category 4 Reproductive toxicity, Category 2

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Zinc	≥1 - ≤30	7440-66-6	231-175-3	Hazardous to the aquatic environment, Acute, Category 1 Hazardous to the aquatic environment, Chronic, Category 1
Distillates (petroleum), hydrotreated middle; Mineral seal oil; Paraffin oils	≤5	64742-46-7	265-148-2	Aspiration toxicity, Category 1 Carcinogen, Category 1B
Nickel	≤5	7440-02-0	231-111-4	Skin Sensitization, Category 1 Carcinogen, Category 2 Specific target organ toxicity — repeated exposure, Category 1 Hazardous to the aquatic environment, Chronic, Category 3

SECTION 4: FIRST AID MEASURES



Description of first aid measures

Self-protection of the first aider

Inhalation

Skin Contact

Eye Contact

Ingestion

Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed

Notes to a physician:

Avoid breathing dust/mist. Ensure adequate ventilation. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Avoid contact with skin. Contaminated clothing should be laundered before reuse. Do not use mouth-to-mouth resuscitation. Eyewash facilities should be stationed close to workplace where possible.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

IF ON SKIN: Gently wash with plenty of soap and water. Remove contaminated clothing and wash clothing before reuse. Immediately call a POISON CENTER/doctor.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. In case of eye irritation consult an ophthalmologist.

IF SWALLOWED: Rinse mouth. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. If symptoms occur obtain medical attention. IF exposed or concerned: Call a POISON CENTER/doctor.

Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Suspected of damaging fertility or the unborn child if inhaled.

Treat symptomatically.

Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water.

Fluorides can reduce serum calcium levels resulting in potentially fatal hypocalcemia. Focus medical efforts on combating shock and reducing systemic toxicity of fluoride ion.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Unsuitable extinguishing Media

Special hazards arising from the substance or mixture

As appropriate for surrounding fire. Extinguish preferably with foam, carbon dioxide or dry chemical.

Do not use water jet. Direct water jet may spread the fire.

Thermal decomposition will evolve toxic and corrosive vapours. Acrid smoke, Carbon monoxide, carbon dioxide, halogenated compounds and hydrofluoric

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Advice for fire-fighters

acid. High temperatures may produce heavy metal fumes, dust and/or vapor. Contact with reducing agents may form explosive gases. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Stop leak if safe to do so. Avoid breathing dust/mist. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. The vapour is heavier than air; beware of pits and confined spaces.

Methods and material for containment and cleaning up

Ensure suitable personal protection (including respiratory protection) during removal of spillages. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. Recover or recycle if possible. Dispose of this material and its container as hazardous waste. Avoid release to the environment. Do NOT wash away into sewer. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

Large spillages:

Evacuate the area and keep personnel upwind. Notify police and fire brigade as soon as possible.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Ensure adequate ventilation. Avoid breathing dust/mist. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

Conditions for safe storage, including any incompatibilities

Storage temperature
Incompatible materials

When molten: Keep from any possible contact with water.

Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Keep away from direct sunlight. Do not reuse empty containers.

Store in a cool/low temperature. 5°C - 25°C

Keep away from reducing agents. Keep away from: Acids, Alkalis, Strong oxidising agents, ammonia, peroxides, halogens, halogenated compounds and strong bases. Protect from moisture.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

SUBSTANCE	CAS No.	ppm (a) ¹	mg/m ³ (b) ¹	Skin designation	Source
Silver, metal and soluble compounds (as Ag)	7440-22-4	-	0.01	-	OSHA NIOSH ACGIH
Silver, Metal, dust and fume		-	0.1	-	ACGIH
Copper Fume (as Cu) Dusts and mists (as Cu)	7440-50-8	-	0.1 1	-	OSHA NIOSH
Copper Fume (as Cu) Dusts and mists (as Cu)		-	0.2 1	-	ACGIH
Nickel, metal and insoluble compounds (as Ni)	7440-02-0	-	1	-	OSHA
		-	0.015	-	NIOSH
		-	0.2	-	ACGIH

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Nickel, soluble compounds (as Ni)	-	1	-	OSHA
	-	0.1	-	ACGIH
Nickel, Elemental	-	1.5	-	ACGIH

Source:

OSHA: Occupational Health and Safety Act - Permissible Exposure Limit (PEL), 1910.1000 TABLE Z-1/NIOSH RELs / ACGIH TLVs

Biological exposure indicies

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Nickel	7440-02-0	Nickel in urine after exposure to elemental and poorly soluble compounds	5 µg/L	End of shift at end of workweek	B
		Nickel in urine after exposure to soluble compounds	30 µg/L	End of shift at end of workweek	-

Source:

2015 ACGIH Biological Exposure Indicies (BEIs)

Notes:

B- Background The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration that could affect interpretation of the result. A "B" notation is assigned to a determinant when the observed 95th percentile value of a random sample, from national population studies, such as the NHANES surveys, is more than 20% of the BEI®.

Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Local exhaust recommended. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Eyewash facilities should be stationed close to workplace where possible.

Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid contact with skin, eyes or clothing. Avoid breathing dust/mist. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/face protection



Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).

Skin protection



Hand protection:

Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: PVC / Nitrile rubber.

When molten: Use gloves with insulation for thermal protection, when needed.

Body protection:

Wear dustproof working clothes. Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Recommended: Wear work clothes with long sleeves.

When molten:Wear flameproof clothing.

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Respiratory protection



Use only in well-ventilated areas. In case of inadequate ventilation wear respiratory protection. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

High concentrations: Wear suitable respiratory equipment. Recommended: Self-contained breathing apparatus (DIN EN 137)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Tan coloured viscous paste
Odor	Characteristic
Odor Threshold	Not available.
pH	Not available.
Melting Point/Freezing Point	>538°C
Initial boiling point and boiling range	277- 328°C
Flash Point	Not available
Evaporation Rate	Not available.
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Not available
Vapour pressure	0.093 mm Hg @ 20°C
Vapour density	>1 (Air = 1)
Relative density	>2 (Water = 1)
Solubility(ies)	Water: Negligible
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition Temperature	Not available
Viscosity	Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under normal conditions. Hazardous polymerisation will not occur.
Possibility of hazardous reactions	Contact with reducing agents may form explosive gases. In reduced atmospheres nickel can react with carbon monoxide to form Ni(CO) ₄ , which is an extremely toxic gas.
Conditions to avoid	Keep away from heat and sources of ignition. Protect from moisture.
Incompatible materials	Keep away from: Reducing agent, Acids, Alkalis, Strong oxidising agents, ammonia, peroxides, halogens, halogenated compounds and strong bases. Protect from moisture.
Hazardous decomposition product(s)	Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air. Thermal decomposition will evolve toxic and corrosive vapours. Acrid smoke, Carbon monoxide, carbon dioxide, halogenated compounds and hydrofluoric acid. High temperatures may produce heavy metal fumes, dust and/or vapor.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity - Ingestion	Mixture: Acute toxicity (oral), Category 4: Harmful if swallowed. Calculated acute toxicity estimate (ATE) >300 - <2,000 mg/kg.
Boron Potassium Fluoride Hydroxide Oxide	Acute toxicity (Oral), Category 4; Harmful if swallowed. LD50 >300 - <2,000 mg/kg Source: Supplier information
Acute toxicity - Skin Contact	Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
Acute toxicity - Inhalation	Mixture: Based upon the available data, the classification criteria are not met.

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Skin corrosion/irritation	Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >20mg/l. (Vapour) Mixture: Skin corrosion/irritation, Category 1C: Causes severe skin burns and eye damage.
Boron Potassium Fluoride Hydroxide Oxide	Skin corrosion/irritation, Category 1C; Causes severe skin burns and eye damage. Source: Supplier information
Serious eye damage/irritation	Mixture: Serious eye damage/irritation, Category 1 : Causes severe eye damage.
Boron Potassium Fluoride Hydroxide Oxide	Serious eye damage/irritation, Category 1 : Causes severe eye damage. Source: Supplier information
Respiratory or skin sensitization	Mixture: Skin sensitization, Category 1: May cause an allergic skin reaction.
Nickel	Skin sensitization, Category 1: May cause an allergic skin reaction. Source: EU Harmonised Classification
Germ cell mutagenicity	Mixture: Based upon the available data, the classification criteria are not met.
Carcinogenicity	Mixture: Carcinogen, Category 1: H350: May cause cancer.
Distillates (petroleum), hydrotreated middle; Mineral seal oil; Paraffin oils	Carcinogen, Category 1: H350: May cause cancer. Source: EU Harmonised Classification/ ECHA registration dossier
Nickel	Carcinogen, Category 2: Suspected of causing cancer. Source: EU Harmonised Classification
Reproductive toxicity	Mixture: Reproductive toxicity, Category 2: Suspected of damaging fertility or the unborn child.
Boron Potassium Fluoride Hydroxide Oxide	Reproductive toxicity, Category 2: Suspected of damaging fertility or the unborn child. Source: Supplier information
STOT - single exposure	Mixture: Based upon the available data, the classification criteria are not met.
STOT - repeated exposure	Mixture: Specific target organ toxicity - Repeated exposure, Category 1; H372: Causes damage to organs through prolonged or repeated exposure.
Nickel	Specific target organ toxicity - Repeated exposure, Category 1; H372: Causes damage to organs through prolonged or repeated exposure. (Testes, epididymis) Source: EU Harmonised Classification
Aspiration hazard	Mixture: Based upon the available data, the classification criteria are not met.
Information on likely routes of exposure	
Inhalation	Unlikely – accidental exposure
Ingestion	Possible – accidental exposure
Skin Contact	Possible – accidental exposure
Eye Contact	Unlikely – accidental exposure
Early onset symptoms related to exposure	Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Suspected of damaging fertility or the unborn child if inhaled.
Delayed health effects from exposure	None Known
Exposure levels and health effects	See Section: 8
Interactive effects	None Known
Other information	
OSHA Designated Carcinogen	No components of the mixture are listed
NIOSH Occupational Carcinogen List	Listed: Nickel
NTP Report on Carcinogens	Listed: Nickel
IARC Monographs	Listed: Nickel Group 2B

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SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Mixture: Hazardous to the aquatic environment (Acute), Category 1: Very toxic to aquatic life. Estimated Mixture LC50(96 hour) <1 mg/l (Fish) Hazardous to the aquatic environment (Chronic), Category 1: Very toxic to aquatic life with long lasting effects. Estimated Mixture LC50(96 hour) <1 mg/l (Fish)
Persistence and degradability	The methods for determining the biological degradability are not applicable to inorganic substances.
Bioaccumulative potential	No data for the mixture as a whole.
Mobility in soil	The product is predicted to have low mobility in soil.
Other adverse effects	None known

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	This material and its container must be disposed of as hazardous waste. Dispose of wastes in an approved waste disposal facility. Dispose of contents in accordance with local, state or national legislation.
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SECTION 14: TRANSPORT INFORMATION

	Road/Rail (ADR/RID)	Sea transport (IMDG)	Air (ICAO/IATA)
UN number	UN 3082	UN 3082	UN 3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver and Copper)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver and Copper)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver and Copper)
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Environmentally hazardous substance	Classified as a Marine Pollutant	Environmentally hazardous substance
Special precautions for user	See Section: 2		
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable		
Additional Information	None		

SECTION 15: REGULATORY INFORMATION

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

US Federal Regulations

TSCA Chemical Data Reporting (CDR) Rule

Listed:

Silver: Subject to 25,000 lb reporting threshold
Copper: Subject to 25,000 lb reporting threshold
Zinc: Subject to 25,000 lb reporting threshold
Nickel: Subject to 25,000 lb reporting threshold

NIOSH Occupational Carcinogen List

Listed: Nickel

EPCRA Section 313

Listed: Silver, Copper, Zinc, Nickel.

CWA 307- Toxic

Listed: Nickel – Toxic pollutant

CERCLA - Hazardous Substances

Listed: Nickel

CWA Section 311 List of Hazardous Substances

All chemicals are not listed

US State Regulations

Proposition 65 (California)

Listed: Nickel

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Massachusetts, New Jersey, Pennsylvania, Rhode Island- State Right to Know Lists
New York -State Right to Know Lists
Minnesota - State Right to Know Lists
Massachusetts – Toxic Use reduction act

Listed: Silver, Copper, Zinc, Nickel.
Listed: Silver, Copper, Zinc, Nickel.
Listed: Silver, Copper, Zinc, Nickel.
Listed: Silver, Copper, Zinc, Nickel.

Non-Regional
IARC Monographs

Listed: Nickel Group 2B

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: V3.0 - Updated substance / mixture classification

Version 3.0
Revision Date 23 May 2023
Date of First Issue 24 August 2015

This Safety Data Sheet was prepared in accordance with US Regulation OSHA HCS (29 CFR 1910.1200)

References:

EU Data:

Harmonised Classification(s) for Zinc (CAS No. 7440-66-6), Distillates (petroleum), hydrotreated middle; Mineral seal oil; Paraffin oils (CAS No 64742-46-7), Nickel (CAS No. 7440-02-0)

Existing ECHA registration(s) for Silver (CAS No. 7440-22-4), Copper (CAS No. 7440-50-8), Zinc (CAS No. 7440-66-6), Distillates (petroleum), hydrotreated middle; Mineral seal oil; Paraffin oils (CAS No 64742-46-7)

Supplier information for Boron Potassium Fluoride Hydroxide Oxide (CAS No 2787482-26-0)

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200	Classification Procedure
Acute toxicity (oral), Category 4	Acute Toxicity Estimate (ATE) Calculation.
Skin corrosion/irritation, Category 1C	Threshold Calculation
Serious eye damage/irritation, Category 1	Threshold Calculation
Skin sensitization, Category 1	Threshold Calculation
Carcinogen, Category 1	Threshold Calculation
Specific target organ toxicity - Repeated exposure, Category 1	Threshold Calculation
Reproductive toxicity, Category 2	Threshold Calculation
Hazardous to the aquatic environment (Acute), Category 1	Summation Calculation
Hazardous to the aquatic environment (Chronic), Category 1	Summation Calculation

LEGEND

ADR/RID ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road / RID: Regulations concerning the international railway transport of dangerous goods

BCF Bioconcentration factor (BCF)

CAS CAS: Chemical Abstracts Service

DNEL Derived No Effect Level

EU European Union

EC EC: European Community

EU European Union

IATA IATA: International Air Transport Association

ICAO/IATA ICAO: International Civil Aviation Organization / IATA: International Air Transport Association

IMDG IMDG: International Maritime Dangerous Goods

PBT Persistent, Bioaccumulative and Toxic

PNEC Predicted No Effect Concentration

UN United Nations

vPvB very Persistent and very Bioaccumulative

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Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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