

PRODUCT: PolyUGTs® Enzyme Reagent Kit

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

Product identifier(s).

Catalogue Number(s): **This MSDS covers the following products:**

Screening Kit: HDGT-001; Scale-up Kits: HDGT-177, HDGT-178, HDGT-179, HDGT-193, HDGT-194, HDGT-203, HDGT-204, HDGT-207, HDGT-212, HDGT-213, and HDGT-216.

Trade name/description: *PolyUGTs® Enzyme reagent Kits (Screening Kit; Scale-up Kit).*

Label Code(s)/Lot#/Batch#: *Lot#: As labelled.*

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS Number: N/A

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

- Application of the substance / the preparation:
Laboratory reagents (enzymes, cofactors and control chemical)
- Compound/material form: All materials are lyophilised powders in glass vials

Details of the supplier of the safety data sheet.

• Manufacturer/Supplier:

Hypha Discovery Limited
154B Brook Drive, Abingdon,
Oxfordshire, OX14 4SD, United Kingdom
Tel +44 (0) 1235 824 849
mail@hyphadiscovery.com; www.hyphadiscovery.com

• Further information obtainable from:

Department: Hypha Shipping

• Emergency telephone number:

+44 (0) 20 7188 7188 (Medical Toxicology Information Service, UK)

SECTION 2: Hazards identification

Classification of the substance or components of the mixtures:

Classification according to Regulation (EC) No. 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567

Substance	Hazard Classification
Recombinant purified UDP-glucuronosyltransferase enzyme preparation from <i>E. coli</i>	Respiratory sensitization (Category 1), H334
Potassium Phosphate Monobasic	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
Potassium Phosphate Dibasic Trihydrate	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
Sucrose	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
Glycerol	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
L-Arginine monohydrochloride	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
Sodium chloride	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
Uridine 5'-diphosphoglucuronic acid trisodium salt	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

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2-Hydroxypropyl- β -cyclodextrin	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
4-Methylumbelliferone	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Label elements:

Labelling according to Regulation (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567

Substance	Pictogram	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
Recombinant purified UDP-glucuronosyl transferase enzyme preparation from <i>E. coli</i>		Danger	H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled.	P261 – Avoid breathing dust. P284 – Wear respiratory protection. P501 – Dispose of contents/container to an approved waste disposal plant.
2-Hydroxypropyl- β -cyclodextrin	None	None	Not classified	P261 – Avoid breathing dust/fume/gas/mist/vapour/spray. P262 – Do not get in eyes, on skin, or on clothing.

Other hazards:

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

SECTION 3: Composition/information on ingredients
Chemical characterization: Substances/Mixtures

Component	CAS-No.	EC-No.	Concentration*	Classification
Recombinant purified UDP-glucuronosyltransferase enzyme preparation from <i>E. coli</i>	-	-	$\leq 0.01\%$ (w/v) $< 0.1\%$ (w/w)	Resp. Sens. 1; H334
Potassium Phosphate Monobasic	7778-77-0	231-913-4	$< 0.3\%$ (w/v) $< 2.2\%$ (w/w)	None
Potassium Phosphate Dibasic Trihydrate	16788-57-1	231-834-5	$< 2\%$ (w/v) $< 15.1\%$ (w/w)	None
Sucrose	57-50-1	-	$\leq 10\%$ (w/v) $< 82\%$ (w/w)	None
Glycerol	56-81-5	200-289-5	$< 0.6\%$ (w/v) $< 4.7\%$ (w/w)	None
L-Arginine monohydrochloride	1119-34-2	-	$< 0.13\%$ (w/v) $< 1\%$ (w/w)	None
Sodium chloride	7647-14-5	231-598-3	$< 0.12\%$ (w/v) $< 1\%$ (w/w)	None
Uridine 5'-diphosphoglucuronic acid trisodium salt (32.3mg per vial)	63700-19-6	-	$\leq 3.23\%$ (w/v) 100% (w/w)	None
2-Hydroxypropyl- β -cyclodextrin (200mg per vial)	128446-35-5	-	$\leq 40\%$ (w/v) 100% (w/w)	None
4-Methylumbelliferone (0.5mg per vial)	90-33-5	-	$\leq 2.5\%$ (w/v) 100% (w/w)	None

* %w/v refers to concentrations in solution, reconstituted with water as per the instructions

%w/w refers to concentrations in lyophilised powders. Enzyme screening vials contain ca. 65mg of product. Enzyme scale-up vials contain ca. 1.3g of product.

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RTECS Number: Not applicable

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

SECTION 4: First aid measures

Description of first aid measures:

- General information:
If in doubt, involve a doctor immediately. Show this material safety data sheet to the doctor in attendance.
Remove breathing equipment only after contaminated clothing have been completely removed.
- After inhalation:
Remove person to fresh air and keep at rest in a position comfortable for breathing.
In case of unconsciousness place patient in stable side position for transportation.
In case of irregular breathing or respiratory arrest provide artificial respiration. It may be dangerous to give mouth-to-mouth resuscitation.
Call a doctor immediately. In the event of any complaints or symptoms, avoid further exposure.
- After skin contact:
Immediately wash with water and soap and rinse thoroughly.
Immediately remove any clothing and shoes contaminated by the product.
Wash contaminated clothing and shoes before reuse.
Seek immediate medical advice.
- After eye contact:
Rinse out with plenty of water for at least 20 minutes. Remove contact lenses, if present and easy to do.
Consult a doctor.
- After swallowing:
Make victim drink water (two glasses at most). Do not induce vomiting. Call for medical help immediately.

Information for doctor:

- Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11
- Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

Extinguishing media:

- Suitable extinguishing agents:
Water spray, foam, carbon dioxide (CO₂), dry powder. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture:

Mixture with some combustible components.
Development of hazardous combustion gases or vapours possible in the event of fire, including but not limited to: oxides of phosphorous, phosphorous trihydride (phosphine), potassium oxides, chlorine, magnesium oxides, hydrogen chloride gas, carbon oxides, nitrogen oxides (NO_x), sodium oxides, and sulphur oxides.

Advice for firefighters:

In the event of fire, wear appropriate protective equipment at self-contained breathing apparatus (SCBA) with a full-face piece operated in positive pressure mode.

Further information:

Prevent fire extinguishing water from contaminating surface water or the ground water system.
Suppress (knock down) gases/vapours/mists with a water spray jet.

SECTION 6: Accidental release measures

- Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid formation and inhalation of dust. Avoid substance contact. Do not breathe vapours, aerosols. Ensure adequate ventilation. Spray/dampen down with water to eliminate dust hazard.

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- Environmental precautions:
Do not let product enter drains.
- Methods and material for containment and cleaning up:
Cover drains. Collect spills. Observe possible material restrictions (see sections 7 and 10). Dispose of waste via a licensed waste disposal contractor. Clean up area.
- Reference to other sections:
For disposal see section 12.

SECTION 7: Handling and storage

Handling:

- Precautions for safe handling:
Always wear recommended Personal Protective Equipment (see section 8 for more detail).
As for all powdered enzymes/protein materials, use only with adequate ventilation at the workplace.
Whilst in powder form, product should be handled within appropriate powder handling containment in accordance with end-user's Health & Safety Policies and Practices.
Wear appropriate respirator when ventilation is inadequate.
Avoid creation of dust when handling; do not crush/break up lyophilized material.
As for all dust/powdered materials, it is recommended persons with a history of asthma, allergies, or chronic or recurrent respiratory disease are not involved in any process handling such materials.
For best practice, addition of dissolution solvent (specified in kit instructions) should be made through the vial septa to eliminate risk of exposure to powdered proteins.
Once in solution, the risk of respiratory sensitisation over long-term or multiple handling events is greatly reduced.
Open and handle receptacle with care; metal crimp can have sharp edges when removed.
- Information about fire and explosion protection:
Keep respiratory protective device available.

Conditions for safe storage, including any incompatibilities:

- Requirements to be met by storerooms and receptacles:
Keep in original container or an approved alternative made from a compatible material.
Serum vials and septa are part of safe containment control; do not remove lyophilized material from original container until in solution.
- Information about storage in one common storage facility:
Store away from foodstuffs.
- Further information about storage conditions:
Keep container tightly sealed.
Store in dry conditions.
Light sensitive.
- Recommended storage temperature:
< -15 °C, ideally < -70 °C
- Specific end use(s):
Use as laboratory reagent. Biocatalysis.

SECTION 8: Exposure controls/personal protection

Control parameters:

- Ingredients with workplace control parameters:
Exposure limits list source(s): UK – EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. IRE – 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority.

Component	The United Kingdom	European Union	Ireland
Sucrose: Saccharose	TWA: 10mg/m ³ STEL: 20mg/m ³	-	-
Glycerol: >95% Glycerin	TWA: 10mg/m ³ 8hr (mist only)	-	TWA: 10mg/m ³ 8hr (mist)

- Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL):

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Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Sodium chloride	-	DNEL: 295.52 mg/kg bw/day	-	DNEL: 295.52 mg/kg bw/day
Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Potassium Phosphate Monobasic	-	-	-	DNEL: 14.82 mg/m ³
Glycerol: Glycerin	-	-	DNEL: 56 mg/m ³	-
Sodium chloride	-	DNEL: 2068.62 mg/m ³	-	DNEL: 2068.62 mg/m ³

• Predicted No Effect Concentration (PNEC):

Component	Fresh water	Fresh water sediment	Water intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Glycerol: Glycerin	PNEC: 0.885 mg/L	PNEC: 3.3 mg/kg sediment dw	PNEC: 8.85 mg/L	PNEC: 1000 mg/L	PNEC: 0.141 mg/kg soli dw
Sodium chloride	PNEC: 5 mg/L	-	-	PNEC: 500 mg/L	PNEC: 4.86 mg/kg soil dw
Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Glycerol: Glycerin	PNEC: 0.0885 mg/L	PNEC: 0.33 mg/kg sediment dw	-	-	-

• Additional information:

The lists valid during the making were used as basis.

Exposure controls:
Appropriate engineering controls:

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Do not attempt to remove lyophilized material from original container until in solution. Keep container sealed unless in use to avoid spills or dust generation.

For best practice, addition of dissolution solvent (specified in kit instructions) should be made through the vial septa to eliminate risk of exposure to powdered proteins

Personal protective equipment:

• Eye/face protection:

Safety glasses. Use equipment for eye protection as tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

• Skin protection:

Handle with gloves. Gloves must be inspected prior to use. Observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

Ensure gloves are suitable for the task: chemical compatibility, dexterity, operational conditions, user susceptibility e.g., sensitisation effects. Also take into consideration the specific local conditions under which the product is used such as the danger of cuts, abrasions.

Remove gloves with care avoiding skin contamination. Dispose of contaminated gloves in accordance with applicable laws and good laboratory practices. Wash and dry hands.

• Body protection:

Long sleeved protective clothing; laboratory coat.

• Respiratory protection:

Required when dusts are generated.

Based on hazard and potential for exposure, select a respirator that meets the appropriate standard or certification.

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Respirators must be used in accordance with a respiratory protection programme to ensure proper fitting, training, and other important aspects of use.

The end-user has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure:

Do not let product enter drains.

General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Store protective clothing separately.

Avoid contact with the eyes and skin.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties		
General Information		
Appearance:	Form:	Lyophilized powder material in vials
	Colour:	Various
	Odour:	Not determined
	Odour threshold:	Not determined
	pH-value:	Not determined
Change in condition:	Boiling point/Boiling range:	Not applicable
	Flash point:	Not determined
	Flammability (solid, gaseous):	Not determined
	Ignition temperature:	Not determined
	Decomposition temperature:	Not determined
Danger of explosion:	Self-igniting:	Not determined
	Explosion limits:	
	Lower:	Not determined
Other Characteristics:	Upper:	Not determined
	Vapour pressure:	Not determined
	Density:	Not determined
Viscosity:	Solubility in / Miscibility with water:	Not determined
	Dynamic:	Not applicable
Other information:	Kinematic:	Not applicable
	No further relevant information available	

SECTION 10: Stability and reactivity

- Reactivity:
No data available.
- Chemical stability:
No data available.
- Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.
- Possibility of hazardous reactions:
No data available.
- Conditions to avoid:

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No data available.

- Incompatible materials:

No data available.

- Hazardous decomposition products:

In the event of a fire, see section 5.

SECTION 11: Toxicological information

Information on toxicological effects:

- Acute toxicity:

Oral: No data available, except for the following:

Potassium Phosphate Monobasic – LD50 Oral – Rat: 3200 mg/kg

Sucrose – LD50 Oral – Rat: 29,700 mg/kg

Remarks: Behavioural: Somnolence (general depressed activity). Cyanosis. Diarrhoea. (RTECS).

Glycerol (Glycerin) – LD50 Oral – Rat: 12,600 mg/kg

L-Arginine monohydrochloride – LD50 Oral – Rat (male and female): 12,400 mg/kg. Remarks: (ECHA)

Sodium chloride – LD50 Oral – Rat: 3 g/kg

2-Hydroxypropyl-β-cyclodextrin – LD50 Oral – Rat: 2,243 mg/kg

4-methylumbelliferone – LD50 Oral – Rat: 3850 mg/kg

Remarks: Sense Organs and Special Senses (Nose, Ear, Eye, and Taste): Eye – Lacrimation. Eye – Ptosis.

Behavioural: Altered sleep time (including change in righting reflex).

Inhalation: No data available, except for the following:

Potassium Phosphate Monobasic – LC50 Inhalation – Rat: 0.83 mg/L, 4h

Glycerol (Glycerin) – LC50 Inhalation – Rat: > 2.75 mg/l/4h (mist)

Sodium chloride – LC50 Inhalation – Rat: > 42 mg/L, 1h

Dermal: No data available, except for the following:

Potassium Phosphate Monobasic – LD50 Dermal – Rabbit: > 4640 mg/kg

Glycerol (Glycerin) – LD50 Dermal – Rabbit: > 10 g/kg

Sodium chloride – LD50 Dermal – Rabbit: > 10000 mg/kg

2-Hydroxypropyl-β-cyclodextrin – LD50 Dermal – Rat: 2,000 mg/kg

- Skin corrosion / irritation:

No data available, except for the following:

L-Arginine monohydrochloride – Skin – reconstructed human epidermis (RhE).

Results: No skin irritation (OCED Test Guideline 439).

- Serious eye damage / eye irritation:

No data available, except for the following:

L-Arginine monohydrochloride – Eyes – Rabbit. Results: No eye irritation – 1h (OCED Test Guideline 405)

- Respiratory or skin sensitization:

Prolonged or repeated exposure may lead to chronic respiratory irritation.

Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

- Germ cell mutagenicity:

No data available, except for the following:

Sucrose – Test type: Mutagenicity (mammal cell test).

Result: Negative. Remarks: (National Toxicology Program)

L-Arginine monohydrochloride – Test type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: human lymphocytes, with and without metabolic activation. Method: OCED Test Guideline 473

Result: Negative.

Test type: Ames test. Test system: Escherichia coli/Salmonella typhimurium, with and without metabolic activation

Method: OECD Test Guideline 471. Result: Negative.

- Carcinogenicity:

No data available.

- Reproductive toxicity:

No data available.

- Specific target organ toxicity – single exposure:

No data available.

- Specific target organ toxicity – repeated exposure:

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No data available.

- Aspiration hazard:
No data available.

Additional information:

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Other dangerous properties cannot be excluded.
Handle in accordance with good industrial / laboratory hygiene and safety practice.

SECTION 12: Ecological information

The environmental impact of the components of this product has not been fully investigated, except for the components detailed below.

Toxicity:

- Aquatic toxicity:

Component	Freshwater Fish	Water Flea	Freshwater Algae
Glycerol: Glycerin	Oncorhynchus mykiss LC50: 51-57 ml/L, 96h static	-	-
L-Arginine monohydrochloride	Danio rerio (Zebra fish) LC50: 2,800 mg/L 96h semi-static test	-	-
Sodium chloride	Pimephales promelas LC50: 7650 mg/L/96h	EC50: 1000 mg/L/48h	-

- Persistence and degradability:
No data available.

Behaviour in environmental systems:

- Bioaccumulative potential:

Component	Log Pow	Bioconcentration factor (BCF)
Glycerol: Glycerin	-1.75	No data available

- Mobility in soil:
No data available.

Results of PBT and vPvB assessment:

- PBT (persistent, bioaccumulative, and toxic):
No data available.
- vPvB (very persistent and very bioaccumulative):
No data available.
- Other adverse effects:
No data available.

SECTION 13 Disposal considerations

Waste treatment methods:

- Recommendation:
Must not be disposed together with general refuse.
The classification of the product may meet the criteria for a hazardous waste.
Dispose by incineration via approved chemical waste routes Do not allow product enter drains.
- European Waste Catalogue (EWC) Code: 07 05 13.

Uncleaned packaging:

- Recommendation: Handle like the product itself. Disposal must be made according to official regulations.

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SECTION 14 Transport information

	ADR / RID	ADN	IMDG	IATA
UN-Number	Not regulated	Not regulated	Not regulated	Not regulated
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	-	-	-	-

- Special precautions for user:
Transport within user's premises: always transport in closed containers that are upright and secure. Ensure the persons transporting the product know what to do in the event of a spillage.
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:
Not applicable.
- Transport/Additional information:
Not applicable.
- UN "Model Regulation":
UN -; Not dangerous goods.

SECTION 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture.
This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended by UK REACH Regulations SI 2019/758 and SI 2020/1577. Consult your local or regional authorities for more information.

International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Legend: X : Listed - : Not listed KECL - NIER number or KE number

Component	CAS No.	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Potassium phosphate monobasic	7778-77-0	231-913-4	-	-	X	X	KE-28622	X	X
Glycerol: Glycerin	56-81-5	200-289-5	-	-	X	X	KE-29297	X	X
Sodium chloride	7647-14-5	231-598-3	-	-	X	X	KE-31387	X	X

Component	CAS No.	TSCA	TSCA Inventory notification (active/inactive)	DSL	NDSL	AICS	NZIoC	PICCS
Potassium phosphate monobasic	7778-77-0	X	Active	X	-	X	X	X
Glycerol: Glycerin	56-81-5	X	Active	X	-	X	X	X
Sodium chloride	7647-14-5	X	Active	X	-	X	X	X

- Chemical safety assessment:
A chemical safety assessment has not been carried out for this product.

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SECTION 16 Other information

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

H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled.

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

• Department issuing MSDS:

Department: Hypha Shipping

Version (revision date): 2 (20/05/2025)

Printing date: 20/05/2025

• Abbreviations and acronyms:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

AICS: Australian Inventory of Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DSL: Canadian Domestic Substances List

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: EU List of Notified Chemical Substances

EN: Europäische Norm (European Standard)

ENCS: Japanese Existing and New Chemical Substances

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

IBC code: International Bulk Chemical code

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

IMDG: International Maritime Dangerous Goods Code

ISHL: Japanese Industrial Health and Safety Law

KECL: Korean Existing and Evaluated Chemical Substances

MARPOL: International Convention for the Prevention of Pollution from Ships

NDSL: Canadian Non-Domestic Substances List

NIOSH: National Institute for Occupational Safety and Health

NLP: No-Longer Polymers

NZIoC: New Zealand Inventory of Chemicals

PBT: Persistent, Bioaccumulative, and Toxic

vPvB: very Persistent and very Bioaccumulative

PICCS: Philippines Inventory of Chemicals and Chemical Substances

RID: Agreement Concerning the International Transport of Dangerous Goods by Rail

RTECS: Registry of Toxic Effects of Chemical Substances

TCSI: Taiwan Chemical Substance Inventory

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