01/07/2024	01/07/2024 Kit Components	
Product code	Description	
V1731	P13K (p110a (E545K)/p85a), 20ug	
Components:		
V173	V173 PI3K (p110a(E545K)/p85a)	
V169	PI3K Reaction Buffer, 5X	



#### Printing date 01/07/2024

Reviewed on 01/07/2024

## 1 Identification

Product identifier Trade name: <u>PI3K (p110a(E545K)/p85a)</u> Article number: V173 Application of the substance / the mixture For Laboratory Use

Details of the supplier of the safety data sheet Manufacturer/Supplier: Promega Corporation 2800 Woods Hollow Road Madison, WI 53711 U.S.A. 1-800-356-9526 or (608)-274-4330

Information department: SDS author: chemicalregulatory@promega.com

#### Emergency telephone number:

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

## 2 Hazard(s) identification

*Classification of the substance or mixture The product is not classified as hazardous according to the Globally Harmonized System (GHS).* 

Label elements GHS label elements Not applicable Hazard pictograms Not applicable Signal word Not applicable Hazard statements Not applicable Classification system: NFPA ratings (scale 0 - 4) Health = 0Fire = 1*Reactivity* = 0HMIS-ratings (scale 0 - 4) *Health* = 0Fire = 1 Reactivity = 0OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable Target Organ(s): May cause Kidney damage (Nephrotoxin) **Other hazards** Results of PBT and vPvB assessment **PBT:** Not applicable. vPvB: Not applicable.

(Contd. on page 2)

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Printing date 01/07/2024

Reviewed on 01/07/2024

#### Trade name: PI3K (p110a(E545K)/p85a)

(Contd. of page 1)

## 3 Composition/information on ingredients

#### Chemical characterization: Mixtures

## Description:

The product is made up of a mixture of hazardous and non-hazardous components. The exact concentration percentages and components name may be withheld as a Promega Corp. trade secret.

#### Dangerous components:

56-81-5 glycerol

25-50%

# Additional information: For the wording of the listed risk phrases refer to section 15.

#### 4 First-aid measures

#### Description of first aid measures

*General information:* No special measures required.

After inhalation: If the patient feels unwell or is concerned, obtain medical advice.

*After skin contact: Generally the product does not irritate the skin.* 

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: If the patient feels unwell or is concerned, obtain medical advice.

Information for doctor:

Most important symptoms and effects, both acute and delayed None

No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## 5 Fire-fighting measures

#### Extinguishing media

Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Special hazards arising from the substance or mixture None known No further relevant information available. Advice for firefighters No special advice. Protective equipment: No special measures required.

## 6 Accidental release measures

 Personal precautions, protective equipment and emergency procedures Not required.

 Environmental precautions:

 Dilute with plenty of water.

 Do not allow to enter sewers/ surface or ground water.

 Methods and material for containment and cleaning up:

 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

 Reference to other sections

 No dangerous substances are released.

 See Section 7 for information on safe handling.

 See Section 13 for disposal information.

(Contd. on page 3)

Printing date 01/07/2024

Reviewed on 01/07/2024

#### Trade name: PI3K (p110a(E545K)/p85a)

(Contd. of page 2)

## 7 Handling and storage

#### Handling:

**Precautions for safe handling** No special measures required. **Information about protection against explosions and fires:** No special measures required.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles: Do not store below -20°C. Protected from light. Information about storage in one common storage facility: Not required. Further information about storage conditions: None.

*Specific end use(s)* No further relevant information available.

#### 8 Exposure controls/personal protection

#### **Control parameters**

Components with limit values that require monitoring at the workplace:

## 56-81-5 glycerol

PEL Long-term value: 15\* 5\*\* mg/m<sup>3</sup> mist; \*total dust \*\*respirable fraction

TLV TLV withdrawn-insufficient data human occup. exp.

Additional information: The lists that were valid during the creation were used as basis.

#### **Exposure** controls

#### Personal protective equipment:

General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment: Not required.

## Protection of hands:

Select the glove material considering penetration time, rate of diffusion and degradation time.

#### Material of gloves

Gloves impermeable to the specific chemical substance.

Please observe the instructions regarding permeability and breakthrough time which are provided by the manufacturer/supplier of the gloves. Ensure gloves are suitable for the task which includes, but is not limited to, chemical compatibility, dexterity, operational conditions, user susceptibility, e.g., sensitization effects. Consider specific local conditions under which the product is used such as the danger of cuts and abrasion. Remove gloves with care to avoid skin contamination.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product 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. **Eye protection:** Not required.

## 9 Physical and chemical properties

Information on basic ph	vsical and chemical properties	
General Information		
Appearance:		
Form:	Fluid	
Color:	Colorless	
Odor:	Not determined	

(Contd. on page 4)

US

Printing date 01/07/2024

Reviewed on 01/07/2024

## Trade name: PI3K (p110a(E545K)/p85a)

	(Contd. of page
Odor threshold:	Not determined.
pH-value at 20 °C (68 °F):	8
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
Flash point:	160 °C (320 °F)
Flammability (solid, gaseous):	Not applicable.
Auto igniting:	400 °C (752 °F)
Decomposition temperature:	Not determined.
Ignition temperature:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	0.9 Vol %
Upper:	0.0 Vol %
Vapor pressure at 20 °C (68 °F):	0.1 hPa
Density:	Not determined.
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Fully miscible.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent separation test	
Organic solvents:	50.0 %
Water:	48.6 %
VOC content:	0.00 %
Solids content:	0.9 %
Other information	No further relevant information available.

# **10 Stability and reactivity**

Reactivity No further relevant information available. Chemical stability Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications. Possibility of hazardous reactions No dangerous reactions known. Conditions to avoid No further relevant information available. Incompatible materials: No further relevant information available. Hazardous decomposition products: No dangerous decomposition products known.

(Contd. on page 5)

US

Printing date 01/07/2024

Reviewed on 01/07/2024

## Trade name: PI3K (p110a(E545K)/p85a)

(Contd. of page 4)

	1 Toxicological information			
	Information on toxicological effects			
_	Acute toxicity:			
_	LD/LC50 values that are relevant for classification:			
_	56-81-5 glycerol			
	Oral LD50 1,200 mg/kg (Rat)			
Primary irritant effect:				
	on the skin: No irritant effect.			
	on the eye: No irritating effect.			
	Sensitization:			
	In case of skin contact: not sensitising In case of inhalation: not sensitising			
	Additional toxicological information:			
	The product is not subject to classification according to internally approved calculation methods			
	preparations:			
	Carcinogenic categories			
	IARC (International Agency for Research on Cancer)			
	None of the ingredients are listed.			
	NTP (National Toxicology Program)			
	None of the ingredients are listed.			
	OSHA-Ca (Occupational Safety & Health Administration)			
	None of the ingredients are listed.			
_				
7	2 Ecological information			
	<i>Toxicity</i> <i>Aquatic toxicity:</i> Not harmful to the aquatic environment			
	Persistence and degradability			
	Not available			
	No further relevant information available.			
	Bioaccumulative potential			
	Not known			
	No further relevant information available.			
	Mobility in soil No further relevant information available.			
Ecotoxicological effects:				
	Remark: Not available			
	Additional ecological information: General notes: Not known to be hazardous to water.			
	Results of PBT and vPvB assessment			

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Printing date 01/07/2024

Reviewed on 01/07/2024

#### Trade name: PI3K (p110a(E545K)/p85a)

(Contd. of page 5)

## **13 Disposal considerations**

## Waste treatment methods

## **Recommendation:**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

#### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations. **Recommended cleansing agent:** Water, if necessary with cleansing agents.

UN-Number DOT, ADR, ADN, IMDG, IATA	Not hazardous for transportation Not applicable	
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	None Not applicable	
Transport hazard class(es)	None	
DOT, ADR, ADN, IMDG, IATA Class	Not applicable	
Packing group DOT, ADR, IMDG, IATA	None Not applicable	
Environmental hazards: Marine pollutant:	No	
Special precautions for user	Not applicable.	
Transport in bulk according to Annex MARPOL 73/78 and the IBC Code	II of Not applicable.	
UN "Model Regulation":	<i>Not applicable</i>	

## **15 Regulatory information**

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

Section 355 (extremely hazardous substances):

None of the ingredients are listed.

Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

TSCA (Toxic Substances Control Act) Inventory:

56-81-5 glycerol

Hazardous Air Pollutants

None of the ingredients are listed.

(Contd. on page 7)

ACTIVE

Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K (p110a(E545K)/p85a)

(Contd. of page 6)
Proposition 65
Chemicals known to cause cancer:
None of the ingredients are listed.
Chemicals known to cause reproductive toxicity for females:
None of the ingredients are listed.
Chemicals known to cause reproductive toxicity for males:
None of the ingredients are listed.
Chemicals known to cause developmental toxicity:
None of the ingredients are listed.
New Jersey Right-to-Know List:
56-81-5 glycerol
Pennsylvania Right-to-Know List:
56-81-5 glycerol
Cancerogenity categories
EPA (Environmental Protection Agency)
None of the ingredients are listed.
TLV (Threshold Limit Value)
None of the ingredients are listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients are listed.
GHS label elements Not applicable

GHS label elements Not applicable Signal word Not applicable Hazard statements Not applicable

National regulations: No information available

*Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water. Chemical safety assessment:* A Chemical Safety Assessment has not been carried out.

## **16 Other information**

\*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 SDS:

Promega Corporation Chemical Regulatory Department 2800 Woods Hollow Road Madison, WI Ph:(608)274-4330 chemicalregulatory@promega.com Contact: Date of preparation / last revision 01/07/2024 Abbreviations and acronyms: RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association EINECS: European Inventory of Existing Commercial Chemical Substances

Printing date 01/07/2024

Reviewed on 01/07/2024

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US

## Trade name: PI3K (p110a(E545K)/p85a)

ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit



#### Printing date 01/07/2024

## Reviewed on 01/07/2024

## 1 Identification

Product identifier Trade name: <u>PI3K Reaction Buffer, 5X</u> Article number: V169 Application of the substance / the mixture For Laboratory Use

Details of the supplier of the safety data sheet Manufacturer/Supplier: Promega Corporation 2800 Woods Hollow Road Madison, WI 53711 U.S.A. 1-800-356-9526 or (608)-274-4330

Information department: SDS author: chemicalregulatory@promega.com

#### Emergency telephone number:

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

## 2 Hazard(s) identification

*Classification of the substance or mixture The product is not classified as hazardous according to the Globally Harmonized System (GHS).* 

Label elements GHS label elements Not applicable Hazard pictograms Not applicable Signal word Not applicable Hazard statements Not applicable Classification system: NFPA ratings (scale 0 - 4) Health = 0Fire = 0*Reactivity* = 0HMIS-ratings (scale 0 - 4) *Health* = 0Fire = 0Reactivity = 0OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable Target Organ(s): Not applicable or unknown **Other hazards** Results of PBT and vPvB assessment **PBT:** Not applicable. vPvB: Not applicable.

(Contd. on page 2)

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Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K Reaction Buffer, 5X

(Contd. of page 1)

## 3 Composition/information on ingredients

#### Chemical characterization: Mixtures

#### Description:

The product is made up of a mixture of hazardous and non-hazardous components. The exact concentration percentages and components name may be withheld as a Promega Corp. trade secret.

#### Dangerous components: Not applicable

Additional information: For the wording of the listed risk phrases refer to section 15.

#### 4 First-aid measures

Description of first aid measures

General information: No special measures required.

*After inhalation: If the patient feels unwell or is concerned, obtain medical advice.* 

*After skin contact: Generally the product does not irritate the skin.* 

After eye contact: Rinse opened eye for several minutes under running water.

*After swallowing:* If the patient feels unwell or is concerned, obtain medical advice.

Information for doctor:

*Most important symptoms and effects, both acute and delayed None* 

No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

#### **5** Fire-fighting measures

Extinguishing media

Suitable extinguishing agents:

*CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Special hazards arising from the substance or mixture* 

None known

No further relevant information available.

Advice for firefighters No special advice.

Protective equipment: No special measures required.

## 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures Not required.

Environmental precautions:

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Reference to other sections

No dangerous substances are released.

See Section 7 for information on safe handling.

See Section 13 for disposal information.

(Contd. on page 3)

Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K Reaction Buffer, 5X

(Contd. of page 2)

## 7 Handling and storage

#### Handling:

**Precautions for safe handling** No special measures required. **Information about protection against explosions and fires:** The product is not flammable.

Conditions for safe storage, including any incompatibilities

Storage:

**Requirements to be met by storerooms and receptacles:** Do not store below -20°C. Protected from light. **Information about storage in one common storage facility:** Not required. **Further information about storage conditions:** None.

*Specific end use(s)* No further relevant information available.

#### 8 Exposure controls/personal protection

#### **Control parameters**

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

*Additional information:* The lists that were valid during the creation were used as basis.

#### **Exposure** controls

Personal protective equipment:

General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment: Not required.

## Protection of hands:

Select the glove material considering penetration time, rate of diffusion and degradation time.

## Material of gloves

Gloves impermeable to the specific chemical substance.

Please observe the instructions regarding permeability and breakthrough time which are provided by the manufacturer/supplier of the gloves. Ensure gloves are suitable for the task which includes, but is not limited to, chemical compatibility, dexterity, operational conditions, user susceptibility, e.g., sensitization effects. Consider specific local conditions under which the product is used such as the danger of cuts and abrasion. Remove gloves with care to avoid skin contamination.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product 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. **Eye protection:** Not required.

## 9 Physical and chemical properties

Information on basic physical an General Information Appearance:	nd chemical properties	
Form:	Fluid	
Color:	Colorless	
Odor:	Not determined	
Odor threshold:	Not determined.	
pH-value at 20 °C (68 °F):	7.5	
		(Contd. on page 4)

Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K Reaction Buffer, 5X

	(Contd. of page
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	100 °C (212 °F)
Flash point:	Not applicable.
Flammability (solid, gaseous):	Not applicable.
<b>Decomposition temperature:</b>	Not determined.
Ignition temperature:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not determined.
Density:	Not determined.
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Fully miscible.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent separation test	
Water:	92.4 %
VOC content:	0.00 %
Solids content:	1.8 %
Other information	No further relevant information available.

## **10 Stability and reactivity**

Reactivity No further relevant information available.
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions No dangerous reactions known.
Conditions to avoid No further relevant information available.
Incompatible materials: No further relevant information available.
Hazardous decomposition products: No dangerous decomposition products known.

## **11 Toxicological information**

Information on toxicological effects Acute toxicity: LD/LC50 values that are relevant for classification: No data available Primary irritant effect: on the skin: No irritant effect. on the eye: No irritating effect.

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US

Printing date 01/07/2024

Reviewed on 01/07/2024

#### Trade name: PI3K Reaction Buffer, 5X

(Contd. of page 4)

## Sensitization:

In case of skin contact: not sensitising In case of inhalation: not sensitising

Additional toxicological information:

The product is not subject to classification according to internally approved calculation methods for preparations:

## Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients are listed.

NTP (National Toxicology Program)

None of the ingredients are listed.

## **OSHA-Ca** (Occupational Safety & Health Administration)

None of the ingredients are listed.

## **12 Ecological information**

#### Toxicity

Aquatic toxicity: Not harmful to the aquatic environment Persistence and degradability Not available No further relevant information available. **Bioaccumulative potential** Not known No further relevant information available. Mobility in soil No further relevant information available. Ecotoxicological effects: Remark: Not available Additional ecological information: General notes: Not known to be hazardous to water. Results of PBT and vPvB assessment *PBT:* Not applicable. vPvB: Not applicable. Other adverse effects No further relevant information available.

## **13 Disposal considerations**

#### Waste treatment methods

#### **Recommendation:**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

#### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations. **Recommended cleansing agent:** Water, if necessary with cleansing agents.

## **14 Transport information**

**UN-Number** 

Not hazardous for transportation

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US

Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K Reaction Buffer, 5X

		(Contd. of page
DOT, ADR, ADN, IMDG, IATA	Not applicable	
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	None Not applicable	
Transport hazard class(es)	None	
DOT, ADR, ADN, IMDG, IATA Class	Not applicable	
Packing group DOT, ADR, IMDG, IATA	None Not applicable	
Environmental hazards: Marine pollutant:	No	
Special precautions for user	Not applicable.	
Transport in bulk according to Annex MARPOL73/78 and the IBC Code	<b>II of</b> Not applicable.	
UN "Model Regulation":	Not applicable	

# **15 Regulatory information**

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

Section 355 (extremely hazardous substances):

None of the ingredients are listed.

Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

TSCA (Toxic Substances Control Act) Inventory:

All components have the value ACTIVE.

## Hazardous Air Pollutants

None of the ingredients are listed.

**Proposition 65** 

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

New Jersey Right-to-Know List:

None of the ingredients are listed.

## Pennsylvania Right-to-Know List:

None of the ingredients are listed.

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– US

Printing date 01/07/2024

Reviewed on 01/07/2024

Trade name: PI3K Reaction Buffer, 5X

(Contd. of page 6)

Cancerogenity categories

EPA (Environmental Protection Agency)

None of the ingredients are listed.

TLV (Threshold Limit Value)

None of the ingredients are listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients are listed.

GHS label elements Not applicable Signal word Not applicable Hazard statements Not applicable

National regulations: No information available

*Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.* 

## **16 Other information**

\*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 SDS:

Promega Corporation Chemical Regulatory Department 2800 Woods Hollow Road Madison, WI Ph:(608)274-4330 chemicalregulatory@promega.com Contact: Date of preparation / last revision 01/07/2024 Abbreviations and acronvms: RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA) HMIS: Hazardous Materials Identification System (USA) VOC: Volatile Organic Compounds (USA, EU) LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent PBT: Persistent, Bioaccumulative and Toxic vPvB: very Persistent and very Bioaccumulative NIOSH: National Institute for Occupational Safety OSHA: Occupational Safety & Health TLV: Threshold Limit Value PEL: Permissible Exposure Limit REL: Recommended Exposure Limit