<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M8221</strong></td>
<td>LigaFast™ Rapid DNA Ligation System</td>
</tr>
</tbody>
</table>

Components:

<table>
<thead>
<tr>
<th>Component Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C671</td>
<td>2X Rapid Ligation Buffer, T4 DNA Ligase</td>
</tr>
<tr>
<td>M180</td>
<td>T4 DNA Ligase</td>
</tr>
</tbody>
</table>
Safety Data Sheet
acc. to OSHA HCS

1 Identification

Product identifier
Trade name: 2X Rapid Ligation Buffer, T4 DNA Ligase

Article number: C671
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
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

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 = 0
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)
Health = 0
Fire = 0
Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable
Target Organ(s): Not applicable or unknown

(Contd. on page 2)
Trade name: 2X Rapid Ligation Buffer, T4 DNA Ligase

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

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

Dangerous components:
Polyethylene Glycol 5-10%

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.

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).
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:* No special requirements.
*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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyethylene Glycol</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>WEEL (H): MW&gt;200</td>
<td></td>
</tr>
</tbody>
</table>

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: Not required.

Material of gloves
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 and chemical properties

General Information

Appearance:
*Form:* Fluid
*Color:* Colorless
*Odor:* Not determined
*Odor threshold:* Not determined.

*pH-value at 20 °C (68 °F):* 7.8
### 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**: No data available.
- **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.
- **Sensitization**: No sensitizing effects known.

**Additional toxicological information**:

The product is not subject to classification according to internally approved calculation methods for preparations.
Trade name: 2X Rapid Ligation Buffer, T4 DNA Ligase

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 available
No further relevant information available.

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 packaging:
Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not hazardous for transportation</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Safety Data Sheet
acc. to OSHA HCS

Printing date 11/30/2020
Reviewed on 07/30/2020

Trade name: 2X Rapid Ligation Buffer, T4 DNA Ligase

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA Class</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Packing group DOT, ADR, IMDG, IATA</td>
<td>None</td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Environmental hazards: Marine pollutant: No</td>
<td></td>
</tr>
<tr>
<td>Special precautions for user Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.</td>
<td></td>
</tr>
<tr>
<td>UN &quot;Model Regulation&quot;: Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

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 ingredients are listed.

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.

Cancerogenity categories

EPA (Environmental Protection Agency)
None of the ingredients are listed.

TLV (Threshold Limit Value established by ACGIH)
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

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

Date of preparation / last revision 11/30/2020 / 1.0

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)
ICAO: Internation Civil Aviation Organization
ADR: Accord européen sur le transport 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
ACGIH: American Conference of Governmental Industrial Hygienists
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

* Data compared to the previous version altered.
1 Identification

Product identifier
Trade name: T4 DNA Ligase

Article number: M180

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
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

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 = 0
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)
Health = 1
Fire = 1
Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable
Target Organ(s): May cause Kidney damage (Nephrotoxin)

(Contd. on page 2)
Trade name: T4 DNA Ligase

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures
Description:
The product is made up of a mixture of 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).

(Contd. on page 3)
Trade name: T4 DNA Ligase

Reference to other sections
No dangerous substances are released.
See Section 7 for information on safe handling.
See Section 13 for disposal information.

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: No special requirements.
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/m³
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: Not required.
Material of gloves
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 and chemical properties
General Information
Appearance:
Form: Fluid
Color: Colorless
Odor: Not determined
Odor threshold: Not determined.

(Contd. on page 4)
Trade name: T4 DNA Ligase

<table>
<thead>
<tr>
<th>pH-value at 20 °C (68 °F):</th>
<th>7.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>100 °C (212 °F)</td>
</tr>
<tr>
<td>Flash point:</td>
<td>&gt; 100 °C (&gt; 212 °F)</td>
</tr>
<tr>
<td>Flammability (solid, gaseous):</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>400 °C (752 °F)</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting:</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits:</td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>0.9 Vol %</td>
</tr>
<tr>
<td>Upper:</td>
<td>0.0 Vol %</td>
</tr>
<tr>
<td>Vapor pressure at 20 °C (68 °F):</td>
<td>0.1 hPa</td>
</tr>
<tr>
<td>Density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water:</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Organic solvents:</td>
<td>50.0 %</td>
</tr>
<tr>
<td>Water:</td>
<td>48.9 %</td>
</tr>
<tr>
<td>VOC content:</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Solids content:</td>
<td>0.6 %</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

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.
Sensitization: No sensitizing effects known.
Additional toxicological information:
The product is not subject to classification according to internally approved calculation methods for preparations:

<table>
<thead>
<tr>
<th>Carcinogenic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC (International Agency for Research on Cancer)</td>
</tr>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>NTP (National Toxicology Program)</td>
</tr>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>OSHA-Ca (Occupational Safety &amp; Health Administration)</td>
</tr>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

### 12 Ecological information

**Toxicity**

**Aquatic toxicity:**
Not available
No further relevant information available.

**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

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>Not hazardous for transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>None</td>
</tr>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>None</td>
</tr>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Class</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Packing group</td>
<td>None</td>
</tr>
<tr>
<td>DOT, ADR, IMDG, IATA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Environmental hazards:</td>
<td>No</td>
</tr>
<tr>
<td>Marine pollutant:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>UN &quot;Model Regulation&quot;:</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

## 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. |
| Proposition 65 | None of the ingredients are listed. |
| 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. |
| Cancerogenity categories | None of the ingredients are listed. |
| EPA (Environmental Protection Agency) | None of the ingredients are listed. |
Trade name: T4 DNA Ligase

TLV (Threshold Limit Value established by ACGIH)
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

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

Date of preparation / last revision 11/30/2020 / 1.0

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)
ICAO: Internation Civil Aviation Organization
ADR: Accord européen sur le transport 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
ACGIH: American Conference of Governmental Industrial Hygienists
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

* Data compared to the previous version altered.