

THE CHEMMACROS BUNDLE

v4.2e 2014/01/09

packages **CHEMMACROS** (v4.3), **CHEMFORMULA** (v4.3), **GHSYSTEM** (v4.2e) and
CHEMGREEK (v0.3)

documentation for the **GHSYSTEM** package

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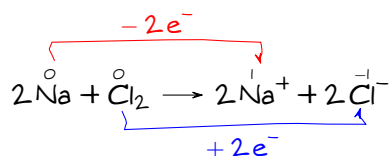


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1 Introduction

As a chemist you are probably aware of the fact that the UNITED NATIONS have developed the GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

(GHS) as a global replacement for the various different systems in different countries. While it has not been implemented by all countries yet [Uni12], it is only a matter of time.

The package **GHSYSTEM** now enables you to typeset all the hazard and precautionary statements and pictograms in a very easy way. The statements are taken from EU regulation 1272/2008 [Theo8].

2 Licence and Requirements

Permission is granted to copy, distribute and/or modify this software under the terms of the L^AT_EX Project Public License (LPPL), version 1.3 or later (<http://www.latex-project.org/lppl.txt>). The software has the status “maintained.”

GHSYSTEM loads the following packages: expl3¹ [The13a], xparse and l3keys2e² [The13b], translations³ [Nie13], siunitx⁴ [Wri13], graphicx⁵ [Car05], longtable⁶ [Car04] and ifpdf⁷ [Obe11].

3 Setup

The simplest way is to load **CHEMMACROS** which loads **GHSYSTEM** implicitly. All of **GHSYSTEM**’s options belong to the module **ghsystem**. This means they can be setup with

```
1 \chemsetup[ghsystem]{<options>} or
2 \chemsetup{ghsystem/<option1>,ghsystem/<option2>}
```

Introduced in
version 4.0

However, **GHSYSTEM** can be loaded as a standalone package and thus provides its own setup command:

```
\ghssetup{<options>}
Setup command for GHSYSTEM.
```

4 Get Hazard and Precautionary Statements

4.1 Simple Statements

The general usage is simple: you use the command

```
\ghs*[{<options>}]{<type>}{<number>}}
Get statement number <number> of type <type>.
```

-
1. on CTAN as l3kernel: <http://mirrors.ctan.org/macros/latex/contrib/l3kernel/>
 2. on CTAN as l3packages: <http://mirrors.ctan.org/macros/latex/contrib/l3packages/>
 3. on CTAN as translations: <http://mirrors.ctan.org/macros/latex/contrib/translations/>
 4. on CTAN as siunitx: <http://mirrors.ctan.org/macros/latex/contrib/siunitx/>
 5. on CTAN as graphicx: <http://mirrors.ctan.org/macros/latex/contrib/graphicx/>
 6. on CTAN as longtable: <http://mirrors.ctan.org/macros/latex/contrib/longtable/>
 7. on CTAN as ifpdf: <http://mirrors.ctan.org/macros/latex/contrib/ifpdf/>

There are three types available: h, euh and p. The *<type>* argument is case insensitive, so just type them in as you like.

```
1 \ghs{h}{200} \par
2 \ghs{H}{224} \par
3 \ghs{euh}{001} \par
4 \ghs{Euh}{202} \par
5 \ghs{p}{201}
```

H200: Unstable explosives.
H224: Extremely flammable liquid and vapour.
EUH001: Explosive when dry.
EUH202: Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
P201: Obtain special instructions before use.

The starred version hides the identifier and only gives the statement. If you want to hide the statement itself instead you can use the option:

`hide = true|false`

Default: false

Hide the statement.

There is an option to customize the output, too.

`space = {<space command>}`

(initially empty)

Space between *<type>* and *<number>*.

```
1 \ghs{h}{200} \par
2 \ghs[space=\,]{h}{200} \par
3 \ghs*{h}{200} \par
4 \ghs[hide]{h}{200}
```

H200: Unstable explosives.
H 200: Unstable explosives.
Unstable explosives.
H200

4.2 Statements with Placeholders

Some of the statements contain placeholders. They can be one of the following:

- *<state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>*
- *<state specific effect if known>*
- *<or state all organs affected, if known>*
- *<name of sensitising substance>*

Except the last one which needs to be filled in, they are hidden per default. They can be made visible with the option

`fill-in = true|false`

Default: false

Show placeholders.

```

1 \ghs{h}{340} \par
2 \ghs[fill-in]{h}{340} \par
3 \ghs{h}{360} \par
4 \ghs[fill-in]{h}{360} \par
5 \ghs{h}{370} \par
6 \ghs[fill-in]{h}{370} \par
7 \ghs{euh}{208} \par
8 \ghs[fill-in]{euh}{208}

```

H340: May cause genetic defects.

H340: May cause genetic defects. *<state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>*

H360: May damage fertility or the unborn child.

H360: May damage fertility or the unborn child. *<state specific effect if known> <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>*

H370: Causes damage to organs.

H370: Causes damage to organs *<or state all organs affected, if known>, <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>*

EUH208: Contains *<name of sensitising substance>*. May produce an allergic reaction.

EUH208: Contains *<name of sensitising substance>*. May produce an allergic reaction.

These placeholders can be replaced with one of these options:

exposure = {<text>} (initially empty)
exposure placeholder

effect = {<text>} (initially empty)
effect placeholder

organs = {<text>} (initially empty)
organ placeholder

substance = {<text>} (initially empty)
substance placeholder

```

1 \ghs[exposure=This is how you get exposed.]{h}{340} \par
2 \ghs[effect=These are the effects.]{h}{360} \par
3 \ghs[organs=to this organ]{h}{370} \par
4 \ghs[substance=substance]{euh}{208}

```

H340: May cause genetic defects. This is how you get exposed.

H360: May damage fertility or the unborn child. These are the effects.

H370: Causes damage to this organ.

EUH208: Contains substance. May produce an allergic reaction.

4.3 Statements with Gaps

Some of the statements have gaps that can be filled.

```
1 \ghs{p}{301} \par
2 \ghs{p}{401} \par
3 \ghs{p}{411} \par
4 \ghs{p}{413}
```

P301: IF SWALLOWED:

P401: Store ...

P411: Store at temperatures not exceeding °C/°F.

P413: Store bulk masses greater than kg/lbs at temperatures not exceeding °C/°F.

These gaps can be filled using these options:

text = {<text>}

Fill the text gap.

dots = {<text>}

Fill the dots gap.

C-temperature = {<num>}

Fill the Celsius temperature gap.

F-temperature = {<num>}

Fill the Fahrenheit temperature gap.

kg-mass = {<num>}

Fill the kg mass gap.

lbs-mass = {<num>}

Fill the lbs mass gap.

```
1 \ghs[text=contact physician!]{p}{301} \par
2 \ghs[dots=here]{p}{401} \par
3 \ghs[C-temperature=50, F-temperature=122]{p}{411} \par
4 \ghs[kg-mass=5.0, lbs-mass=11, C-temperature=50, F-temperature=122]{p}{413}
```

P301: IF SWALLOWED: contact physician!

P401: Store here

P411: Store at temperatures not exceeding 50 °C/122 °F.

P413: Store bulk masses greater than 5.0 kg/11 lbs at temperatures not exceeding 50 °C/ 122 °F.

4.4 Combined Statements

There are some combinations of statements. They are input with a + between the numbers:

```
1 \ghs{p}{235+410} \\  
2 \ghs{p}{301+330+331}
```

P235 + P410: Keep cool. Protect from sunlight.
P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

Note that you can only get combinations that officially exist. *You can't combine freely.*

5 Pictograms

5.1 The Pictures

The GHS defines a number of pictograms:



`\ghspic[⟨options⟩]{⟨name⟩}`
Load pictogram ⟨name⟩.

Table 1 shows all available pictograms and their names. To be more precise: it shows the names to use with the `\ghspic` command. The file names are `ghsystem_⟨name⟩.⟨filetype⟩` where ⟨filetype⟩ is eps, pdf, jpg or png, see also section 5.2.

```
1 \ghspic{skull}
```



If you don't like the default size you can change it using this option:

`scale = {⟨factor⟩}`

Default: 1

Scales the pictogram.

The pictures are actually quite large. The default setting scales them by a factor of $\frac{1}{20}$.

```
1 \ghspic[scale=2]{skull}
```



If you want to use some specific `\includegraphics` options, *e. g.*, if you want to rotate the pictogram for some reason, use this option:

```
includegraphics = {\includegraphics keyvals}
```



















Pass options to the underlying `\includegraphics` command.

```
1 \ghspic[includegraphics={angle=90}]{skull}
```



TABLE 1: All available GHS pictograms.

| name | pictogram | name | pictogram |
|---------------|-----------|---------------|-----------|
| explos | | explos-1 | |
| explos-2 | | explos-3 | |
| explos-4 | | explos-5 | |
| explos-6 | | | |
| flame | | flame-2-white | |
| flame-2-black | | flame-3-white | |
| flame-3-black | | flame-4-1 | |

| name | pictogram | name | pictogram |
|-----------------|---|-----------------|---|
| flame-4-2 |  | flame-4-3-white |  |
| flame-4-3-black |  | flame-5-2-white |  |
| flame-5-2-black |  | | |
| flame-0 |  | flame-0-5-1 |  |
| bottle |  | bottle-2-black |  |
| bottle-2-white |  | | |
| acid |  | acid-8 |  |
| skull |  | skull-2 |  |
| skull-6 |  | | |
| exclam |  | | |
| health |  | | |
| aqpol |  | | |

5.2 Picture Type Depending on Engine

As you probably know you can't use every picture type with every compiler engine. pdfTeX in DVI mode *needs* eps pictures while pdfTeX in PDF mode, XeTeX and LuaTeX convert eps pictures into pdf files, given they have the rights to write in the directory the pictures are saved

in.

However, the latter can include jpg and png without any problems, while pdf_TE_X in D_VI mode can't.

To resolve this **GHSYSTEM** tests which engine is used and if pdf_TE_X which mode is used and then chooses either eps or pdf for the pictograms. You are free to choose the picture type yourself with the option

`pic-type = eps|pdf|jpg|png`

Choose the picture type.

6 Available Languages

Right now the H and P statements are only available in English, German or Italian. The package adapts **CHEMMACROS**' option `language` or if the option hasn't been used recognizes the language settings made with babel or polyglossia. To be more precise: the language selected at begin document is recognized. Later changes won't affect **GHSYSTEM**. If you want to use different languages you have to use **GHSYSTEM**'s language option then.

You can also choose the language explicitly.

`language = english|german|italian`

Default: english

Selects and loads language file. Falls back to english if the chosen file doesn't exist.

| | |
|--|---|
| <pre> 1 \ghs{h}{201} 2 3 \chemsetup[ghsystem]{language=german} 4 \ghs{h}{201} </pre> | <p>H201: Explosive; mass explosion hazard.</p> <p>H201: Explosiv, Gefahr der Massenexplosion.</p> |
|--|---|

There is another alternative:

`\loadghsystemlanguage{<language>}`

Load the language used by **GHSYSTEM**.

Introduced in
version 4.0

I will add other languages some time in future. This may take a while, though. If you would be willing to contribute and write the statements of another language please feel free to contact me.⁸ I would provide you with a template file, a PDF containing the official translations, and help to all your questions.

7 List of All Statements

If for some reason you want to list all sentences you can use

`\ghslistall[<options>]`

Print a table with all defined statements.

8. contact@mychemistry.eu

This command has a number of options to customize the table, which is created with the `longtable` environment of the `longtable` package.

`table-head-number = {⟨text⟩}` Default: Identifier
The table head for the number.

`table-head-text = {⟨text⟩}` Default: Statement
The table head for the statement.

`table-next-page = {⟨text⟩}` Default: continues on next page
The hint for a next page.

`table-caption = {⟨text⟩}` Default: All H, EUH, and P Statements.
The ⟨text⟩ in `\caption{⟨text⟩}`.

`table-caption-short = {⟨short text⟩}` (initially empty)
The ⟨short text⟩ in `\caption[⟨short text⟩]{⟨text⟩}`.

`table-label = {⟨text⟩}` Default: `tab:ghs-hp-statements`
The label to refer to the table with `\ref` and similar commands.

`table-row-sep = {⟨dim⟩}` Default: 3pt
The separation of the table rows. A \TeX dimension.

`table-rules = default|booktabs|none` Default: `default`
The style of the horizontal rules in the table. `default` uses `\hline`, `booktabs` uses `\toprule`, `\midrule` and `\bottomrule`, resp. This option needs the `booktabs` package which you have to load yourself then.

`table-top-head-rule = default|booktabs|none` Default: `default`
Change top rule explicitly.

`table-head-rule = default|booktabs|none` Default: `default`
Change rule below head explicitly.

`table-foot-rule = default|booktabs|none` Default: `default`
Change foot rule explicitly.

`table-last-foot-rule = default|booktabs|none` Default: `default`
Change last foot rule explicitly.

The code below shows how table 2 was created:

```
1 \ghslistall[fill-in,table-rules=booktabs]
```

TABLE 2: All H, EUH, and P Statements.

| Identifier | Statement |
|------------|--|
| H200 | Unstable explosives. |
| H201 | Explosive; mass explosion hazard. |
| H202 | Explosive, severe projection hazard. |
| H203 | Explosive; fire, blast or projection hazard. |
| H204 | Fire or projection hazard. |
| H205 | May mass explode in fire. |
| H220 | Extremely flammable gas. |
| H221 | Flammable gas. |
| H222 | Extremely flammable aerosol. |
| H223 | Flammable aerosol. |
| H224 | Extremely flammable liquid and vapour. |
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |
| H228 | Flammable solid. |
| H240 | Heating may cause an explosion. |
| H241 | Heating may cause a fire or explosion. |
| H242 | Heating may cause a fire. |
| H250 | Catches fire spontaneously if exposed to air. |
| H251 | Self-heating; may catch fire. |
| H252 | Self-heating in large quantities; may catch fire. |
| H260 | In contact with water releases flammable gases which may ignite spontaneously. |
| H261 | In contact with water releases flammable gases. |
| H270 | May cause or intensify fire; oxidiser. |
| H271 | May cause fire or explosion; strong oxidiser. |
| H272 | May intensify fire; oxidiser. |
| H280 | Contains gas under pressure; may explode if heated. |
| H281 | Contains refrigerated gas; may cause cryogenic burns or injury. |
| H290 | May be corrosive to metals. |
| H300 | Fatal if swallowed. |
| H301 | Toxic if swallowed. |

continues on next page

| Identifier | Statement |
|------------|---|
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H310 | Fatal in contact with skin. |
| H311 | Toxic in contact with skin. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |
| H330 | Fatal if inhaled. |
| H331 | Toxic if inhaled. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H340 | May cause genetic defects. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H341 | Suspected of causing genetic defects. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H350 | May cause cancer. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H351 | Suspected of causing cancer. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H360 | May damage fertility or the unborn child. <i><state specific effect if known> <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H361 | Suspected of damaging fertility or the unborn child. <i><state specific effect if known> <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H362 | May cause harm to breast-fed children. |

continues on next page

7 List of All Statements

| Identifier | Statement |
|------------|---|
| H370 | Causes damage to organs <i><or state all organs affected, if known>.</i> <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H371 | May cause damage to organs <i><or state all organs affected, if known>.</i> <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H372 | Causes damage to organs <i><or state all organs affected, if known></i> through prolonged or repeated exposure. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H373 | May cause damage to organs <i><or state all organs affected, if known></i> through prolonged or repeated exposure. <i><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard></i> |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H412 | Harmful to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |
| H350i | May cause cancer by inhalation. |
| H360F | May damage fertility. |
| H360D | May damage the unborn child. |
| H361f | Suspected of damaging fertility. |
| H361d | Suspected of damaging the unborn child. |
| H360FD | May damage fertility. May damage the unborn child. |
| H361fd | Suspected of damaging fertility. Suspected of damaging the unborn child. |
| H360Fd | May damage fertility. Suspected of damaging the unborn child. |
| H360Df | May damage the unborn child. Suspected of damaging fertility. |
| EUH001 | Explosive when dry. |
| EUH006 | Explosive with or without contact with air. |
| EUH014 | Reacts violently with water. |
| EUH018 | In use may form flammable/explosive vapour-air mixture. |
| EUH019 | May form explosive peroxides. |
| EUH044 | Risk of explosion if heated under confinement. |

continues on next page

| Identifier | Statement |
|------------|--|
| EUH029 | Contact with water liberates toxic gas. |
| EUH031 | Contact with acids liberates toxic gas. |
| EUH032 | Contact with acids liberates very toxic gas. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| EUH070 | Toxic by eye contact. |
| EUH071 | Corrosive to the respiratory tract. |
| EUH059 | Hazardous to the ozone layer. |
| EUH201 | Contains lead. Should not be used on surfaces liable to be chewed or sucked by children. |
| EUH201A | Warning! contains lead. |
| EUH202 | Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children. |
| EUH203 | Contains chromium (VI). May produce an allergic reaction. |
| EUH204 | Contains isocyanates. May produce an allergic reaction. |
| EUH205 | Contains epoxy constituents. May produce an allergic reaction. |
| EUH206 | Warning! Do not use together with other products. May release dangerous gases (chlorine). |
| EUH207 | Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions. |
| EUH208 | Contains <name of sensitising substance>. May produce an allergic reaction. |
| EUH209 | Can become highly flammable in use. |
| EUH209A | Can become flammable in use. |
| EUH210 | Safety data sheet available on request. |
| EUH401 | To avoid risks to human health and the environment, comply with the instructions for use. |
| P101 | If medical advice is needed, have product container or label at hand. |
| P102 | Keep out of reach of children. |
| P103 | Read label before use. |
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. |

continues on next page

| Identifier | Statement |
|------------|--|
| P211 | Do not spray on an open flame or other ignition source. |
| P220 | Keep/Store away from clothing/.../combustible materials. |
| P221 | Take any precaution to avoid mixing with combustibles ... |
| P222 | Do not allow contact with air. |
| P223 | Keep away from any possible contact with water, because of violent reaction and possible flash fire. |
| P230 | Keep wetted with ... |
| P231 | Handle under inert gas. |
| P232 | Protect from moisture. |
| P233 | Keep container tightly closed. |
| P234 | Keep only in original container. |
| P235 | Keep cool. |
| P240 | Ground/bond container and receiving equipment. |
| P241 | Use explosion-proof electrical/ventilating/lighting/... equipment. |
| P242 | Use only non-sparking tools. |
| P243 | Take precautionary measures against static discharge. |
| P244 | Keep reduction valves free from grease and oil. |
| P250 | Do not subject to grinding/shock/.../friction. |
| P251 | Pressurized container: Do not pierce or burn, even after use. |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P262 | Do not get in eyes, on skin, or on clothing. |
| P263 | Avoid contact during pregnancy/while nursing. |
| P264 | Wash ... thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P281 | Use personal protective equipment as required. |
| P282 | Wear cold insulating gloves/face shield/eye protection. |
| P283 | Wear fire/flame resistant/retardant clothing. |

continues on next page

| Identifier | Statement |
|-------------|--|
| P284 | Wear respiratory protection. |
| P285 | In case of inadequate ventilation wear respiratory protection. |
| P231 + P232 | Handle under inert gas. Protect from moisture. |
| P235 + P410 | Keep cool. Protect from sunlight. |
| P301 | IF SWALLOWED: |
| P302 | IF ON SKIN: |
| P303 | IF ON SKIN (or hair): |
| P304 | IF INHALED: |
| P305 | IF IN EYES: |
| P306 | IF ON CLOTHING: |
| P307 | IF exposed: |
| P308 | IF exposed or concerned: |
| P309 | IF exposed or if you feel unwell: |
| P310 | Immediately call a POISON CENTER or doctor/physician. |
| P311 | Call a POISON CENTER or doctor/physician. |
| P312 | Call a POISON CENTER or doctor/physician if you feel unwell. |
| P313 | Get medical advice/attention. |
| P314 | Get medical advice/attention if you feel unwell. |
| P315 | Get immediate medical advice/attention. |
| P320 | Specific treatment is urgent (see ... on this label). |
| P321 | Specific treatment (see ... on this label). |
| P322 | Specific measures (see ... on this label). |
| P330 | Rinse mouth. |
| P331 | Do NOT induce vomiting. |
| P332 | If skin irritation occurs: |
| P333 | If skin irritation or rash occurs: |
| P334 | Immerse in cool water/wrap in wet bandages. |
| P335 | Brush off loose particles from skin. |
| P336 | Thaw frosted parts with lukewarm water. Do not rub affected area. |
| P337 | If eye irritation persists: |
| P338 | Remove contact lenses, if present and easy to do. Continue rinsing. |
| P340 | Remove victim to fresh air and keep at rest in a position comfortable for breathing. |

continues on next page

7 List of All Statements

| Identifier | Statement |
|--------------------|---|
| P341 | If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P342 | If experiencing respiratory symptoms: |
| P350 | Gently wash with plenty of soap and water. |
| P351 | Rinse cautiously with water for several minutes. |
| P352 | Wash with plenty of soap and water. |
| P353 | Rinse skin with water/shower. |
| P360 | Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. |
| P361 | Remove/Take off immediately all contaminated clothing. |
| P362 | Take off contaminated clothing and wash before reuse. |
| P363 | Wash contaminated clothing before reuse. |
| P370 | In case of fire: |
| P371 | In case of major fire and large quantities: |
| P372 | Explosion risk in case of fire. |
| P373 | DO NOT fight fire when fire reaches explosives. |
| P374 | Fight fire with normal precautions from a reasonable distance. |
| P375 | Fight fire remotely due to the risk of explosion. |
| P376 | Stop leak if safe to do so. |
| P377 | Leaking gas fire: Do not extinguish, unless leak can be stopped safely. |
| P378 | Use ... for extinction. |
| P380 | Evacuate area. |
| P381 | Eliminate all ignition sources if safe to do so. |
| P390 | Absorb spillage to prevent material damage. |
| P391 | Collect spillage. |
| P301 + P310 | IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. |
| P301 + P312 | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. |
| P301 + P330 + P331 | IF SWALLOWED: rinse mouth. Do NOT induce vomiting. |
| P302 + P334 | IF ON SKIN: Immerse in cool water/wrap in wet bandages. |
| P302 + P350 | IF ON SKIN: Gently wash with plenty of soap and water. |
| P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |

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| Identifier | Statement |
|--------------------|--|
| P303 + P361 + P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P304 + P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P304 + P341 | IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P306 + P360 | IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. |
| P307 + P311 | IF exposed: Call a POISON CENTER or doctor/physician. |
| P308 + P313 | IF exposed or concerned: Get medical advice/attention. |
| P309 + P311 | IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. |
| P332 + P313 | If skin irritation occurs: Get medical advice/attention. |
| P333 + P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P335 + P334 | Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. |
| P337 + P313 | If eye irritation persists: Get medical advice/attention. |
| P342 + P311 | If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. |
| P370 + P376 | In case of fire: Stop leak if safe to do so. |
| P370 + P378 | In case of fire: Use ... for extinction. |
| P370 + P380 | In case of fire: Evacuate area. |
| P370 + P380 + P375 | In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. |
| P371 + P380 + P375 | In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. |
| P401 | Store ... |
| P402 | Store in a dry place. |
| P403 | Store in a well-ventilated place. |
| P404 | Store in a closed container. |
| P405 | Store locked up. |
| P406 | Store in corrosive resistant/... container with a resistant inner liner. |
| P407 | Maintain air gap between stacks/pallets. |

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References

| Identifier | Statement |
|-------------------------------------|--|
| P ₄₁₀ | Protect from sunlight. |
| P ₄₁₁ | Store at temperatures not exceeding °C/°F. |
| P ₄₁₂ | Store at temperatures not exceeding 50 °C/122 °F. |
| P ₄₁₃ | Store bulk masses greater than kg/lbs at temperatures not exceeding °C/°F. |
| P ₄₂₀ | Store away from other materials. |
| P ₄₂₂ | Store contents under ... |
| P ₄₀₂ + P ₄₀₄ | Store in a dry place. Store in a closed container. |
| P ₄₀₃ + P ₂₃₃ | Store in a well-ventilated place. Keep container tightly closed. |
| P ₄₀₃ + P ₂₃₅ | Store in a well-ventilated place. Keep cool. |
| P ₄₁₀ + P ₄₀₃ | Protect from sunlight. Store in a well-ventilated place. |
| P ₄₁₀ + P ₄₁₂ | Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. |
| P ₄₁₁ + P ₂₃₅ | Store at temperatures not exceeding °C/°F. Keep cool. |
| P ₅₀₁ | Dispose of contents/container to ... |

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