



## Self-Heating Chemicals

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### **How does OSHA's Hazard Communication Standard (HCS 2012) define self-heating chemicals?**

A self-heating chemical is a solid or liquid chemical, other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; this chemical differs from a pyrophoric liquid or solid in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

**NOTE:** Self-heating of a substance or mixture is a process where the gradual reaction of that substance or mixture with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance or mixture will rise which, after an induction time, may lead to self-ignition and combustion.

### **How does HCS 2012 classify self-heating chemicals?**

A self-heating chemical is classified in one of the two categories for this hazard class if the results meet the criteria shown in Table 1 and the tests are performed in accordance with test method N.4 in Part III, sub-section 33.3.1.6 of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Revision 4.

**Table 1: Self-Heating Substances Classification Criteria and Hazard Communication elements**

Category	Category 1	Category 2
<b>Description</b>	A positive result is obtained in a test using a 25 mm sample cube at 140°C (284°F)	A negative result is obtained in a test using a 25 mm cube sample at 140°C (284°F), a positive result is obtained in a test using a 100 mm sample cube at 140°C (284°F), and: (a) the unit volume of the chemical is more than 3 m <sup>3</sup> ; or (b) a positive result is obtained in a test using a 100 mm cube sample at 120°C (248°F) and the unit volume of the chemical is more than 450 liters; or (c) a positive result is obtained in a test using a 100 mm cube sample at 100°C (212°F).

Table 2 shows some of the label elements for self-heating chemicals. The precautionary statements are not included due to space limitations of this fact sheet. See §1910.1200 for complete classification and labelling information.

**Table 2: Hazard Communication Label Elements for self-heating chemicals**

Category	Category 1	Category 2
<b>Pictogram</b>		
<b>Signal Word</b>	Danger	Warning
<b>Hazard Statement</b>	Self-heating; may catch fire	Self-heating in large quantities; may catch fire

### ***Important considerations in classifying substances as self-heating chemicals:***

- 1- Chemicals with a temperature of spontaneous combustion higher than 50°C (122°F) for a volume of 27 m<sup>3</sup> are not classified as self-heating chemicals.
- 2- Chemicals with a spontaneous ignition temperature higher than 50°C (122°F) for a volume of 450 liters are not classified in Category 1 of this class.
- 3- The classification procedure for self-heating chemicals need not be applied if the results of a screening test can be adequately correlated with the classification test and an appropriate safety margin is applied.

### ***To learn more...***

- **OSHA: Hazard Communication.** Available at: <https://www.osha.gov/dsg/hazcom/index.html>  
View the HCS 2012 standard, the compliance directive, the *Small Entity Compliance Guide*, briefs, pictograms, QuickCards™, Frequently Asked Questions, and other resources.
- **UNECE: About the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (from the UN).** Available at: [http://www.unece.org/trans/danger/publi/ghs/ghs\\_welcome\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html)
- **Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Revision 3** (also known as “The Purple Book.”) Available at: [http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev03/03files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html)

*Note:* Newer revisions of the “Purple Book” have been developed; however, HCS 2012 follows GHS Revision 3. In some instances, conforming to later revisions may render the user out of compliance with HCS 2012.

- **OSHA/SCHC Alliance Information Sheets.** Available at:
  - OSHA site: <http://www.osha.gov/dcsp/alliances/schc/schc.html>
  - SCHC site: <http://www.schc.org/osha-alliance>
- **SCHC: Regulatory and Industry Standards Courses.** Available at: <http://www.schc.org/training>

*The information contained in this sheet is believed to accurately represent HCS 2012 requirements. However, SCHC cannot guarantee the accuracy or completeness of this information. Users are responsible for determining the suitability and appropriateness of these materials for any particular application.*

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