



Globally Harmonized System (GHS)
of Classification and Labeling of Chemicals
Produced by SCHC-OSHA Alliance
GHS Information Sheet Workgroup – Sept. 2007

Info Sheet #2 Flammable (and Combustible) Liquids January, 2010

How does the GHS compare to other U.S. regulations and consensus standards?

U.S. regulatory authorities and consensus standards define Flammable and Combustible Liquids in various ways – see the definitions on page 3. Certain classification and rating systems are subject to various exceptions and qualifications that are beyond the scope of this information sheet—please refer to the regulatory text for full details.

Table 1 compares the classifications:

Table 1: Flammable and(Combustible) Liquid Classification Comparison

Flash Point Closed Cup	<20°F(-7°C)	20°F(-7°C)- 100°F(38°C)	100°F(38°C)- 140°F(60°C)	140°F(60°C)- 150°F(66°C)	150°F(66°C)- 200°F(93°C)
OSHA	Flammable	Flammable	Combustible	Combustible	Combustible
ANSI	Extremely Flammable	Flammable	Flammable (<141°F/60.5°C)	Combustible	Combustible
RCRA (EPA)	Ignitable	Ignitable	Ignitable		
DOT	Flammable	Flammable	Flammable (<141°F/60.5°C)	Combustible	Combustible
CPSC	Extremely Flammable	Flammable	Combustible	Combustible	
NFPA 30	Class I	Class I	Class II	Class III	Class III




Table 2 presents the way in which the GHS harmonizes the Flammable Liquid Criteria:

Table 2: GHS Flammable (and Combustible) Liquid Criteria

Criteria	GHS Category	Transport Class / Packing Group
Flash point < 73°F(23°C) and initial boiling point ≤ 95°F(35°C)	1	3, I
Flash point < 73°F(23°C) and initial boiling point > 95°F(35°C)	2	3, II
Flash point ≥ 73°F(23°C) and ≤ 140°F(60.5°C)	3	3, III
Flash point > 140°F(60.5°C) and ≤ 199.4°F(93°C)	4	Combustible Liquid, PG III [DOT uses <200°F(93°C)]

Table 3 provides GHS label elements for Flammable (and Combustible) Liquids

Table 3: GHS Label Elements for Flammable (and Combustible) Liquids

	Category 1	Category 2	Category 3	Category 4
Symbol				No symbol
Signal Word	Danger	Danger	Warning	Warning
Hazard Statement	Extremely flammable liquid and vapor	Highly flammable liquid and vapor	Flammable liquid and vapor	Combustible liquid

Two numerical rating systems are currently used in the United States: NFPA 704 and HMIS III[®]. Table 4 compares these rating systems to the GHS classification system.

Table 4: GHS Classifications Compared to NFPA 704 and HMIS III[®] Rating Systems*

Flammability Criteria	GHS Category	NFPA 704 Rating	HMIS III [®] Rating
Flash point < 73°F(23°C) and initial boiling point <100°F(37.8°C)	1 or 2	4	4
Flash point < 73°F(23°C) and initial boiling point ≥ 100°F(37.8°C) and Flash point ≥ 73°F(23°C) and < 100°F(37.8°C)	2 or 3	3	3
Flash point ≥ 100°F(37.8°C) and < 200°F (93.4°C)	3 or 4	2	2
Flash point ≥ 200°F(93.4°C) and will burn in air when exposed to a temperature of 1500°F(815.5°C) for a period of 5 min.	None	1	1

* HMIS[®] is a registered trademark of the National Paint and Coatings Association (NPCA).
NFPA is the National Fire Protection Association

To learn more ...

- The GHS, in its entirety (including classification criteria and label and MSDS requirements), can be downloaded at: http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html
- OSHA's Notice of Proposed Rulemaking on the GHS is available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=21110
- A 12-hour training course on the GHS is offered by the Society for Chemical Hazard Communication (SCHC): <http://www.schc.org/training.php>
- For information sheets on additional GHS topics:
 OSHA site: <http://www.osha.gov/dcspp/alliances/schc/schc.html#documents> - go to 'Products and Resources'.
 or SCHC site: http://www.schc.org/issues.php?start_from=5&ucat=&archive=&subaction=&id=&cat=9 - see 'GHS Information Sheets'.
- The OSHA Guide to the Globally Harmonized System of Classification and Labeling of Chemicals is available at: <http://www.osha.gov/dsg/hazcom/ghs.html>

Current Definitions of Flammable and Combustible Liquids Used by U.S. Regulatory Authorities and Consensus Standards

(These standards are subject to various exceptions and qualifications that are beyond the scope of this information sheet—please refer to the regulatory text for full details.)

OSHA (Occupational Safety and Health Administration) (29 CFR 1910.1200)

- “Flammable Liquid”: Any liquid having a flash point below 100°F (37.8°C)
- “Combustible liquid”: Any liquid with a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C)

ANSI (American National Standards Institute) Z129.1- 2006

- “Extremely Flammable Liquid”: Any liquid having a flash point at or below 20°F (-6.7°C) OR any liquid having a flash point of not more than 141°F (60.5°C) and a boiling point of not more than 95°F (35°C)
- “Flammable Liquid”: Any liquid having a flash point of not more than 141°F (60.5°C) and a boiling point greater than 95°F (35°C)
- “Combustible Liquid”: Any liquid having a flash point above 141°F (60.5°C) and below 200°F (93.3°C)

RCRA (Resource Conservation & Recovery Act) - (EPA) (Environmental Protection Agency)

- Ignitable and spontaneously combustible OR having a flash point less than 140°F(60 °C)

DOT (Department of Transportation) (49 CFR 173.120)

- “Flammable Liquid”: A liquid having a flash point of not more than 141°F(60.5°C) OR

Any material in a liquid phase with a flash point at or above 100°F(37.8°C) that is intentionally heated and offered for transportation or transported at or above its flash point in a bulk packaging

“Combustible liquid”: Any liquid that does not meet the definition of any other hazard class specified in this subchapter
AND
has a flash point above 141°F (60.5°C) and below 200°F (93°C)

CPSC CPSC (Consumer Product Safety Commission) (16 CFR 1500.3)

- “Extremely Flammable”: Any substance with a flashpoint at or below 20°F(-6.7 °C)
- “Flammable”: Any substance with a flashpoint above 20°F(-6.7°C) and below 100°F(37.8°C)
- “Combustible”: Any substance with a flashpoint at or above 100°F(37.8°C) to and including 150°F(65.6°C)

NFPA 30 (National Fire Protection Association) (Flammable and Combustible Liquids Code)

- Class IA: Flash point less than 73°F(23°C); boiling point less than 100°F(38°C)
- Class IB: Flash point less than 73°F(23°C); boiling point equal to or greater than 100°F(38°C)
- Class IC: Flash point equal to or greater than 73°F(23°C), but less than 100°F(38°C)
- Class II: Flash point equal to or greater than 100°F(38°C), but less than 140°F(60°C)
- Class IIIA: Flash point equal to or greater than 140°F(60°C), but less than 200°F(93°C)

The information contained in this sheet is believed to accurately represent provisions of U.S. regulations, consensus standards, and current GHS 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.

This sheet was developed through OSHA’s Alliance Program for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor.