

Cut Off Values (continued)

There are also differences in the cut off values used in the EU and in the US and Canada for skin sensitizers, respiratory sensitizers, carcinogens, and specific target organ toxicity effects. As an example, the GHS classification for a product containing $\geq 0.1\%$ of a component that is a Category 1 skin sensitizer is classified for skin sensitization in the US and Canada. However, the same product may not be classified for skin sensitization in the EU due to a higher classification trigger, cut-off value, of $\geq 1.0\%$ for a Category 1 skin sensitizer component in a mixture. As seen in example 2, the hazard warnings will be as follows:

Example 2	EU CLP	OSHA 2012 & WHMIS 2015
Symbol:	none	
Signal Word:	none	Danger
Hazard Statement(s):	none	May cause an allergic skin reaction

Region Specific Classification Requirements

There are region specific classification requirements, such as the EU CLP harmonized classification. There are over four thousand substances that have EU legally binding classifications and, in some cases, the legally binding classification is different from the classification derived for the same substance in countries such as the US and Canada. As part of the EU harmonized classification, there are some substance Specific Concentration Limits (SCL) that have been derived and

used; these SCL values are sometimes higher or lower than the generic cut off values prescribed in the UN GHS building block. This results in differences between the EU and the US and Canada.

Other Drivers for GHS Classification Differences

Also contributing to the differences in GHS classifications is that each company may rely on different data and information when completing their hazard classifications. The data used for classification may be obtained from tests, literature and practical experience and this information is not always the same across all companies. Some companies, including BASF, have set internal standards with minimum data and risk assessment requirements that drive a robust set of available information on products. Even if multiple companies were producing the same product and each company started with the exact same information, it is possible that product safety, toxicology and regulatory experts may interpret the same set of data differently and result in differences in a product's hazard classification.

These data may also change over time when new test results or information become available and these changes may affect the product's GHS classification. Additionally, changes to raw materials used to produce a product may affect the GHS classification. A new raw material supplier for the same product may have different contaminants present in their product or different levels of the same contaminant. Since cut off values for components of mixtures may be as low as 0.1%, a minor change to a raw material may affect the overall product's GHS classification. As suppliers are assessing their materials and classifying their products, it is expected that we will continue to see classification changes.

BASF Promotes Global Harmonization

At BASF, we have made significant efforts to harmonize our GHS classifications as much as possible and to promote transparent communication to our customers. Within North America, we have elected to take a regional approach to GHS implementation and have a single classification per product across Canada, US and Mexico. As an example, WHMIS 2015 requires categorization of physical and health hazards not otherwise classified; the regional approach is to include categorization of these hazards across the region. The environmental hazard class has been adopted by some of the regions that have adopted GHS. In order to stay true to our commitment to promote global product classification when possible, the BASF North America region adopted the UN GHS environmental hazard class although not required by regional authorities in Canada and the US. As such, BASF products in North America will include environmental hazard classifications and the associated environmental hazard pictogram where applicable. There will still be regional classification differences to comply with country specific requirements. However, at BASF, we are working together globally to promote a harmonized approach for classifying our products.

For More Information:

For general questions, contact your BASF Account Manager. For regulatory questions, contact BASF Product Stewardship at our EHS Product Information Center (EPIC@BASF.com)



North America GHS Customer Bulletin

Why GHS Is Not Globally Harmonized

While GHS stands for the Globally Harmonized System, the approach is not global nor is it fully harmonized. As a result, global customers may find that the Safety Data Sheet (SDS) and label for the same product purchased from the same supplier in a different region may have different GHS classifications. The same may be true for products purchased in the same region from different suppliers. As GHS is implemented across North America, and globally, these differences are becoming more prevalent. How is this possible when the product itself hasn't changed?

No Global Requirements

It's important to understand that the GHS itself is not truly a global standard or regulation. The concept for a harmonized approach for classification and labelling was driven by an international mandate adopted during the 1992 United Nations (UN) Conference on Environment and Development to provide a foundation for all countries to develop comprehensive national programs for classifying and communicating hazards. The UN GHS Document (known as "The Purple Book") establishes hazard class building blocks for competent authorities in each country to adopt; however, this adoption does not necessarily eliminate existing national programs that address specific chemical hazard classification and communication. This approach provides a framework, but not a consistent set of global requirements. As a result, there are differences between the hazard classification and communication programs in each country that has adopted GHS.

Building Blocks

Under GHS, each country may adopt different elements of the building blocks for physical hazards, health hazards and environmental hazards. For example, in the United States (US), hazard communication falls under the Occupational Safety and Health Administration (OSHA), therefore, none of the elements of the GHS environmental hazard class were adopted under the Hazard Communication Standard (HCS). In Canada, the Hazardous Products Regulations (HPR) did not adopt the GHS category for explosives. The European Union (EU) Classification, Labelling and Packaging (CLP) regulations did not adopt GHS category 4 flammable liquids.

Table 1 (centerfold) outlines the current version of the GHS purple book (5th edition) along with the specific adoption in the European Union, the US and Canada; the differences between each program are highlighted in red.

Key Drivers for GHS Classification Differences

- GHS is not a global standard
- Countries have adopted different versions of GHS with different hazard categories and cut off values
- Underlying toxicology data and information available to each company for a chemical is not always the same
- Company experts may interpret results differently
- Raw material supplier information may differ

Cut Off Values

In addition to adopting different elements of the building blocks, there are also different cut off limits that can be applied when classifying the health hazards of a product. As an example, the GHS classification for a product containing $\geq 0.1\%$ of a component that is classified as a reproductive toxicant Category 1 (may damage fertility) will be classified as a reproductive toxin Category 1 (may damage fertility) in the US and Canada, and will be labelled with a Health Hazard pictogram. However, the same product may not be classified as a reproductive toxin in the EU because the EU cut off value is at 0.3% for Category 1 reproductive toxicants. The following shows this difference between how the EU and US/Canada SDSs/labels would look in example 1:

Example 1	EU CLP	OSHA 2012 & WHMIS 2015
Symbol:	none	
Signal Word:	none	Danger
Hazard Statement(s):	none	Suspected of damaging fertility

Table 1 - Comparison of EU, US and Canada GHS Programs Highlighting Building Block and Cut Off Value Differences (Differences marked in red)



Hazard Class	UN GHS (5th Edition) - 2013	EU Classification, Labelling and Packaging (CLP) - 2013	US OSHA Hazard Communication Standard (HCS) - 2012	Health Canada Hazardous Products Regulations (HPR) - 2015
PHYSICAL HAZARDS				
EXPLOSIVES	Division 1.1 - 1.6	Division 1.1 - 1.6	Division 1.1 - 1.6	Not Adopted
FLAMMABLE GASES (INCLUDING CHEMICALLY UNSTABLE GASES)	Category 1 - 2 Unstable Gas: Category A & B	Category 1 - 2 Unstable Gas: Category A & B	Category 1 - 2 Unstable Gas: Category A & B - Not Adopted	Category 1 - 2 Unstable Gas: Category A & B - Not Adopted
AEROSOLS	Category 1 - 3 (Category 3 = non-flammable aerosols)	Category 1 - 3 (Category 3 = non-flammable aerosols)	Category 1 - 2; Category 3 - Not Adopted	Category 1 - 2; Category 3 - Not Adopted
OXIDIZING GASES	Category 1	Category 1	Category 1	Category 1
GASES UNDER PRESSURE	Compressed gas; Liquefied gas; Refrigerated liquefied gas; Dissolved gas	Compressed gas; Liquefied gas; Refrigerated liquefied gas; Dissolved gas	Compressed gas; Liquefied gas; Refrigerated liquefied gas; Dissolved gas	Compressed gas; Liquefied gas; Refrigerated liquefied gas; Dissolved gas
FLAMMABLE LIQUIDS	Category 1 - 4	Category 1 - 3; Category 4 - Not Adopted	Category 1 - 4	Category 1 - 4
FLAMMABLE SOLIDS	Category 1 - 2	Category 1 - 2	Category 1 - 2	Category 1 - 2
SELF-REACTING SUBS & MIXTURES	Type A - G	Type A - G	Type A - G	Type A - G
PYROPHORIC LIQUIDS	Category 1	Category 1	Category 1	Category 1
PYROPHORIC SOLIDS	Category 1	Category 1	Category 1	Category 1
SELF-HEATING SUBS & MIXTURES	Category 1 - 2	Category 1 - 2	Category 1 - 2	Category 1 - 2
SUBS & MIXTURES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES	Category 1 - 3	Category 1 - 3	Category 1 - 3	Category 1 - 3
OXIDIZING LIQUIDS	Category 1 - 3	Category 1 - 3	Category 1 - 3	Category 1 - 3
OXIDIZING SOLIDS	Category 1 - 3	Category 1 - 3	Category 1 - 3	Category 1 - 3
ORGANIC PEROXIDES	Type A - G	Type A - G	Type A - G	Type A - G
CORROSIVE TO METALS	Category 1	Category 1	Category 1	Category 1
HEALTH HAZARDS				
ACUTE TOXICITY	Category 1 - 5	Category 1 - 4 Category 5 - Not Adopted	Category 1 - 4 Category 5 - Not Adopted	Category 1 - 4 (also requires classification for water activated toxic gas release under acute toxicity); Category 5 - Not Adopted
SKIN CORROSION/IRRITATION	Category 1A, 1B, 1C; Category 2 & Category 3	Category 1A, 1B, 1C; Category 2; Category 3 - Not Adopted	Category 1A, 1B, 1C; Category 2; Category 3 - Not Adopted	Category 1A, 1B, 1C; Category 2; Category 3 - Not Adopted
SERIOUS EYE DAMAGE/EYE IRRIT.	Category 1; Category 2A & 2B	Category 1; Category 2A; Category 2B - Not Adopted	Category 1; Category 2A & 2B	Category 1; Category 2A & 2B
SKIN SENSITIZATION	Category 1 for mixtures containing ≥0.1% or ≥1.0% Category 1 component Sub-category 1A for mixtures containing ≥0.1% Category 1A component Sub-category 1B for mixtures containing ≥1.0% Category 1B component	Category 1 for ≥1.0% of Category 1/1B component Category 1A for ≥0.2% of Category 1/1B component	Category 1 for ≥0.1% of Category 1/1A component Category 1 for ≥1.0% of Category 1B component	Category 1 for ≥0.1% of Category 1/1A component Category 1 for ≥1.0% of Category 1B component
RESPIRATORY SENSITIZATION	For Solid/Liquid: Cat 1 for mixtures containing ≥0.1% or ≥1.0% Cat 1 component; Sub-category 1A for mixtures containing ≥0.1% Category 1A component; Sub-category 1B for mixtures containing ≥1.0% Category 1B component For Gas: Cat 1 for mixtures containing ≥0.1% or ≥0.2% Cat 1 component; Sub-category 1A for mixtures containing ≥0.1% Sub-category 1A component; Sub-category 1B for mixtures containing ≥0.2% Sub-category 1B component	Category 1 for ≥1.0% of Category 1/1B component (solid, liquid) Category 1A for ≥0.1% of Category 1A component (solid, liquid) Category 1 for ≥0.2% of Category 1/1B component (gas) Category 1A for ≥0.1% of Category 1A component (gas)	Category 1 for ≥0.1% of Category 1/1A component (solid, liquid, gas) Category 1 for ≥1.0% of Category 1B component (solid/liquid) Category 1 for ≥0.2% of Category 1B component (gas)	Category 1 for ≥0.1% of Category 1/1A component (solid, liquid, gas) Category 1 for ≥1.0% of Category 1B component (solid/liquid) Category 1 for ≥0.2% of Category 1B component (gas)
GERM CELL MUTAGENICITY	Category 1A & 1B; Category 2 (mixture cut off values are 0.1% for Category 1 and 1.0% for Category 2)	Category 1A & 1B; Category 2 (mixture cut off values are 0.1% for Category 1 and 1.0% for Category 2)	Category 1A & 1B; Category 2 (mixture cut off values are 0.1% for Category 1 and 1.0% for Category 2)	Category 1A & 1B; Category 2 (mixture cut off values are 0.1% for Category 1 and 1.0% for Category 2)
CARCINOGENICITY	Category 1A for mixtures containing ≥0.1% Category 1A component Category 1B for mixtures containing ≥0.1% Category 1B component Category 2 for mixtures containing ≥0.1% or ≥1.0% Category 2 component	Category 1 for ≥0.1% Category 1 component Category 2 for ≥1.0% Category 2 component	Category 1 for ≥0.1% Category 1 component Category 2 for ≥0.1% Category 2 component	Category 1 for ≥0.1% Category 1 component Category 2 for ≥0.1% Category 2 component
REPRODUCTIVE TOXICITY	Category 1A for mixtures containing ≥0.1% or ≥0.3% Category 1A component Category 1B for mixtures containing ≥0.1% or ≥0.3% Category 1B component Category 2 for mixtures containing ≥0.1% or ≥3.0% Category 2 component Additional Category for Lactation Effects: ≥0.1% or ≥0.3% component	Category 1A/B for ≥0.3% Category 1A/B component Category 2 for ≥3.0% Category 2 component Additional Category for Lactation: ≥0.3% Lactation Effect component	Category 1 for ≥0.1% Category 1 component Category 2 for ≥0.1% Cat 2 component Additional Category for Lactation: ≥0.1% Lactation Effect component	Category 1 for ≥0.1% Category 1 component Category 2 for ≥0.1% Cat 2 component Additional Category for Lactation: ≥0.1% Lactation Effect component
SPECIFIC TARGET ORGAN TOXICITY (STOT) SINGLE EXPOSURE	Category 1 for mixtures containing ≥1.0% or ≥10% Category 1 component Category 2 for mixtures containing ≥1.0% or ≥10% Category 2 component Category 3 for mixtures containing ≥20% (sum of all Category 3 components)	Category 1 for ≥10% Category 1 component Category 2 for ≥10% Category 2 component Category 2 for 1-10% Category 1 component Category 3 for ≥20% (sum of all Category 3 components)	Category 1 for ≥1.0% Category 1 component Category 2 for ≥1.0% Category 2 component Category 3 for ≥20% (sum of all Category 3 components)	Category 1 for ≥1.0% Category 1 component Category 2 for ≥1.0% Category 2 component Category 3 for ≥20% (sum of all Category 3 components)
SPECIFIC TARGET ORGAN TOXICITY (STOT) REPEATED EXPOSURE	Category 1 for mixtures containing ≥1.0% or ≥10% Category 1 component Category 2 for mixtures containing ≥1.0% or ≥10% Category 2 component Category 2 for mixtures containing 1.0-10% Category 1 component	Category 1 for ≥10% Category 1 component Category 2 for ≥10% Category 2 component Category 2 for 1-10% Category 1 component	Category 1 for ≥1.0% Category 1 component Category 2 for ≥1.0% Category 2 component	Category 1 for ≥1.0% Category 1 component Category 2 for ≥1.0% Category 2 component
ASPIRATION HAZARD	Category 1 - 2	Category 1; Category 2 - Not Adopted	Category 1; Category 2 - Not Adopted	Category 1; Category 2 - Not Adopted
ENVIRONMENTAL HAZARDS				
ACUTE AQUATIC TOXICITY	Category 1 - 3	Category 1; Category 2 & 3 - Not Adopted	Not Adopted	Not Adopted
CHRONIC AQUATIC TOXICITY	Category 1 - 4	Category 1 - 4	Not Adopted	Not Adopted
HAZARDOUS TO THE OZONE LAYER	Category 1	Category 1	Not Adopted	Not Adopted
OTHER HAZARDS				
PYROPHORIC GAS	Not Adopted	Not Adopted	Pyrophoric Gas	Pyrophoric Gas
SIMPLE ASPHYXIANT	Not Adopted	Not Adopted	Simple Asphyxiant	Simple Asphyxiant
COMBUSTIBLE DUST	Not Adopted	Not Adopted	Combustible Dust	Combustible Dust
BIOHAZARDOUS INFECTIOUS MATERIALS	Not Adopted	Not Adopted	Not Adopted	Biohazardous Infectious Materials
CONTACT WITH WATER LIBERATES TOXIC GAS	Not Adopted	Contact with water liberates toxic gas	Supplemental hazard statement required on the SDS if a substance is present which, upon contact with water, releases a toxic gas in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.	Supplemental hazard statement required on the SDS and label indicating that "In contact with water, releases gases which are fatal/ toxic/harmful if inhaled".
REACTS VIOLENTLY WITH WATER	Not Adopted	Reacts violently with water	Possible HNOC	Possible HNOC
REPEATED EXPOSURE MAY CAUSE SKIN DRYING OR CRACKING	Not Adopted	Repeated exposure may cause skin drying or cracking	Possible HNOC	Possible HNOC
HAZARDS NOT OTHERWISE CLASSIFIED (HNOC)	Not Adopted	Not Adopted	HNOC: state the hazard. No label element requirements, just a requirement to list the hazard in Section 2 of the SDS.	Physical HNOC and Health HNOC: Mixtures containing ≥1% HNOC require disclosure of component(s) in SDS Section 3; Required label elements: appropriate pictogram, hazard statement, signal word and precautionary statement.