



GHS Compliance Labeling

Printing labels that comply with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

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Overview

The United Nations created the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) to standardize the labeling of chemicals as they are sold and transported internationally.

BarTender® provides intuitive, easy-to-use GHS label templates that help you meet GHS labeling requirements and produce consistent, compliant labeling throughout your enterprise.



The GHS sample templates described in this white paper were introduced in BarTender 10.1 SR2. Previous versions of BarTender included a GHS sample template with fewer features.

The BarTender GHS label templates are completely configurable and feature:

- Automated insertion of GHS product data from your ERP system, third-party database, internal database, or any combination of the three — so you can, for example, generate a product's GHS labels from the same data source as its SDS.
- Built-in business rules to help you navigate GHS's complexities.
- Automated population of hazard statements, precautionary statements, and GHS-mandated pictograms in the correct size for the application, with multiple formatting options, including linear- and diamond-shaped arrangements.
- Support for multiple languages, including all six of the official UN languages.
- Seagull Scientific's legendary technical support.

If you do not use BarTender's GHS sample templates, you can add GHS symbols to your custom templates using the Seagull GHS symbol font. For more information, refer to the [Adding GHS Symbols to Your Custom Template](#) chapter of this white paper.

For more information about GHS and chemical labeling, visit the Seagull Scientific GHS Regulation page:

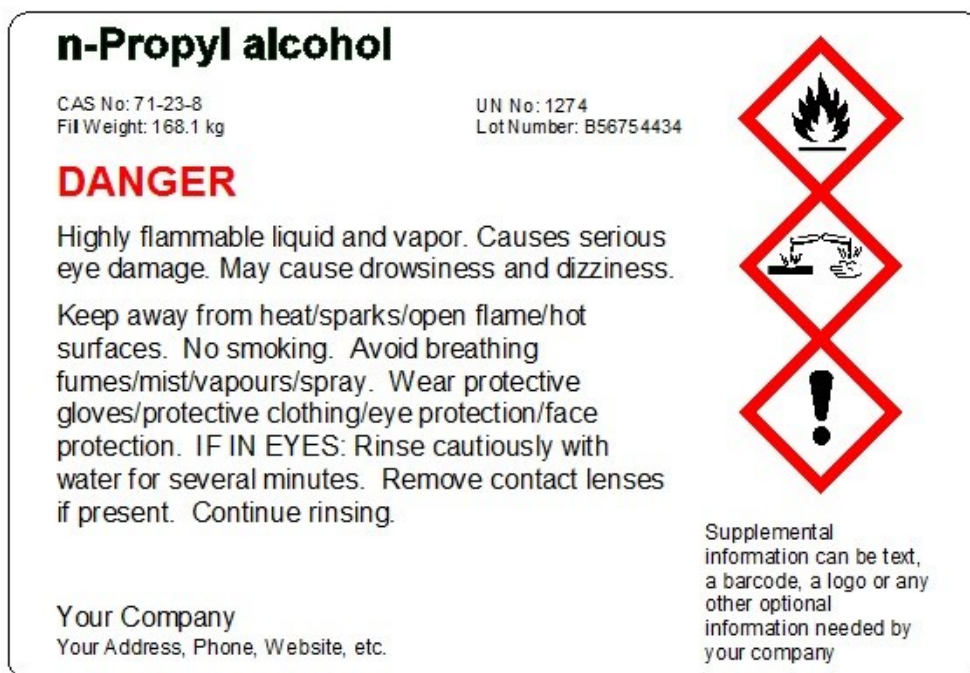
<https://www.seagullscientific.com/label-design-and-printing/regulations-standards/ghs/>

Steps to Implement GHS Labeling Using BarTender's Sample Templates

BarTender installs two sample GHS label templates and a sample data file into the following folder on your computer:

Documents\BarTender\BarTender Documents\GHS

The templates are automatically populated with data from the sample data file.



To modify the samples into a working labeling system, you must first prepare the database. The sample database contains fields for each GHS-required label element. A GHS-compliant label must contain the following elements:

- **Product Identifier (ingredient disclosure):** The name and/ or number used to identify a hazardous product.
- **Symbols:** Pictograms that convey the health, physical and environmental hazards associated with the product.
- **Signal words:** The words "Danger" or "Warning" are used to emphasize hazards and indicate the severity of the hazards. (Some lower level hazard categories do not require signal words.) Only one signal word corresponding to the class of the most severe hazard should be used on a label.
- **GHS hazard statements:** Also called H-statements, these are standard phrases applied to a hazard class and category that describe the nature of the hazard. An appropriate statement for each GHS hazard should be included on the label for products containing more than one hazard.

- **GHS precautionary statements:** Also called P-statements, these are statements that describe how to minimize or prevent adverse effects of the product.
- **Supplier identification:** The name, address, and telephone number of the product supplier.

Information that is not required under the GHS can also be included to provide further details.

Prepare Your Database

The sample database contains fields for each of the elements required under the GHS. To prepare your database, you will need to enter values for each of the required fields.

1. Open the sample GHS label that you want from Documents\BarTender\BarTender Documents\GHS and identify the content that you want to update.
2. From the same folder location, open the database file, GHS.csv, using a text editor application such as Notepad. The template objects in the sample label are linked to fields in GHS.csv for each GHS-required label element, as well as several that are optional. These fields include the following:
 - **ProductIdentifier:** The product identifier information. This is the product name portion of the Product Identifier requirement.
 - **Pictograms:** The symbols that visually describe the risks inherent in the chemical. For more information about the available symbols that you can use and how to add them to the database, refer to [Specifying GHS Pictograms](#) in this white paper.
 - **SignalWord:** The signal word corresponding to the class of the most severe hazard associated with the product. Either “WARNING” or “DANGER”.
 - **HazardStatements:** The H-statements (standard phrases corresponding to a hazard class and category that describe the nature of the hazard).
 - **PrecautionaryStatements:** The P-statements (standardized instructions that describe how to minimize risks in product handling).



For **HazardStatements** and **PrecautionaryStatements**, refer to the GHS specification for the required text:

<https://www.osha.gov/dsg/hazcom/global.html>

- **UNNumber:** The unique numerical identifier that represents the recommended transport protocol according to the UN Recommendations on the Transport of Dangerous Goods. Part of the Product Identifier requirement.
- **CASNumber:** The unique numerical identifier assigned by the Chemical Abstracts Service (CAS) to the chemical substance defined by the label. Part of the Product Identifier requirement.














A GHS-compliant label must contain *either* a UN number or a CAS number. Having both is not required.

- **FillWeight:** This field may be useful for your label design, but it is not required under GHS.
 - **LotNumber:** This field may be useful for your label design, but it is not required under GHS.
 - **ManufacturerName:** The name of the product manufacturer. Part of the Supplier identification requirement.
 - **AddressLine:** The manufacturer's address. Part of the Supplier identification requirement.
 - **SupplementalInformation:** Additional information. This field is permitted but not required under GHS.
3. Using the text editor, replace the existing data in each field of GHS.csv with the data that your label requires. To help you get started, the BarTender samples include placeholder text in these fields.
 4. When you have finished updating the database fields, save and close GHS.csv, and then save the BarTender document. Saving the BarTender document refreshes the template objects with the updated database content.

Specifying GHS Pictograms

The sample templates use a coding system to indicate which symbols to print on the label. Each symbol can be indicated by using either its long name or its short name, as shown in the table below.

Short Name	Long Name	Symbol	Short Name	Long Name	Symbol
None	None	<blank>	Skull	Skull and Crossbones	
Bomb	Exploding Bomb		Exclamation-SE	Exclamation Mark - Skin and Eye	
Flame	Flame		Exclamation	Exclamation Mark	
FlameO	Flame Over Circle		Health-R	Health Hazard - Respiratory	
Gas	Gas Cylinder		Health	Health Hazard	
Corrosion	Corrosion		Environment	Environment	

Multiple symbols can be indicated by separating their codes with semicolons, such as “Skull; Health” or “Exploding Bomb; Gas Cylinder.”

For detailed instructions on how to specify GHS pictograms, see [To Specify the GHS Pictograms](#), below.

How to Use the Two Exclamation Mark Symbols and Two Health Hazard Symbols

The sample templates implement the rules in GHS section 1.4.10.5.3.1 (Precedence for the Allocation of Symbols):



- If the Skull and Crossbones symbol is shown, the Exclamation Mark symbol should not be shown.
- If the Corrosion symbol is shown, the Exclamation Mark symbol should not be shown if the Exclamation Mark was being used for skin and eye irritation.
- If the Health Hazard symbol is shown for respiratory sensitization, then the Exclamation Mark symbol should not be shown if the Exclamation Mark was being used for skin and eye irritation.

So, use “Exclamation Mark – Skin and Eye” to indicate skin and eye irritation, and “Exclamation Mark” for all other Exclamation Mark applications. Use “Health Hazard – Respiratory” to indicate respiratory sensitization, and “Health Hazard” for all other health hazards. By doing so, you will enable BarTender to enforce those rules for you. If you are confident in your own compliance, you do not need to use “Exclamation Mark – Skin and Eye” or “Health Hazard – Respiratory.” Just use “Exclamation Mark” and “Health Hazard” exclusively.

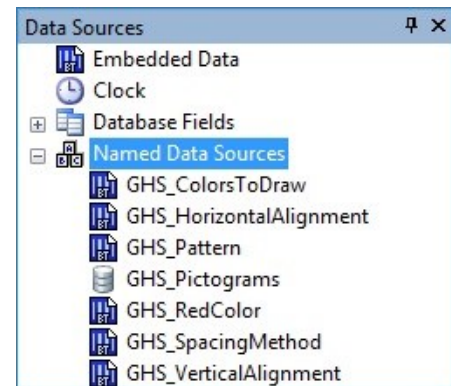
Modify the Sample Label

The sample templates include a document-level VBScript specified in the BarTender Document Options dialog. This VBScript draws the symbols requested at print-time into the rectangular area reserved for holding the symbols. Once your database is in place, use the steps below to complete the label design.

1. Copy the appropriate .btw file based on container volume:
 - a. For containers with a capacity of more than 500 liters, use GHS_500_Liters_or_More.btw.
 - b. For containers with a capacity of less than 500 liters, use GHS_Less_Than_500_Liters.btw.
 - c. If these labels are too large for your container, your container holds less than five liters, and your GHS-issuing regulatory agency permits a smaller size, you can easily build your own label template using GHS size guidelines and one of the sample templates as your starting point.
2. Rename the file, and open it.
3. From the **File** menu, select **Print** and specify your printer in the **Print** dialog. As implemented in virtually all countries, GHS requires a red border on pictograms. Therefore, either the printer you select must be able to print red items, or you must use stock that is pre-printed with red borders.
4. From the **File** menu, select **Page Setup** and set the label size.
5. Click **OK** to close the **Page Setup** dialog.
6. Adjust the label layout and position the template objects as desired.

7. Locate the Pictogram Area rectangle on the label design area. This is where the pictograms will appear at print-time. This object is in a locked layer, and it must be unlocked before modifying it.
8. To unlock the Pictogram Area rectangle, select the **Layers** tab at the bottom of the Toolbox, then click the  icon in the **Pictogram Area** layer.
9. Change the size of the Pictogram Area rectangle (or box) as you wish and move it to the desired location.
10. Double-click the Pictogram Area rectangle to open the **Box Properties** dialog. On the **Position** property page, verify that its reference point is **Top Left**.
11. Specify the names of the pictogram(s) you want to be printed at print-time. (For detailed instructions, see [To Specify the GHS Pictograms](#), below.)
12. Re-lock the **Pictogram Area** layer by clicking the  icon.
13. The document has a number of named GHS text objects that affect how the symbols are drawn. To view and edit them, click the **Data Sources** tab at the bottom of the Toolbox and expand the **Named Data Sources** node. Most of these data sources are set to be **Embedded Data** (static data), meaning that the desired values are specified in the document directly.

The available text data sources are listed below. To edit one of the data source's values, double-click on the desired named data source.



a. **GHS_ColorsToDraw**

Determines which objects to draw. Possible values are:

- <blank> = Draw all objects
- Red = Draw the red text and red diamonds only
- Black = Draw the black text and black symbols only

b. **GHS_HorizontalAlignment**

Controls the placement of the pictograms within the pictogram area. Possible values are:

- Left
- Right
- Center (default)


c. **GHS_Pattern**

Controls how multiple requested symbols will be positioned. Possible values are:

- Line = One single line of pictograms
- Sawtooth = One jagged line of pictograms
- Argyle = Pictograms placed in an argyle pattern

- o Auto (the default) = One of the three above patterns will be automatically selected based on which one results in the largest pictograms
 - d. **GHS_RedColor**
Specifies a value of red for the pictogram borders. If no value is specified, the default red color is used. Although color can be specified using any VBScript-compatible syntax, we recommend using one of the BtColor methods, such as “BtColor.FromRGB(255, 0, 0)”.
 - e. **GHS_SpacingMethod**
Controls the positioning between symbols. Possible values are:
 - o Overlapping (default) = Red borders of adjacent diamonds will overlap
 - o Touching = Red borders of adjacent diamonds will just touch each other
 - o Gapped = There will be a space between red borders of adjacent diamonds
 - f. **GHS_VerticalAlignment**
Controls the placement of the pictograms within the pictogram area. Possible values are:
 - o Top
 - o Bottom
 - o Center (default)
14. Replace the sample database with your own, configured above. Be sure to connect the field that specifies the desired symbols to the GHS_Pictograms data source (found in Named Data Sources, in the Data Sources tab of the Toolbox).
15. Specify the database fields for the following label elements:
- Signal Word
 - Hazard Statements (“H-statements”)
 - Precautionary Statements (“P-statements”)
 - Supplier Information
 - Any needed supplemental information
16. Save your BarTender document.

To Specify the GHS Pictograms:

1. Select the **Layers** tab at the bottom of the Toolbox and then click the  icon in the **Pictogram Area** layer to unlock the Pictogram Area rectangle.
2. At the bottom of the Toolbox, select the **Data Sources** tab.
3. Double-click the **GHS_Pictograms** named data source. The **Named Data Sources** dialog opens.
4. In the **Sample Data** area, enter the short or long names for the pictograms you wish to appear at print-time. If you're entering more than one pictogram name, be sure to separate them with a semicolon (i.e. Bomb;Flame).

5. When you're done entering the pictogram data, click **Close** to close the **Named Data Sources** dialog.

Print the Sample Label

Once you're ready to print and have finished the required steps for label setup by identifying the data source, specifying the printer, and completing the label formatting, consider using Integration Builder to automate the printing process.

See the BarTender Integration Methods white paper for more information:

<https://www.seagullscientific.com/support/white-papers>

Adding GHS Symbols to Your Custom Template

If you are not using one of BarTender's sample templates, you can add GHS symbols to a document by using BarTender's **Insert Symbols or Special Characters** dialog. After you place a GHS symbol on your template, you can reposition and resize it. In addition, if you will be adding a GHS symbol to your document after printing, you can add, size, and color an empty diamond shape on your template so that a GHS symbol can be placed onto it later.

To add a GHS symbol to your template:

1. From BarTender's **Create** menu, select **Text** to display a list of available text objects. Alternatively, click **A ▾** on the object toolbar.
2. From the list of text objects, click **Symbol Font Characters** to open the **Insert Symbols or Special Characters** dialog.
3. From the **Font** dropdown list, select **Seagull: GHS v1.0** to display the GHS symbols.
4. From the preview images, click the symbol you want.
5. Click **Insert** to close the **Insert Symbols or Special Characters** dialog.
6. Click on the template to place the symbol.

Using Shortcut Keys to Add GHS Symbols to your Template

Shortcut keys are provided for the Seagull GHS font symbols. If you routinely use a specific Seagull GHS symbol in your document designs, you may find it faster to add your symbol using its shortcut key. To take advantage of this feature, you must first determine the shortcut key for the symbol that you want.

Finding a Symbol's Shortcut Key

1. From BarTender's **Create** menu, select **Text** to display a list of available text objects. Alternatively, click **A ▾** on the object toolbar.
2. From the list of text objects, click **Symbol Font Characters** to open the **Insert Symbols or Special Characters** dialog.
3. From the **Font** dropdown list, select **Seagull: GHS v1.0** to display the GHS symbols.
4. From the preview images, click the symbol you want.
5. Note the shortcut key displayed on the left side of the dialog, below the preview images and just above the **Recently Used Characters**.



The shortcut key displayed for this Seagull GHS font symbol is **Latin Capital C**, so the shortcut key is "C". For a complete list of Seagull GHS symbol shortcuts, refer to [Appendix A](#).



Inserting a Symbol Using the Shortcut Key

1. From the BarTender **Create** menu, select **Text** to display a list of available text objects. Alternatively, click **A ▾** on the **object toolbar**.
2. From the dropdown list, select **Single Line** or **Multi-line**.
3. Click on the template to place the text object.
4. Click the text object to select the default sample text.
5. Type the shortcut key for the Seagull GHS symbol that you want.
6. From the **Text** toolbar, select **Seagull: GHS v1.0** from the font list. The shortcut key becomes the symbol.



It is also possible to create the text object on the template and apply the Seagull font to it, and then subsequently read the shortcut key into the text object from a database field. For more information about connecting your document to a database and importing data into template objects, refer to the [Reading Data from Databases](#) topic in the BarTender help system.

Inserting, Resizing and Coloring a Red Diamond Symbol

You can create, size, and color an empty red diamond shape on your template. This is useful if your GHS symbol will not be added to the label until after printing (for example, when it will be stamped on).

To Add a Diamond Symbol to your Template

From the Insert Symbols or Special Characters dialog

1. From the BarTender **Create** menu, select **Text** to display a list of available text objects. Alternatively, click **A ▾** on the **object toolbar**.
2. From the list of text objects, click **Symbol Font Characters** to open the **Insert Symbols or Special Characters** dialog.
3. From the **Font** dropdown list, select **Seagull: GHS v1.0** to display the GHS symbols.
4. Select the diamond symbol.





5. Click **Insert**.
6. Click on your template to place the diamond symbol.

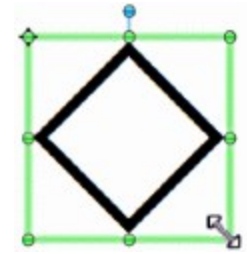
Using the Shortcut Key

1. From the BarTender **Create** menu, select **Text** to display a list of available text objects. Alternatively, click **A ▾** on the **object toolbar**.

2. From the dropdown list, select **Single Line**.
3. Click on the template to place the text object.
4. Click the text object to select the default sample text.
5. Type 0 (zero), which is the shortcut key for the diamond.
6. From the **Text** toolbar, select **Seagull: GHS v1.0** from the font list. The shortcut key becomes the diamond symbol.

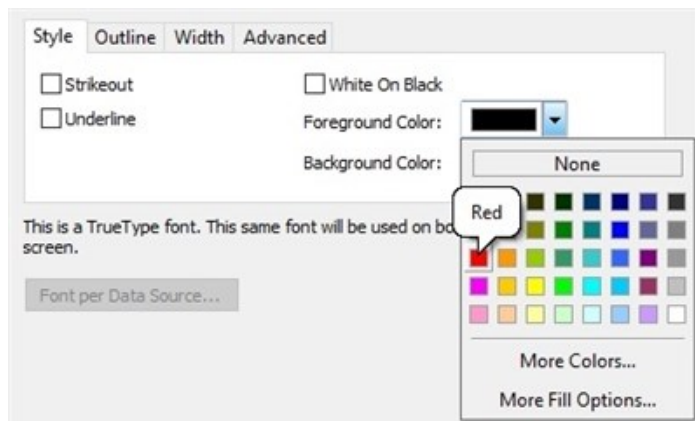
To Reposition and Resize the Diamond Symbol

1. Click the diamond symbol's outline to select it.
2. Use the move cursor  to move the diamond symbol to where you want it on the template.
3. Use the sizing cursor  to resize the diamond symbol.

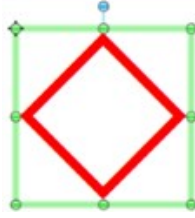


To Color the Diamond Symbol

1. From the diamond symbol's context menu, click **Properties** to open the **Text Properties** dialog.
2. In the navigation pane on the left side of the dialog, select **Font** to open the **Font** property page.
3. Click the **Style** tab.
4. From the **Foreground Color** dropdown list, select **Red**.






























5. Click **Close** to close the **Text Properties** dialog. The diamond symbol on your template is now red.













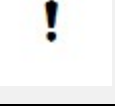





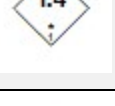

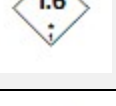













For more information, refer to the [Insert Symbols or Special Characters Dialog](#) topic in BarTender's help system.

Appendix A: Seagull GHS Font Shortcut Reference

Below is a list of the GHS and DOT symbols included in the Seagull GHS font and their keyboard shortcuts.

Symbol	Shortcut	Symbol	Shortcut	Symbol	Shortcut
	0 (digit zero)		1 (digit one)		2 (digit two)
	3 (digit three)		4 (digit four)		5 (digit five)
	6 (digit six)		A (Latin capital letter A)		B (Latin capital letter B)
	C (Latin capital letter C)		D (Latin capital letter D)		E (Latin capital letter E)
	F (Latin capital letter F)		G (Latin capital letter G)		H (Latin capital letter H)
	I (Latin capital letter I)		J Latin capital letter J)		K (Latin capital letter K)
	L (Latin capital letter L)		M (Latin capital letter M)		N (Latin capital letter N)
	O (Latin capital letter O)		P (Latin capital letter P)		Q (Latin capital letter Q)
	R (Latin capital letter R)		S (Latin capital letter S)		T (Latin capital letter T)

	U (Latin capital letter U)		V Latin capital letter V)		W (Latin capital letter V)
	X (Latin capital letter X)		Y (Latin capital letter Y)		Z (Latin capital letter Z)
	a (Latin small letter a)		b (Latin small letter b)		c (Latin small letter c)
	d (Latin small letter d)		e (Latin small letter e)		f (Latin small letter f)
	g (Latin small letter g)		h (Latin small letter h)		i (Latin small letter i)
	j (Latin small letter j)		k (Latin small letter k)		l (Latin small letter l)
	m (Latin small letter m)		n (Latin small letter n)		o (Latin small letter o)
	p (Latin small letter p)		q (Latin small letter q)		r (Latin small letter r)
	s (Latin small letter s)		t (Latin small letter t)		u (Latin small letter u)
	v (Latin small letter v)		w (Latin small letter w)		x (Latin small letter x)
	y (Latin small letter y)		z (Latin small letter z)		

Related Documentation

White Papers and Manuals

- Labeling for GHS (WEB)
<https://www.seagullscientific.com/label-design-and-printing/regulations-standards/ghs/>
- GHS Labeling: Pictograms (WEB)
<https://www.seagullscientific.com/label-design-and-printing/regulations-standards/ghs-pictograms>
- BarTender for Chemical Labeling (PDF)
<https://www.seagullscientific.com/media/101548/sheet-industry-chemical.pdf>
- GHS Compliance Labeling for BarTender 10.0 and Older (PDF)
<https://www.seagullscientific.com/support/white-papers>

External Documentation

To learn more, please visit the Occupational Safety and Health Administration website at <https://www.osha.gov> or the United Nations Economic Commission for Europe website at <http://www.unece.org>.

Additional information can be found at the following websites:

- The Globally Harmonized System for Hazard Communication (WEB)
<https://www.osha.gov/dsg/hazcom/global.html>
- About the GHS (WEB)
http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html
- CAS, Chemical Abstracts Service Home Page (WEB)
<http://www.cas.org/>
- International Union of Pure and Applied Chemistry (WEB)
<https://iupac.org/>
- UN Recommendations on the Transport of Dangerous Goods (PDF)
http://www.unece.org/fileadmin/DAM/trans/danger/publi/unrec/rev17/English/Rev17_Volume1.pdf

