American Coatings Association

Industry Labeling Guide

Advance Supplement to the Sixth Edition

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An Important Note

This document provides guidance for precautionary labeling which is considered appropriate by the Product Stewardship Committee of the American Coatings Association, Inc. (ACA). The information and recommendations contained in this guide have been compiled from sources believed to be reliable and to represent the best opinion on the subject as of 2013. However, no warranty, guarantee, or representation is made by the American Coatings Association, Inc., as to the correctness or sufficiency of any information or recommendation herein, and the association assumes no responsibility in connection therewith; nor can it be assumed that all necessary warnings and precautionary measures are contained in this guide, or that other or additional information or measures may not be required or desirable because of particular or exceptional conditions or circumstances, or because of applicable federal, state, or local law.

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Preface

Labeling Guidance Limitations

This document provides guidance for precautionary labeling which is considered appropriate by the Product Stewardship Committee of the American Coatings Association, Inc. (ACA). With respect to any specific finished product, the manufacturer or marketer has the ultimate responsibility for label content, based on known hazards. The labeling practices identified in this guide reflect the application of individual regulatory standards and guidelines, as well as existing consensus standards. Manufacturers who prepare labels in accordance with the guide must also consider information received from raw material suppliers and other relevant regulatory requirements.

ACA does not guarantee that the information contained herein will meet every labeling law or regulation, but does believe that basic labeling requirements are addressed. It must be emphasized that each manufacturer is responsible for the proper precautionary labeling with respect to reasonable foreseeable hazards associated with the handling, use and misuse of their product(s). Manufacturers are also responsible for the appropriate precautionary labeling of the product(s) composition as a whole, rather than relying solely on the statement of the single (or multiple) hazards associated with the individual ingredients or components.

Certain laws and regulations set forth mandatory requirements labeling which a manufacturer and/or marketer must follow to market products. Some courts have held that such labeling laws and regulations merely set minimum standards. Although full compliance with such laws and regulations would not be a perfect defense, it would be evidence of "standard care" and, as such, admissible in court proceedings. Therefore, from the standpoint of product liability, manufacturers should not rely solely on proof of compliance with applicable federal and state labeling laws involved in the sale of their products.

The recommendations and procedures contained in this labeling guide are merely guidelines. ACA member companies may use these procedures at their sole discretion. To the extent feasible, current trade practices have also been incorporated. The information in this guide has been compiled from sources believed to be reliable and to represent the best opinion on the subject as of December 2013. No warranty, guarantee, or representation is made by the American Coatings Association, Inc. as to the correctness or sufficiency of any guidance provided, and the association assumes no responsibility in connection therewith, nor can it be assumed that all possible procedures or warnings are contained in the guidance, or that additional information or measures may not be required or desirable because of particular and exceptional conditions or circumstances, or because of applicable federal, state or local laws.

In fact, it is necessary that individual manufacturers review the hazard classifications provided by raw materials suppliers. The information contained herein is not intended to replace an individual company's hazard classification. However, a complete understanding of the underlying regulatory requirements will better enable a manufacturer to develop appropriate precautionary labeling language for products and to demonstrate to government agencies a logical, rational and valid labeling effort that is consistent with the interpretations of applicable government agencies regarding compliance.

Elements of Hazard and Precautionary Labeling

Hazard and precautionary labeling is a constantly evolving art, drawing from diverse and constantly changing

sources of information. The purpose of this guide is to combine various influences into a single document. As a result, information in the guide can only be as current as the date it is prepared and published. New constituent ingredients are constantly being introduced, formula variations are developed, more is discovered about chemical properties, some products attain new uses, and different protective techniques are recognized; any or all of these potentially result in changes in product labeling language.

To accommodate such changes, each edition of the guide undergoes continual revision to reflect changing conditions. During the life of a given edition, supplements will be issued as needed. It is important that the user immediately integrate these supplements into a working copy of the guide, as they are made available.

Legislative and Regulatory Requirements

Some precautionary labeling requirements are mandatory, driven by various governmental authorities, such as the U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), for household (i.e., consumer) products the Consumer Product Safety Commission (CPSC), and assorted state and local bodies. Usually, such legal requirements are directed toward specific product lines, markets, ingredients, work practices, or constituencies. This combination of various governmental requirements creates a variety of information which product labels must convey to the end user.

EPA classifies some paints and coatings as "pesticides." Such products are subject to registration and special labeling requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) [7 USC 136 et. seq.]. Detailed requirements are provided in a separate chapter of this guide.

OSHA applies its Hazard Communication Standard (HCS) to ensure workers are informed of workplace hazards associated with the products used in the workplace setting [29 CFR 1200 et. seq.]. OSHA has clearly exempted consumer products (including paint and coatings products sold or available for sale to consumers) from the labeling provisions of the HCS. Accordingly, the specific hazard and precautionary labeling under the HCS are limited to "industrial paint and coating products." The following is also required:

1. Employers must prepare a written hazard communication program and inform workers and contractors at each plant site about the hazards of the chemicals present at that site.
2. Chemical manufacturers, importers and employers must provide a specific hazard classification for each chemical produced or used in the workplace.
3. The chemical manufacturer or distributor must attach required hazard and precautionary labels to each hazardous product leaving the workplace (i.e. shipped product containers).
4. The manufacturer of chemical mixtures (including paint and coatings products) may rely on the information provided by the chemical manufacturer, importer or distributor to assign the hazard classifications for the mixture, or may rely on test data developed for the mixture itself (i.e. flash point, or specific toxicology testing).
5. All employers must ensure that each container of hazardous materials in the workplace continues to bear the manufacturers hazard and precautionary labels (or compliant in-plant labeling systems, such as ACA's Hazardous Materials Information System or HMIS® may be used).
6. Chemical manufacturers and importers must provide a Safety Data Sheet (SDS) for each hazardous product produced or imported. Employers must have an SDS in the workplace for each hazardous chemical they use.
7. Employers must provide information and training for employees to the extent necessary to protect them from chemical hazards in the workplace.

Again, each chemical manufacturer should determine the hazard(s) of their product(s). The OSHA HCS lists numerous sources of information, and permits manufacturers using chemicals to rely on the hazard determination information (i.e., SDS) developed by their suppliers.

Although federal preemption has provided much uniformity in labeling, state and local governing bodies have also instituted precautionary labeling requirements. Generally speaking, these relate to the sale and use of specific products in particular jurisdictions. Mention of these requirements in this guide is not comprehensive. The most prominent or burdensome requirements are addressed in a separate chapter.

Consensus Standard Guidelines

The paint and coatings industry has also developed systems and procedures as an aid to communicating hazards. ACA's Hazardous Materials Identification System® (HMIS®) was designed to assist in complying with OSHA's HCS. HMIS® is discussed in another chapter and is supplemental to precautionary labeling recommendations included in the guide.

Trade Practice and Case Law

Product liability case law can have a major impact on precautionary language that should appear on a label. This, in turn, leads to development of industry trade practices to address a particular problem identified by common usage or by subsequent litigation. To the extent the legal principles and ensuing practices are well established, these have been integrated with labeling recommendations.

Commercial Practices

Although the guide's primary focus is on precautionary labeling, certain commercial practices have been incorporated. Examples include weights and measures labeling to indicate container content, air quality volatile organic compound (VOC) content requirements for some jurisdictions, environmental recycling, and waste disposal suggestions.

To the extent practical, the aforementioned laws and regulations have been considered in preparing the ACA sample labels, tables and other guidance. Nevertheless, this information is intended to serve as guidance, rather than the final answer; it constitutes suggestions, not directives. The information in this guide does not cover every conceivable formulation for household/consumer, commercial or industrial products. Again, it must be emphasized that the information contained within this guide is "representative" for the industry's products. All information in this guide should be carefully considered to ensure that cautions are included for all possible hazards presented by the individual manufacturer's finished product(s.)

Responsibility of Manufacturer

Irrespective of any labeling laws or regulations, when a manufacturer of any hazardous product places it in channels of trade, then — by the very nature of their business — it assumes a duty of conveying to those who might use the product, a fair and adequate warning/notice as to the known hazard(s) of the product(s). Thus, its customer (the end-user), by the exercise of reasonable care on his/her part, will be alerted to the possible consequences of use, or even misuse, thereof. It is very important that manufacturers of paint, coatings and other related products bear this in mind when preparing labels for their products.

Remember, each manufacturer, in the final analysis, has the responsibility for the proper and legal labeling of their finished product(s). This responsibility also applies to "private label"/toll products (see Chapter 9), whether the manufacturer controls the label content or whether a label designed and furnished by the private label customer is applied.

Features of the *Advance Supplement to the Sixth Edition*

This *Advance Supplement to the Sixth Edition of the ACA Industry Labeling Guide* is intended to provide information for ACA member companies manufacturing industrial coatings products. Issuance of this guidance was precipitated by OSHA's publication of a revised Hazard Communication Standard (Revised HCS) that requires the use of labels and Safety Data Sheets (SDS) that conform to the United Nations (UN) Globally Harmonized System for the Classification and Labeling of Chemicals (GHS). The most significant aspects of the Revised HCS are the more prescriptive hazard and precautionary statements that follow from the required assignment of a specific hazard classification for an industrial coating product or a chemical component of an industrial coating. This hazard classification is generally assigned by the raw materials manufacturer, and may be relied on by the mixture manufacturer to develop GHS conforming and Revised HCS compliant labels.

The issuance of this *Advance Supplement* comes some 18 months before the initial hazard communication requirements are to commence (June 1, 2015), and raw material suppliers are likely to use this time period to assign hazard classifications and offer information to their customers. Given that some communication from raw material suppliers may take time and industrial coatings manufacturers may want to consider developing GHS-conforming labels in advance of the June 2015 deadline, this *Advance Supplement* features a detailed listing of GHS-conforming hazard classifications for common industrial coatings raw materials extracted from publicly available databases (specifically the European Chemicals Agency's database of classifications for the Classification, Labaleing and Packaging (CLP) program that also aligns with the GHS).

ACA and its Product Stewardship Committee has compiled this detailed listing to provide industrial coatings manufacturers with some advance information on likely hazard classifications and resulting hazard and precautionary labeling requirements that will be required by the effective dates for the Revised HCS. The Advance Supplement, as noted, is still intended to work with aspects of the ACA *Industry Labeling Guide (Fifth Edition, as Supplemented May 2005),* as many other aspects of product labeling are unaffected by the Revised HCS.

Acknowledgments

ACA would like to acknowledge and thank members of its Product Stewardship Committee, who have graciously and generously given their time and expertise in producing this guide. The Product Stewardship Committee has sought to streamline the process for developing labeling guidance. Combining technical/risk assessment efforts and labeling compliance expertise, the Product Stewardship Committee as a whole will seek to address identified hazard assessment and (label) communication issues each time it meets. To support this effort, the committee is interested in receiving questions and other input from the ACA membership and other users of the guide. If you have questions, comments or concerns about the content of the guide or labeling issues in general, contact: **American Coatings Association, Inc., 1500 Rhode Island Ave., NW, Washington, DC 20005-5597; Phone (202) 462-6272; Fax (202) 462-8549; Email: member@paint.org.**

Introduction

How to Use ACA's *Advance Supplement to the Sixth Edition* for Industrial Products Regulated by OSHA

OSHA's Revised Hazard Communications Standard (Revised HCS) issued in February 2012 integrates the United Nations' Globally Harmonized System for the Classification and Labeling of Chemicals (GHS). These new requirements for labeling industrial coatings have required the development of this "Advance Supplement" to the planned *Sixth Edition of the ACA Industry Labeling Guide*.

The purpose of this *Advance Supplement* is to offer guidance on the wording, arrangement, and location of hazard and precautionary label statements arising from the Revised HCS and its required adoption of the GHS. This guide was developed not only to support proper hazard and precautionary labeling, but also to equip users with an understanding of the principles behind creating a label.

Chapters 1 and 2 are the working core of the guide. Chapter 1 includes **Procedures for Use**, a step-by-step approach to the principles of Revised HCS and GHS-conforming labels; and a **Recommended Label Format** illustrating placement of the various hazard and precautionary statements, as well as newly required pictograms.

Chapter 2 contains Tables 1- 5 which include hazard and precautionary label statements associated with commonly used ingredients in the industry. This information was derived from published data bases and is provided to assist industrial coatings manufacturers in developing Revised HCS and GHS-conforming labels in advance of the required compliance deadlines. IMPORTANT: Information on GHS Hazard Classifications provided by raw material suppliers takes precedent over the published data provided in this *Advance Supplement*, and industrial coatings manufacturers are urged to use raw material supplier data preferentially. In the absence of raw materials supplier data, however, the information provided in this *Advance Supplement* is useful as it is linked to reliable databases established by government agencies that have embraced the GHS requirements.

After following the steps in Chapters 1 and 2, you will have a hazard and precautionary label that reflects the hazard classification assigned to the ingredients in your products.

Additional statements may also be needed to conform to industry trade practice and to comply with other federal, state, and local laws and regulations that require label content. This *Advance Supplement* offers some additional information on labeling practices to supplement the current materials in Chapters 2 through 9 of the current *Fifth Edition of the Industry Labeling Guide* (as Supplemented May 2005), and you will need to continue to refer to the content in those chapters until such time as a final Sixth Edition can be completed.

Chapter 2, **Label Statements**, includes statements which should be considered when ensuring labels cover

all hazards in a product. Chapter 3, **Industry Guidelines**, includes information on other industry standards. Chapter 4 is a reference of **Federal Laws and Regulations** which may affect the labeling of your product, and Chapter 5 provides information on some **State and Local Laws and Regulations** which you may need to consider.

Chapter 6, **International Labeling References**, includes information on the basic labeling requirements for Canada, Mexico and the European Union along with a list of resources for obtaining additional information.

Chapter 7 addresses specific labeling concerns of the adhesives and sealants industry.

Chapter 8 provides background information on the U.S. Environmental Protection Agency's requirements for registering **Pesticides**, and labeling requirements under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Chapter 9 discusses **Commercial Labeling** considerations, such as labeling for toll produced and private labeled products, warranties, waste disposal, and a statement of weights and measures. Also included is a review of **Shipping Marking and Labeling Requirements**. The guide ends with a **Glossary** of labeling terms and an **Appendix** of acronyms used throughout the guide.

FAMILIARIZE YOURSELF WITH ALL CHAPTERS BEFORE DRAFTING YOUR LABEL!

Chapter 1 – Labeling Practices (for Industrial Products)

Procedure for Use Summary Checklist

- ☐ **STEP 1.** Identify industrial product to be labeled
- ☐ **STEP 2.** Identify **ALL** chemicals in mixture
- ☐ **STEP 3.** Determine hazard classification for ALL chemicals in the mixture

NOTE: Hazard classifications provided by chemical supplier are the most reliable and may be reliably used to comply with applicable regulatory requirements. In the absence of such information, the hazard classifications provide in Table 1 may be considered as they are derived from published databases.

- ☐ **STEP 4.** Consider any product-specific test data on the final product (i.e., determine flash point)
- ☐ **STEP 5.** Consider calculating hazard classification of mixture
- ☐ **STEP 6.** List the required hazard and precautionary statements, and pictograms associated with the hazard classifications for the ingredients and by-products using Tables 1-4
- ☐ **STEP 7.** Assign signal word, combine statements and format label
- ☐ **STEP 8.** Review VOC label requirements (Chapter 4 & 5)
- ☐ **STEP 9.** Review product-specific labeling requirements (Table 5)
- ☐ **STEP 10. Review draft label and verify all applicable requirements outlined in steps 1 – 9 have been addressed**

Procedure for Use

The steps described below should be followed to make effective use of this *Advance Supplement to the Sixth Edition of the Industry Labeling Guide* and to obtain an understanding of the principles of the new labeling requirements for industrial coatings resulting from the Revised OSHA Hazard Communication Standard (Revised HCS) and its adoption of the UN Globally Harmonized System (GHS). In considering these procedures, the user must be aware that the guide seeks to develop a hazard and precautionary label solely for industrial products. **Before finalizing any label, please review Table 4, "Product-Specific Labeling Considerations" in Chapter 2 for insight on some of the considerations the Revised HCS and GHS have brought to light.**

STEP 1. IDENTIFY THE TYPE OF INDUSTRIAL PRODUCT TO BE LABELED (i.e., industrial paint, protective coating, primer, topcoat, aerosol, etc.)

Be aware of the specific and unique characteristics of the product that may require additional precautionary warnings not covered by the Revised HCS and the GHS.

STEP 2. IDENTIFY ALL CHEMICALS

It is important to identify all chemicals in a product mixture in order to ensure compliance with all applicable federal, state and local labeling regulations.

A. Assemble information (formula, specifications, etc.) on the product to be labeled.
B. Verify that no chemical in the product is banned for use in its intended market. Review Table 5 in Chapter 2, "Product Specific Labeling Considerations" for additional statements.

STEP 3. DETERMINE HAZARD CLASSIFICATIONS FOR EACH CHEMICAL IN THE PRODUCT

Identify the hazard classification for the chemicals by referring to information from suppliers, such as raw material labels and Safety Data Sheets (SDS). In the absence of supplier data, industrial coatings manufacturers may also use Table 1 in Chapter 2 of this guide and other available sources.

In general, the Revised HCS requires that, unless a product (mixture) has been tested as a whole to determine its health hazards, that product (mixture) must be labeled with the health hazards of each hazardous component comprising 1.0 percent or greater (by weight or volume). Furthermore, carcinogen, germ cell mutagenicity, and reproductive toxicity warnings must be provided on product labels when present at or above 0.1 percent in the mixture. OSHA further acknowledges that specific warning labels must be included whenever "a health or physical hazard has been established at some lower content."

Consider additional hazards associated with raw materials that are incorporated into a final product. The Revised HCS requires a manufacture to label for hazards that are not covered under the GHS classification system. OSHA refers to these hazards as 'Hazards Not Otherwise Classified': these hazards should be communicated in the raw material SDS.

Additionally, consider if your product presents combustible dust or asphyxiation hazards. If applicable, refer to Table 3 for OSHA specific label statements.

STEP 4. CONSIDER PRODUCT-SPECIFIC TEST DATA

Many mixture manufacturers have undertaken specific testing of their products to help determine applicable hazard classifications. In the event such test data is available, or as a paint and coatings manufacturer you have undertaken specific testing of the finished product, you may use the data to develop a hazard classification for the whole mixture and not use the hazard classifications for the individual components.

The most illustrative example of this is the use of flashpoint to determine the flammability hazard of a solvent mixture/blend. The accepted flash point test methods for industrial products include the Tagliabue Closed Tester (ASTM D56-87), Pensky-Martens Closed Tester (ASTM D93-90), or the Setaflash Closed Tester (ASTM 3278-89); (see 29 CFR 1910.1200(c)), Flash point). Product-specific flashpoint data would allow assignment of a hazard classification for the mixture according to OSHA and GHS criteria.

STEP 5. CONSIDER CALCULATING HAZARD CLASSIFICATION OF MIXTURE

The GHS approach to the classification of mixtures for health hazards is tiered, and is dependent on the amount of information available for the mixture itself and for its components. The process for the classification of mixtures is based on the following steps:

(1) Where test data are available for the mixture itself, the classification of the mixture will be based on that data (with the exceptions of carcinogens, mutagens & reproductive toxins);

(2) Where test data are not available for the mixture itself, then the appropriate bridging principles (described below) in the specific chapter should be used;

(3) If test data are not available for the mixture itself, and the bridging principles cannot be applied, then use the calculation or cutoff values (generally 1% except for carcinogens which have a 0.1% cut-off) described in the specific endpoint to classify the mixture.

Bridging principles are an important concept in the GHS for classifying untested mixtures. When a mixture has not been tested, but there are sufficient data on all the comparable components of the mixture and/or data on similar tested mixtures, these data can be used in accordance with the following bridging principles:

- **Dilution**: If a mixture is diluted with a diluent that has an equivalent or lower toxicity, then the hazards of the new mixture are assumed to be equivalent to the original.
- **Batching**: If a batch of a complex substance is produced under a controlled process, then the hazards of the new batch are assumed to be equivalent to the previous batches.
- **Concentration of Highly Toxic Mixtures**: If a mixture is severely hazardous, then a concentrated mixture is also assumed to be severely hazardous.
- **Interpolation within One Toxic Category:** Mixtures having component concentrations within a range where the hazards are known are assumed to have those known hazards.
- **Substantially Similar Mixtures**: Slight changes in the concentrations of components are not expected to change the hazards of a mixture and substitutions involving toxicologically similar components are not expected to change the hazards of a mixture.
- **Aerosols**: An aerosol form of a mixture is assumed to have the same hazards as the tested, non-aerosolized form of the mixture unless the propellant affects the hazards upon spraying.

When the bridging principles do not apply or cannot be used due to data limitations, the health hazards of mixtures are based on the hazard classification of each of the individual components, as was the requirement under the prior HCS regulation.

IMPORTANT: **Under the GHS, the methodology used to estimate (calculate) the hazard classification of mixtures varies by endpoint. The United Nation's GHS Document or "Purple Book" offers more guidance on classifying mixtures, and can be found at the following link:** (http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html).

In general, while ACA acknowledges the value and utility of classifying the hazards of mixtures, there are practical limits *to such an undertaking, in particular the likely lack of comprehensive comparative data.*

Where an ingredient with unknown acute toxicity is used in a mixture at a concentration ≥ 1%, and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required on the label.

STEP 6. LIST THE HAZARD AND PRECAUTIONARY STATEMENT AND PICTOGRAMS REQUIRED FOR THE HAZARD CLASSIFICATIONS OF CHEMICALS IN THE MIXTURE

A. For each hazard classification provided by the raw material supplier, identify the required signal word, hazard statements, precautionary statements in Tables 2 and 3.
B. If no hazard classification is provided by the raw material supplier, check the list of chemicals in Table 1 to see if present, and use the hazard classifications and information contained there and in Table 2 and 3 to develop required labeling statements.
C. If a chemical is not listed in Table 1, again make efforts to obtain raw material supplier classifications. If hazard classification data is still not forthcoming, make use of any of several published databases for hazard classifications.

STEP 7. ASSIGN THE SIGNAL WORD, COMBINE SIMILAR/RELATED LABEL STATEMENTS, AND ARRANGE THE LABEL IN THE REQUIRED FORMAT

Combine statements where possible. For example, the statements "CAUSES EYE IRRITATION" and "CAUSES SKIN IRRITATION" can be combined to "CAUSES EYE AND SKIN IRRITATION."

Select dominant statements representing the greater hazard; eliminate statements for similar, but lesser hazard. For example, "CAUSES SKIN BURNS" is a statement representing a similar but greater hazard than "CAUSES SKIN IRRITATION." The statement "CAUSES SKIN BURNS" should be used and the statement "CAUSES SKIN IRRITATION" eliminated.

List applicable signal words (DANGER or WARNING) for each ingredients hazard classification. Select and use the signal word most cautionary warning (in most cases DANGER) associated with assigned health and physical hazard(s) classification of the ingredients in the product.

STEP 8. REVIEW THE VOC LABELING REQUIREMENTS

Specific labeling requirements regarding the volatile organic compound (VOC) content of various products exist at both the federal and state/local levels and are reviewed in Chapters 4 and 5. These labeling requirements differ according to the product type (i.e., architectural coatings, aerosol coatings, adhesives, etc.) and the location in which the product will be sold/distributed.

STEP 9. REVIEW OTHER PRODUCT-SPECIFIC LABELING REQUIREMENTS

Table 5 provides a long listing of product-specific labeling requirements that may be applicable to the industrial coating being labeled. These requirements should be reviewed and appropriate label statement included.

STEP 10. REVIEW DRAFT LABEL AND VERIFY THAT ALL APPLICABLE REQUIREMENTS OUTLINED IN STEPS 1 – 9 HAVE BEEN ADDRESSED

Sample GHS Label Format

The label format shown here illustrates the required placement of the components of hazard and precautionary labeling for industrial coatings. **This is a recommended format.** The specific hazard and precautionary statements conform to the GHS adopted by OSHA in the Revised HCS will depend upon the product's specific hazards and must be displayed in the order shown below.

For the complete label on a specific industrial product, additional statements may be required as a result of federal, state and municipal laws, regulations and ordinances.

Chemical Identifier

SIGNAL WORD

PICTOGRAMS

HAZARD STATEMENTS

Prevention:
Response:
Storage:
Disposal:

Company name and address
Telephone Number

Chapter 2 – Label Statements (For Industrial Products)

Introduction

Chapter 2 will outline the new label requirements now included in OSHA's Revised HCS, which adopted the GHS for the United States. Labels for hazardous chemicals are now required to have: pictograms, harmonized signal words, harmonized hazard statements, and harmonized precautionary statements. Under the GHS these new label requirements are based on a specific hazard classification. The criteria for classifications are outlined in Appendix A and B of the final rule.

The following important Definitions are used in this chapter:

Hazard Category - the division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

Hazard Class - the nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

Hazard Code - A unique number assigned to a hazard statement.

Hazard Statement - a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

Precautionary Code - a unique number assigned to a precautionary statement.

Pictogram - a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category.

Precautionary Statement - a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

Signal Word - a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for the less severe.

The Hazard Statement Codes, Precautionary Statement Codes, and Pictogram Codes were developed as part of the GHS and are nothing more than identifiers. NOTE: OSHA did not use the code system when adopting the final rule; however, ACA has elected to use the codes to make a simpler and more prescriptive approach.

As previously stated, the GHS is much more prescriptive than the previous HCS requirements, as outlined in the *ACA Industry Labeling Guide, Fifth Edition* (as Supplemented May 2005). Once a chemical is classified under the GHS, assigning the required pictograms, signal word, hazard and precautionary statements is nothing more than following a prescribed "recipe."

The new hazard and precautionary statements required under the GHS essentially provide the same information that the ACA *Labeling Guide* has previously recommended; however, the wording is slightly different.

It is important to remember that the GHS only applies to industrial coatings products. The "single label" concept of labeling no longer applies as a result of OSHA seeking conformance to the GHS, and specifically exempting consumer products. The labeling practices identified in this guide reflect the application of OSHA's HCS (29 CFR 1910.1200), which was revised in 2012 to implement the GHS. Manufacturers who prepare labels in accordance with the guide must always consider information received from raw material suppliers and other relevant regulatory requirements.

It is important to remember that precautionary labels for product mixtures should include all of the information identified for each of the individual raw materials (and their components) used in the product (unless the product itself has been tested as a whole to evaluate any/all relevant health and safety hazards).

Where an ingredient with unknown acute toxicity is used in a mixture at a concentration ≥ 1%, and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required on the label.

The documents associated with this chapter were developed in part by health, safety and environmental professionals from ACA's Product Stewardship Committee, and ACA staff. The European Chemicals Agency's (EHCA) Classification and Labeling Database was used to populate this table. All comments and recommendations were carefully reviewed by the committee workgroup and appropriately incorporated into the guide. Tables 2 and 3 were developed using Appendix C of the final revised Hazard Communication Standard in combination with GHS Annex 3.

Table 1 identifies the GHS classifications, GHS hazard statement codes and GHS pictogram codes for many hazardous ingredients commonly used in the formulation of products for the paint, coatings, caulks, sealants and adhesives industries. Once you find a specific chemical on Table 1, take each GHS classification and refer to Table 2, to determine the appropriate Hazard Statements. If data from your raw material supplier differs from the classifications in Table 1, use your supplier's data to classify your product.

Many chemicals in Table 1 do not have a harmonized classification in the ECHA database or are not list in Table 1; in this case, it is important to refer to supplier data when classifying the hazards of your end product.

For reference, the ECHA database is available at: http://echa.europa.eu/information-on-chemicals/cl-inventory-database.

IMPORTANT: **Labeling for environmental hazards is not required under the Revised HCS, but ACA has included the environmental hazard classifications in Table 1 to serve as a reference for other national jurisdictions where they may be required.**

Table 1 – GHS Hazard Classifications for Common Industrial Coatings Raw Materials

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Code(s)	Signal Word	Pictogram Codes (See Table 4 for actual label)	Additional Information (If a chemical has no consensus by ECHA, refer to supplier data, or check the ECHA database to see if a consensus has been reached.)
Formaldehyde	50-0-0	Acute Tox. 3* Acute Tox. 3* Skin Corr. 1B Skin Sens. 1 Acute Tox. 3* Carc. 2	H301 H311 H314 H317 H331 H351	DANGER	GHS06 GHS05 GHS07	
Glycerol (1,2,3 propanetriol)	56-81-5	Skin Irrit. 2 Eye Irrit. 2 STOT RE 2 STOT RE 1	H315 H319 H373 H372	WARNING	GHS07 GHS08	No Consensus by ECHA
Propylene Glycol	57-55-6	Eye Irrit. 2 Acute Tox. 4 Aquatic Chronic 1 Skin Irrit. 2 STOT SE 3 Skin Sens. 1	H319 H302 H410 H315 H335 H317	WARNING	GHS07 GHS09	No Consensus by ECHA
Tetra Sodium EDTA	64-02-8	Acute Tox. 4* Eye Dam. 1	H302 H318	DANGER	GHS07 GHS05	
Ethanol	64-17-5	Flam. Liq. 2	H225	DANGER	GHS02	
Formic Acid	64-18-6	Skin Corr. 1A	H314	DANGER	GHS05	
Acetic Acid	64-19-7	Flam, Liq. 3 Skin Corr. 1A	H226 H314	DANGER	GHS02 GHS05	
Methanol	67-56-1	Flam. Liq. 2 Acute Tox. 3* Acute Tox. 3* Acute Tox. 3* STOT SE 1	H225 H301 H311 H331 H370 **	DANGER	GHS02 GHS06 GHS08	
Isopropanol	67-63-0	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Acetone	67-64-1	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
Dimethyl Formamide	68-12-2	Acute Tox. 4* Eye Irrit. 2 Acute Tox. 4* Repr. 1B	H312 H319 H332 H360D	DANGER	GHS07 GHS08	
n-Propanol	71-23-8	Flam. Liq. 2 Eye Dam. 1 STOT SE 3	H225 H318 H336	DANGER	GHS07 GHS02 GHS05	
n-Butanol	71-36-3	Flam. Liq. 3 Acute Tox. 4* Skin Irrit. 2 Eye Dam. 1 STOT SE 3 STOT SE 3	H226 H302 H315 H318 H335 H336	DANGER	GHS07 GHS02 GHS05	
1-Pentanol	71-41-0	Flam. Liq. 3 Skin Irrit. 2 Acute Tox. 4* STOT SE 3	H226 H315 H332 H335	WARNING	GHS07 GHS02	
Benzene	71-43-2	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 Eye Irrit. 2 Muta. 1B Carc. 1A STOT RE 1	H225 H304 H315 H319 H340 H350 H372	DANGER	GHS07 GHS02 GHS08	
1,1,1- Trichlorethane	71-55-6	Acute Tox. 4* Ozone 1	H332 H420	WARNING	GHS07	
Propane	74-98-6	Press. Gas Flam. Gas 1	 H220	DANGER	GHS02 GHS04	
Vinyl Chloride	75-01-4	Press. Gas Flam. Gas 1 Carc. 1A	 H220 H350	DANGER	GHS02 GHS08	
Acetaldehyde	75-07-0	Flam Liq. 1 Eye Irrit. 2 STOT SE 3 Carc. 2	H224 H319 H335 H351	DANGER	GHS07 GHS02 GHS08	
Methylene Chloride	75-09-2	Carc. 2	H351	WARNING	GHS08	
Tert-Butyl Alcohol	75-65-0	Flam. Liq. 2 Eye Irrit. 2 Acute Tox. 4* STOT SE 3	H225 H319 H332 H335	DANGER	GHS07 GHS02	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Tert-Amyl Alcohol	75-85-4	Flam Liq. 2 Skin Irrit. 2 Acute Tox. 4* STOT SE 3	H225 H315 H332 H335	DANGER	GHS07 GHS02	
Methyl-Tert-Butyl Ketone	75-97-8	Acute Tox. 4 Flam. Liq. 2 Acute Tox. 4 Aquatic Chronic 3	H302 H225 H332 H412	DANGER	GHS07 GHS02	
Dibutyl Tin Dilaurate	77-58-7	Acute Tox. 3 Eye Irrit. 2 Skin Irrit. 2 Skin Corr. 1C Skin Sens. 1 Muta. 2 Repr. 1B STOT RE 1 STOT SE 1 Aquatic Acute 1 Aquatic Chronic 1	H301 H319 H315 H314 H317 H341 H360 H372 H370 H400 H410	DANGER	GHS07 GHS09 GHS08 GHS05	No Consensus by ECHA
Isophorone	78-59-1	Acute Tox. 4* Acute Tox. 4* Eye Irrit. 2 STOT SE 3 (>10%) Carc. 2	H301 H312 H319 H335 H351	WARNING	GHS07 GHS08	
Isopentane	78-78-4	Flam. Liq. 1 Asp. Tox. 1 STOT SE 3 Aquatic Chronic 2	H224 H304 H336 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
Isobutanol	78-83-1	Flam. Liq. 3 Skin Irrit. 2 Eye Dam. 1 STOT SE 3 STOT SE 3	H226 H315 H318 H335 H336	DANGER	GHS07 GHS02 GHS05	
2-Butanol	78-92-2	Flam. Liq. 3 Eye Irrit. 2 STOT SE 3 STOT SE 3	H226 H319 H335 H336	WARNING	GHS07 GHS02	
2-Butanone (MEK)	78-93-3	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Trichloroethylene	79-01-6	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Muta. 2 Carc. 1B Aquatic Chronic 3	H315 H319 H336 H341 H350 H412	DANGER	GHS07 GHS08	
Methyl Acetate	79-20-9	Flam. Liq. 2 Eye. Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
Nitroethane	79-24-3	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4*	H226 H302 H332	WARNING	GHS07 GHS02	
α-Pinene (Pine Oil)	80-56-8	Flam. Liq. 3 Asp. Tox. 1 Skin Irrit. 2 Skin Sens. 1 Eye Dam. 1 Aquatic Chronic. 1	H226 H304 H315 H317 H318 H410	DANGER	GHS07 GHS02 GHS09 GHS05 GHS08 GHS01	No Consensus by ECHA
Dibutyl Phthalate	84-74-2	Repr. 1B Aquatic Acute 1	H360 Df H400	DANGER	GHS09 GHS08	
Benzyl Butyl Phthalate	85-68-7	Repr. 1B Aquatic Acute 1 Aquatic Chronic 1	H360 Df H400 H410	DANGER	GHS09 GHS08	
Toluene Diisocyanate	91-08-7	Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Acute Tox. 2* Resp. Sens. 1 STOT SE 3 Carc. 2 Aquatic Chronic 3	H315 H317 H319 H330 H334 H335 H351 H412	DANGER	GHS06 GHS08	
Napthalene	91-20-3	Acute Tox. 4* Carc. 2 Aquatic Acute 1 Aquatic Chronic 1	H302 H351 H400 H410	WARNING	GHS07 GHS09 GHS08	
o-xylene	95-47-6	Flam. Liq. 3 Acute Tox. 4* Skin Irrit. 2 Acute Tox. 4*	H226 H312 H315 H332	WARNING	GHS07 GHS02	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Trimethyl Benzene	95-63-6	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4* STOT SE 3 Aquatic Chronic 2	H226 H315 H319 H332 H335 H411	WARNING	GHS07 GHS02 GHS09	
Methyl Ethyl Ketoxime	96-29-7	Acute Tox. 4* Skin Sens. 1 Eye Dam. 1 Carc.1	H312 H317 H318 H351	DANGER	GHS07 GHS05 GHS08	
Isobutyl Isobutryate	97-85-8	Flam. Liq. 3 Aquatic Chronic 3 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H226 H412 H315 H319 H335	WARNING	GHS02 GHS07	No Consensus by ECHA
1-Chloro, 4-(Trifluromethyl) Benzene	98-56-6	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Aquatic Chronic 2	H226 H315 H319 H335 H411	WARNING	GHS07 GHS02	No Consensus by ECHA
Cumene	98-82-8	Flam. Liq. 3 Asp. Tox. 1 STOT SE 3 Aquatic Chronic 2	H226 H304 H335 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
N, N-Dimethyl-p-Toluidine	99-97-8	Acute Tox. 3* Acute Tox. 3* Acute Tox. 3* STOT RE 2 * Aquatic Chronic 3	H301 H311 H331 H373 H412	DANGER	GHS06 GHS08	
Ethylbenzene	100-41-4	Flam. Liq. 2 Acute Tox. 4*	H225 H332	DANGER	GHS07 GHS02	
Styrene	100-42-5	Flam. Liq. 3 Skin Irrit. 2 Eye. Irrit. 2 Acute Tox. 4*	H226 H315 H319 H332	WARNING	GHS07 GHS02	
MDI (4,4-methylenediphenyl diisocyanate)	101-68-8	Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Acute Tox. 4* Resp. Sens. 1 STOT SE 3 Carc. 2 STOT RE 2*	H315 H317 H319 H332 H334 H335 H351 H373	DANGER	GHS07 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Triethanolamine	102-71-6	Eye Irrit. 2 Skin Irrit. 2 Acute Tox. 4 Skin Corr. 1B Eye Dam. 1	H319 H315 H302 H314 H318			No Consensus by ECHA
Toluenesulphonic Acid	104-15-4	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07	
2-Ethylhexanol	104-76-7	Eye Irrit. 2 Skin Irrit. 2 Acute Tox. 4 STOT SE 3 Eye Dam. 1 Aquatic Chronic 3	H319 H315 H332 H335 H319 H412	WARNING	GHS07	No Consensus by ECHA
Ethyl Proprionate	105-37-3	Flam. Liq. 2	H225	DANGER	GHS02	
s-Butyl Acetate	105-46-4	Flam. Liq. 2	H225	DANGER	GHS02	
n-Propyl Proprionate	106-36-5	Flam. Liq. 3 Acute Tox. 4*	H226 H332	WARNING	GHS07 GHS02	
p-Xylene	106-42-3	Flam. Liq. 3 Acute Tox. 4* Skin Irrit. 2 Acute Tox. 4*	H226 H312 H315 H332	WARNING	GHS07 GHS02	
Dimethyl Succinate	106-65-0	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
Ethyl n-Amyl Ketone	106-68-3	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H226 H315 H319 H335	WARNING	GHS02 GHS07	No Consensus by ECHA
n-Propryl Bromide	106-94-5	Flam. Liq. 2 Skin Irrit. 2 Eye. Irrit. 2 STOT SE 3 STOT SE 3 Repr. 1B STOT RE 2*	H225 H315 H319 H335 H336 H360FD H373	WARNING	GHS07 GHS02 GHS08	
n-Butane (NOTE: additional warnings if > 0.1% butadiene)	106-97-8	Press. Gas	H220	DANGER	GHS02 GHS04	
1,3-Butadiene	106-99-0	Press. Gas Fla,m. Gas 1 Muta. 1B Carc. 1A	 H220 H340 H350	DANGER	GHS02 GHS08 GHS04	
Ethylene Glycol	107-21-1	Acute Tox. 4*	H302	WARNING	GHS07	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Hexylene glycol	107-41-5	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	
2-Methyl-Pentane	107-83-5	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Aquatic Chronic 22	H225 H304 H315 H336 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
Methyl Propyl Ketone (2-Pentanone)	107-87-9	Acute Tox. 4 Eye Irrit. 2 Skin Irrit. 2 STOT SE 3 Flam. Liq. 2	H302 H319 H315 H335 H225	WARNING	GHS07 GHS02	No Consensus by ECHA
Propylene Glycol Monomethyl Ether (1-Methoxy-2-Propanol)	107-98-2	Flam. Liq. 3 STOT SE 3	H226 H336	WARNING	GHS07 GHS02	
Dimethylethanolamine	108-01-0	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4* Skin Corr. 1B Acute Tox. 4* STOT SE 3	H226 H302 H312 H314 H332 H335	DANGER	GHS07 GHS02 GHS05	
Vinyl Acetate	108-05-4	Flam. Liq. 2	H225	DANGER	GHS02	
Methyl Isobutyl Ketone	108-10-1	Flam. Liq. 2 Eye Irrit. 2 Acute Tox. 4 STOT SE 3	H225 H319 H332 H335	DANGER	GHS07 GHS02	
Methyl Amyl Alcohol	108-11-2	Flam. Liq. 3 STOT SE 3	H226 H335	DANGER	GHS07 GHS02	
Isopropyl Acetate	108-21-4	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
1,2-Propylene Carbonate	108-32-7	Eye Irrit. 2	H319	WARNING	GHS07	
m-Xylene	108-38-3	Flam. Liq. 3 Acute Tox. 4* Skin Irrit. 2 Acute Tox. 4*	H226 H312 H315 H332	WARNING	GHS07 GHS02	
Propylene Glycol Monomethyl Ether	108-65-6	Flam. Liq. 3	H226	WARNING	GHS02	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Isopropyl Acetate	108-21-4	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
1,2-Propylene Carbonate	108-32-7	Eye Irrit. 2	H319	WARNING	GHS07	
m-Xylene	108-38-3	Flam. Liq. 3 Acute Tox. 4 Skin Irrit. 2 Acute Tox. 4	H226 H312 H315 H332	WARNING	GHS07 GHS02	
Propylene Glycol Monomethyl Ether Acetate	108-65-6	Flam. Liq. 3	H226	WARNING	GHS02	
1,3,5-Trimethyl Benzene (Mesitylene)	108-67-8	Flam. Liq. 3 STOT SE 3 ($\geq$25%) Aquatic Chronic 2	H226 H335 H411	WARNING	GHS07 GHS02 GHS09	
Diisobutyl Ketone	108-83-8	Flam. Liq. 3 STOT SE 3	H226 H335	WARNING	GHS07 GHS02	
Methylcyclohexane	108-87-2	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Aquatic Chronic 2	H225 H304 H315 H336 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
Toluene	108-88-3	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Repr. 2 STOT RE 2*	H225 H304 H315 H336 H361d H373	DANGER	GHS07 GHS02 GHS08	
Cyclohexanol	108-93-0	Acute Tox. 4* Skin Irrit. 2 Acute Tox. 4* STOT SE 3	H302 H315 H332 H335	WARNING	GHS07	
Cyclohexanone	108-94-1	Flam. Liq. 3 Acute Tox. 4*	H226 H332	WARNING	GHS07 GHS02	
n-Butyl Butyrate	109-21-7	Flam. Liq. 3	H226	WARNING	GHS02	
n-Propyl Acetate	109-60-4	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
n-Pentane	109-66-0	Flam. Liq. 2 Asp. Tox. 1 STOT SE 3 Aquatic Chronic 2	H225 H304 H336 H411	DANGER	GHS07 GHS02 GHS09 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Ethylene Glycol Monomethyl Ether (2-Methoxy Ethanol)	109-86-4	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4* Acute Tox. 4* Repr. 1B	H226 H302 H312 H332 H360FD	DANGER	GHS07 GHS02 GHS08	
Tetrahydrofuran	109-99-9	Flam. Liq. 2 Eye Irrit. 2 (≥25%) STOT SE 3 (≥25%)	H225 H319 H335	DANGER	GHS07 GHS02	
Methyl Isoamyl Ketone	110-12-3	Flam. Liq. 3 Acute Tox. 4*	H226 H332	WARNING	GHS07 GHS02	
Isobutyl Acetate	110-19-0	Flam. Liq. 2	H225	DANGER	GHS02	
Methyl Amyl Ketone	110-43-0	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4*	H226 H302 H332	WARNING	GHS07 GHS02	
Ethylene Glycol Monomethyl Ether Acetate	110-49-6	Acute Tox. 4* Acute Tox. 4* Acute Tox. 4* Repr. 1B	H302 H312 H332 H360FD	DANGER	GHS07 GHS08	
Hexane	110-54-3	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Repr. 2 STOT RE 2* (≥5%) Aquatic Chronic 2	H225 H304 H315 H336 H361f H373 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
Butyraldoxime	110-69-0	Acute Tox. 4* Acute Tox. 3* Eye Irrit. 2	H302 H311 H319	DANGER	GHS06	
n-Propyl Formate	110-74-7	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3 STOT SE 3	H225 H319 H335 H336	DANGER	GHS07 GHS02	
Ethylene Glycol Monoethyl Ether	110-80-5	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4* Acute Tox 4* Repr. 1B	H226 H302 H312 H332 H360FD	DANGER	GHS07 GHS02 GHS08	
Cyclohexane	110-82-7	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 1	H2225 H304 H315 H336 H400 H410	DANGER	GHS07 GHS02 GHS09 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Morpholine	110-91-8	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4* Skin Corr. 1B Acute Tox. 4*	H226 H302 H312 H314 H332	DANGER	GHS07 GHS02 GHS05	
Ethylene Glycol Monoethyl Ether Acetate	111-15-9	Flam. Liq. 3 Acute Tox. 4* Acute Tox. 4* Acute Tox. 4* Repr. 1B	H226 H302 H312 H332 H360FD	DANGER	GHS07 GHS02 GHS08	
Diethylenetriamine	111-40-0	Acute Tox. 4* Acute Tox. 4* Skin Corr. 1B Skin Sens. 1	H302 H312 H314 H317	DANGER	GHS07 GHS05	
Diethanolamine	111-42-2	Acute Tox. 4* Skin Irrit. 2 Eye Dam. 1 STOT RE 2*	H302 H315 H318 H373	DANGER	GHS07 GHS05 GHS08	
Diethylene Glycol	111-46-6	Acute Tox. 4*	H302	WARNING	GHS07	
n-Octane	111-65-9	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 1	H225 H304 H315 H336 H400 H410	DANGER	GHS07 GHS02 GHS09 GHS08	
Ethylene Glycol Monobutyl Ether	111-76-2	Acute Tox. 4* Acute Tox. 4* Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4*	H302 H312 H315 H319 H332	DANGER	GHS07	
Diethylene Glycol Monomethyl Ether	111-84-2	Repr. 2	H361d	WARNING	GHS08	
n-Nonane	111-84-2	Eye Irrit. 2 Flam. Liq. 3 Skin Irrit. 2 STOT SE 3 Asp. Tox. 1 Aquatic Chronic 1	H319 H226 H315 H336 H304 H410	WARNING	GHS07 GHS02 GHS09 GHS08	No Consensus by ECHA
Ethylene Glycol Monobutyl Ether Acetate	111-76-2	Acute Tox. 4 Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4	H302 H312 H315 H319 H332	WARNING	GHS07	
2-Butoxyethyl Acetate	112-07-2	Acute Tox. 4* Acute Tox. 4*	H312 H332	WARNING	GHS07	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Diethylene Glycol Monomethyl Ether Acetate	112-15-2	Eye Irrit. 2 Skin Irrit. 2 STOT SE 3	H319 H315 H336	WARNING	GHS07	No Consensus by ECHA
Triethylenetetramine	112-24-3	Acute Tox. 4* Skin Corr. 1B Skin Sens. 1 Aquatic Chronic 3	H312 H314 H317 H412	WARNING	GHS07 GHS05	
Diethylene Glycol Monobutyl Ether	112-34-5	Eye Irrit. 2	H319	WARNING	GHS07	
2-(2-hexyloethoxy)ethanol	112-59-4	Acute Tox. 4* Eye Dam. 1	H312 H318	DANGER	GHS07 GHS05	
Dimethyl Ether	115-10-6	Flam. Gas 1	H220	DANGER	GHS02 GHS04	
Dioctyl Phthalate (Diethylhexyl Phthalate)	117-81-7	Repr. 1B	H360FD	DANGER	GHS08	
Tetrahydronaphthalane	119-64-2	Skin Irrit. 2 Eye Irrit. 2 Aquatic Chronic 2	H315 H319 H411	WARNING	GHS07 GHS09	
Triethylamine	121-44-8	Flam. Liq. 2 Acute Tox. 4* Acute Tox 4* Skin Corr. 1A Acute Tox. 4* STOT SE 3	H225 H302 H312 H314 H332 H335 ($\geq$ 1%)	DANGER	GHS07 GHS02 GHS05	
Diacetone Alcohol	123-42-2	Eye Irrit. 2	H319	WARNING	GHS07	
Acetyl Acetone	123-54-6	Flam. Liq. 3 Acute Tox. 4*	H226 H302	WARNING	GHS07 GHS02	
n-Butyl Acetate	123-54-6	Flam. Liq. 3 STOT SE 2	H226 H336	WARNING	GHS07 GHS02	
Diethylene Glycol Monobutyl Ether Acetate	124-17-4	Eye Irrit. 2 Skin Irrit 2	H319 H315	WARNING	GHS07	No Consensus by ECHA
2-Amino-2-Methyl-1-Propanol	124-68-5	Skin Irrit. 2 Eye Irrit. 2 Aquatic Chronic 3	H315 H319 H412	WARNING	GHS07	
Tributyl Phosphate	126-73-8	Acute Toxd. 4* Skin Irrit. 2 Carc. 2	H302 H315 H351	WARNING	GHS07 GHS08	
Perchloroethylene	127-18-4	Carc. 2 Aquatic Chronic 2	H351 H411	WARNING	GHS09 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Folpet (n-Trichloromethylthio)phthalimide	144-07-3	Skin Sens. 1 Eye Irrit. 2 Acute Tox. 4* Carc. 2 Aquatic Acute 1	H317 H319 H332 H351 H400	WARNING	GHS07 GHS09 GHS08	
Zinc Octoate	136-53-8	Eye Irrit. 2 Flam. Liq. 3 Acute Tox. 4 Skin Irrit. 1 Aquatic Chronic 2	H319 H226 H302 H315 H411	WARNING	GHS07 GHS02 GHS09	No Consensus by ECHA
Dipentene	138-86-3	Flam. Liq. 3 Skin Irrit. 2 Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic 1	H226 H315 H317 H400 H410	WARNING	GHS07 GHS02 GHS09	
Monoethanolamine	141-43-5	Acute Tox. 4 Acute Tox. 4 Skin Corr. 1B Acute Tox. 4	H302 H312 H314 H332	DANGER	GHS07 GHS05	
Ethyl Acetate	141-78-6	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	DANGER	GHS07 GHS02	
Heptane	142-82-5	Flam. Liq. 2 Asp. Tox. 1 Skin Irrit. 2 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 1	H225 H304 H315 H336 H400	DANGER	GHS07 GHS02 GHS09 GHs08	
Oxy-hexyl Acetate	142-92-7	Flam. Liq. 3 Aquatic Chronic 2	H226 H411	WARNING	GHS02 GHS09	No Consensus by ECHA
Copper Phthalocyanine	147-14-8	Skin Sens. 1 Aquatic Chronic 4	H317 H413	WARNING	GHS07	No Consensus by ECHA
2-Ethylhexanoic Acid	149-57-9	Repr. 2	H361d	WARNING	GHS08	
Triethylenediamine	280-57-9	Flam. Sol. 1 Acute Tox. 4 Skin Irrit. 2 Eye Dam. 1 STOT SE 3 Aquatic Chronic 3	H228 H302 H315 H318 H335 H412	DANGER	GHS07 GHs02 GHs05	No Consensus by ECHA
Sodium Carbonate	497-19-8	Eye Irrit. 2	H319	WARNING	GHS07	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
1,2,3-Trimethyl Benzene	526-73-8	Flam. Liq. 2 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Asp. Tox 1	H226 H315 H319 H335 H304	WARNING	GHS07 GHS02 GHS08	No Consensus by ECHA
Sodium Benzoate	532-32-1	Eye Irrit. 2 Skin Sens. 1 Skin Irrit. 2 Eye Dam. 1	H319 H317 H315 H319	WARNING	GHS07	No Consensus by ECHA
t-Butyl Acetate	540-88-5	Flam. Liq. 2	H225	DANGER	GHS02	
Methyl Isobutryate	547-63-7	Flam. Liq. 2	H225	DANGER	GHS02	No Consensus by ECHA
Methyl Lactate	547-64-8	Flam. Liq. 3 Eye Irrit. 2 STOT SE 3	H226 H319 H335	WARNING	GHS07 GHS02	
Methyl Proprionate	554-12-1	Flam. Liq. 2 Acute Tox 4	H225 H332	DANGER	GHS07 GHS02	
Zinc Stearate	557-05-1	STOT SE 3 Aquatic Acute 1 Aquatic Chronic 4 Eye Irrit. 2	H335 H400 H413 H319	WARNING	GHS07 GHS09	No Consensus by ECHA
Bis (2-Ethylhexyl) Sodium Sulfosuccinate	577-11-7	Skin Irrit. 2 Eye Dam. 1 Acute Tox 4 Eye Irrit. 2 Aquatic Chronic 3	H315 H318 H302 H319 H412	DANGER	GHS05 GHS07 GHS02	No Consensus by ECHA
Potassium Oxalate Monohydrate	583-52-8	Acute Tox. 4 Acute Tox. 4	H302 H312	WARNING	GHS07 GHS08	No Consensus by ECHA
Toluene Diisocyanate	584-84-9	Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Acute Tox. 2 STOT SE 3 Carc. 2 Aquatic Chronic 3	H315 H317 H319 H330 H335 H351 H412	DANGER	GHS06 GHS08	
n-Butyl Propionate	590-01-2	Flam. Liq. 3	H226	WARNING	GHS02	
Methyl n-Butyl Ketone (2-Hexanone)	591-78-6	Flam. Liq. 3 STOT SE 3 Repr. 2 STOT RE 1	H226 H336 H361f H372	DANGER	GHS07 GHS02 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Dimethyl Adipate	627-93-0	Eye Irrit. 2 STOT RE 2 Acute Tox. 4 Acute Tox. 4 Acute Tox. 4 Repr. 2	H319 H373 H302 H312 H332 H361	WARNING	GHS07 GHS08	No Consensus by ECHA
Methyl n-Butyl Ether	628-28-4	Flam. Liq. 2	H225	DANGER	GHS02	No Consensus by ECHA
Amyl Acetate	628-63-7	Flam. Liq. 3	H226	WARNING	GHS02	
Ethyl 3-Ethoxypropionate	763-69-9	Flam. Liq. 3 Aquatic Chronic 3 Eye Irrit. 2 Skin Irrit. 2 Aquatic Chronic 1	H226 H412 H319 H315 H410	WARNING	GHS02 GHS07 GHS03 GHS09	No Consensus by ECHA
Hexamethylene Diisocyanate	822-06-0	Skin Irrit. 2 Skin Sens 1 (≥0.5%) Eye Irrit. 2 Acute Tox. 3 Resp. Sens. 1(≥0.5%) STOT SE 3	H315 H317 H319 H331 H334 H335	DANGER	GHS06 GHS05	
Methyl-2-Pyrrolidone	872-50-4	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Repr. 1B	H315 H319 H335 H360D	DANGER	GHS07 GHS08	
Quinacridone	1047-16-1	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
Azo Pigment Red	1103-38-4	Acute Tox. 4	H302	WARNING	GHS07	No Consensus by ECHA
Dimethyl Glutarate	1119-40-0	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 STOT RE 2	H302 H315 H319 H373	WARNING	GHS07 GHS08	No Consensus by ECHA
Sodium Xylene Sulfonate	1300-72-7	Eye Irrit. 2 Skin Irrit. 2 STOT SE 3	H319 H315 H335	WARNING	GHS07	No Consensus by ECHA
Magnesium Silicate	1302-78-9	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07	No Consensus by ECHA
Antimony Trioxide Pigment	1309-64-4	Carc. 2	H351	WARNING	GHS08	
Yellow Iron Oxide	1310-14-1	STOT RE 2	H373	WARNING	GHS08	No Consensus by ECHA
Sodium Hydroxide	1310-73-2	Skin Corr. 1A	H314	DANGER	GHS05	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Zinc Oxide	1314-13-2	Aquatic Acute 1 Aquatic Chronic 1	H400 H410	WARNING	GHS09	
Black Iron Oxide	1317-61-9	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07 GHS09	No Consensus by ECHA
Crystalline Silica	1317-95-9	STOT RE 2 Eye Irrit. 2 Acute Tox. 4 STOT RE 1	H373 H319 H332 H372	WARNING	GHS08 GHS07	No Consensus by ECHA
Zeolite	1318-02-1	Acute Tox. 4 STOT SE 3 STOT RE 2 Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4 STOT RE 1	H312 H335 H373 H315 H319 H332 H372	WARNING	GHS07 GHS08	No Consensus by ECHA
Muscovite	1318-94-1	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
Copper Phthalocyanine Green	1328-53-6	Acute Tox. 4 Eye Irrit. 2 STOT SE 3	H312 H319 H335	WARNING	GHS07	No Consensus by ECHA
Xylene (Mixed)	1330-20-7	Flam. Liq. 3 Acute Tox. 4 Skin Irrit 2 Acute Tox. 4	H226 H312 H315 H332	WARNING	GHS07 GHS02	
Tricresyl Phosphate	1330-78-5	Skin Sens. 1 Repr. 2 STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1	H317 H361 H373 H400 H410	WARNING	GHS07 GHS09	No Consensus by ECHA
Pumice	1332-09-8	Eye Irrit. 2 STOT SE 3	H319 H335	WARNING	GHS07	No Consensus by ECHA
Iron Oxide	1332-37-2	Acute Tox. 4 STOT RE 1 Skin Irrit. 2 Eye Irrit. 2	H332 H372 H315 H319	DANGER	GHS07 GHS08	No Consensus by ECHA
Carbon Black	1333-86-4	Carc. 2 STOT SE 3	H351 H335	WARNING	GHS07 GHS08	No Consensus by ECHA
Ammonium Hydroxide	1336-21-6	Skin Corr. 1B Aquatic Acute 1	H314 H400	DANGER	GHS09 GHS05	
Methyl Ethyl Ketone Peroxide	1338-23-4	Org. Peroxide D Acute Tox. 4 Skin Corr. 1B Eye Dam. 1	H242 H302 H314 H318	DANGER	GHS07 GHS02 GHS05	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Lead Sulfochromate Yellow	1344-37-2	Carc. 1B Repr. 1A STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1	H350 H360Df H373 H400 H410	DANGER	GHS09 GHS08	
Calcium Silicate	1344-95-2	Eye Irrit. 2 Skin Irrit. 2 STOT SE 3	H319 H315 H335	WARNING	GHS07	No Consensus by ECHA
Cobalt Pigment Blue 28	1345-16-0	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Aquatic Acute 1	H315 H319 H335 H400	WARNING	GHS07 GHS09	No Consensus by ECHA
Propylene Glycol Monopropyl Ether	1569-01-3	Flam. Liq. 3 Skin Irrit 2 Eye Irrit. 2 STOT SE 3 Acute Tox. 4	H226 H315 H319 H336 H332	WARNING	GHS07 GHS02	No Consensus by ECHA
1-Ethoxy-2-Propanol (Propylene Glycol Monopropyl Ether)	1569-02-4	Flam. Liq. 3 STOT SE 3	H226 H336	WARNING	GHS07 GHS02	
2-Methoxy-1-Propanol	1589-47-5	Flam. Liq. 3 Skin Irrit. 2 Eye Dam. 1 STOT SE 3 Repr. 1B	H226 H315 H318 H335 H360D	DANGER	GHS07 GHS02 GHS05 GHS08	
n-Butyl Acid Phosphate	1623-15-0	Skin Corr. 1B Met. Corr. 1 Eye Dam. 1	H314 H290 H318	DANGER	GHS05	No Consensus by ECHA
Methyl t-Butyl Ether	1634-04-4	Flam Liq. 2 Skin Irrit. 2	H225 H315	DANGER	GHS07 GHS02	
Ammonium Benzoate	1863-63-4	Acute Tox. 4 Skin Irrit 2 Eye Irrit. 2 STOT SE 3	H302 H315 H319 H335	WARNING	GHS07	No Consensus by ECHA
Chlorothalonil	1897-45-6	Skin Sens. 1 Eye Dam. 1 Acute Tox. 2 STOT SE 3 Carc. 2 Aquatic Acute 1 Aquatic Chronic 1	H317 H318 H330 H335 H351 H400 H410	DANGER	GHS06 GHS09 GHS05 GHS08	
Isoamyl Isobutyrate	2050-01-3	Flam. Liq. 3	H226	WARNING	GHS02	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (triglycidyl isocyanurate TGIC)	2451-62-9	Acute Tox. 3 Skin Sens. 1 Eye Dam. 1 Acute Tox. 3 Muta. 1B STOT RE 2 Aquatic Chronic 3	H301 H317 H318 H331 H340 H373 H412	DANGER	GHS05 GHS06 GHS08	
n-Butyl Glycidyl Ether	2426-08-6	Flam. Liq. 3 Acute Tox. 4 Skin Sens. 1 Acute Tox. 4 STOT SE 3 Muta. 2 Carc. 2 Aquatic Chronic 3	H226 H302 H317 H332 H335 H341 H351 H412	WARNING	GHS07 GHS02 GHS08	See ECHA HARMONIZED Data
Trimethoxysilane	2530-83-8	Eye Dam. 1 Skin Irrit. 2 Aquatic Chronic 3 Eye Irrit. 2	H318 H315 H412 H319	DANGER	GHS05 GHS07 GHS09	
C.I. Pigment Red 170	2786-76-7	Eye Irrit. 2 Aquatic Chronic 3	H319 H412	WARNING	GHS07	No Consensus by ECHA
Ethylene Glycol Monopropyl Ether	2807-30-9	Acute Tox. 4 Eye Irrit.2	H312 H319	WARNING	GHS07	
Tosyl-Isocyanate	4083-64-1	Skin Irrit. 2 (≥5%) Eye Irrit. 2 (≥5%) Resp. Sens. 1 STOT SE 2 (≥5%)	H315 H319 H334 H335	DANGER	GHS07 GHS08	
Polyisocyanates (IPDI)	4098-71-9	Skin Irrit. 2 Skin Sens. 1 (≥0.5%) Eye Irrit. 2 Acute Tox. 3 Resp. Sens. 1 (≥0.5%) STOT SE 3 Aquatic Chronic 2	H315 H317 H319 H331 H334 H335 H411	DANGER	GHS06 GHS09 GHS08	
Propylene Glycol Monobutyl Ether (3-Butoxypropan-2-ol)	5131-66-8	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	
Isobornyl Acrylate	5888-33-5	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Aquatic Chronic 2	H315 H319 H335 H411	WARNING	GHS07 GHS09	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
d-Limonene	5989-27-5	Flam. Liq. 3 Skin Irrit. 2 Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic 1	H226 H315 H317 H400 H410	WARNING	GHS07 GHS02 GHS09	
Disodium Metasilicate	6834-92-0	Skin Corr. 1B STOT SE 3	H314 H335	DANGER	GHS07 GHS05	
Aluminum Powder (Stabilized)	7429-90-5	Flam. Solid 1 Water-react. 2	H228 H261	DANGER	GHS02	
Copper Powder	7440-50-8	Acute Tox. 3 Skin Irrit. 2 Eye Irrit. 2 Acute Tox.4 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 1	H302 H315 H319 H332 H335 H400 H410	WARNING	GHS07 GHS06 GHS09 GHS08	No Consensus by ECHA
Zinc Powder	7440-66-6	Pyr. Sol. 1 Water-react. 1 Aquatic Acute 1 Aquatic Chronic 1	H250 H260 H400 H410	DANGER	GHS02 GHS09	
Silica, Amorphous	7631-86-9	Skin Irrit.2 Eye Irrit. 2 STOT SE 3 Acute Tox. 4	H315 H319 H335 H332	WARNING	GHS07 GHS08	No Consensus by ECHA
Sodium Nitrite	7632-00-0	Ox. Sol. 3 Acute Tox. 3 Aquatic Acute 1	H272 H301 H400	DANGER	GHS06 GHS09 GHS03	
Ammonia, Anhydrous	7664-41-7	Press. Gas Flam. Gas 2 Skin Corr. 1B Acute Tox. 3 Aquatic Acute 1	 H221 H314 H331 H400	Danger	GHS06 GHS09 GHS05 GHS04	
Sodium Hypochlorite	7681-52-9	Skin Corr. 1B Aquatic Acute 1	H314 H400	Danger	GHS09 GHS05	
Barium Sulfate	7727-43-7	Acute Tox. 4 Acute Tox. 4 Eye Irrit. 2 STOT RE 2	H302 H332 H319 H373	WARNING	GHS07 GHS08	No Consensus by ECHA
Lead Chromate	7758-97-6	Carc. 1B Repr. 1A STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1	H350 H360Df H373 H400 H410	DANGER	GHS09 GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Zinc Phosphate	7779-90-0	Aquatic Acute 1 Aquatic Chronic 1	H400 H410	WARNING	GHS09	
Strontium Chromate	7789-06-5	Acute Tox. 4 Carc. 1B Aquatic Acute 1 Aquatic Chronic 1	H302 H350 H400 H410	DANGER	GHS07 GHS09 GHS08	
Tung Oil	8001-20-5	Only 1 registered				No Consensus by ECHA
Soybean Oil	8001-22-7	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
Lecithin	8002-43-5	Only 1 registered				No Consensus by ECHA
Parrafin Wax	8002-74-2	Eye Irrit. 2 STOT SE 3 Acute Tox. 4	H319 H370 H302	WARNING	GHS07 GHS08	No Consensus by ECHA
Turpentine	8006-64-2	Flam. Liq. 3 Acute Tox. 4 Asp. Tox. 1 Acute Tox. 1 Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Acute Tox. 4 Aquatic Chronic 2	H226 H302 H304 H312 H315 H317 H319 H332 H411	DANGER	GHS07 GHS02 GHS09 GHS08	
Kerosene	8008-20-6	Asp. Tox. 1	H304	DANGER	GHS08	
Mineral Oil	8012-95-1	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
VM&P Naptha	8030-30-6	Asp. Tox. 1 Muta. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Fuller's Earth	8031-18-3	Acute Tox. 4 Eye Irrit. 2 Acute Tox. 4 STOT SE 3 Aquatic Chronic 2	H302 H319 H332 H335 H411	WARNING	GHS07 GHS09	No Consensus by ECHA
Ligroine (Petroleum Naptha)	8032-32-4	Asp. Tox. 1 Muta. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Stoddard Solvent (Mineral Spirits)	8052-41-3	Asp. Tox. 1 Muta. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Cellulose Acetate Butyrate	9004-36-8	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H312 H315 H319 H335	WARNING	GHS07	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Ethyl Cellulose	9004-57-3	Only 3 Registered				
Hydroxyethyl Cellulose	9004-62-0	Skin Irrit. 2 Eye Irrrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07	No Consensus by ECHA
Nonylphenol Ethoxylate	9016-45-9	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Aquatic Chronic 2	H302 H315 H319 H411	WARNING	GHS07 GHS09	No Consensus by ECHA
Polyethylene Glycol Octophenyl Ether	9036-19-5	Acute Tox. 4 Eye Dam. 1 Aquatic Chronic 3 Skin Irrit. 2	H302 H318 H412 H315	DANGER	GHS07 GHS05 GHS09	No Consensus by ECHA
Alkoxylated Butyl Ether	9038-95-3	Acute Tox. 4 Acute Tox. 4 Acute Tox. 2 Skin Irrit. 2 Eye Irrit.2 Aquatic Chronic 4	H302 H332 H330 H315 H319 H413	WARNING	GHS07 GHS06	No Consensus by ECHA
Barium Phosphate	10048-98-3	Acute Tox. 4 Acute Tox. 4	H302 H332	WARNING	GHS07	No Consensus by ECHA
Potassium Chromate	11103-86-9	Acute Tox. 4 Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Resp. Sens. 1 Muta. 2 Carc. 1A STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1	H302 H315 H317 H319 H334 H341 H350 H373 H400 H410	DANGER	GHS07 GHS09 GHS08	No Consensus by ECHA
Xanthan Gum	11138-66-2	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	No Consensus by ECHA
Aluminum Magnesium Silicate	12174-11-7	Carc. 2	H351	WARNING	GHS08	No Consensus by ECHA
Copper Phthalocyanine	12239-87-1	Acute Tox. 4	H302	WARNING	GHS07	No Consensus by ECHA
Hydrated Aluminum Silicate	12269-78-2	Eye Irrit. 2	H319		GHS07	No Consensus by ECHA
Titanium Dioxide	13463-67-7					See Supplier Data
Zinc Chromate	13530-65-9	Acute Tox. 4 Skin Sens. 1 Carc. 1A Aquatic Acute 1 Aquatic Chronic 1	H302 H317 H350 H400 H410	DANGER	GHS07 GHS09 GHS08	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Potassium Tripolyphosphate	13845-36-8	Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4	H315 H319 H302	WARNING	GHS07	No Consensus by ECHA
Aluminum Triphosphate	13939-25-8	Only 2 Registered				
Bismuth Vanadate	14059-33-7	STOT RE 2 Acute Tox. 4	H373 H332	WARNING	GHS08 GHS07	No Consensus by ECHA
Crystalline Silica (Cristobalite)	14464-46-1	STOT RE 1 Carc. 1A Carc. 2	H372 H350 H351	DANGER	GHS08	No Consensus by ECHA
Talc	14807-96-6	Acute Tox. 4 Eye Irrit. 2 STOT RE 1	H332 H319 H372	WARNING	GHS07 GHS08	No Consensus by ECHA
Crystalline Silica (Quartz)	14464-46-1	STOT RE 1 Acute Tox. 4 Carc. 1A Carc. 2 STOT RE 2	H372 H332 H350 H351 H373	DANGER	GHS08	No Consensus by ECHA
Crystalline Silica (Trydimite)	15468-32-3	CARC. 1A STOT RE 2 STOT RE 2	H350 H372 H373	DANGER	GHS08	No Consensus by ECHA
Benzidine Pigment Orange	15793-73-4	Only 1 Registered				No Consensus by ECHA
1,3-Bis (2,3-Epoxypropoxy)-2,2-Dimethylpropane	17557-23-2	Skin Irrit. 2 Skin Sens. 1	H335 H317	WARNING	GHS07	
Iron Hydroxide Oxide	20344-49-4	Only 1 Registered				No Consensus by ECHA
2-Ethylhexanoate	22462-99-9 (wrong CAS number)	Skin Irrit. 2 Eye Irrit 2 STOT SE 3 Acute Tox. 4 Aquatic Chronic 4	H315 H319 H335 H332 H413	WARNING	GHS07	No Consensus by ECHA
Bisphenol-A-((Epichlorohydrin)	25068-38-6	Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Aquatic Chronic 2	H315 H317 H319 H411	WARNING	GHS07 GHS09	
Dipropylene Glycol	25265-71-8	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	No Consensus by ECHA
Polyethylene Glycol	25322-68-3	STOT SE 3 Eye Irrit. 2 Acute Tox. 4	H335 H319 H302	WARNING	GHS07	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Tripropylene Glycol Monomethyl Ether	25498-49-1	Eye Irrit. 2	H319	WARNING	GHS07	No Consensus by ECHA
Isopropylamine Dodecylbenzene Sulfonate	26264-05-1	Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4 STOT SE 3 Aquatic Chronic 3 Eye Dam. 1	H315 H319 H302 H335 H412 H318	WARNING	GHS07 GHS05	No Consensus by ECHA
Methyl Diphenyl Diisocyanate	26447-40-5	Skin Irrit. 2 Skin Sens. 1 Eye Irrit. 2 Acute Tox. 4 Resp. Sens. 1 STOT SE 3 Carc. 2 STOT RE 2	H315 H317 H319 H332 H334 H335 H351 H373	DANGER	GHS07 GHS08	
Dipropylene Glycol Dibenzoate	27138-31-4	Aquatic Chronic 2 Eye irrit. 2 Repr. 2	H411 H319 H361	WARNING	GHS09 GHS08 GHS07	No Consensus by ECHA
Manganese Drier	27253-32-3	Skin Irrit. 2 Acute Tox. 4 Acute Tox. 4	H315 H302 H332	WARNING	GHS07	No Consensus by ECHA
Alkyl Aryl Polyglycol Ether	27344-41-8	Eye Dam. 1 Eye Irrit. 2	H318 H319	WARNING	GHS07 GHS05	No Consensus by ECHA
Polyisocyanate (HMDI)	28182-81-2	Skin Sens. 1 Acute Tox. 4 Resp. Sens. 1 Eye Irrit. 2	H317 H332 H334 H319	DANGER	GHS07 GHS08	No Consensus by ECHA
Butyl Dipropasol (DPNB)	29911-28-2	Eye Dam. 1 Acute Tox. 4 Eye Irrit. 2	H318 H332 H319	DANGER	GHS07 GHS05	No Consensus by ECHA
2-(Hydroxyethylamino) Ethanol	34375-28-5	Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4 STOT SE 3 Eye Dam. 1	H315 H319 H332 H335 H318	WARNING	GHS07 GHS05	No Consensus by ECHA
Trimethoxysilane	34396-03-7	Flam. Liq. 3 Aquatic Chronic 3 Eye Dam. 1	H226 H412 H318	DANGER	GHS02 GHS05	No Consensus by ECHA
Phenol Red	34487-61-1	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07	No Consensus by ECHA
Dipropylene Glycol Monomethyl Ether	34590-94-8	Eye Irrit. 2 Eye Dam. 1 Aquatic Chronic 2	H319 H318 H411	DANGER	GHS07 GHS09 GHS05	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Isoindoline Pigment	36888-99-0	Only 1 Registered				No Consensus by ECHA
Propylene Glycol t-Butyl Ether	57018-52-7	Flam. Liq. 3 Eye Dam. 1	H226 H318	DANGER	GHS02 GHS05	
Cadmium Sulfoselenide Pigment	58339-34-7	Acute Tox. 4 Acute Tox. 4 Acute Tox. 4 Skin Irrir. 2 STOT SE 3	H302 H312 H332 H315 H335	WARNING	GHS07	No Consensus by ECHA
Alcohol Ethoxylate	60828-78-6	Eye Dam. 1 Aquatic Chronic 3 Skin Irrit. 2 Eye Irrit. 2	H318 H412 H315 H319	DANGER	GHS05 GHS07	No Consensus by ECHA
Chrlorinated Hydrocarbon	61788-76-9	Aquatic Chronic 4 Aquatic Acute 1	H413 H400	WARNING	GHS09	No Consensus by ECHA
Diatomaceous Earth	61790-53-2	Acute Tox. 4 Eye Irrit. 2 STOT SE 3	H302 H319 H335	WARNING	GHS07 GHS08	No Consensus by ECHA
Polymethyl Siloxane	63148-62-9	Aquatic Chronic 4 Eye Irrit. 2 Flam. Liq. Repr. 23 Skin Corr. 1A Eye Dam. 1	H413 H319 H226 H361 H314 H318	DANGER	GHS07 GHS02 GHS05	No Consensus by ECHA
Silica, Amorphous	63231-67-4	Acute Tox. 4 Eye Irrit. 2 Acute Tox. 3	H312 H319 H331	DANGER	GHS07 GHS06	No Consensus by ECHA
Chlorinated Paraffins	63449-39-8	Carc. 2 Eye Irrit. 2	H351 H319	WARNING	GHS08 GHS07	No Consensus by ECHA
Naptha (Petroleum-Heavy-Straight)	64741-41-9	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Naptha (Petroleum-Heavy-Alkylate)	64741-65-7	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Isopar E (Isoparaffinic Hydrocarbon)	64741-66-8	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Petroleum Distillates	64741-92-0	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Petroluem Distillates (Light)	64742-47-8	Asp. Tox. 1	H304	DANGER	GHS08	
Hi-flash Naptha	64742-47-8	Asp. Tox. 1	H304	DANGER	GHS08	

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Isopar G (Isoparaffinic Hydrocarbon)	64742-48-9	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Petroleum Naptha Hydrotreated	64742-48-9	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Naptha, Petroleum Hydrotreated (Light)	64742-49-0	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Petroleum Distillates Hydrotreated (Heavy)	64742-52-5	Carc. 1B	H350	DANGER	GHS08	
Petroleum Distillates Hydrotreated (Light)	64742-54-7	Carc. 1B	H350	DANGER	GHS08	
Petroleum Distillates Hydrotreated (Light)	64742-55-8	Carc. 1B	H350	DANGER	GHS08	
Petroleum Naptha Hydrosulfurized (heavy)	64741-82-1	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Petroleum Naptha (Medium)	64742-88-7	Asp. Tox. 1	H304	DANGER	GHS08	
Petroleum Naptha (Light)	64742-89-8	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Aromatic 150	64742-94-5	Asp. Tox. 1	H304	DANGER	GHS08	
Aromatic 100 (High Flash Naptha)	64742-95-6	Asp. Tox. 1 Mut. 1B Carc. 1B	H304 H340 H350	DANGER	GHS08	
Coal Tar Pitch (Refined)	65997-93-2	Carc. 1B	H350	DANGER	GHS08	
Portland Cement	65997-15-1	Skin Irrit. 2 Skin Sens. 1 Eye Dam. 1 STOT SE 3	H315 H317 H318 H335	DANGER	GHS07 GHS08 GHS05	No Consensus by ECHA
Glass Oxides (Fiberglass)	65997-17-3	Eye Irrit. 2 Skin Irrit. 2 STOT SE 3 Carc. 1B	H319 H315 H335 H350	DANGER	GHS07 GHS08	No Consensus by ECHA
Linseed Oil (polymerized)	67746-08-1	Aquatic Chronic 4	H413	DANGER	GHS07	No Consensus by ECHA
Alcohol Ethoxylate	68439-46-3	Acute Tox. 4 Skin Irrit. 2 Eye Dam. 1	H302 H315 H318	DANGER	GHS07 GHS05	No Consensus by ECHA
Polyamide Resin	68410-23-1	Skin Irrit. 2 Eye Irrit. 2	H315 H318	WARNING	GHS07 GHS05	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Diisononyl Phthalate	68515-48-0	Aquatic Acute 1	H400	WARNING	GHS09	No Consensus by ECHA
Linseed Oil (Co/Mn Salt)	68553-15-1	Skin Irrit.2 Eye Irrit.2	H315 H319	WARNING	GHS07	No Consensus by ECHA
Polysiloxane	71750-80-6	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	No Consensus by ECHA
Neodymium 2-Ethylhexanoate	73227-23-3	Skin Irrit. 2	H315	WARNING	GHS07	No Consensus by ECHA
Dodecylpyrrolidinedione	79720-19-7	Aquatic Acute 1 Aquatic Chronic 1 Skin Corr. 1A Acute Tox. 4 Acute Tox. 4 Eye Dam. 1 Acute Tox. 4	H400 H410 H314 H302 H312 H318 H332	DANGER	GHS09 GHS05 GHS07	No Consensus by ECHA
Exxate 600 Solvent (Ascertic Acid Ester)	88230-35-7	Aquatic Chronic 2	H411		GHS09	See ECHA HARMONIZED Data
Oxo-Heptyl Acetate	90438-79-2	Aquatic Chronic 2 Acute Tox. 4 Acute Tox. 4 Acute Tox. 4	H411 H302 H312 H332	WARNING	GHS07	No Consensus by ECHA
Aluminum Silicate Extender	93763-70-3	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	WARNING	GHS07	No Consensus by ECHA
Silica, Amorphous (Precipitated)	112926-00-8	Acute Tox. 2 STOT RE 1	H330 H372	DANGER	GHS06 GHS08	No Consensus by ECHA
Thixatrol SR100	126162-16-1	Only 5 Registered				
Nonylphenol Polyethylene Glycol Ether	127087-87-0	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Eye Dam. 1 Acute Tox. 4 Aquatic Chronic 2	H302 H315 H319 H318 H332 H411	DANGER	GHS07 GHS09 GHS05	No Consensus by ECHA
Hydroxyphenylbenxotriazole Derivate	127519-17-9	Aquatic Chronic 2	H411		GHS09	
Propylene Glycol Monomethyl Ether Propionate	148462-57-1	Acute Tox. 3	H331	WARNING	GHS07	No Consensus by ECHA
Asphalt	8052-42-4	Skin Irrit. 2 Eye Irrit. 2	H315 H319	WARNING	GHS07	No Consensus by ECHA
Kaolin	1332-58-7	Skin Irrit. 2 Eye Irrit. 2 STOT RE 1	H315 H319 H372	DANGER	GHS07 GHS08	No Consensus by ECHA

Chemical Name	CAS Number	Hazard Class and Category Code(s)	Hazard Statement Code(s)	Signal Word	Pictogram Codes	Additional Information
Cellulose	9004-34-6	STOT SE 3	H335	WARNING	GHS07	No Consensus by ECHA
Calcium Carbone / Limestone	1317-65-3	Skin Irrit. 2 Eye Dam. 1 Carc. 1B STOT RE 1	H315 H318 H350 H372	WARNING DANGER	GHS07 GHS05 GHS08	No Consensus by ECHA

Table 2 list the Hazard Class, Hazard Category, Signal Word, Hazard Statement and Pictogram associated with each GHS classification. After determining your GHS classifications from data provided by your raw materials suppliers (or from a reading of Table 1, or from specific testing data), use Table 2 to determine the required Signal Word, Hazard Statement and Pictogram required for your label. It is important to note the "Hazard Code" associated with each "Hazard Statement", as this code will be used in conjunction with Table 3 to determine the required "Precautionary Statements." Where appropriate, Hazard Statements may be combined to increased readability.

Table 2 – GHS Hazard Classifications and Required Signal Words, Hazard Statements and Pictograms

Hazard Class	Hazard Category	Signal Word	Hazard Code	Hazard Statement	Pictogram
Explosives (See OSHA Appendix B.1)	Unstable explosive	Danger	H200	Unstable Explosive	GHS 01
	Division 1.1	Danger	H201	Explosive; mass explosion hazard	
	Division 1.2	Danger	H202	Explosive; severe projection hazard	
	Division 1.3	Danger	H203	Explosive; fire, blast or projection hazard	
	Division 1.4	Warning	H204	Fire or projection hazard	
	Division 1.5	Danger	H205	May mass explode in fire	None
Flammable Gasses (See OSHA Appendix B.2)	1	Danger	H220	Extremely Flammable Gas	GHS 02
	2	Warning	H221	Flammable gas	None
Flammable Aerosols (See OSHA Appendix B.3)	1	Danger	H222	Extremely flammable aerosol	GHS 02
	2	Warning	H223	Flammable aerosol.	
Oxidizing Gases (See OSHA Appendix B.4)	1	Danger	H270	May cause or intensify fire; oxidizer	GHS 03
Gasses Under Pressure (See OSHA Appendix B.5)	Compressed Gas	Warning	H280	Contains gas under pressure; may explode if heated	GHS 04
	Compressed Liquid				
	Dissolved Gas				
	Refrigerated Liquefied Gas	Warning	H281	Contains refrigerated gas; may cause cryogenic burns or injury	
Flammable Liquids (See OSHA Appendix B.6)	1	Danger	H224	Extremely flammable liquid and vapor	GHS 02
	2	Danger	H225	Highly flammable liquid and vapor	
	3	Warning	H226	Flammable liquid and vapor	

Hazard Class	Hazard Category	Signal Word	Hazard Code	Hazard Statement	Pictogram
	4	Warning	H227	Combustible liquid	None
Flammable Solids (See OSHA Appendix B.7)	1	Danger	H228	Flammable Solid	GHS 02
	2	Warning	H228	Flammable Solid	
Self-reactive Substances and Mixtures (See OSHA Appendix B.8)	Type A	Danger	H240	Heating may cause an explosion	GHS 01
	Type B		H241	Heating may cause a fire or explosion	GHS 01 GHS 02
	Type C		H242	Heating may cause a fire	GHS 02
	Type D				
	Type E	Warning			
	Type F				
Pyrophoric Liquids (See OSHA Appendix B.9)	1	Danger	H250	Catches fire spontaneously if exposed to air	GHS 02
Pyrophoric Solids (See OSHA Appendix B.10)	1	Danger	H250	Catches fire spontaneously if exposed to air	GHS 02
Self-Heating Substances and Mixtures (See OSHA Appendix B.11)	1	Danger	H251	Self-heating; may catch fire	GHS 02
	2	Warning	H252	Self-heating in large quantities; may catch fire	
Substances and Mixtures Which, In Contact with Water, Emit Flammable Gases (See OSHA Appendix B.12)	1	Danger	H260	In contact with water releases flammable gases, which may ignite spontaneously	GHS 02
	2		H261	In contact with water releases flammable gases	
	3	Warning	H261	In contact with water releases flammable gases	
Oxidizing Liquids (See OSHA Appendix B.13)	1	Danger	H271	May cause fire or explosion; strong oxidizer	GHS 03
	2		H272	May intensify fire; Oxidizer	
	3	Warning		May intensify fire; Oxidizer	
Oxidizing Solids (See OSHA Appendix B.14)	1	Danger	H271	May cause fire or explosion; strong oxidizer	GHS 03
	2		H272	May intensify fire; Oxidizer	
	3	Warning	H272	May intensify fire; Oxidizer	
Organic Peroxides (See OSHA	Type A	Danger	H240	Heating may cause an explosion	GHS 01

Hazard Class	Hazard Category	Signal Word	Hazard Code	Hazard Statement	Pictogram
Appendix B.15)	Type B		H241	Heating may cause explosion	GHS 01 GHS 02
	Type C		H242	Heating may cause a fire	GHS 02
	Type D				
	Type E	Warning			
	Type F				
Corrosive To Metals (See OSHA Appendix B.16)	1	Warning	H290	May be corrosive to metals	GHS 05
Simple Asphyxiant		Warning		May displace oxygen and cause rapid suffocation	None
Combustible Dust		Warning		May form combustible dust in concentrations in air	None
Pyrophoric Gas		Danger		Catches fire spontaneously if exposed to air	GHS 02
Acute Toxicity – Oral (See OSHA Appendix A.1)	1	Danger	H300	Fatal if swallowed	GHS 06
	2				
	3		H301	Toxic if swallowed	
	4	Warning	H302	Harmful if swallowed	GHS 07
Acute Toxicity – Dermal (See OSHA Appendix A.1)	1	Danger	H310	Fatal in contact with skin	GHS 06
	2				
	3		H311	Toxic in contact with skin	
	4	Warning	H312	Harmful in contact with skin	GHS 07
Acute Toxicity – Inhalation (See OSHA Appendix A.1)	1	Danger	H330	Fatal if inhaled	GHS 06
	2				
	3		H331	Toxic if inhaled	
	4	Warning	H332	Harmful if inhaled	GHS 07
Skin Corrosion / Irritation (See OSHA Appendix A.2)	1A to 1C	Danger	H314	Causes severe skin burns and eye damage	GHS 05
	2	Warning	H315	Causes skin irritation	GHS 07
Eye Damage / Irritation (See OSHA	1	Danger	H318	Causes serious eye damage	GHS 05

Hazard Class	Hazard Category	Signal Word	Hazard Code	Hazard Statement	Pictogram
Appendix A.3)	2A	Warning	H319	Causes serious eye irritation	GHS 07
	2B		H320	Causes eye irritation	None
Sensitization – Respiratory (See OSHA Appendix A.4)	1 (Including 1A and 1B)	Danger	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	GHS 08
Sensitization – Skin (See OSHA Appendix A.4)	1 (Including 1A and 1B)	Warning	H317	May cause an allergic skin reaction	GHS 07
Germ Cell Mutagenicity (See OSHA Appendix A.5)	1A and 1B	Danger	H340	May cause genetic defects <…>. <…> (*state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.)*	GHS 08
	2	Warning	H341	Suspected of causing genetic defects <…>. <…> (*state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.)*	
Carcinogenicity (See OSHA Appendix A.6)	1A and 1B	Danger	H350	May cause cancer <…>. <…> (*state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.)*	GHS 08
	2	Warning	H351	Suspected of causing cancer <…>. <…> (*state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.)*	
Toxic To Reproduction (See OSHA Appendix A.7)	1A and 1B	Danger	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.)*	GHS 08
	2	Warning	H361	Suspected of damaging fertility <…><<…>>. <…> (*state specific effect if known.)* <<…>> (*state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.)*	
	(additional)	None	H362	May cause harm to breast-fed children	None
Specific Target Organ Toxicity (Single Exposure) (See OSHA Appendix A.8)	1	Danger	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.)*	GHS 08
	2	Warning	H371	May Cause 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.)*	

Hazard Class	Hazard Category	Signal Word	Hazard Code	Hazard Statement	Pictogram
	3		H335	May cause respiratory irritation; or	GHS 07
			H336	May cause drowsiness or dizziness	
Specific Target Organ Toxicity (Repeated Exposure) (See OSHA Appendix A.9)	1	Danger	H372	Causes damage to organs <…> through prolonged or repeated exposure <<…>>. <…> (*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.)*	GHS 08
	2	Warning	H373	May Cause damage to organs <…> through prolonged or repeated exposure <<…>>. <…> (*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.)*	
Aspiration Hazard	1	Danger	H304	May be fatal if swallowed and enters airways	GHS 08

Table 3 list the Precautionary Statement associated with each Hazard Statement. Using the Hazard Code from Table 1 or Table 2, locate the associated Precautionary statements listed on Table 3. The Precautionary Statements are organized into four categories: 1) Prevention (P), 2) Response (R), 3) Storage (S), and 4) Disposal (D). The Precautionary Codes are organized by number:

Category	Numbers
Prevention	P200 – P299
Response	P300 – P399
Disposal	P400 – P499
Storage	P500 – P599

Again, where it is appropriate, precautionary statements may be combined to increased readability.

Table 3–GHS Hazard Statements and Required & Recommended Precautionary Labeling Statements

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
	Recommended for all products	P101	**If medical advice is needed, have product container or label at hand.**
		P102	**Keep out of reach of children.**
H200	Unstable Explosive	P201 (P)	**Obtain special instructions before use.**
		P202 (P)	**Do not handle until all safety precautions have been read and understood.**
		P281 (P)	**Wear personal protective equipment/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment, as required.
		P372 (R)	**Explosion risk in case of fire.**
		P373 (R)	**DO NOT fight fire when fire reaches explosives.**
		P380 (R)	**Evacuate Area.**
		P401 (S)	**Store…**in accordance with local/regional/national/international regulations (to be specified).
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H201 H202 H203	Explosive; mass explosion hazard Explosive; serve explosion hazard Explosive; fire, blast or projection hazard	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P230 (P)	**Keep wetted with…**Chemical manufacturer, importer, or distributor to specify appropriate material. (*If drying out increases explosion hazard, except as needed for manufacturing or operating processes (e.g. nitrocellulose)) (For substances and mixtures which are wetted, diluted, dissolved or suspended with a phlegmatizer in order to reduce or suppress their explosive properties (desensitized explosives).)*
		P240 (P)	**Ground/bond container and receiving equipment.** *(If the explosive is electrostatically sensitive.)*
		P250 (P)	**Do not subject to grinding/shock/…/friction.** Chemical manufacturer, importer, or distributor to specify applicable rough handling. *(If the explosive is mechanically sensitive.)*
		P280 (P)	**Wear face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P380 (R)	**In case of fire; evacuate area.**
		P372 (R)	**Explosion risk in case of fire.**
		P373 (R)	**Do NOT fight fire when fire reaches explosives.**
		P401 (S)	**Store…**in accordance with local/regional/national/international regulations (to be specified).
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H204	Fire or projection hazard	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P240 (P)	**Ground/bond container and receiving equipment.** *(If the explosive is electrostatically sensitive.)*
		P250 (P)	**Do not subject to grinding/shock/…/friction.** Chemical manufacturer, importer, or distributor to specify applicable rough handling. *(If the explosive is mechanically sensitive.)*
		P280 (P)	**Wear face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P380 (R)	**In case of fire; evacuate area.**
		P372 (R)	**Explosion risk in case of fire. (**Except if explosives are *1.4S AMMUNITION AND COMPONENTS THEREOF.)*
		P373 (R)	**Do NOT fight fire when fire reaches explosives.**
		P374 (R)	**Fight fire with normal precautions from a reasonable distance.** (*If explosives are 1.4S AMMUNITION AND COMPONENTS THEREOF.)*
		P401 (S)	**Store…**in accordance with local/regional/national/international regulations (to be specified).
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H205	May mass explode in fire	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P230 (P)	**Keep wetted with…** Chemical manufacturer, importer, or distributor to specify appropriate material. (*If drying out increases explosion hazard, except as needed for manufacturing or operating processes (e.g. nitrocellulose).)*
		P240 (P)	**Ground/bond container and receiving equipment.** (*If the explosive is electrostatically sensitive)*
		P250 (P)	**Do not subject to grinding/shock/…/friction.** Chemical manufacturer, importer, or distributor to specify applicable rough handling. *(If the explosive is mechanically sensitive.)*
		P280 (P)	**Wear face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P380 (R)	**In case of fire; evacuate area.**
		P372 (R)	**Explosion risk in case of fire.**
		P373 (R)	**Do NOT fight fire when fire reaches explosives.**
		P401 (S)	**Store…**in accordance with local/regional/national/international regulations (to be specified).
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H220	Extremely Flammable Gas	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P377 (R)	**Leaking gas fire; Do not extinguish, unless leak can be stopped safely.**
		P381 (R)	**Eliminate all ignition sources if safe to do so.**
		P403 (S)	**Store in well-ventilated place.**
H221	Flammable Gas	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P377 (R)	**Leaking gas fire; Do not extinguish, unless leak can be stopped safely.**
		P381 (R)	**Eliminate all ignition sources if safe to do so.**
		P403 (S)	**Store in well-ventilated place.**
H222 H223	Extremely flammable aerosol. Flammable aerosol	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P211 (P)	**Do not spray on an open flame or other ignition source.**
		P251 (P)	**Pressurized container: Do not pierce or burn, even after use.**
		P410 + P412 (S)	**Protect from sunlight. Do not expose to temperatures exceeding 50°C / 122°F.**

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H224 H225 H226	Extremely flammable liquid and vapor Highly flammable liquid and vapor * Flammable liquid and vapor * *Corrected May 2014	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P233 (P)	**Keep container tightly closed.** *(If the liquid is volatile and may generate an explosive atmosphere.)*
		P240 (P)	**Ground/bond container and receiving equipment.** (*If electrostatically sensitive material is for reloading. If product is volatile so as to generate hazardous atmosphere.)*
		P241 (P)	**Use explosion-proof electrical/ventilating/lighting/…/equipment.** Chemical manufacturer, importer, or distributor to specify other equipment. *(If the liquid is volatile and may generate an explosive atmosphere.)*
		P242 (P)	**Use only non-sparking tools.** *(If the liquid is volatile and may generate an explosive atmosphere and if the minimum ignition energy is very low. (This applies to substance and mixtures where the minimum ignition energy is <.01 mJ, i.e., carbon disulphide).*
		P243 (P)	**Take precautionary measures against static discharge.** *(If the liquid is volatile and may generate an explosive atmosphere.)*
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P303 + P361 + P353 (R)	**If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. *(If water increases risk.)*
		P403 + P235 (S)	**Store in a well-ventilated place. Keep cool.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H227	Combustible Liquid	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.**
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P403 + P235 (S)	**Store in a well-ventilated place. Keep cool.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H228	Flammable Solid	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P240 (P)	**Ground/bond container and receiving equipment.** (*If electrostatically sensitive material is for reloading.)*
		P241 (P)	**Use explosion-proof electrical/ventilating/lighting/…/equipment.** Chemical manufacturer, importer, or distributor to specify other equipment. (*If dust cloud can occur)*
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media (*if water increases risk.)*
H240	Heating may cause an explosion	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P220 (P)	**Keep/Store away from clothing/…/combustible material.** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P234 (P)	**Keep only in original container.**
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P370 + P380 + P375 (R)	**In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.**
		P403 + P235 (S)	**Store in well-ventilated place. Keep cool.**
		P411 (S)	**Store at temperature not exceeding …°C/…°F.** Chemical manufacturer, importer, or distributor to specify temperature.
		P420 (S)	**Store away from other materials.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H241	Heating may cause fire or explosion	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P220 (P)	**Keep/Store away from clothing/…/combustible material.** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P234 (P)	**Keep only in original container.**
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P370 + P380 + P375 (R)	**In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.**
		P403 + P235 (S)	**Store in well-ventilated place. Keep cool.**
		P411 (S)	**Store at temperature not exceeding …°C/…°F.** Chemical manufacturer, importer, or distributor to specify temperature.
		P420 (S)	**Store away from other materials.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H242	Heating may cause fire	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P220 (P)	**Keep/Store away from clothing/…/combustible material.** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P234 (P)	**Keep only in original container.**
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P403 + P235 (S)	**Store in well-ventilated place. Keep cool.**
		P411 (S)	**Store at temperature not exceeding …°C/…°F.** Chemical manufacturer, importer, or distributor to specify temperature.
		P420 (S)	**Store away from other materials.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H250	Catches fire spontaneously if exposed to air	P210 (P)	**Keep away from heat/sparks/open flames/hot surfaces. No Smoking.** Chemical manufacturer, importer, or distributor to specify applicable ignition source(s).
		P222 (P)	**Do not allow contact with air.**
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P304 +P334 (R)	**If on skin: Immerse in cool water/wrap with wet bandages.**
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P422 (S)	**Store contents under…** Chemical manufacturer, importer, or distributor to specify appropriate liquid or inherit gas.
H251	Self-heating; may catch fire	P235 + P410 (P)	**Keep cool. Protect from sunlight.**
H252	Self-heating in large quantities; may catch fire	P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P407 (S)	**Maintain air gap between stacks/pallets.**
		P413 (S)	**Store bulk masses great than …kg/…lbs at temperatures not exceeding …°C/…°F.** Chemical manufacturer, importer, or distributor to specify mass and temperature.
		P420 (S)	**Store away from other materials.**
H260	In contact with water releases flammable gases, which may ignite spontaneously	P233 (P)	**Do not allow contact with water.**
		P231 + P232 (P)	**Handle under inert gas. Protect from moisture.** *(If the substance or mixture reacts readily with moisture in the air.)*
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
H261	In contact with water releases flammable gases	P335 +P334 (R)	**Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages.**
		P370 + P378 (R)	**In cases of fire: Use… to extinguish.** Chemical manufacturer, importer, or distributor to specify appropriate media. (*If water increases risk.)*
		P402 + P404 (S)	**Store in a dry place. Store in a closed container.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H270	May cause or intensify fire; oxidizer	P220 (P)	**Keep/Store away from clothing/…/combustible materials.** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P224 (P)	**Keep valves and fittings free from oil and grease.**
		P370 + P376 (R)	**In case of fire: Stop leak if safe to do so.**
		P403 (S)	**Store in well-ventilated place.**
H271	May cause fire or explosion; strong oxidizer	P210 (P)	**Keep away from heat.**
		P220 (P)	**Keep/Store away from clothing and combustible material.**
		P221 (P)	**Take any precaution to avoid mixing with combustibles/…/** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P283 (P)	**Wear fire/flame resistant/retardant clothing.**
		P306 + P360 (R)	**If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.**
		P371 + P380 + P357 (R)	**In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.**
		P370 + P378 (R)	**In case of fire: Use … for extinction.** Chemical manufacturer, importer, or distributor to specify appropriate media (*if water increases risk*)
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H272	May intensify fire; oxidizer	P210 (P)	**Keep away from heat.**
		P220 (P)	**Keep/Store away from clothing/…/combustible material.** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P221 (P)	**Take any precaution to avoid mixing with combustibles/…** Chemical manufacturer, importer, or distributor to specify other incompatible materials.
		P280 (P)	**Wear protective gloves/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P370 + P378 (R)	**In case of fire: Use … for extinction.** Chemical manufacturer, importer, or distributor to specify appropriate media (*if water increases risk*)
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H280	Contains gas under pressure; may explode if heated	P410 + P403 (S)	**Protect from sunlight. Store in a well-ventilated place.**
H281	Contains refrigerated gas; may cause cryogenic burns or injury	P282 (P)	**Wear cold insulating gloves/face shield/eye protection.**
		P336 (R)	**Thaw frosted parts with lukewarm water. Do not rub affected area.**
		P315 (R)	**Get immediate medical advice/attention.**
		P403 (S)	**Store in well-ventilated place.**
H290	May be corrosive to metals	P234 (P)	**Keep only in original container.**
		P390 (R)	**Absorb spillage to prevent material damage.**
		P406(S)	**Store in corrosive resistant/…container with a resistant inner liner.** Chemical manufacturer, importer, or distributor to specify other compatible materials.
H300	Fatal if swallowed	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke while using this product.**
		P301 + P310 (R)	**If swallowed: Immediately call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P321 (R)	**Specific treatment (see… on this label).** Reference to supplemental first aid instruction. (*If immediate administration of antidote is required.*)
		P330 (R)	**Rinse mouth.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H301	Toxic if swallowed	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke while using this product.**
		P301 + P310 (R)	**If swallowed: Immediately call a poison center/doctor…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P321 (R)	**Specific treatment (see… on this label).** Reference to supplemental first aid instruction. (*If immediate administration of antidote is required.*)
		P330 (R)	**Rinse mouth.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H302	Harmful if swallowed	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke while using this product.**
		P301 + P310 (R)	**If swallowed: Immediately call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P330 (R)	**Rinse mouth.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H304	May be fatal if swallowed and enters airways	P301 + P310 (P)	**If swallowed: Immediately call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P331 (P)	**Do NOT induce vomiting.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H310	Fatal in contact with skin	P262 (P)	**Do not get in eyes, on skin, or on clothing.**
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke while using this product.**
		P280 (P)	**Wear protective gloves/protective clothing.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P302 + P350 (R)	**If on skin: Wash with plenty of water/…** Chemical manufacturer, importer, or distributor may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		P310 (R)	**Immediately call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P322 (R)	**Specific measure (see …on this label).** Reference to supplemental first aid instruction. (*If immediate measures such as specific cleansing agent is advised.*)
		P361 (R)	**Take off immediately all contaminated clothing and wash before reuse.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H311	Toxic in contact with skin	P280 (P)	**Wear protective gloves/protective clothing.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P302 + P350 (R)	**If on skin: Wash with plenty of water/…** Chemical manufacturer, importer, or distributor may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		P312 (R)	**Call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P322 (R)	**Specific measure (see …on this label).** Reference to supplemental first aid instruction. (*If immediate measures such as specific cleansing agent is advised.*)
		P361 (R) + P363 (R)	**Take off immediately all contaminated clothing and wash before reuse.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H312	Harmful in contact with skin	P280 (P)	**Wear protective gloves/protective clothing.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P302 + P350 (R)	**If on skin: Wash with plenty of water/…** Chemical manufacturer, importer, or distributor may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		P312 (R)	**Call a Poison control center, doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
H314	Causes severe skin burns and eye damage	P260 (P)	**Do not breathe dusts or mists.** (*If inhalable particles of dusts or mists may occur during use.)*
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P280 (P)	**Wear protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P301 + P330 + P331 (R)	**If swallowed: Rinse mouth. Do NOT induce vomiting.**
		P303 + P361 + P353 (R)	**If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**
		P363 (R)	**Wash contaminated clothing before reuse.**
		P304 + P340 (R)	**If inhaled: Remove victim to fresh air and keep comfortable for breathing.**
		P310 (R)	**Immediately call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P321 (R)	**Specific treatment (see …on this label).** Reference to supplemental first aid instruction. (*Manufacture/supplier or the competent authority may specify a cleansing agent if appropriate.*)
		P305 + P351 + P338 (R)	**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H315	Causes skin irritation	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P280 (P)	**Wear protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P302 + P352 (R)	**If on skin: Wash with plenty of soap and water/...** Chemical manufacturer, importer, or distributor may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		P321 (R)	**Specific treatment (see …on this label).** Reference to supplemental first aid instruction. (*Manufacture/supplier or the competent authority may specify a cleansing agent if appropriate.*)
		P332 + P313 (R)	**If skin irritation occurs: Get medical advice/attention.**
		P363 (R)	**Take off contaminated clothing and wash before reuse.**
H317	May cause an allergic skin reaction	P261 (P)	**Avoid breathing dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P272 (P)	**Contaminated work clothing should not be allowed out of the workplace.**
		P280 (P)	**Wear protective gloves.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P302 + P352 (R)	**If on skin: Wash with plenty of water/…** Chemical manufacturer, importer, or distributor may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		P333 + P313 (R)	**If skin irritation or rash occurs: Get medical advice/attention.**
		P321 (R)	**Specific treatment (see …on this label).** Reference to supplemental first aid instruction. (*Manufacture/supplier or the competent authority may specify a cleansing agent if appropriate.*)
		P363 (R)	**Wash contaminated clothing before reuse.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H318	Causes serious eye damage	P280 (P)	**Wear eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P305 + P351 + P338 (R)	**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**
		P310 (R)	**Immediately call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
H319	Causes serious eye irritation	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P280 (P)	**Wear protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment.
		P305 + P351 + P338 (R)	**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**
		P337 + P313 (R)	**If eye irritation persists: Get medical advice/attention.**
H320	Causes eye irritation	P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P305 + P351 + P338 (R)	**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**
		P337 + P313 (R)	**If eye irritation persists: Get medical advice/attention.**
H330	Fatal if inhaled	P260 (P)	**Do not breathe dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P271 (P)	**Use only outdoors or in well-ventilated area.**
		P284 (P)	**[In case of inadequate ventilation] Wear respiratory protection.** Chemical manufacturer, importer, or distributor to specify equipment. - *Text in square brackets may be used if additional information is provided with the chemical at the point of use that explains what type of ventilation would be adequate for safe use.*
		P304 + P340 (R)	**If inhaled: Remove victim to fresh air and keep comfortable for breathing.**
		P310 +P233 (R)	**Immediately call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P320 (R)	**Specific treatment is urgent (see …on this label).** Reference to supplemental first aid instruction. (*If immediate administration of antidote is required.*)
		P403 (S)	**Store in well-ventilated place. Keep container tightly closed.** (*If product is volatile as to generate hazardous atmosphere.)*
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H331	Toxic if inhaled	P261 (P)	**Avoid breathing dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P271 (P)	**Use only outdoors or in well-ventilated area.**
		P304 + P340 (R)	**If inhaled: Remove victim to fresh air and keep comfortable for breathing.**
		P312 (R)	**Call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P321 (R)	**Specific treatment (see …on this label).** Reference to supplemental first aid instruction. (*If immediate specific treatment is required.*)
		P403 + P233(S)	**Store in well-ventilated place. Keep container tightly closed.** (*If product is volatile as to generate hazardous atmosphere.)*
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H332	Harmful if inhaled	P261 (P)	**Avoid breathing dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P271 (P)	**Use only outdoors or in well-ventilated area.**
		P304 + P340 (R)	**If inhaled: Remove victim to fresh air and keep comfortable for breathing.**
		P312 (R)	**Call a poison control center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	P261 (P)	**Avoid breathing dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P285 (P)	**[In cause of inadequate ventilation] wear respiratory protection.** Chemical manufacturer, importer, or distributor to specify equipment. - *Text in square brackets may be used if additional information is provided with the chemical at the point of use that explains what type of ventilation would be adequate for safe use.*
		P304 + P340 (R)	**If inhaled: If breathing is difficult remove victim to fresh air and keep comfortable for breathing.**
		P342 + P311 (R)	**If experiencing respiratory symptoms: Call a poison center/doctor/...** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H335 H336	May cause respiratory irritation; or May cause drowsiness or dizziness	P261 (P)	**Avoid breathing dust/fume/gas/mist/vapor/spray.** Chemical manufacturer, importer, or distributor to specify applicable conditions.
		P271 (P)	**Use only outdoors or in a well-ventilated area.**
		P304 + P340 (R)	**If inhaled: Remove victim to fresh air and keep comfortable for breathing.**
		P312 (R)	**Immediately call a poison center/doctor/…/ if you feel unwell.** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P403 + P233	**Store in a well-ventilated place. Keep container tightly closed.** *(If product is volatile so as to generate hazardous atmosphere.)*
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H340 H341	May cause genetic defects <…>. Suspected of causing genetic defects <…>. <…> (*state route of exposure if no other routes of exposure cause the hazard.)*	P201 (P)	**Obtain special instructions before use.**
		P202 (P)	**Do not handle until all safety precautions have been read and understood.**
		P281 (P)	**Use personal protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment, as required.
		P308 + P313 (R)	**If exposed or concerned: Get medical advice/attention.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H350 H351	May cause cancer <…>. Suspected of causing cancer <…>. <…> (*state route of exposure if no other routes of exposure cause the hazard.)*	P201 (P)	**Obtain special instructions before use.**
		P202 (P)	**Do not handle until all safety precautions have been read and understood.**
		P281 (P)	**Use personal protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment, as required.
		P308 + P313 (R)	**If exposed or concerned: Get medical advice/attention.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H360 H361	May damage fertility or the unborn child <…> <<…>>. Suspected of damaging fertility <…><<…>>. <…> (*state specific effect if known.)* <<…>> (*state routes of exposure if no other route of exposure cause the hazard.)*	P201 (P)	**Obtain special instructions before use.**
		P202 (P)	**Do not handle until all safety precautions have been read and understood.**
		P281 (P)	**Use personal protective gloves/protective clothing/eye protection/face protection.** Chemical manufacturer, importer, or distributor to specify type of equipment, as required.
		P308 + P313 (R)	**If exposed or concerned: Get medical advice/attention.**
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H362	May cause harm to breast-fed children	P201 (P)	**Obtain special instructions before use.**
		P260 (P)	**Do not breathe dusts or mists.** (*If inhalable particles of dusts or mists may occur during use.)*
		P263 (P)	**Avoid contact during pregnancy/while nursing.**
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke when using this product.**
		P308 + P313 (R)	**If exposed or concerned: Get medical advice/attention.**
H370	Causes damage to organs <…> <<…>>. <…> (*or state all organs affected, if known.)* <<…>> (*state route of exposure if no other route of exposure cause the hazard.)*	P260 (P)	**Do not breathe dust/fume/gas/mist/vapors/spray.** Chemical manufacturer, importer, or distributor *to specify applicable conditions.*
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke when using this product.**
		P307 + P311	**If exposed. Call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P321 (R)	**Specific treatment (see …on this label).** Reference to supplemental first aid instruction. (*If immediate measures are required.*)
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H371	May Cause damage to organs <…> <<…>>. <…> (*or state all organs affected, if known.)* <<…>> (*state route of exposure if no other route of exposure cause the hazard.)*	P260 (P)	**Do not breathe dust/fume/gas/mist/vapors/spray.** Chemical manufacturer, importer, or distributor *to specify applicable conditions.*
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke when using this product.**
		P307 + P311	**If exposed. Call a poison center/doctor/…** Chemical manufacturer, importer, or distributor to specify the appropriate source of emergency medical advice.
		P405 (S)	**Store locked up.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
H372	Causes damage to organs <…> through prolonged or repeated exposure <<…>>. <…> (*state all organs affected, if known.)* <<…>> (*state route of exposure if no other route of exposure cause the hazard.)*	P260 (P)	**Do not breathe dust/fume/gas/mist/vapors/spray.** Chemical manufacturer, importer, or distributor *to specify applicable conditions.*
		P264 (P)	**Wash …thoroughly after handling.** Chemical manufacturer, importer, or distributor to specify parts of the body to be washed after handling.
		P270 (P)	**Do not eat, drink or smoke when using this product.**
		P314 (R)	**Get medical advice/attention if you feel unwell.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).

Hazard Code	Hazard Statements	Precautionary Code	Precautionary Statement
H373	May cause damage to organs <…> through prolonged or repeated exposure <<…>>. <…> (*state all organs affected, if known.)* <<…>> (*state route of exposure if no other route of exposure cause the hazard.)*	P260 (P)	**Do not breathe dust/fume/gas/mist/vapors/spray.** (Chemical manufacturer, importer, or distributor *to specify applicable conditions.)*
		P314 (R)	**Get medical advice/attention if you feel unwell.**
		P501 (D)	**Dispose of contents/container to…** in accordance with local/regional/national/international regulations (to be specified).
Simple Asphyxiants	May displace oxygen and cause rapid suffocation		
Combustible Dust	May form combustible dust in concentrations in air		

Table 4 lists the GHS Pictograms and the Hazard Classifications that they represent.

Table 4 – GHS Pictograms

▪ Explosives ▪ Self Reactives ▪ Organic Peroxides  **Exploding Bomb – GHS 01**	▪ Flammables ▪ Self Reactives ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Organic Peroxides  **Flame – GHS 02**	▪ Oxidizers  **Flame over Circle – GHS 03**	▪ Gases Under Pressure  **Gas Cylinder – GHS 04**
▪ Corrosives  **Corrosion – GHS 05**	▪ Acute toxicity (severe)  **Skull and Crossbones – GHS 06**	▪ Irritant ▪ Dermal Sensitizer ▪ Acute toxicity (harmful) ▪ Narcotic Effects ▪ Respiratory Tract ▪ Irritation  **Exclamation Mark – GHS 07**	▪ Carcinogen ▪ Respiratory Sensitizer ▪ Reproductive Toxicity ▪ Target Organ Toxicity ▪ Mutagenicity ▪ Aspiration Toxicity  **Health Hazard – GHS 08**
▪ Aquatic Toxicity  **Environment – GHS 09**			

When applying Pictograms to labels, it is important to note the following hierarchy:

1. When selecting Pictograms if the Skull and Crossbones Pictogram is required, the exclamation mark Pictogram should not appear for Acute Toxicity.

2. When the corrosive Pictogram is required, the exclamation mark Pictogram should not appear for skin or eye irritation.

3. When the health hazard Pictogram is required for respiratory sensitization, the exclamation mark Pictogram should not appear for skin sensitization or for skin or eye irritation.

Table 5, which refers to Product-Specific Considerations, is included here in its entirety from the *ACA Industry Labeling Guide, Fifth Edition* as Supplemented May 2005. In that guide it was listed as "Table 4" and the numbering change here has not impacted the content. ACA members are encouraged to review Table 5 to make certain that any specific requirements for labeling specific industrial products are also included in new GHS-conforming labels.

Table 5 – Product Specific Labeling Considerations

IMPORTANT: Not all of the content in Table 5 relates to Industrial Products – Table 5 is reprinted here from the *ACA Industry Labeling Guide, Fifth Edition*, as Supplemented May 2005 in its entirety, but with some additional new and/or revised content for labeling industrial products. Users are cautioned to read and consider all information provided and determine its applicability for industrial product labels.

Introduction
Some product types have unique hazards too broad to be addressed by the general labeling recommendations provided in the previous tables. This table provides pertinent information to be considered when labeling for specific product types and uses. Before attempting to draft any label, read the Preface and Chapter 1 of this guide, and the following items. Then, refer to the representative sample labels at the end of this chapter and begin drafting your label.

1. Additional Hazards

Some of the sample labels in this guide address only a single hazard such as flammability, pressure, etc. Be sure to refer to other labels for wording for any additional hazards to combine with single-hazard sample labels. All hazards must be covered.

2. Naming of Hazardous Chemicals

Section 2(p)1(a) of the Federal Hazardous Substances Act (FHSA) requires that the label of a hazardous substance bear, among other things, the identity of each substance or component that contributes substantially to the hazard of the substance or mixture. The purpose of this requirement is to provide information necessary to enable a physician, emergency room, or poison control center to properly treat a victim of an accidental exposure to a hazardous household substance. It is not necessary, or even desirable, to identify all of the substances in the mixture, but only those that "contribute substantially to the hazard." Generally, this includes those substances that are present in a quantity sufficient to require a statement of principal hazard or to affect the first aid instructions. For an exception, see 16 CFR 1500.83(a)(1).

Consumer Product Safety Commission (CPSC)

Part 1500.83 Exemptions for small packages, minor hazards, and special circumstances.

a) The following exemptions are granted for the labeling of hazardous substances under the provisions of Part 1500.82:

1) When the sole hazard from a substance in a self-pressurized container is that it generates pressure or when the sole hazard from a substance is that it is flammable or extremely flammable, the name of the chemical that contributes the hazards need not be stated.

Occupational Safety and Health Administration (OSHA)
OSHA does not require the identification of hazardous components of product mixtures on the label of industrial products. OSHA continues to promote the Safety Data Sheet (SDS) as the primary means of hazard communication

State/Local
In addition to the federal requirements, see Chapter 5 for specific information on state agency requirements for identifying hazardous chemicals on the label, e.g. CAS Numbers (specifically New Jersey and Pennsylvania).

3. Type Size Location

The statement "See Other Caution on (Back/Side) Panel" is noted on many sample labels in this guide. The panel should be identified with the proper wording. Some firms may wish to draw attention to the location of the "Other Cautions" referred to on the front panel. A borderline may also be used for this purpose.

All cautionary information must be located prominently and in conspicuous and legible type in contrast by typography, layout, or color, with printed matter on the label. (see 16 CFR 1500.121.)

Type Size: Type Size is specified in terms of the actual height of the printed image in fractions of an inch, rather than in the traditional point size of the type. It is related directly to the actual area of the principal display panel, according to the table below.

Note: The table's calculations are based on "standard" sizes taken from the Can Dimension Dictionary. However, it would be prudent for each paint filler to measure his own containers. To determine the principal display panel area of round cans, multiply the diameter of the can (in inches) by 3.14 to determine the circumference. Multiply this by the height (not including the seams), then multiply the product by 0.40 (40 percent). For "F" style cans (a rectangular can with screw cap), simply multiply the width of the panel by the height (not including the seams).

Type Size Requirements:

The Terms Below are in Reference to Tables 1, 2 and 3			
Container Size	**Signal Word**	**Hazard Statements**	**Precautionary Statements**
Round Friction Lid Cans			
I gallon	5/32"	7/64"	3/32"
1 quart	1/8"	3/32"	5/64"
1 pint	7/64"	3/32"	1/16"
½ pint	3/32"	1/16"	1/16"
"F" -style Cans			
1 gallon	5/32"	7/64"	3/32"
1 quart	5/32"	7/64"	3/32"
1 pint	1/8"	3/32"	5/64"
½ pint	7/64"	3/32"	5/64"
Aerosol Cans			
10 oz. or more	1/8"	3/32"	5/64"
6-8 oz.	7/64"	3/32"	1/16"
3-4 oz.	3/32"	1/16"	1/16"

Prominence: Several factors other than type size affect the prominence of cautionary labeling, as follows:

Horizontal placement: Labeling required to be on the principal display panel must appear in lines that are generally parallel to the base. The balance of the required cautionary labeling on another panel must be parallel to all other labeling on that panel. (This requirement does not apply to labeling on collapsible tubes, cylindrical containers with a narrow diameter, or "F" style cans where both the "front" and "back" of the container are principal display panels; see part 1500.121 (b)(1).)

Type style: The ratio of the height of a capital or upper case letter to its width shall be no more than 3:1.

Color: The color of the type used must be in sharp contrast to the background. Combinations such as black letters on a dark blue or green background, dark red letters on a light red background, white letters on a light gray background, etc., are not satisfactory.

Interference: The background to any cautionary labeling should be clear and free of any portion of the design, vignettes, or other printed graphic matter.

Labeling Requirements for Accompanying Literature: Labeling Requirements for Accompanying Literature: While not affecting the sample labels herein, the provisions of FHSA part 1500.125 should be noted carefully. This section requires that all of the information required by section 2(p) of the FHSA be included in accompanying literature. Section 2(n) of the act provides that this labeling must be on "all accompanying literature where there are directions for use, written or otherwise." Normally, this does not include advertising and promotional literature such as color cards. All such cautionary labeling shall be in reasonable proximity to any directions for use and shall be placed together within the same general area. The type size of such cautionary labeling shall be reasonably related to the type size of other printed matter in the accompanying literature.

The Wording in Boxes: Readers of this guide will note that the wording for sample labels in Chapter 2 is enclosed in boxes. This is done to highlight the suggested label statements. Neither the law nor

the regulations require that the warning statements be enclosed in a box. The requirement extends only to keeping such statements clear and conspicuous and separate from other statement on the label. Each manufacturer should make its own decision whether or not to enclose such labels in boxes.

4. Adequate Ventilation

Labels bearing such statements as "VAPOR HARMFUL" warn users that these products should be applied with care, and that the users should take necessary precautions to minimize breathing vapors which may arise during application of these products.

The labeling statement, "Use only with adequate ventilation," has evolved over time (when used in conjunction with such statements as "VAPOR HARMFUL") and may be supplemented with various additional related precautionary statements; examples of such precautionary statements can be found in Table 3, Part B.

5. Fire Hazards

Under certain circumstances, products with a flash point above 20° F may generate enough flammable vapors to set the stage for a flash fire or explosion, and thus, should be labeled appropriately. Some factors to consider are quantity and flash point of the solvents in the mixture, quantity of product ordinarily used at one time, size of the surface area being contacted, method of application, place of application (indoors or outdoors), and size or container (a very small container may not contain enough solvent to reach a flammable vapor level).

6. Spontaneous Combustion

Improper disposal of rags, paper and other items that have been used for applying or cleaning up paint may ignite through the process of spontaneous combustion. This is more common with the fish oil or vegetable oils often used in stains or wood fillers, but is not necessarily limited to these raw materials or products. If a manufacturer has a product whose formulation or anticipated use might make a label caution concerning spontaneous combustion desirable, an example of possible wording follows:

> To avoid spontaneous combustion during temporary storage, soak soiled rags and waste immediately after use in a water-filled, closed metal container.

The wording might be included in the directions for use, or cleanup instructions, rather than the warning sections covered by the various ACA sample labels. (See also Chapter 5, "Miscellaneous State Regulations," "Connecticut Spontaneous Combustion Labeling.")

7. Ingestion Hazard

Products that, upon ingestion, can cause illness or injury to humans are classified as "toxic by ingestion" under FHSA and must bear appropriate warnings, including a statement of the principal hazard(s), the identity of the chemical(s) that create the hazard(s), and the first aid instructions. These factors are taken into account in the sample labels and tables of label statements, but there are special circumstances that also must be considered for products containing petroleum distillates

(see number 9 below), methanol, and lead (see number 10 below), and those packaged in aerosol cans (see numbers 12 and 13 on the following pages).

8. Vomiting

On Aug. 1, 1978, CPSC reported in the *Federal Register* (43 FR 33701-05) its final Statement of Policy on First Aid Directions for Inducing Vomiting, which states:

A. That it considers the use of a salt solution to induce vomiting (saline emesis) to be an unacceptable and frequently ineffective means of inducing vomiting;
B. That saline emesis is no longer recommended by the CPSC (16 CFR 1500.134) as an appropriate first aid direction; and
C. That, in cases where saline emesis has been recommended in the past, unless a particular contra-indication exists in connection with any particular hazardous substance, the CPSC considers ipecac syrup to be the appropriate emetic.

CPSC recently moved to revise all of its recommendations for first aid statements relative to the ingestion on hazardous substances. ACA was provided with an advanced copy of the proposed revisions, which continue to reflect the move away from any statement that advises to induce vomiting. As a result, the users of the guide are cautioned against using statements that recommend inducing vomiting unless there is a specific and documented medical reason for the recommendation that has been identified by a qualified physician or poison control specialist. **Note**: Companies may wish to consult supplier (M)SDSs and/or with their own physicians, toxicologists, and lawyers concerning what constitutes appropriate first aid for their specific product formulations.

9. Petroleum Distillates (including toluene and xylene)

Most petroleum solvents used by the paint industry are not toxic by ingestion under the FHSA if they remain in the gastrointestinal tract, but a teaspoonful or even less may be fatal due to chemical pneumonitis if it gets into the lungs by aspiration. This can happen in a number of ways such as choking, gagging or vomiting. Therefore, the FHSA regulations require special labeling for this hazard (see 16 CFR 1500.14(a)(3)(ii)), unless the viscosity of the product or of any liquid that may separate or be present in the container (tested at 100° F) is 100 Saybolt Universal Seconds (SUS) (21 centistokes) or higher—when the risk of chemical pneumonitis is substantially lessened (see 16 CFR 1500.83(a)(13)).

VISCOSITY COMPARISON CHART

Centistokes	0	10	20	30	40	50	60
SUS-Seconds		50	100	150	200		250
Zahn #1 Cup-Seconds		20	30	40	50	60	70
Ford #2 Cup-Seconds	20	25	30	35	40	50	55
Gardner Tubes	A-5	A-4	A-3	A-2	A-1	A	
Centipoises (Dens. 0.900)		10		20	30	40	50
Centistokes		10	20	30	40	50	60
	SPECIAL LABELING REQUIRED under Part 1500.14 FHSA Regulations			EXEMPT from Special Labeling under Part 1500.83(a)(13) FHSA Regulations			

The Viscosity Comparison Chart shows the relationship between various methods of measuring viscosity to the Saybolt Universal Scale. Although the chart is not precise to a mathematically absolute degree, it does permit determination of approximate relationship of the systems of measure contained therein.

In addition to the aspiration hazard, toluene and xylene possess a hazard from inhalation of the vapors, regardless of viscosity. If a product contains 10 percent or more (by weight) of toluene, 10 percent or more of xylene, or 10 percent or more of a mixture of the two, the words VAPOR HARMFUL must appear on the main panel in addition to any other statements of hazard, even if the product does not require an ingestion warning. One or both chemicals need to be named, and supplemental statements for adequate ventilation, such as those listed in Table 3, section B, should be considered. Because of the aspiration hazard, low viscosity mixtures (less than 100 SUS at 100° F) containing 10 percent or more petroleum distillates, toluene and/or xylene ordinarily require the first aid instruction: "If swallowed do not induce vomiting. Get medical attention immediately." If the product contains more than 10 percent toluene and/or xylene, one or both of these chemicals should be named on a label. For most other petroleum solvents, the generic term "petroleum distillates" may be used. However, there may be instances where "other hazardous substances" must be named on the label.

10. Lead-Containing Paints

Any paints intended for use by consumers must meet federal requirements with respect to the use of lead and residual lead content (see 16 CFR Part 1303, which is included in Chapter 4). In 1972, CPSC issued its first regulations limiting the lead content in consumer paints to no more than 0.5 percent. In 1978, CPSC banned the use of lead-containing paints.

CPSC states: "Lead containing paint means paint or other similar surface coating materials containing lead or lead compounds and in which the lead content (calculated as lead metal) is in excess of 0.06 percent by weight of the total non-volatile content of the paint or the weight of the dried paint film. "

Certain "special purpose" coatings are exempt from the ban on lead-containing paints, provided they bear certain labeling:

> **WARNING**
> Contains lead. Dried film of this paint may be harmful if eaten or chewed. (See other cautions on side/back panel.)
>
> Do not apply on toys or other children's articles, furniture, or interior surfaces of any dwelling or facility which may be occupied or used by children.
>
> Do not apply on exterior surfaces of dwelling units such as windows, sills, porches, stairs, or railings, to which children may be commonly exposed.
>
> Keep out of reach of children.

The "special purpose" coatings identified in 16 CFR Part 1303 are: 1) agricultural and industrial equipment refinish coatings; 2) industrial (and commercial) building and equipment maintenance coatings, including traffic and safety-marking coatings; 3) graphic art coatings (i.e., products marketed solely for application on billboards, road signs, and similar uses and for identification marketing in industrial buildings); 4) touch-up coatings for agricultural equipment, lawn and garden equipment, and appliances; and catalyzed coatings marketing solely for use on radio-controlled, model-powered aircraft.

11. Portland Cement-Containing Paints

In response to a complaint alleging that a paint-on product containing Portland cement had caused blindness, CPSC conducted biological testing of several such products. As a result of these tests, CPSC staff issued an advisory opinion which concluded that the following cautionary labeling is necessary for Portland cement and products containing it:

> WARNING: INJURIOUS TO EYES
>
> {"CAUTION" may be used instead of "WARNING"; for Spanish translations use "Causes Eye Injury" rather than "Injurious to the Eye"}
>
> CAUSES SKIN IRRITATION. (Use in products containing a high percentage of Portland Cement)
>
> Contains Portland cement. (Including "and lime" is appropriate.)
>
> Avoid eye contact or prolonged contact with skin.
>
> Wash thoroughly after handling.

In case of eye contact, flush with plenty of water for at least 15 minutes.

Consult a physician immediately.

Keep out of reach of children.

NOTE: Because a direct translation of the statement "INJURIOUS TO EYES" is difficult, companies developing Spanish or French label copy should consider using the eye damage statements offered in Table 6-2.

12. Aerosol and Self-Pressurized Products

Aerosol products that emerge from the container as a mist or fine droplets, and where ingestion by children is not reasonably foreseeable, do not ordinarily require the warning "HARMFUL OR FATAL IF SWALLOWED."

Furthermore, in the unlikely event that the product would be sprayed into a cup and collected, the viscosity of the collected material may be high enough (100 SUS at 100°F or greater) to qualify for exemption from the special labeling required for petroleum distillates. (See item 9 of this table, "Petroleum Distillates.")

However, if the manufacturer feels that it is reasonably foreseeable that a child would collect and drink a sufficient quantity of the product to provide an aspiration hazard (16 CFR 1500.14(b)(3)(ii)), consult item 9 of this table, "Petroleum Distillates."

In addition to the recommended cautionary labeling of Sample Labels 7 and 8 in Chapter 2, ASTM Standard D-3789-79 (Labeling of Consumer Spray Paints) provides recommended label copy for directions for use. The purpose is the standardization of format and terminology among all manufacturers to promote safe use and proper application of the product. The label statements listed below are typically used when labeling aerosol/self-pressurized products:

A. CONTENTS UNDER PRESSURE
B. Do not puncture or incinerate (burn) container. Exposure to heat or prolonged exposure to sun may cause bursting. Do not expose to heat or store at temperatures above 120°F.

13. Deliberate Abuse

The manufacturer may wish to include the following statement warning against deliberate abuse (intentional misuse) of aerosol and other products:

WARNING! Use only as directed; intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

14. Multi-Component Kits

For two-package epoxy systems, antiquing kits or other multi-component systems that are packaged in kit form in one container, the outside of the container must state on the main panel within a borderline the following:

Signal word for the most hazardous component of the kit.

This kit contains the following chemicals that may be harmful if misused: (List hazardous chemical compounds by name.)

Read cautions on individual containers carefully.

Keep out of reach of children.

This requirement is outlined in 16 CFR 1500.83(a)(25):

Cleaning and spot-removing kits intended for use in cleaning carpets, furniture, and other household objects; kits intended for use in coating, painting, antiquing, and similarly processing furniture, furnishings, equipment, sidings, and various other surfaces; and kits intended for use in photographic color processing are exempt from the requirements of Section 2(p)(1) of the Act (repeated in part 1500.3 (b)(14)(i) and from the requirements of part 1500.14, provided that:

A. The immediate container of each hazardous substance in the kit is fully labeled and in conformance with the requirements of the Act and regulations thereunder; and
B. The carton of the kit bears on the main display label (or panels) within a borderline, and in the type size specified in part 1500.121, the caution statement "(Insert proper signal word as specified in paragraph (a)(25)(iii) of this section.) This kit contains the following chemicals that may be harmful if misused: (List hazardous chemical components by name.) Read cautions on individual containers carefully. Keep out of reach of children."
C. If either the word "POISON" or "DANGER" is required on the container of any component of the kit, the same word shall be required to appear as part of the caution statement of the kit carton. If both "POISON" and "DANGER" are required for the labeling of any component or components in the kit, the word "POISON" shall be used. In all other cases the word "WARNING" or "CAUTION" shall be used.

For proper type size and further information refer to 16 CFR 1500.121.

15. Spray Equipment

Where a product is recommended for application by spray, the manufacturer may wish to include information and cautions about the spraying and/or the use of spray and protective equipment. This might be done in the directions for use, rather than in the warning sections covered by the various ACA sample labels. An example of such wording might be:

When spraying, follow spray equipment manufacturer's recommendations carefully. Wear appropriate respirator, eye protection, and protective clothing.

16. Solvent Neurotoxicity

For some years now, the *Industry Labeling Guide* has recommended a statement on the potential for brain and nervous system damage from occupational "overexposure" to organic solvents. This statement (see Table 2, Statement 30) was developed in response to Scandinavian studies that indicated a link between decreased performance on certain neurobehavioral tests and significant workplace exposure to organic solvents. The findings of the Scandinavian literature were viewed by many neurologists and neurobehavioral specialists as "flawed" primarily for their lack of specificity and "dose-response" indications. This fact, coupled with new developments in conducting

computer-administered neurobehavioral tests, led ACA to contract with Johns Hopkins University to undertake an epidemiology study to attempt to quantify the neurotoxic effects of solvents in an occupationally exposed cohort. The results of the ACA-sponsored studies were published by researchers at Johns Hopkins in four peer-reviewed articles.[1] In summary, the collective studies showed no evidence of solvent exposure-induced neurotoxic effects.

It is important to note that the exposures encountered in the Johns Hopkins study group were at or near established occupational exposure limits (i.e., OSHA PEL or ACGIH TLV). Consequently, it was not possible for the ACA-sponsored study to determine the level at which effects associated with acute toxicity (or repeated acute exposures) may manifest, or for that matter, the types of solvents which might present neurotoxic risk.

For these reasons, ACA continues to recommend the use of the solvent neurotoxicity label statement for paint, coatings and other formulated products containing organic solvents, unless there is objective evidence offered by the solvent supplier that the (solvent) materials have been tested for neurotoxic potential and found to not contribute.

In an effort to develop an empirical approach for evaluating a given solvent's potential for manifesting neurotoxic effects and the need for product labeling, ACA consulted with a board certified toxicologist at the Duke University Medical Center in Durham, North Carolina, who wrote:

> [Many of the] symptoms of acute and chronic solvent toxicity are generally the same. If a [solvent] product can cause narcosis acutely, then it can with chronic inhalation as well, and labeling (symptoms and precautions) would be the same. With repeated intoxication you are likely to get symptoms that can persist for some time.
>
> A. In [the case of] those solvents which are known to cause structural damage to the brain (n-hexane, methanol, etc.) symptoms can be permanent.
> B. For those solvents that cause only symptoms because of membrane effects (anesthesia/narcosis), symptoms tend to resolve in weeks or, sometimes, months. For a solvent to cause narcosis there has to be a high enough vapor pressure to get sufficient amounts of the chemical in the air to cause effects.
>
> [Percent solvent, volatility, product use and ventilation during use are also important variables to consider.]
>
> Generally, non-specific narcosis symptoms will occur after 800-1000 parts per million (ppm) exposures. With some solvents that only have non-specific membrane effects repeated exposures will cause narcosis symptoms at lower levels of exposure than with acute exposures, but this does not seem to be the rule. The narcosis potential of solvents seems to be additive with that of other solvents. [As a general "rule" of thumb:] if you can't get sufficient solvent

[1] "Dose-Related Subclinical Neurobehavioral Effects of Chronic Exposure to Low Levels of Organic Solvents"; M.I. Bleecker, K.I. Bolla, J. Agnew, B.S. Schwartz, and D.P. Ford. *American Journal of Industrial Medicine* 19:715-728, 1991. "Subclinical Neuropsychiatric Effects of Chronic Low-Level Solvent Exposure in U.S. Paint Manufacturers"; J. Agnew, D.P. Ford, and M.L. Bleecker. *Journal of Occupational Medicine* 32(8):671-677, 1990. "A Quantitative Approach to the Characterization of Cumulative and Average Solvent Exposure in Paint Manufacturing Plants"; D.P. Ford, B.S. Schwartz, S. Powell, T. Nelson, L. Keller, S. Sides, J. Agnew, K.I. Bolla, M.L. Bleecker. *American Industrial Hygiene Association Journal* 52:226-234, 1991. "Solvent-Associated Decrements of Olfactory Function in Paint Manufacturing Workers"; B.S. Schwartz, D.P. Ford; K.I. Bolla; J. Agnew, N. Rothman, M.L. Bleecker. *American Journal of Industrial Medicine* 18:697-706, 1990.

vapor into the air [during use of the product] to cause narcosis acutely with usual activities, then labeling for this concern is not warranted [emphasis added].

17. Methylene Chloride

On Sept. 14, 1987, the CPSC issued a "Statement of Policy" concerning products containing methylene chloride. Under this enforcement policy, CPSC took the position that methylene chloride and products containing it are "toxic" within the meaning of FHSA because they present a potential risk of cancer to humans. Under FHSA, any hazardous substance intended or suitable for use in or around a household must bear appropriate cautionary labeling. The labeling for methylene chloride identified in Chapter 2, Sample Label 9, incorporates language from Table 2, statement 31, which is considered by CPSC to meet the requirements of Section 2(p)(1) of FHSA as to precautionary measures for the hazard of inhaling the vapor from methylene chloride. Of course, the product labeling must meet all other FHSA requirements and address any other hazards presented by the product. For labeling requirements of industrial products containing methylene chloride, refer to OSHA Substance Specific Standard 29 CFR 1910.1052.

The labeling for methylene chloride-containing products is identified in Chapter 2, Sample Label 3, and is based on the harmonized classification from the ECHA CLP Database.

18. Ozone-Depleting Substances

The Clean Air Act Amendments of 1990 (CAAA), among other things, established a timely ban on chemicals known to contribute to the depletion of stratospheric ozone. The regulations developed pursuant to the CAAA (See Chapter 4, Federal Laws and Regulations) also require (as of May 15, 1993) a warning label statement for products manufactured with an ozone-depleting substance:

> Warning: Contains [name of substance] a substance which harms public health and environment by destroying ozone in the upper atmosphere.

To the extent that paint manufacturers are formulating a product with any of the identified ozone-depleting substances, this label must appear. Provisions of the regulations allow a manufacturer not to label in cases of incidental uses of ozone-depleting substances (i.e., when present as a contaminant in a paint raw material) or as a result of incidental contact with ozone-depleting substances in the manufacturing process.

19. Products for Industrial Use Only

Certain products may be manufactured for industrial or professional use markets and not be intended for consumer or household use. It is often the practice for coatings manufacturers to use a statement such as "For Industrial Use Only" at the end of the precautionary text. In such cases, the word "Industrial" may be substantiated by "Professional" or "Industry" as comparable terms, except where defined and limited by federal, state and local Volatile Organic Compound (VOC) rules (see Chapter 5 for further information). For example, the U.S. Environmental Protection Agency's National Architectural Industrial Maintenance (AIM) Rule allows one of four specific statements to be used (see the section, "National Volatile Organic Compound Emission Standards," in Chapter 4).

Additionally, listing of Hazardous Chemical Constituents on industrial or professional use products is

generally limited to those required under the limited number of chemical-specific OSHA regulations (see Item 2. p. 2-19).

20. Empty Containers

"Commercially empty" drums (drums that have been emptied by normal commercial practices but not yet purged) that once contained hazardous materials may retain hazardous residue. This residue can cause severe injury to those who divert such drums to other uses by cutting, welding or other forms of dangerous handling practices. Manufacturers may want to warn against these hazardous practices by considering the use of a special precautionary statement on the label. Listed below are samples of statements presently in use to cover this hazard.

ATTENTION!
THIS CONTAINER HAZARDOUS WHEN EMPTY
Since empty containers retain product residue (vapor or liquid), all labeled hazardous precautions must be observed. Do not reuse "empty package" without commercial cleaning or reconditioning.

ATTENTION!
Emptied containers may retain hazardous residue and explosive vapors. Keep away from heat, sparks, and flames. Do not cut, puncture or weld on or near this container. Follow label warnings until container is thoroughly cleaned or destroyed.

Similarly, supplemental statements may be considered for assisting product users in the recycling/disposal of empty containers; see the waste disposal section in Chapter 9.

21. Surface Preparation Lead Hazard (ACA-State Attorney's General Agreement)

On May 9, 2003 the National Paint and Coatings Association (now American Coatings Association or ACA) entered into an agreement with 50 state attorneys general that established a national program of consumer paint product warnings, point of sale information, and education and training regarding the potential exposure to lead-dust during the remodeling or renovation of buildings which may contain old lead based paint.

The agreement resulted from a dialogue started in October 2002 between a workgroup of state attorneys general (state AGs) spearheaded by the office of the Massachusetts attorney general, and ACA. The agreement called for an interim product sticker program and permanent product labeling to alert consumers that lead dust exposure may occur during the renovation and remodeling of buildings, which may contain old lead-based paint. A 19-month sticker program for consumer paints began for products manufactured on or after Sept. 30, 2003 and extended through April 30, 2005. The new labeling requirements were set to begin no later than Dec. 31, 2004.

The new labeling requirements affect only **consumer paints** defined as "paints available to the consumer, including professional contractors, at the retail level. Consumer Paints includes all architectural coatings intended for interior and exterior applications to residences, public and private buildings and similar structures, and excludes adhesives and coatings recommended by the manufacturer for shop applications; non-stationary structures (e.g., airplanes, ships, automobiles

and railcars); water proofing sealers and other deck coatings; field marking; and hobby craft coatings." The following is the label language that must be applied to consumer paint products.

For large containers (one quart and larger):

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH-approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

For small containers (aerosols under 24 ounces, and liquid paints under 32 ounces):

WARNING! If you scrape, sand or remove old paint, you may release lead dust. LEAD IS TOXIC. Contact the National Lead Information Hotline at 1-800-424-LEAD or log onto www.epa.gov/lead.

[NOTE: For both labels, the type size requirements are not specified but should not be any smaller that the type size required for other hazard and precautionary warnings on the container. Placement of the warning should be in close proximity to the "directions for use" and, in particular, any surface preparation recommendations.]

In addition to the label warning requirements above, consumer paint manufacturers were also required to do "Sticker" labeling of large containers of consumer paints manufactured after Sept. 30, 2003 and through April 30, 2005. Stickers could be placed on the lid, top, plug or side of the container (using either an adhesive sticker or lithograph or heat stamped impression). The warning language required on the sticker is the same as the warning required for small containers above.

Consumer paint manufacturers also had the option of meeting both the labeling and "Sticker" requirements by using a "Sticker" with the large container (full) warning above but placement is limited to the lid, top or plug of the container. Use of the full warning "Sticker" was to begin on Sept. 30, 2003 and continue through April 30, 2005, at which time the product label had to be amended to include the full warning or the "Sticker" label must appear indefinitely. [**NOTE:** Containers subject to CPSC enforcement of the child-drowning hazard label (ASTM F1615-95), typically five-gallon containers, may incorporate the large container version of the warning on the side of the container opposite the child-drowning warning using the same label area and type size.]

22. Five-Gallon Open-Head Plastic Containers

CPSC has indicated that it intends to initiate enforcement actions directed at manufacturers who fail to voluntarily affix an additional pictorial label that identifies the potential child-drowning hazard associated with the reuse of these containers as household buckets. These child-drowning labels must be consistent with American Society for Testing and Materials (ASTM) Standard F1615-95 entitled "Cautionary Labeling for Five-Gallon Open-Head Plastic Containers." (**Note:** As a practical matter, labels for all products in 4-6 gallon containers should also conform to the California state regulatory requirements, which include metal and plastic containers.) A brief review of the

requirements of ASTM Standard F1615-95 is contained in Chapter 3 of the guide, and Chapter 5 provides a review of the California requirements.

CPSC intends to enforce compliance with the voluntary ASTM Standard using its authority under Section 15 of the Consumer Product Safety Act (CPSA), 15 USC 2064. This provision allows CPSC to take a number of actions with respect to a product it determines to pose a "substantial product hazard." As a result, the primary charge of CPSC staff seeking enforcement of the voluntary ASTM standard will be to determine whether unlabeled five-gallon plastic buckets are defective products which pose a substantial risk of injury to the public. In doing this, CPSC may elect to require companies found not to be labeling their products to provide detailed information justifying their decision to not conform to the voluntary standard.

As a result, ACA recommends that its members immediately review the ASTM Standard, and if not currently labeling their products in accordance with the standard, take appropriate action to do so as soon as possible.

23. Labeling of Hazardous Art Materials

The Labeling of Hazardous Art Materials Act (LHAMA), 15 USC 1277 [Pub. L. 100 695] required that ASTM D 4236, "Practice for Labeling Art Materials for Chronic Health Hazards," be a regulation issued by CPSC under Section 3(b) of the FHSA 15 USC 1262 (b). The Code of Federal Regulations (CFR), Title 16, Part 1500 has been amended by CPSC to incorporate these changes as required by LHAMA. One clarifying note was included on the codification regarding the standard's requirement for a "board certified toxicologist" review. However, CPSC is primarily concerned that the person reviewing formulations has sufficient knowledge based on a combination of education, training, and experience, and that the reviewer uses appropriate criteria to recommend complete and accurate labeling. CPSC will not require that a board-certified toxicologist do all art material reviews. When CPSC considers rulemaking to amend the codified ASTM standard, it will consider deleting the requirement of review by a board-certified toxicologist. LHAMA describes a procedure used to develop precautionary labels for art materials and provides hazard and precautionary label statements developed from knowledge that exists in the scientific and medical communities.

ASTM D 4236 applies only to products determined to be art materials. While ASTM defines "art materials" as those products intended for use in the creation of a work of art, the operating definition of "art materials" is contained in 16 CFR Part 1500.14 (see Chapter 4, Federal Laws and Regulations).

ASTM D 4236 requires that a toxicologist review art material formulations. It defines the term "toxicologist" as "any individual who through education, training, and experience has expertise in the field of toxicology, as it relates to human exposure, and is either a toxicologist or a physician certified by a nationally recognized certification board."

24. Personal Protective Equipment (PPE)

PPE is a key component for reducing personal exposure to chemical(s) and chemical mixtures. PPE exists in a wide variety of types (i.e., respirators, gloves, eye protection), but is usually intended for very specific uses. Recommendations for personal protective equipment are usually found on (Material) Safety Data Sheets ((M)SDS). However, you may choose to include specific PPE statements on your product label or simply refer the end user to the product (M)SDS for recommended PPE. When recommending PPE, be as specific as possible (i.e., supplied air respirator, solvent impermeable gloves, glasses with side shields). The following are some suggested PPE statements.

Respirator Statements

Note: Information on the selection of respirators for specific exposure conditions is available free of charge from the National Institute for Occupational Safety and Health (NIOSH) at 4676 Columbia Parkway, Cincinnati, OH 45226, phone (513) 533-8287. Also, visit OSHA and NIOSH online and follow the links to respiratory protection:www.osha.gov and www.cdc.gov/niosh.

A. Wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for use.
B. Wear an appropriate, properly fitted respirator (NIOSH approved, with approved dust pre-filter) during application unless air monitoring demonstrates dust level is below applicable limits. Follow respirator manufacturer's directions for use.
C. If properly used, a respirator may offer additional protection. Obtain professional advice before using. A dust mask does not provide protection against vapors. Do not use in basement or other unventilated areas.
D. Avoid exposure to dust by wearing an appropriate NIOSH approved particulate respirator.
E. An airline respirator (NIOSH approved) is recommended. (**Note:** also suitable for materials containing monomeric isocyanates).
F. A vapor/particulate respirator (NIOSH approved) may be appropriate where airborne monitoring demonstrates vapor levels below 10 times the applicable exposure limits. Follow respirator manufacturer's directions for respirator use.
G. Avoid exposure to dust by wearing an appropriate (NIOSH approved) particulate respirator during application, sanding and clean up.

Other Forms of PPE

A. Use solvent resistant eyewear with splashguards. Solvent impermeable gloves, clothing and boots are recommended to prevent skin contact.
B. Wear goggles or protective glasses with side shields.
C. Wear impermeable protective gloves.
D. Gloves are recommended to avoid prolonged or repeated contact with skin.
E. Wear appropriate gloves to prevent skin contact.

25. Cure Volatiles

Other sections of this guide provide adequate guidance for hazard statements, health effects, and preventive measures associated with intentionally added product ingredients and their constituents.

An area that has not been addressed elsewhere in this guide is the formation or liberation of hazardous chemicals by coatings products while in the shipping container or during cure. While it is difficult to make generalizations due to variations in polymer types and curing mechanisms within a generic technology classification, this phenomenon is deemed important enough by the ACA Product Stewardship Committee to offer some general guidance to consider in labeling these types of products. Following are some specific examples of product types and suggested labeling language. Each manufacturer is encouraged to determine the applicability of these statements for its specific chemistries, based upon product knowledge.

Please note that in the examples below, an effort was made to include only those statements that were considered to be relevant to the potential exposure scenarios described. However, manufacturers should consider each of the labeling statements recommended for a particular chemical in Table 1 of this guide to determine which are applicable to their specific technology and potential exposure situation. The following are examples of label statements that can be used when additional chemicals may be formed or liberated in the shipping container or during product cure.

Specific Examples of Label Statements:

A. Drying Oil/Alkyd Cure

Product:
- Contains a drying oil and/or alkyd resin, which may release small amounts of hexanal and other higher molecular weight aldehyde vapors during drying and curing.

Potential Hazard:
- Hexanal and other higher molecular weight aldehyde vapors may be released during drying and curing.

Potential Health Effects:
- Causes nose and throat irritation.

Precautionary Information:
- Provide fresh air ventilation during application, drying, and curing.
- Maintain flow of fresh air until all vapors (odors) are gone.

B. Urea/Melamine Cure

Product:
- Contains melamine/formaldehyde resin capable of cross-linking under processing conditions and releasing formaldehyde gas.

Potential Hazard:
- Formaldehyde gas can be evolved when the material is heated under processing conditions.

Potential Health Effects:
- Harmful if inhaled.

- Causes nose and throat irritation.
- Causes lung irritation.
- Causes eye irritation.
- Possible cancer hazard. May cause cancer based on animal data.
- Can cause (organ) damage.

Precautionary Information:
- Use only with adequate ventilation.
- Avoid breathing vapor.
- Avoid contact with eyes, skin and clothing.
- KEEP OUT OF REACH OF CHILDREN.

C. Blocking Agent Released During Cure

Product:

1. Contains a blocked crosslinker that will release the blocking agent (i.e., MEKO, glycol ether) and may release small amounts of the crosslinker during crosslinking/curing at elevated temperature, i.e., baking.

Potential Hazard:

2. Contains a blocked crosslinker that will release the blocking agent (name of the blocking agent) and may release small amounts of the crosslinker during oven curing (baking).

Potential Health Effects:

3. (Use statements appropriate for the chemical(s)).

Precautionary Information:

4. Proper exhaust and ventilation of ovens is necessary to control workplace concentrations.

26. Direct Food Contact Coatings

Compounds used to make coatings for direct application to food contact surfaces must be formulated and manufactured in accordance with the Federal Food, Drug and Cosmetic Act (FFDCA), which is administered by the Food and Drug Administration (FDA). Coatings manufacturers must supply facility operators using their direct food contact coatings with a letter of guaranty that the product is formulated in compliance with FFDCA. Title 21, Code of Federal Regulations (CFR), Section 7.12 and 7.13 offer a detailed description of acceptable guaranties for compliance purposes, which, at a minimum must contain the following information:

A. A statement that the materials complies with FFDCA and all applicable food additive regulations;
B. Brand name, product code, or other designation which specifically identifies the material;
C. Name and address of supplier;
D. A description of the intended use and conditions for such use, and
E. Signature of the official supplier.

Publications to support compliance with the FDA requirements for food contact coatings are available at http://www.access.gpo.gov/nara/cfr/cfr-table-search.ntml#page1.

27. Incidental Food Contact Coatings

Letters of guaranty are not required for paints and coatings used in construction or repair of surfaces not in direct contact with food (floors, walls, ceilings, etc.) and such products do not need to be formulated in conformance with the Federal Food, Drug and Cosmetic Act (FFDCA). The U.S. Department of Agriculture, under the Food Safety and Inspection Service (FSIS) has a directive (FSIS 11.300-14 (10/97)) which has established certain limitations for Incidental Food Contact Coatings used in federally inspected establishments:

A. Paints and coatings may not contain the heavy metals antimony, arsenic, cadmium, chromium (except chromic oxide), lead, mercury, selenium, or any materials such as carcinogens, mutagens, and teratogens classified as hazardous substances. Carcinogens are those classified by the National toxicology Program (NTP) as known human carcinogens. The mutagens and teratogens are those substances classified by OSHA as reproductive hazards.

B. Pesticidal coatings (e.g., containing biocides, fungicides, etc.) that require registration by the U.S. Environmental Protection Agency are not permitted to be used in food processing areas. Paints may contain anitmicrobial agents to prevent microbial growth in the can or to protect the dry paint film.

C. Some ingredients in paints and coatings (e.g. pigments) may contain, as impurities, compounds that are restricted. This does not preclude their use, provided the use and reasonably foreseeable misuse of the product would not result in a daily intake regarded as toxicologically insignificant.

Additional information on the restrictions for incidental food contact coatings can be obtained by contacting the Labeling and Consumer Protection Office at USDA, 202-205-0460.

28. Small Container Labeling Guidance

The United Nations (UN) Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals, Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals, at its Seventh Session, July 2004, considered the development of guidance for the labeling of small packages. While this guidance is not complete, some of the underlying assumptions and principles are useful for paint and coating manufacturers to consider when faced with more labeling content/copy than can reasonably be accommodated on the available container surface area.

A. Some basic considerations for small container labeling:
    1. Hazardous substances and mixtures are classified for the physico-chemical, health and environmental hazards of the chemical components they contain.
    2. Many products are supplied in small packages and as a result, it is not possible to place all hazard and precautionary information on a label without sacrificing legibility, due to size constraints.
    3. The potential for harm posed by such products is lower because of the small quantities involved.
    4. In the occupational setting, the user is trained to act upon information contained in a safety data sheet (SDS).
    5. The workplace user can understand the meaning of hazard pictograms.
    6. Often, the consumer will not have access to the SDS.

B. Small packages are invariably aggregated and packaged in larger packaging, e.g. for transport or storage, and more detailed information can be provided on such outer packaging.

C. The U.S. Code of Federal Regulations (CFR) recognizes that small packages can have simplified labeling in certain circumstances without compromising safety. This recognition is described in the Federal Hazardous Substances Act (FHSA), and in the regulations that have emerged pursuant to that act, rules that are product-specific (see Chapter 4 summary of FHSA requirements and product-specific small container exemptions).

D. Currently, for small packages, the amount of information required is dependent on the hazard. In order to develop guidance to cut back on required label content for small containers, the following criteria have been proposed:

Minimum information to appear on label for small packages

Hazard Classification	Identify Hazardous Component	Symbol (Where Required)	Signal Word (Instead of Symbol)	Hazard Statement	Precautionary Statements
Flammable		YES	YES	NO	NO
Corrosive	YES	YES	YES	NO	NO
Gas Cylinder (Contents Under Pressure)		YES	YES	NO	NO
Poisonous (Skull and crossbones)	YES	YES	YES	NO	NO
Chronic Hazard	YES(For Sensitization Hazards Only)	YES	YES	NO	NO
Environmental Hazard		YES	YES	NO	NO
Serious Health Hazard	YES	YES	YES	NO	NO

29. Carcinogens, Respirable Dust and Other Particulate Hazards in Wetted Mixtures

Background

While the Revised OSHA Hazard Communication Standard clearly requires chemical manufacturers to evaluate the hazards of their products, the detailed classification criteria for carcinogen, respirable dusts, and other particulate hazards is likely to result in more diverse classifications than previously offered.

For carcinogens, this is a movement away from strict "official listing" classification approaches (i.e. whenever the International Agency for Research on Cancer, IARC or the National Toxicology Program (NTP) formally lists a chemical that is classifiable as to carcinogenicity), towards classifications based on the detailed carcinogen criteria contained in the Revised HCS and the UN's Globally Harmonized System (GHS).

Specific Findings by Authoritative Agencies

At the center of such revised classifications is the "availability for exposure" presented by particulates when "bound" in a wetted-paint or coatings mixture. Given the published findings of the International Agency for Research on Cancer (IARC) and the California Office of Environmental Health Hazard Assessment (OEHHA), the "availability for exposure" factor has resulted in clear moderating statements on carcinogen classifications." For example:

> FOR CARBON BLACK
>
> "Operators in user industries who handle fluffy or pelleted carbon black during rubber, ***paint and ink production are expected to have significantly lower exposures to carbon black than workers in carbon black production***. Other workers in user industries who handle it occasionally have little opportunity for exposure.
>
> And further…
>
> ***"End-users of these products (rubber, ink or paint) are unlikely to be exposed to airborne carbon black particles, which are bound within the product matrix."***
>
> "Many workers were exposed to carbon black in bound matrices such as paint or rubber. It is probable that workers exposed to carbon black in this study were exposed to lower levels than those in other studies."
>
> FOR TITANIUM DIOXIDE
>
> ***"No significant exposure to primary particles of titanium dioxide is thought to occur during the use of products in which titanium dioxide is bound to other materials, such as in paints."***

SOURCE: IARC Monograph on Carbon Black and Titanium Dioxide
http://monographs.iarc.fr/ENG/Monographs/vol93/index.php

"Most of the crystalline silica particles in the paints were above respirable size (10 μm) and partitioned out of the respirable paint aerosol when the aerosol was generated. This is the likely reason for the lack of crystalline silica detection in respirable wet paint aerosol under these testing conditions. Since NPCA (now ACA) took a reasonable approach in its effort to measure crystalline silica from the spraying activity, i.e., the pooling of filters, ***OEHHA believes the wet aerosol portion of the exposure may be much less toxicologically significant than that produced from the dusts that result from sanding.***

A number of factors may tend to increase or decrease estimates of exposure relative to the approach used to develop the exposure levels described above. ***We believe, on the whole, that the assumptions made are likely to have resulted in overestimates of exposure levels from the average use of interior flat latex paint."***

SOURCE: OEHHA "Safe Use Determination for Crystalline Silica
http://www.oehha.org/prop65/CRNR_notices/safe_use/sylicasud2.html

Summary and Conclusions

Based on these authoritative findings with respect to the lack of evidence of exposure and attendant risk associated with the integration of particulates (having established hazard classifications, including carcinogenicity, **which are dependent on the form of the exposure such as *respirable dusts, and other forms of particulates***), it may not be appropriate to include a hazard warning for that classification on an industrial paint or coating product (a "wetted" mixture). The decision to forgo a hazard warning required for a specific hazard classification must be limited to respirable dusts and other forms of particulates that are bound in a paint or coating, and must not be based on other acute or chronic health hazard or physical hazard classifications.

Creating a label is easy once you have all the Pictograms, Signal Word and Hazard Statements from Table 2 and the Precautionary Statements from Table 3. In addition to the required GHS Statements, the label must include: a chemical identifier, the company name, company address and a telephone number where a user can receive additional information about the product. Pictograms must be a red 'square set on point,' which is large enough to see.

The sample labels below were "converted" from the *ACA Industry Labeling Guide, Fifth Edition* as Supplemented May 2005 to provide a corresponding GHS conforming label. The original and GHS-conforming labels have been included "side-by-side" to show comparison. In general, with the exception of the required pictograms under the GHS, label content, and even the labeling language are remarkably consistent. Please note that when using the sample labels you should always refer to the Precautionary Statements in Table 3. Many of the Precautionary Statements have important product specific language that must be considered when creating labels.

Sample Label 1: Assigning Hazards
OSHA HCS 2005

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR
VAPORS MAY CAUSE FLASH FIRE
VAPOR HARMFUL. CAUSES EYE, SKIN, NOSE
AND THROAT IRRITATION.

Contains Acetone, Toluene, Heptane, and Isopropyl Alcohol. May affect the brain or nervous system causing dizziness, headache or nausea. Harmful or fatal if swallowed.

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Vapors may ignite explosively. Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

Use only with adequate ventilation. Do not breathe vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during application. Follow respirator manufacturer's directions for respirator use. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

First Aid: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately. If swallowed, do not induce vomiting. Get medical attention immediately. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. (Destroy contaminated shoes.) (Thoroughly clean contaminated shoes.)[1]

If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

KEEP OUT OF REACH OF CHILDREN
Company name and address

Sample Label 1: Assigning Hazards
OSHA HCS 2012

PRODUCT ABC

DANGER

Highly flammable liquid and vapor
May be fatal if swallowed and enters airways
Causes serious eye irritation
Causes skin irritation
May cause drowsiness or dizziness
Suspected of damaging fertility
May cause damage to organs through prolonged or repeated exposure

Prevention: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment, Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/eye protection/face protection. Wash [insert appropriate areas] thoroughly after handling. Use only outdoors or in well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product.

Response: In case of fire, use [appropriate media, specified by the manufacturer/supplier or the competent authority] to extinguish. If on skin (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. If on skin: Wash with plenty of soap and water. Take of contaminated clothing and wash before re-use. If skin irritation occurs, seek medical advice/attention. If swallowed, or you feel unwell: Immediately call a poison control center or doctor/physician. Do NOT induce vomiting. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention. Specific treatment (see ... on this label). If inhaled: Remove to fresh air and keep at rest in a position comfortable for breathing. If exposed or concerned: Get medical attention/advice.

Storage: Store locked in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Company name and address
Telephone Number

Sample Label 2: Extremely Flammable Substances
OSHA HCS 2005

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR
VAPORS MAY CAUSE FLASH FIRE

Contains: (Name specific ingredients that contribute substantially to the product's hazard.) Vapor harmful. May affect the brain or nervous system causing dizziness, headache or nausea. Causes eye, skin, nose and throat irritation.

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Vapors may ignite explosively. Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

Use only with adequate ventilation. Do not breathe vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

First Aid: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, get medical attention immediately.

If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

KEEP OUT OF REACH OF CHILDREN
Company name and address

Sample Label 2: Extremely Flammable Substances[2]
OSHA HCS 2012

PRODUCT ABC

DANGER

Highly flammable liquid and vapor
Causes serious eye damage
Causes severe skin burns and eye damage
May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure

Prevention: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/clothing wear eye /face protection. Wash [insert appropriate areas] thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.

Response:
In case of fire, use [appropriate media] to extinguish. If on skin (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a Poison control center or doctor/physician if you feel unwell. Wash contaminated clothing before reuse. If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove to fresh air and keep at rest in a position comfortable for breathing. Specific treatment (see ... on this label). Get medical advice/attention if you feel unwell.

Storage: Store locked in a well-ventilated place. Keep cool. Keep container tightly closed.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Company name and address
Telephone Number

[2] The required GHS statements are essentially the same for all categories of Flammable Liquids. Refer to Table 3 to determine which statements may be eliminated for less serve flammability hazards.

Sample Label 3: Methylene Chloride
OSHA HCS 2005

WARNING!

VAPOR HARMFUL. HARMFUL OR FATAL IF SWALLOWED.
CAUSES EYE BURNS. CAUSES SKIN IRRITATION.

Contains methylene chloride, which has been shown to cause cancer in certain laboratory animals. Risk to your health depends on level and duration of exposure.

May affect the brain or nervous system causing dizziness, headache or nausea. REDUCES THE BLOOD'S OXYGEN-CARRYING CAPACITY.

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Contact with flame or hot surface may produce toxic/corrosive gases. Keep away from heat and flame. Do not smoke. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

Use only with adequate ventilation. Use this product outdoors, if possible. If you must use it indoors, open all windows and doors or use other means to ensure fresh air movement during application and drying. If workplace exposure monitoring indicates methylene chloride levels cannot be controlled to below the established OSHA exposure limits (29 CFR 1910.1050), then appropriate respiratory protection must be provided. Obtain professional advice before using respiratory protection. A dust mask does not provide protection against vapors. Do not use in basement or other unventilated area. Avoid contact with eyes and skin.

Open containers carefully and close after each use. Clean up rags, papers and waste promptly. Allow solvent to evaporate then dispose of in metal container.

First Aid: If swallowed, do not induce vomiting. Get medical attention immediately. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water.

KEEP OUT OF REACH OF CHILDREN
Company name and address

Sample Label 3: Methylene Chloride[3]
OSHA HCS 2012

PRODUCT ABC

DANGER

May Cause Cancer
Fatal if swallowed
Causes severe skin burns and eye damage

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash [insert appropriate areas] thoroughly after handling. Do not eat, drink or smoke while using this product. Wear protective gloves/protective clothing/eye protection/face protection.

Response: If exposed or concerned: Get medical attention/advice. If swallowed, or you feel unwell: Immediately call a poison center or doctor. Specific treatment (see… on this label). Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove victim to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Company name and address
Telephone Number

[3] Although the ECHA database only reports a Carcinogenicity Classification, due to industry practice Skin Corrosion / Irritation and Acute Toxicity – Oral were added.

Sample Label 4: Polyisocyanates
OSHA HCS 2005

DANGER! VAPOR AND SPRAY MIST HARMFUL. OVEREXPOSURE MAY CAUSE LUNG DAMAGE. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION, EFFECTS MAY BE PERMANENT. MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. CAUSES EYE, SKIN, NOSE AND THROAT IRRITATION. FLAMMABLE (COMBUSTIBLE) LIQUID AND VAPOR.

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. (Cancer information: toluene diisocyanate has caused cancer in certain laboratory animal tests.)

INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH approved) during application unless air monitoring demonstrates vapor/mist levels are below applicable limits. An airline respirator (NIOSH approved) is recommended. A vapor/particulate respirator (NIOSH approved) may be appropriate where airborne monitoring demonstrates vapor levels below ten times the applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Keep away from heat, sparks and flame. Vapor may cause flash fire. **Use only with adequate ventilation**.

First Aid: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, get medical attention immediately.

Keep container closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.

The contents of this package may be blended with other components before the product can be used. Any mixture of components will have hazards of all components. Before opening the packages, read all warning labels. Follow all precautions.

FOR INDUSTRIAL USE ONLY
Company name and address

Sample Label 4: Polyisocyanates[4]
OSHA HCS 2012

PRODUCT ABC

DANGER

Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
Fatal if inhaled
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause respiratory irritation
Suspected of causing cancer

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash [insert appropriate areas] thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapor/spray. Contaminated work clothing should not be allowed out of the workplace. Do not breathe dust/fume/gas/mist/vapor/spray. Use only outdoors or in well-ventilated area. [In case of inadequate ventilation] Wear respiratory protection.

Response: If on skin: Wash with plenty of soap and water. Specific treatment is urgent (see …on this label). If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhalted: Remove victim to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor if you feel unwell. If experiencing respiratory symptoms: Immediately call a poison center/doctor. If exposed or concenred: Get medical advice/attention.

Storage: Store in well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Company name and address
Phone Number

[4] Sample Label 4 was prepared using the ECHA harmonized classification for Toluene Diisocyanate from Table 1.

Sample Label 5: Powder Coatings
OSHA HCS 2005

WARNING!

POWDER DUST CAUSES IRRITATION TO EYES,
SKIN, NOSE, THROAT AND LUNGS.
POWDER DUST MAY FORM EXPLOSIVE MIXTURE WITH AIR.

Contains: (Name specific ingredients that contribute substantially to the product's hazard.) Avoid breathing powder dust. Wear an appropriate, properly fitted respirator (NIOSH approved with approved dust pre-filter) during application unless air monitoring demonstrates dust level is below applicable limits. Follow respirator manufacturer's directions for use. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Finely divided powders are potentially explosive when suspended in air. Keep away from heat, sparks, flame or any type of ignition sources including static electricity, welding or flame cutting operations.

First Aid: In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention. If inhaled, or swallowed, get medical attention.

In case of spillage, sweep or collect with vacuum equipment approved for use in hazardous locations and place in closed impervious container for disposal. Dispose of in accordance with local, state or federal regulations.

FOR INDUSTRIAL USE ONLY
Company name and address
Phone Number

Sample Label 5: Powder Coatings[5]
OSHA HCS 2012

PRODUCT ABC

DANGER

Toxic if swallowed.
May cause an allergic skin reaction.
Causes serious eye damage.
Toxic if inhaled.
May cause genetic defects.
May Cause damage to organs through prolonged or repeated exposure
May form combustible dust in concentrations in air

Prevention: Wash [insert appropriate areas] thoroughly after handling. Do not eat, drink or smoke while using this product. Avoid breathing dust/fume/gas/mist/vapor/spray. Use only outdoors or in well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves. Wear eye protection/face protection.

Response: If swallowed, or you feel unwell: Immediately call a poison center/doctor. Specific treatment (see… on this label). Rinse mouth. If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If inhaled: Remove victim to fresh air and keep comfortable for breathing.

Storage: Store locked up. Store in well-ventilated place. Keep container tightly closed.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations

Company name and address
Phone Number

[5] Powder Coatings will not be classified under the GHS unless other hazards are present. OSHA requires just one statement: 'May form combustible dust in concentrations in air.' Sample Label 5 was prepared using the ECHA harmonized classification for Triglycidyl Isocyanurate (TGIC) from Table 1.

Advance Supplement to the Sixth Edition
Chapters 3 - 9

NOTE: The following chapters of the *ACA Industry Labeling Guide (Fifth Edition) as Supplemented May 2005* continues to be useful for developing industrial product labels. They have not been updated for the *Advance Supplement to the Sixth Edition*, however, and ACA members are encouraged to refer to them as noted in the specific chapter discussions that follow**.**

Chapter 3 – Industry Guidance

Chapter 4 – Federal Laws and Regulations

Chapter 5 – State and Local Laws/Regulations

Chapter 6 – International Labeling

Chapter 7 – Adhesive, Sealant and Repair Products

Chapter 8 – Pesticides

Chapter 9 – Commercial and Shipping Labeling

Chapter 3 – Industry Consensus Standards

OSHA's adoption of the Revised Hazard Communication Standard has rendered most industry consensus standards out-of-date. As such, Chapter 3 currently has limited or no utility until such time as it can be updated when the referenced materials are also updated.

Chapter 4 – Federal Laws and Regulations

With the adoption of the Globally Harmonized System of Classification and Labeling (GHS) the U.S. Occupational Safety and Health Administration (OSHA) has revised the Hazard Communication Standard (HCS) (29 CFR 1910.1200). The revised HCS regulations are available below. As mentioned in previous chapters, the U.S. Consumer Products Safety Commission and U.S. Environmental Protection Agency have not adopted the portions of the GHS that fall under their respective jurisdictions. The Federal Hazardous Substances Act regulates consumer products and is available in the *Industry Labeling Guide (Fifth Edition)*. The Labeling of Products Using Ozone Depleting Substances and National Volatile Organic Compound (VOC) Emission standards are also available in the *Industry Labeling Guide (Fifth Edition) as Supplemented May 2005*.

29 CFR 1910.1200 (OSHA Revised Hazard Communication Standard 2012)

(a) **Purpose.**

(a)(1) The purpose of this section is to ensure that the hazards of all chemicals produced or imported are classified, and that information concerning the classified hazards is transmitted to employers and employees. The requirements of this section are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3. The transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, safety data sheets and employee training.

(a)(2) This occupational safety and health standard is intended to address comprehensively the issue of classifying the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legislative or regulatory enactments of a state, or political subdivision of a state, pertaining to this subject. Classifying the potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) **Scope and application.**

(b)(1) This section requires chemical manufacturers or importers to classify the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers.)

(b)(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(b)(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain any safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible during each workshift to laboratory employees when they are in their work areas;

(iii) Employers shall ensure that laboratory employees are provided information and training in accordance with paragraph (h) of this section, except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section; and,

(iv) Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f) of this section, and that a safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(b)(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain copies of any safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a safety data sheet if an employee requests the safety data sheet, and shall ensure that the safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,

(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(b)(5) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(ii) Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling

regulations issued under that Act by the Environmental Protection Agency;

(iii) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;

(iv) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, Firearms and Explosives;

(v) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

(vi) Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(b)(6) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(ii) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.) when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with Environmental Protection Agency regulations.

(iii) Tobacco or tobacco products;

(iv) Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);

(v) Articles (as that term is defined in paragraph (c) of this section);

(vi) Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(vii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

(viii) Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(ix) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can

show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;

(x) Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

(xi) Ionizing and nonionizing radiation; and,

(xii) Biological hazards.

(c) **Definitions.**

"Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any substance, or mixture of substances.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name that will clearly identify the chemical for the purpose of conducting a hazard classification.

"Classification" means to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition, classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.

"Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

"Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

"Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

"Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazard category" means the division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

"Hazard class" means the nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

"Hazard not otherwise classified (HNOC)" means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

"Hazard statement" means a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

"Hazardous chemical" means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

"Health hazard" means a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to §1910.1200 -- Health Hazard Criteria.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

"Label" means an appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

"Label elements" means the specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category.

"Mixture" means a combination or a solution composed of two or more substances in which they do not react.

"Physical hazard" means a chemical that is classified as posing one of the following hazardous

effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to §1910.1200 -- Physical Hazard Criteria.

"Pictogram" means a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category.

"Precautionary statement" means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

"Product identifier" means the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

"Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

"Pyrophoric gas" means a chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Safety data sheet (SDS)" means written or printed material concerning a hazardous chemical that is prepared in accordance with paragraph (g) of this section.

"Signal word" means a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for the less severe.

"Simple asphxyiant" means a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Substance" means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix E to §1910.1200—Definition of Trade Secret, sets out the criteria to be used in evaluating trade secrets.

"Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) Hazard classification.

(d)(1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to classify the chemicals in accordance with this section. For each chemical, the chemical manufacturer or importer shall determine the hazard classes, and where appropriate, the category of each class that apply to the chemical being classified. Employers are not required to classify chemicals unless they choose not to rely on the classification performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(d)(2) Chemical manufacturers, importers or employers classifying chemicals shall identify and consider the full range of available scientific literature and other evidence concerning the potential hazards. There is no requirement to test the chemical to determine how to classify its hazards. Appendix A to §1910.1200 shall be consulted for classification of health hazards, and Appendix B to §1910.1200 shall be consulted for the classification of physical hazards.

(d)(3) **Mixtures.**

(i) Chemical manufacturers, importers, or employers evaluating chemicals shall follow the procedures described in Appendices A and B to §1910.1200 to classify the hazards of the chemicals, including determinations regarding when mixtures of the classified chemicals are covered by this section.

(ii)When classifying mixtures they produce or import, chemical manufacturers and importers of mixtures may rely on the information provided on the current safety data sheets of the individual ingredients, except where the chemical manufacturer or importer knows, or in the exercise of reasonable diligence should know, that the safety data sheet misstates or omits information required by this section.

(e) **Written hazard communication program.**

(e)(1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, safety data sheets, and employee information and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using a product identifier that is referenced on the appropriate safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(e)(2) "Multi-employer workplaces." Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(i) The methods the employer will use to provide the other employer(s) on-site access to safety data sheets for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(e)(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e)(4) The employer shall make the written hazard communication program available, upon

request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.1020 (e).

(e)(5) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) **Labels and other forms of warning.**

(f)(1) **Labels on shipped containers.** The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked. Hazards not otherwise classified do not have to be addressed on the container. Where the chemical manufacturer or importer is required to label, tag or mark the following shall be provided:

(i) Product identifier;
(ii) Signal word;
(iii) Hazard statement(s);
(iv) Pictogram(s);
(v) Precautionary statement(s); and,
(vi) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.

(f)(2) The chemical manufacturer, importer, or distributor shall ensure that the information provided under paragraphs (f)(1)(i) through (v) is in accordance with Appendix C, Allocation of Label Elements, for each hazard class and associated hazard category for the hazardous chemical, prominently displayed, and in English (other languages may also be included if appropriate).

(f)(3) The chemical manufacturer, importer, or distributor shall ensure that the information provided under paragraphs (f)(1)(ii) through (iv) is located together on the label, tag, or mark.

(f)(4) **Solid materials**

(i) For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;

(ii) The label may be transmitted with the initial shipment itself, or with the safety data sheet that is to be provided prior to or at the time of the first shipment; and,

(iii) This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains).

(f)(5) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(f)(6) Workplace labeling. Except as provided in paragraphs (f)(7) and (f)(8) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with either:

(i) The information specified under paragraphs (f)(1)(i) through (v) for labels on shipped containers; or,

(ii) Product identifier and words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(f)(7) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(6) of this section to be on a label. The employer shall ensure the written materials are readily accessible to the employees in their work area throughout each work shift.

(f)(8) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. For purposes of this section, drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(f)(9) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(f)(10) The employer shall ensure that workplace labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(f)(11) Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within six months of becoming aware of the new information, and shall ensure that labels on containers of hazardous chemicals shipped after that time contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importer, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

(g) Safety data sheets.

(g)(1) Chemical manufacturers and importers shall obtain or develop a safety data sheet for each hazardous chemical they produce or import. Employers shall have a safety data sheet in the workplace for each hazardous chemical which they use.

(g)(2) The chemical manufacturer or importer preparing the safety data sheet shall ensure that it is in English (although the employer may maintain copies in other languages as well), and includes at least the following section numbers and headings, and associated information under each heading, in the order listed (See Appendix D to §1910.1200--Safety Data Sheets, for the specific content of each section of the safety data sheet):

(i) Section 1, Identification;
(ii) Section 2, Hazard(s) identification;
(iii) Section 3, Composition/information on ingredients;
(iv) Section 4, First-aid measures;
(v) Section 5, Fire-fighting measures;
(vi) Section 6, Accidental release measures;
(vii) Section 7, Handling and storage;
(viii) Section 8, Exposure controls/personal protection;
(ix) Section 9, Physical and chemical properties;
(x) Section 10, Stability and reactivity;
(xi) Section 11, Toxicological information.
Note 1 to paragraph (g)(2): To be consistent with the GHS, an SDS must also include the following headings in this order:
(xii) Section 12, Ecological information;
(xiii) Section 13, Disposal considerations;
(xiv) Section 14, Transport information; and
(xv) Section 15, Regulatory information.
Note 2 to paragraph (g)(2): OSHA will not be enforcing information requirements in sections 12 through 15, as these areas are not under its jurisdiction.
(xvi) Section 16, Other information, including date of preparation or last revision.

(g)(3) If no relevant information is found for any sub-heading within a section on the safety data sheet, the chemical manufacturer, importer or employer preparing the safety data sheet shall mark

it to indicate that no applicable information was found.

(g)(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one safety data sheet to apply to all of these similar mixtures.

(g)(5) The chemical manufacturer, importer or employer preparing the safety data sheet shall ensure that the information provided accurately reflects the scientific evidence used in making the hazard classification. If the chemical manufacturer, importer or employer preparing the safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the safety data sheet before the chemical is introduced into the workplace again.

(g)(6)(i) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate safety data sheet with their initial shipment, and with the first shipment after a safety data sheet is updated;

(ii) The chemical manufacturer or importer shall either provide safety data sheets with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;

(iii) If the safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,

(iv) The chemical manufacturer or importer shall also provide distributors or employers with a safety data sheet upon request.

(g)(7)(i) Distributors shall ensure that safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a safety data sheet is updated;

(ii) The distributor shall either provide safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;

(iii) Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a safety data sheet is available;

(iv) Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a safety data sheet is available;

(v) If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a safety data sheet can be obtained;

(vi) Wholesale distributors shall also provide safety data sheets to employers or other distributors upon request; and,

(vii) Chemical manufacturers, importers, and distributors need not provide safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

(g)(8) The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).

(Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(g)(9) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(g)(10) Safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

(g)(11) Safety data sheets shall also be made readily available, upon request, to designated representatives, the Assistant Secretary, and the Director, in accordance with the requirements of 29 CFR 1910.1020(e).

(h) **Employee information and training.**

(h)(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

(h)(2) Information. Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and safety data sheets required by this section.

(h)(3) Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labels received on shipped containers and the workplace labeling system used by their employer; the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information.

(i) **Trade secrets.**

(1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name, other specific identification of a hazardous chemical, or the exact percentage (concentration) of the substance in a mixture, from the safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;

(ii) Information contained in the safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(iii) The safety data sheet indicates that the specific chemical identity and/or percentage of composition is being withheld as a trade secret; and,

(iv) The specific chemical identity and percentage is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(i)(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit.

(i)(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity or percentage composition, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:

(i) The request is in writing;

(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(D) To provide medical treatment to exposed employees;

(E) To select or assess appropriate personal protective equipment for exposed employees;

(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity or percentage composition is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this section:

(A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(v) The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or

individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(i)(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;

(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(iii) May not include requirements for the posting of a penalty bond.

(i)(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(i)(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.

(i)(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity or percentage composition, the denial must:

(i) Be provided to the health professional, employee, or designated representative, within thirty days of the request;

(ii) Be in writing;

(iii) Include evidence to support the claim that the specific chemical identity or percent of composition is a trade secret;

(iv) State the specific reasons why the request is being denied; and,

(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the trade secret.

(i)(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(i)(9) When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity or percentage composition is a trade secret;

(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,

(iii) The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

(i)(10)(i) If OSHA determines that the specific chemical identity or percentage composition requested under paragraph (i)(3) of this section is not a "bona fide" trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(i)(11) If a citation for a failure to release trade secret information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation "in camera" or issue appropriate orders to protect the confidentiality of such matters.

(i)(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(i)(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process information which is a trade secret.

(j) **Effective dates.** (1) Employers shall train employees regarding the new label elements and safety data sheets format by December 1, 2013.

(2) Chemical manufacturers, importers, distributors, and employers shall be in compliance with all modified provisions of this section no later than June 1, 2015, except:

(i)After December 1, 2015, the distributor shall not ship containers labeled by the chemical manufacturer or importer unless the label has been modified to comply with paragraph (f)(1) of this section.

(ii) All employers shall, as necessary, update any alternative workplace labeling used under paragraph (f)(6), update the hazard communication program required by paragraph (h)(1), and provide any additional employee training in accordance with paragraph (h)(3) for newly identified physical or health hazards no later than June 1, 2016.

(3) Chemical manufacturers, importers, distributors, and employers may comply with either §1910.1200 revised as of October 1, 2011, or the current version of this standard, or both during the transition period.

APPENDIX A TO §1910.1200 - HEALTH HAZARD CRITERIA
APPENDIX B TO §1910.1200 - PHYSICAL HAZARD CRITERIA
APPENDIX C TO §1910.1200 - ALLOCATION OF LABEL ELEMENTS
APPENDIX D TO §1910.1200 - SAFETY DATA SHEETS
APPENDIX E TO §1910.1200 – Definition of "Trade Secret"
APPENDIX F TO §1910.1200 – GUIDANCE FOR HAZARD CLASSIFICATIONS RE: CARCINOGENICITY (NON-MANDATORY)

OSHA Hazard Communication Website

Chapter 5 – State and Local Laws/Regulations

The regulations available in Chapter 5 of the *Industry Labeling Guide (Fifth Edition)* are not affected by the adoption of the Globally Harmonized System of Classification and Labeling (GHS) by the U.S. Occupational Safety and Health Administration (OSHA). When creating GHS conforming labels, it will be important to reference Chapter 5 and the updated versions of these regulations to ensure all additional requirements are met.

Chapter 6 – International Labeling References

The international regulations available in Chapter 6 of the *Industry Labeling Guide (Fifth Edition)* are not affected by the adoption of the Globally Harmonized System of Classification and Labeling (GHS) by the U.S. Occupational Safety and Health Administration (OSHA). ACA will no longer be updating this chapter of the labeling guide. To check the adoption status of the GHS in other countries, please reference the United Nation's GHS Implementation by Country: http://www.unece.org/trans/danger/publi/ghs/implementation_e.html.

Chapter 7 – Adhesive, Sealant and Repair Products

This chapter has not been specifically updated to conform with the Globally Harmonized System of Classification and Labeling (GHS). Any industrial adhesives, sealants or repair products will be subjected to the U.S. Occupational Safety and Health Administration's (OSHA) revised Hazard Communication Standard (HCS). To create labels for these products, refer to the classification methods and label statements from Chapter 1 and Chapter 2.

Chapter 8 – Pesticides

Pesticides are exempted from the U.S. Occupational Safety and Health Administration's (OSHA) revised Hazard Communication Standard (HCS) and are required to be labeled under the U.S. Environmental Protection Agency's Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Refer to Chapter 8 of the *Industry Labeling Guide (Fifth Edition) as Supplemented May 2005* for specific information about FIFRA.

Chapter 9 – Commercial and Shipping Labeling

The adoption of the Globally Harmonized System of Classification and Labeling (GHS) by U.S. Occupational Safety and Health Administration (OSHA) did not affect Commercial and Shipping Labeling requirements; refer to Chapter 9 of the *Industry Labeling Guide (Fifth Edition) as Supplemented May 2005*.