



GHS UPDATE

The
Globally Harmonized System
of Classification and Labeling of Chemicals

**Dymax Corporation
HWAC Meeting
June 19, 2014**

Susan Thompson



Current Classification Systems

- Health & Safety Classification and Labels
 - North America (NAM)
 - International based on EU Standard
 - GHS
- Transportation Classification
 - DOT
 - GHS (IATA, IMDG, ADR)
- Waste Classification



Classification = Definition

- Define what constitutes a hazardous chemical
- Communicate this knowledge via
 - Material Safety Data Sheets (MSDS)
 - Product Labels



Substance vs. Mixture vs. Article

- Substance - a single chemical element
- Mixture - a product composed of two or more substances
- Articles - an object with a given shape/surface/design which determines its function



Chemical Classification in the United States

- OSHA's Hazard Communication Standard 1910.1200
 - Implemented in the 1980's
 - Revised in the 1990's
 - Restructured in 2012
- Based on collected data and/or manufacturers knowledge for health and physical properties

Current North American – Product Classification

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview

COMBUSTIBLE LIQUID AND VAPOR, Corrosive, May cause sensitization by skin contact, The product causes burns of eyes, skin and mucous membranes, Harmful by inhalation, in contact with skin and if swallowed.

Appearance transparent

Physical state liquid

Odor Characteristic

Principle Routes of Exposure

Inhalation, Skin contact, Eye contact, Ingestion.

Product Description

EYES

May cause eye irritation with susceptible persons, Causes burns, Corrosive to the eyes and may cause severe damage including blindness, Risk of serious damage to eyes, Contact with eyes may cause irritation.

Skin

May be harmful in contact with skin, May cause sensitization by skin contact, Repeated or prolonged skin contact may cause allergic reactions with susceptible persons, Causes burns.

Inhalation

May be harmful if inhaled, May cause allergic respiratory reaction, Harmful by inhalation, May cause irritation of respiratory tract.

Ingestion

May be harmful if swallowed, May cause additional affects as listed under "Inhalation", Ingestion causes burns of the upper digestive and respiratory tracts, Can burn mouth, throat, and stomach, Harmful if swallowed, Ingestion may cause irritation to mucous membranes.

Chronic Effects

No known effect based on information supplied.

Interactions with Other Chemicals

Irritants, Sensitizers, Epoxies.

Environmental hazard

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment, See Section 12 for additional Ecological Information.

Current Dymax NAM Label Example



Label is one color
Label is only printed in English

Chemical Classification Internationally

- Based on collected data
- Data includes health, physical and environmental testing. This includes:
 - LD/LC 50 values
 - 48 HR EC50 values
 - pH
 - Flashpoint



Hazard Pictograms used Internationally

Health & Safety Classifications

Physical



Health



Environmental



Current International – Product Classification

2. HAZARDS IDENTIFICATION

The substance/preparation is classified as dangerous in accordance with Directive(s) 67/548/EEC with amendments and/or 1999/45/EC with amendments.

Classification

Symbol(s)

C - Corrosive
N - Dangerous for the environment



Classification

C;R35 - Xi;R37 - R43 - N;R50 - R52-53

Most Important Hazards

R - phrase(s)

Causes severe burns

Irritating to respiratory system

May cause sensitization by skin contact



Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Other hazards which do not result in classification

Environmental properties

Should not be released into the environment.

Current Dymax International Label Example

 Net 30 ML 51 Greenwood Road, Torrington, CT 06790 / Phone: 860-626-7006 / Fax: 860-626-7043 984-LVUF Lot # KAT1234-KBT5678	
FOR INDUSTRIAL USE ONLY	
<p>Risk Phrases R43 - May cause sensitization by skin contact, R36/37/38 - Irritating to eyes, respiratory system and skin, R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p>Safety Phrases S24 - Avoid contact with skin, S37 - Wear suitable gloves, S61 - Avoid release to the environment. Refer to special instructions/safety data sheets, S29 - Do not empty into drains, S35 - This material and its container must be disposed of in a safe way, S57 - Use appropriate container to avoid environmental contamination, S36/37 - Wear suitable protective clothing and gloves.</p> <p>Contains tert-Butyl Perbenzoate, 2-Hydroxyethyl methacrylate</p>	<p>RESPONSE IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE. Wash off immediately with soap and plenty of water. Flush eye with water for 15 minutes. Move to fresh air, if symptoms persist, call a physician. Rinse mouth.</p> <p>SPILLS OR LEAKS Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Prevent further leakage or spillage if safe to do so.</p> <p>STORAGE AND HANDLING Handle in accordance with good industrial hygiene and safety practice Ensure adequate ventilation Protect from light To facilitate handling and use, this product may be warmed slowly to 50 °C / 120 °F in an oven. DO NOT USE BAND HEATERS! Keep container tightly closed in a dry and well-ventilated place Extended storage at temperatures not exceeding 32 °C / 90 °F.</p> <p>DISPOSAL Should not be released into the environment, Dispose of in accordance with the European Directives on waste and hazardous waste.</p>
MADE IN THE USA	
North America: Chemtrec @ 1-800-424-9300 (24hrs) International: Chemtrec @ 001-703-527-3887 (24hrs)	
	
<small>No warranty, expressed or implied, of merchantability, fitness for a particular purpose or otherwise, is made, except that product conforms to Dymax Oligomers & Coatings specifications. Buyer assumes all risk of use, storage and handling. Dymax Oligomers & Coatings shall not be liable for any incidental or consequential damages arising directly or indirectly in connection with the purchase, use, storage and handling of the product.</small>	

Globally Harmonized System (GHS)

- Base on a system implemented by the United Nations
- GHS is a system for standardizing and harmonizing the classification and labelling of chemicals.
- It is a logical and comprehensive approach to:
 - Defining health, physical and environmental hazards of chemicals;
 - Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
 - Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).

GHS Hazard Pictograms

Physical











(Flammable or reactive materials)

Health

(Harm human health)

Environmental

(Harm to the aquatic environment or ozone layer)

GHS – Hazard Pictograms and correlated exemplary Hazard Classes				
Physical Hazards				
				
Explosives	Flammable Liquids	Oxidizing Liquids	Compressed Gases	Corrosive to Metals
Health Hazards			Env. Hazards	
				
Acute Toxicity	Skin Corrosion	Skin Irritation	CMR ¹⁾ , STOT ²⁾ , Aspiration Hazard	Hazardous to the Aquatic Environment

1) carcinogenic, germ cell mutagenic, toxic to reproduction / 2) specific target organ toxicity

HAZARD

Categories

- Within each Hazard Class
 - Up to 4 Hazard Categories
 - Category 1 = Most Hazardous
 - Category 4 = Least Hazardous
 - Based on LD and LC values or other test data



Class Determination for "Bad" Cupcake

LD50 = ≤ 6 cupcakes



■ Alison



■ Susan



LD50= 5

■ Rob



■ Jon



Class: Bad Cupcake Category Determination

1



LD50=2



LD50=3



LD50=4



LD50=5

2

Category	LC50 Value
Category 1	1-2
Category 2	3-4
Category 3	4-5
Category 4	5-6

3



Category 1



Category 2



Category 3



Category 4

All products will be classified according to GHS/CLP rules



Acute Oral Toxicity – Category 1, 2 & 3



Aquatic Toxicity (Acute) – Category 1

Aquatic Toxicity (Chronic) – Category 1 & 2



Skin Sensitization – Category 1

Acute Oral Toxicity – Category 4

Serious Eye Damage / Eye Irritation – Category 2A



CMR / Target Organs Toxicity

Category 1A, 1B, & 1C (Danger)

Category 2 (Warning)



Skin Corrosion / Irritation – Category 1A, 1B & 1C

Serious Eye Damage / Eye Irritation – Category 1

GHS – Product Classification

Section 2: HAZARDS IDENTIFICATION

A GHS - Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 3
Acute toxicity - Inhalation (Vapors)	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

B Label elements



Signal word

DANGER

Hazard statements

H302 - Harmful if swallowed
 H311 - Toxic in contact with skin
 H314 - Causes severe skin burns and eye damage
 H317 - May cause an allergic skin reaction
 H330 - Fatal if inhaled
 H372 - Causes damage to organs through prolonged or repeated exposure
 H410 - Very toxic to aquatic life with long lasting effects
 H335 - May cause respiratory irritation
 H336 - May cause drowsiness or dizziness

GHS Dymax Label


318 Industrial Lane, Torrington, CT 06790 / Phone: 860-482-1010

Optical Adhesives & Coatings
984-LVUF
FOR INDUSTRIAL USE ONLY

H302 - Harmful if swallowed H315 - Causes skin irritation H317 - May cause an allergic skin reaction H318 - Causes serious eye damage H335 - May cause respiratory irritation H400 - Very toxic to aquatic life H411 - Toxic to aquatic life with long lasting effects P280 - Wear protective gloves/ eye protection/ face protection P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P273 - Avoid release to the environment P310 - Immediately call a POISON CENTER or doctor/ physician

DANGER   

Contains Pentaerythritol tetrakis[3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate], tert-Butyl hydroperoxide, tert-Butyl Perbenzoate, 2-Hydroxyethyl methacrylate

Emergency Phone: Chemtrec @ 001-703-527-3887 (24hrs)

Protect from light **Adhesives**

Lot # RY834-MW791 Use by: Dec 31 2012 Net: 30 ml

Pictograms must be red border with black symbol
Every phrase on label changes as the product number changes



Globally Harmonized System (GHS)

- 2010
 - Use of identical pictograms
 - Standardized classification names
 - Substance classification based on mfg LD50 values
 - Labels and SDS - uniform set of requirements
 - H&S and Transportation use same platform
- 2013
 - LD50 values defined by countries
 - Additional classifications introduced
 - Country Specific - pictogram "rules"
 - Label requirements specific to country
 - H&S and Transportation may not be on the same platform



What does this mean.....



Although our products
are not changing

Our SDS and Label will vary for same
product based on where product is sold

GHS Mixture Classification

- Product testing
- Summation
 - Mathematical formula based on LD/LC Value of the substance in mixture
 - % of a substance in mixture



Acute Toxicity - Inhalation Vapors



Japan



S. Korea

Japan's assigned
classification for acrylic
acid LD50 = 3.6
Max % in product mix= 18%

Internationally accepted
acrylic acid classification
LD50 = 5.3
Max % in product mix= 26%

Dymax Adhesive with
20%
Acrylic Acid



Skin Corrosion / Irritation



Japan



S. Korea


Max acrylic acid
allowed in
product mix 5%

Max acrylic acid
allowed in
product mix 3%

Dymax Mixture
with 4.9%
acrylic acid



GHS – Product Classification

Section 2: HAZARDS IDENTIFICATION	
A <u>GHS - Classification</u>	
Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 3
Acute toxicity - Inhalation (Vapors)	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1
B <u>Label elements</u>	
	
Signal word	DANGER
Hazard statements H302 - Harmful if swallowed H311 - Toxic in contact with skin H314 - Causes severe skin burns and eye damage H317 - May cause an allergic skin reaction H330 - Fatal if inhaled H372 - Causes damage to organs through prolonged or repeated exposure H410 - Very toxic to aquatic life with long lasting effects H335 - May cause respiratory irritation H336 - May cause drowsiness or dizziness	

← Added pictogram

LABELS – GHS REQUIREMENTS

Label requirements Country specific

*Korea
requires box label
allows for modified P & H Statements

*China & EU
requires list of substances in mixture
that caused classification

*Unites States & Canada
includes additional hazard classes -
HNOC (pyrophoric gases, simple
asphyxiants and combustible dust) and
HHNOC/PHNOC



ToxiFlam (Contains: XYZ)



**Danger! Toxic If Swallowed, Flammable
Liquid and Vapor**

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling.
Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking.

Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment.

Take precautionary measures against static discharge.
Use only non-sparking tools. Store in cool/well-ventilated place.

**IF SWALLOWED: Immediately call a POISON CONTROL CENTER
or doctor/physician. Rinse mouth.**

In case of fire, use water fog, dry chemical, CO₂, or "alcohol" foam.

See Material Safety Data Sheet for further details regarding safe use of this product.

MyCompany, MyStreet, MyTown NJ 00000, Tel: 444 999 9999

Following Full GHS Implementation

Webviewer choices will include:

1. Adhesive or Oligomer & Coating
2. Product Name
3. Country being Sold in
4. Language

Each Dymax product will have a unique SDS based on country being sold in - in multiple languages when applicable



When is this happening?

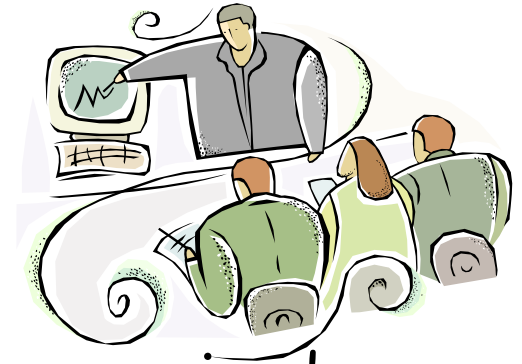
It has already begun:

- 2010 China, New Zealand, Taiwan
- 2011 Brazil, Japan, Mexico, & Russia
- 2012 Thailand
- 2013 Korea, & Malaysia
- 2015 Australia, EU, Singapore & US
- 2016 South Africa



These dates represent compliance for the manufacturing of mixtures. Substances manufactures will need to comply earlier.

What we still need to do....



1. Distributor orders - how to provide the required label and SDS that they will need for their customers.
2. Down packaging in international offices - printers
3. Determine how to handle Customers with custom label requirements due to limited space available on GHS label.
4. Inform our customers that our products have not changed.....just the mechanism that defines its health & safety classification.

QUESTIONS ?

