

PRACTICE USING THE 2016 ERG (*Emergency Response Guidebook*) AND OTHER RESOURCES

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To use this training aid as a PowerPoint-style presentation see the instructions in Slide #5

Some images obtained from Miscellaneous WWW Sites and unknown published sources.

WARNING: Read Slide #3 and Slide #4 completely before using!

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LAKELAND COMMUNITY COLLEGE

Home of a Classroom Based and an OnLine Fire Science Degree Program

and an OnLine Emergency Management (aka Disaster Planning / Homeland Security) Degree

Both are Internationally Accredited by IFSAC



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INSTRUCTIONS:

- To use this training aid in a “PowerPoint-style” slide mode click on “**View**” then “**Full Screen Mode**”. You can then use your up/down or arrow keys to advance the slides. This is also compatible with most remote control devices.
- This presentation mostly consists of alternating pairs of slides.
- In most cases the first slide will present you with questions. The second slide in each pair provides you with suggested answers.
- For each slide you should also consider / review the information found on the orange pages such as the general hazard found at the top of the page, and other information found in the pairs of orange pages. In some cases you will first go to the green pages. **WHY?**
- **DISCLAIMER:** These are practice samples only and perfect accuracy is **NOT GUARANTEED**. Report any errors to lsilvi@lakelandcc.edu

Please note – Other Identification Systems exist. These slides primarily review:

- **UN / DOT Placards and Labels.**
- **NFPA 704[®] System**
- **HMIS-1[®], HMIS-2[®], and HMIS-3[®]**
- **The newer “Globally Harmonized System”**
- **The European / South American System**
- **Pipeline identification in the United States**
- **The HFR System[®]**
- **Selected proprietary labeling systems**



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Propane (et. Al.)

- What type of material is it?

Flammable gas

- What is the correct guide number?

115



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Methanol (and ?)

- What type of material is it?

Flammable liquid

- What is the correct guide number?

131



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Hydrochloric Acid+

- What type of material is it?

Corrosive / Toxic?

- What is the correct guide number?

157



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What type of material is it?

**Infectious
Substances**

- What is the correct guide number?

158



-or-



- Given the placards or symbols at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



-or-



- Given the placards or symbols at the left what is the name of the material?

Unknown

- What type of material is it?

**Gases, Toxic
and/or Corrosive**

- What is the correct guide number?

123 (See pages 8 & 9)



-or-



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



-or-



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What type of material is it?

Substances, Toxic and/or Corrosive

- What is the correct guide number?

153 (See pages 8 & 9)



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

?

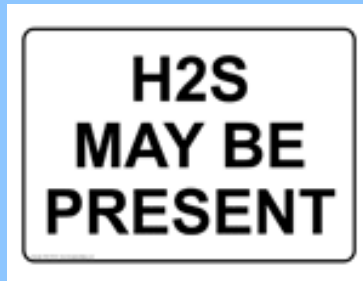


Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

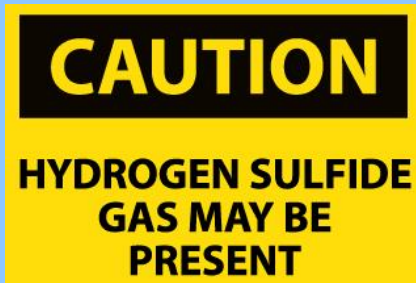
See Pages 20-25



-or-



-or-



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

?



-or-



-or-



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

**See “Note”
on Page 21**

**(Also: See page 123
in the 2016 Guidebook)**



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

?



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

Pages 20-25



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

?



Given the placard or symbol at the left, to what page in your ERG might you turn for initial guidance?

Pages 20-25



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What type of material is it?

**Water Reactive +
Flammable/Toxic Gases**

- What is the correct guide number?

139 (see the 2016
ERG, page 9)



- Given the placard or symbol at the left what is the name of the material?

?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

111 (See the 2016
ERG, page 8)



- Given the placard or symbol at the left what is the name of the material?

?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

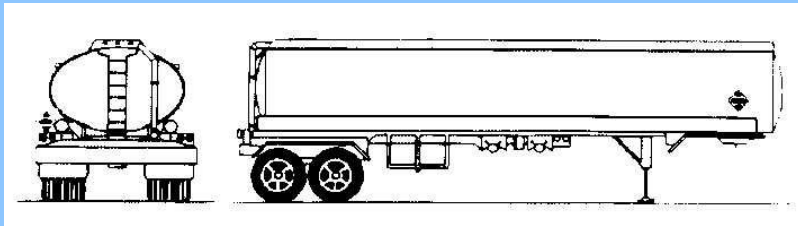
111 (See the 2016
ERG, pages 8 and 9)

3,5-DICHLORO-2,4,6- TRIFLUOROPYRIDINE (Shipping Paper)

- UN Number ?
- Guide Number ?
- Hazard?

3,5-DICHLORO-2,4,6- TRIFLUOROPYRIDINE (Shipping Paper)

- UN Number = **9264**
- Guide Number = **Use Guide 151 or the Green Pages whichever is applicable.** (See ERG page 20 or 90 for details on when each applies)
- Hazard = **Toxic Substance**



- Given the highway trailer at the left what is the name of the material?

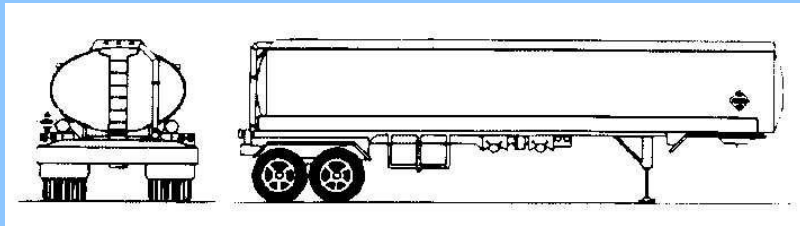
?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the highway trailer at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

131 (See the 2016
ERG, pages 12 & 13)



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it ?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?

Pesticide, n.o.s.

(“n.o.s.” Stands for not otherwise specified.)



- What type of material is it ?

Toxic

- What is the correct guide number?

151



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

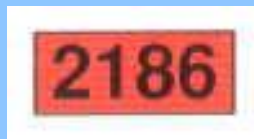
Unknown

- What type of material is it?

Flammable Gas

- What is the correct guide number?

118 (See pages 8 & 9)



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?

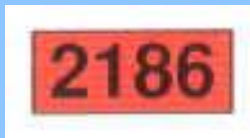
Hydrogen Chloride

- What type of material is it?

Toxic and/or Corrosive

- What is the correct guide number? **As applicable:**

**Use Guide 125 or the
Green Pages!**



Note: This is an Orange Panel that might be found next to a US Placard. It is not quite the same as the European or South American ADR System.

X88
1828

- Given the code at left, what is this material?

?

- What is its major hazard?

?

- What is the correct guide number?

?

- What ID system is this?

?

Hazard Identification Number
X88
1828
UN Number

- Given the code at left, what is this material?
Sulfur Chlorides
- What is it's major hazard?
It is a Corrosive / Water Reactive Substance
- What is the correct guide number? **As applicable: Use either Guide 137 or the Green Pages!**
- What ID system is this?
European / S. American
But it has been found on IM shipments in the US
(See 2016 E.R.G., page 16)



- Given the placard or symbol at the left what is the name of the material?

?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

134

DRIVE SAFELY PLACARD

(But you have unusual smoke / fire conditions)



- UN Number?
- Guide Number?

DRIVE SAFELY PLACARD

(But you have unusual smoke / fire conditions)



- UN Number =
Unknown
- Guide
Number =
111



- Given the placard or symbol at the left what is the hazardous material?

?

- What is the UN Number?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the hazardous material?



Organic Peroxide
(a “newer” style placard)

- What is the UN Number?

?

- What is the correct guide number?

148



- Given the placard or symbol at the left what is the hazard?
- What is the UN Number?
- What is the correct guide number?

- Given the placard or symbol at the left what is the hazard?

This is an “Environmentally Hazardous Substance Mark”



- What is the UN Number?

?

- What is the correct guide number?

171



- Given the code at left, what is this material?

?

- What are its major hazards?

?

- What is the correct guide number?

?

- What ID system is this?

?



- Given the code at left, what is this material?
Acetyl Chloride
- What are its major hazards?
Water reactive, highly flammable, & corrosive!
- What is the correct guide number? **As applicable: Use Guide 155 or the Green Pages!**
- What ID system is this?
European / S. American



- Given the placard or symbol at the left what is the name of the material?

?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

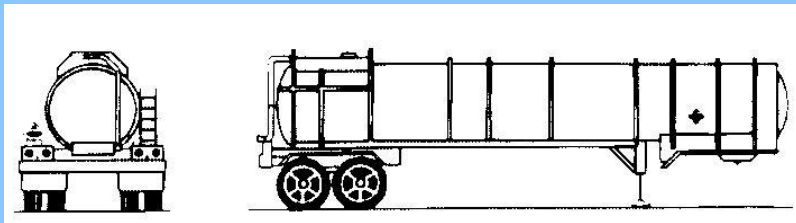
171

TOLUENE (Shipping Paper)

- UN Number?
- Guide Number?
- Hazard?

TOLUENE (Shipping Paper)

- UN Number = 1294
- Guide Number = 130
- Hazard = Noxious
Flammable Liquid



- Given the highway trailer at the left what is the name of the material?

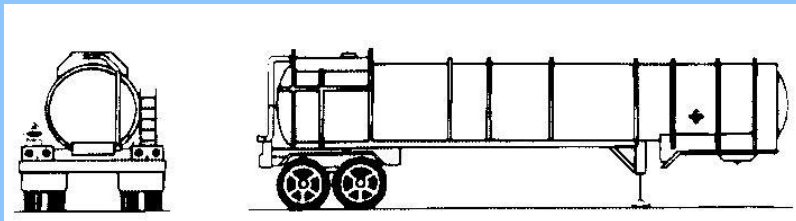
?

- What type of material?

?

- What is the correct guide number?

?



- Given the highway trailer at the left what is the name of the material?

Unknown

- What type of material?

A Corrosive

- What is the correct guide number?

137 (see page 13
of the 2016 ERG)



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is this?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?



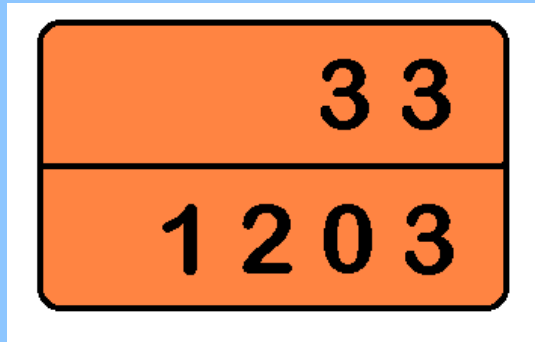
Hydrogen Cyanide

- What type of material is this?

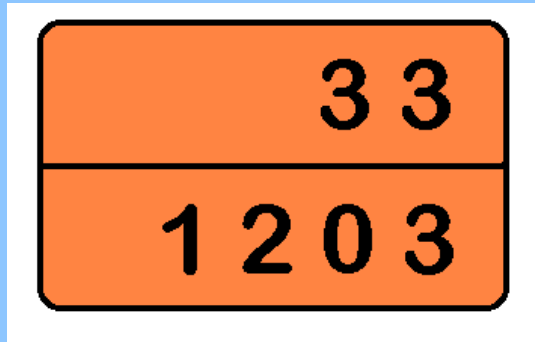
Toxic / Corrosive

- What is the correct guide number?

As applicable: Use Guide 152 or the Green Pages!



- Given the code at left, what is this material?
?
- What is its major hazard?
?
- What is the correct guide number?
?
- What ID system is this?
?



- Given the code at left, what is this material?
Gasoline, (a.k.a. Petrol, Gasohol, Motor Spirits)
- What is its major hazard?
Highly flammable
- What is the correct guide number?
128
- What ID system is this?
European / S. American

HYDROGEN (Shipping Paper)

- UN Number?
- Guide Number?
- Hazard?

HYDROGEN (Shipping Paper)

- UN Number = 1049
- Guide Number = 115
- Hazard = Flammable Gas

NO PLACARD

(But you have unusual smoke / fire conditions)

- UN Number?
- Guide
Number?

NO PLACARD

(But you have unusual smoke / fire conditions)

- UN Number =
Unknown
- Guide Number
111

2-METHYLFURAN

(Shipping Paper)

- UN Number?
- Guide Number?
- Hazard?

2-METHYLFURAN

(Shipping Paper)

- UN Number = 2301
- Guide Number = 128
- Hazard = Flammable Liquid



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?



Chlorine

- What type of material is it?

“Gas, Toxic and/or Corrosive - Oxidizing”

- What is the correct guide number?

As applicable: Use Guide **124**
or the **Green Pages!**

LITHIUM ION BATTERIES

(including lithium ion polymer batteries)

Shipping Papers

- UN Number ?
- Guide Number ?

LITHIUM ION BATTERIES

(including lithium ion polymer batteries)

Shipping Papers

- UN Number: **3480**
- Guide Number: **147**

Note: This is a newer guide found in the Emergency Response Guidebook. You will not find this in editions prior to the 2008 ERG.

This is one reason why you should **ALWAYS** use the most current edition of the ERG.

n-PENTANE

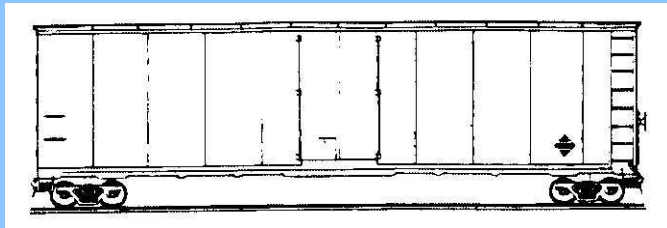
(Shipping Paper)

- UN Number ?
- Guide Number ?
- Hazard ?

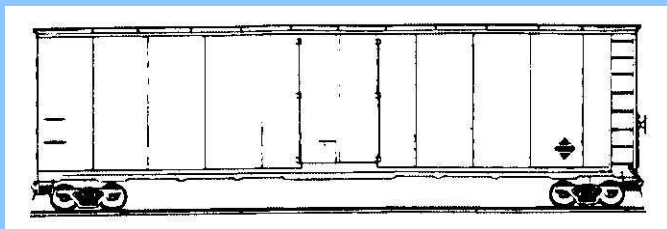
n-PENTANE

(Shipping Paper)

- UN Number = 1265
- Guide Number = 128
- Hazard = Flammable Liquid



- Given the rail car at the left what is the name of the material?
?
- What is the UN Number?
?
- What is the correct guide number?
?



- Given the rail car at the left what is the name of the material?

Unknown

- What is the UN Number?

Unknown

- What is the correct guide number?

111 (see page 11
in the 2016 ERG)



- Given the code at left, what is this material?
?
- What is its major hazard?
?
- What is the correct guide number?
?
- What ID system is this?
?



- Given the code at left, what is this material?

Acetal

- What is its major hazard?

Highly Flammable

- What is the correct guide number?

127

- What ID system is this?

European / S. American



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Arsine or “SA”

- What type of material is it?

**Toxic and
Flammable!**

- What is the correct guide number?

**As applicable: Use Guide
119 or the Green Pages!**

- Given the symbol at the left what is the name of the material?



?

- What type of material is it?

?

- What is the correct guide number?

?

- Given the symbol at the left what is the name of the material?

Radioactive II, n.o.s.

- What type of material is it?

**Radioactive III,
thus a HIGH Level
Radioactive Material**

- What is the correct guide number?

163





- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?

Explosives, n.o.s. !

- What type of material is it?

**Fragmentation
Hazard Explosives**

- What is the correct guide number? **112**

**(See pages 6, 8, 15, 27,
118, 162 and 163 in the
2016 Emergency
Response Guidebook)**

- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is it?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?



**Organophosphorus
Pesticide, solid ...**

- What type of material is it?

Toxic & Combustible

- What is the correct guide number?

152

DRIVE SAFELY PLACARD

(But you have unusual smoke / fire conditions)



- UN Number?
- Guide Number?

DRIVE SAFELY PLACARD

(But you have unusual smoke / fire conditions)



- UN Number =
Unknown
- Guide Number =
111



- Given the placard or symbol at the left what is the name of the material?

?

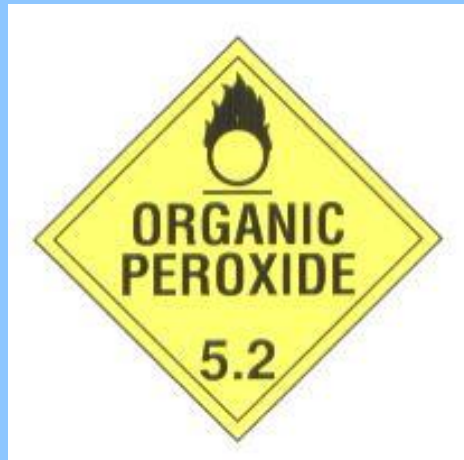
- What is the UN Number?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?



Organic Peroxide, n.o.s.

- What is the UN Number?

Unknown

- What is the correct guide number?

148



- You have encountered an IM tank on a truck trailer. Both of these placards are displayed. What might this material be ?

?

- What is the UN Number?

?

- What is the Guide Number?

?

- What are the potential hazards of these materials

?





- You have encountered an IM tank on a truck trailer. Both of these placards are displayed. What might this material be ?

Carbon Bisulfide or ?

- What is the UN Number?

1131

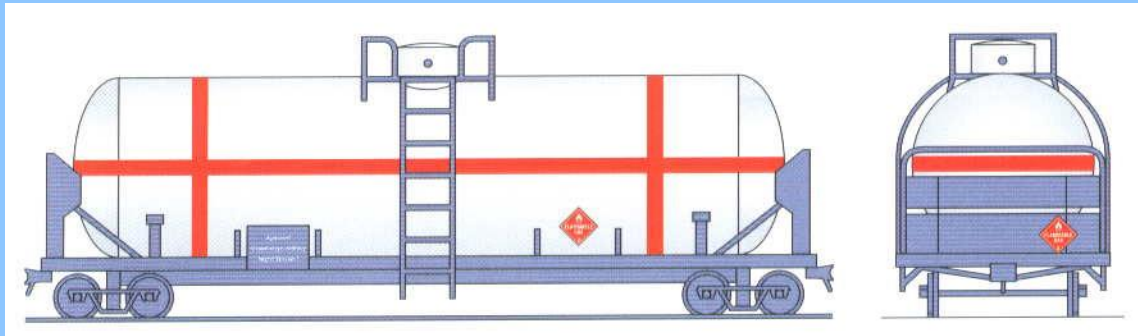
- What is the Guide Number?

131

- What are the potential hazards of these materials

It is a toxic flammable liquid. Remember, MANY HazMats have more than one hazard, but this is one that should display both a primary risk and a subsidiary risk placard.





- Given the rail car above, what is the name of the material?

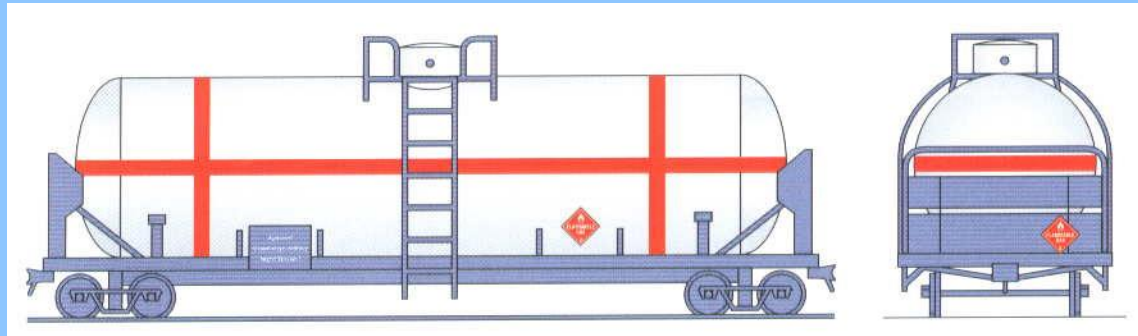
?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the rail car above, what is the name of the material?
This car is nicknamed the “Candystriper”.
It’s cargo is normally Hydrocyanic Acid - UN 1051
- What is the correct guide number?
As applicable: Use Guide **117** or the **Green Pages!**
(See page 26 or 92 for details on when each applies)

NO VISIBLE PLACARD?

(But you have unusual smoke / fire conditions)

- UN Number?
- Guide Number?
- Hazard?

NO VISIBLE PLACARD?

(But you have unusual smoke / fire conditions)

- UN Number = **Not applicable**
- Guide Number = **111**
- Hazard = **Unknown !!!**

LITHIUM NITRIDE (Spilled in Water)

- UN Number = ?
- Guide Number = ?

LITHIUM NITRIDE (Spilled in Water)

*Determining this one,
and many others that
are considered “hazardous
when spilled in water”,
is much more complicated!*

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

(1) Lithium Nitride is **UN 2806**

The Guide Number is **138**

(see page 128 in the 2016 ERG)

***BUT*** (see the next 5 slides)

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

- (1) Lithium Nitride is UN 2806 / Guide 138 (see page 128)
- (2) It is a highlighted material, in Water, so go to the green pages (page 317, which refers you to page 351).**

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

- (1) Lithium Nitride is UN 2806 / Guide 138 (see page 128)
- (2) It is a highlighted material, in Water, so go to the green pages (page 317, which refers you to page 351)
- (3) On page 351 you see the TIH is NH_3 - Ammonia**

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

- (1) Lithium Nitride is UN 2806 / Guide 138 (see page 128)
- (2) It is a highlighted material, in Water, so go to the green pages (page 317, which refers you to page 351)
- (3) On page 351 you see the TIH is NH_3 - Ammonia
- (4) **Look up Ammonia in the Blue pages = UN 1005**

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

- (1) Lithium Nitride is UN 2806 / Guide 138 (see page 128)
- (2) It is a highlighted material, in Water, so go to the green pages (page 317, which refers you to page 351)
- (3) On page 351 you see the TIH is NH_3 - Ammonia
- (4) Look up Ammonia in the Blue pages = UN 1005
- (5) Then look up UN 1005 in the green pages**

LITHIUM NITRIDE (Spilled in Water)

Determining this one is More Complicated (continued):

- (1) Lithium Nitride is UN 2806 / Guide 138 (see page 128)
- (2) It is a highlighted material, in Water, so go to the green pages (page 317, which refers you to page 351)
- (3) On page 351 you see the TIH is NH_3 - Ammonia
- (4) Look up Ammonia in the Blue pages = UN 1005
- (5) Then look up UN 1005 in the green pages
- (6) **Use the protection distances that provide the most safety for you - the one for UN 2806 or UN 1005 and **MOVE** there or farther away **NOW** !**



- What type of material is this?

?

- What is the correct guide number?

?

- What is this material?

?



- What type of material is this?

Toxic +

- What is the correct guide number?

153

- What is this material?

It could be one of numerous HazMats that share the same UN number. Most are chemical warfare agents. One of these is Sarin.

According to NIOSH: “Sarin (military designation GB), is a nerve agent that is one of the most toxic of the known chemical warfare agents. It is generally odorless and tasteless. Exposure to sarin can cause death in minutes. A fraction of an ounce (1 to 10 mL) of sarin on the skin can be fatal. Nerve agents are chemically similar to organophosphate pesticides and exert their effects by interfering with the normal function of the nervous system”.



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is this?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?



It could be one of many that share the same UN Number. If safe to obtain, you will need the shipping papers or MSDS.

- What type of material is this?

Corrosive

- What is the correct guide number?

154

Note: There are many other HazMats that share UN Numbers.



- Given the placard or symbol at the left what is the name of the material?

?

- What type of material is this?

?

- What is the correct guide number?

?

- Given the placard or symbol at the left what is the name of the material?



It could be one of many that share the same UN Number. If safe to obtain, you will need the shipping papers or MSDS.

- What type of material is this?

Flammable Liquid

- What is the correct guide number?

128

Once again, this is one of many other HazMats that share UN Numbers.

- Given the information below what is the name of the material?

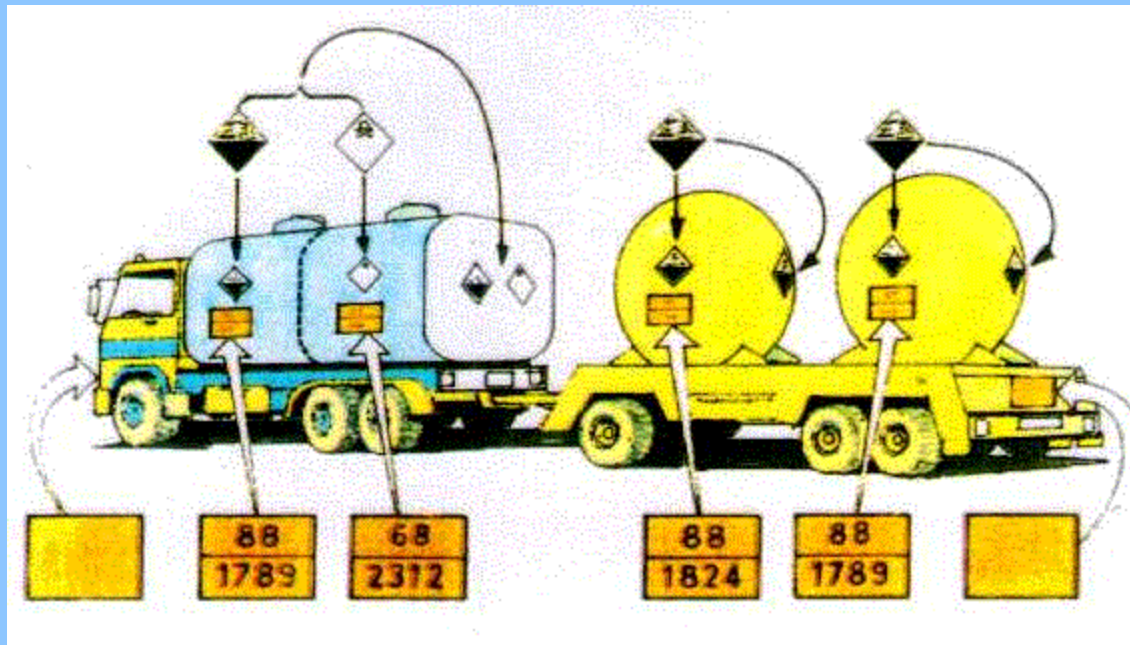
?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the information below what is the name of the material?

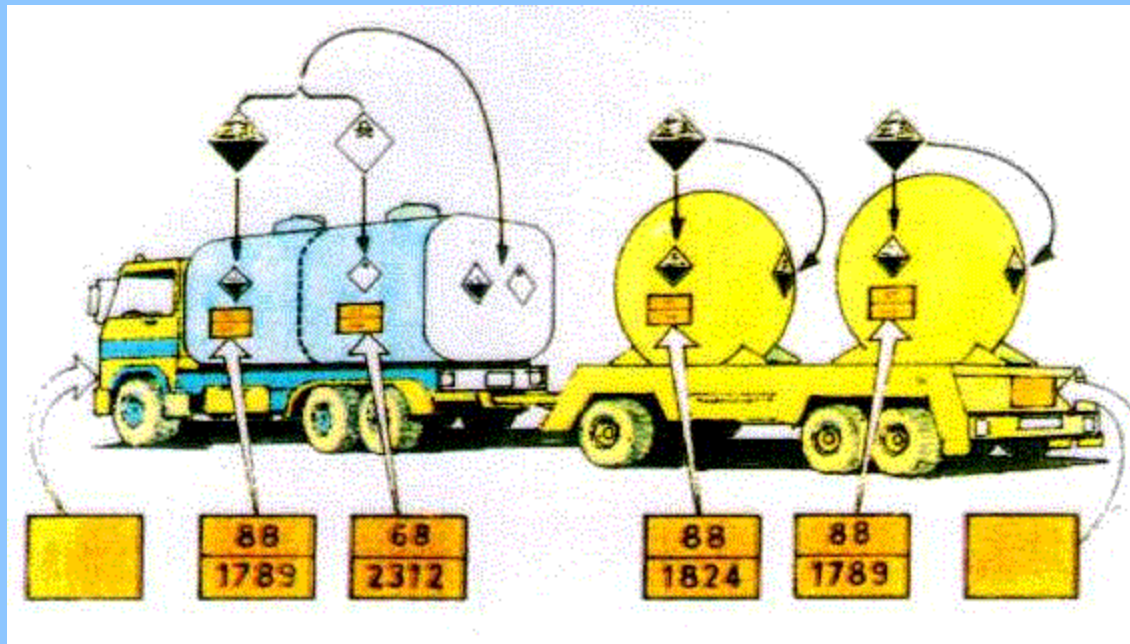
Multiple Materials are on board

- What is the UN Number?

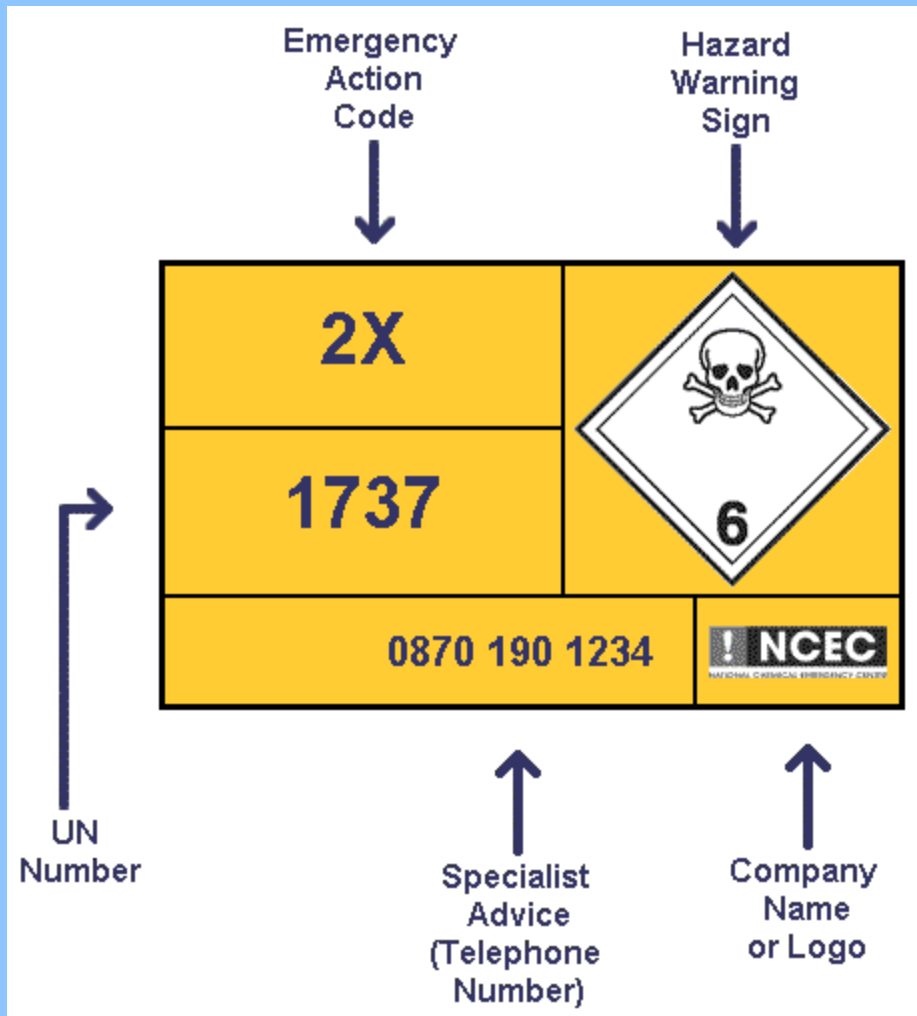
UN 1789, 1824, and 2372

- What is the correct guide number?

If you're not sure which is leaking use the "most restrictive" guide of the three !



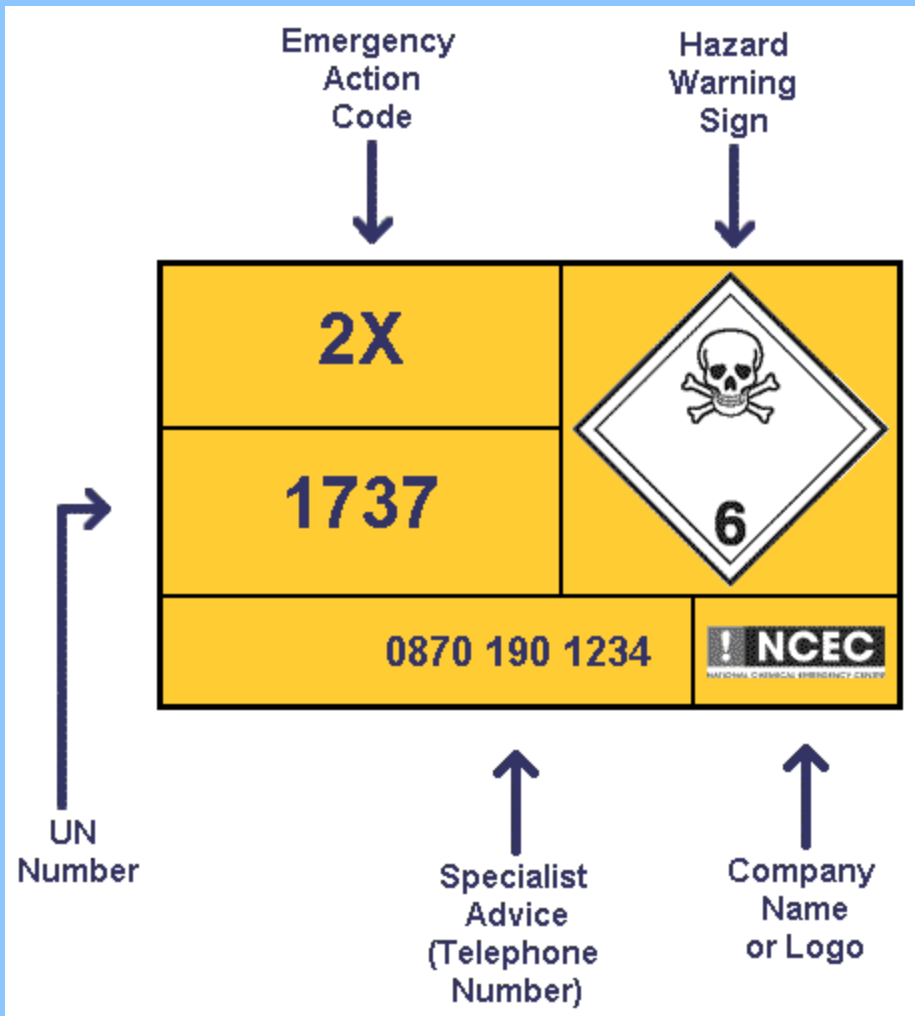
ANOTHER EUROPEAN SYSTEM:



This system has an “Emergency Action Code” within one of the panels

BUT

ANOTHER EUROPEAN SYSTEM:



The
“Emergency
Action Code”
is **NOT** the
same as the
two digit
European or
S. American
Hazard ID
Numbers!

Regarding a BLEVE, what is the minimum time to failure for a severe torch of a 2000 liter container?

Regarding a BLEVE, what is the minimum time to failure for a severe torch of a 2000 liter container?

For the answer to this you could have referred to pages 368 and 369 of the 2016 Emergency Response Guidebook

What is the minimum outdoor evacuation distance for a high explosive IED pipe bomb?

What is the minimum outdoor evacuation distance for a high explosive IED pipe bomb?

For the answer to this you could have referred to page 374 of the 2016 Emergency Response Guidebook

What is the night time down wind protection distance for an agricultural nurse tank of UN1005 if the winds are greater than 12 MPH?

What is the night time down wind protection distance for an agricultural nurse tank of UN1005 if the winds are greater than 12 MPH?

For the answer to this you could have referred to page 355 of the 2016 Emergency Response Guidebook

What is the night time down wind protection distance for a single ton container of UN1052 if the winds are greater than 12 MPH?

What is the night time down wind protection distance for a single ton container of UN1052 if the winds are greater than 12 MPH?

For the answer to this you could have referred to page 357 of the 2016 Emergency Response Guidebook

**Have you checked your
Emergency Response Guidebook
for any needed corrections?**

**Do you know how to
check for corrections?**

Have you checked your Emergency Response Guidebook for any needed corrections?

Did you know an errata has been issued for the 2016 ERG?

You should periodically visit this web site to check for errata information applicable to your ERG:

<https://www.phmsa.dot.gov/hazmat/corrections-to-the-erg>

If the above page returns an error message, type the word “errata” in the search box found on this web page.

<https://www.phmsa.dot.gov/>



- Given the placard or symbol at the left what is the name of the material?

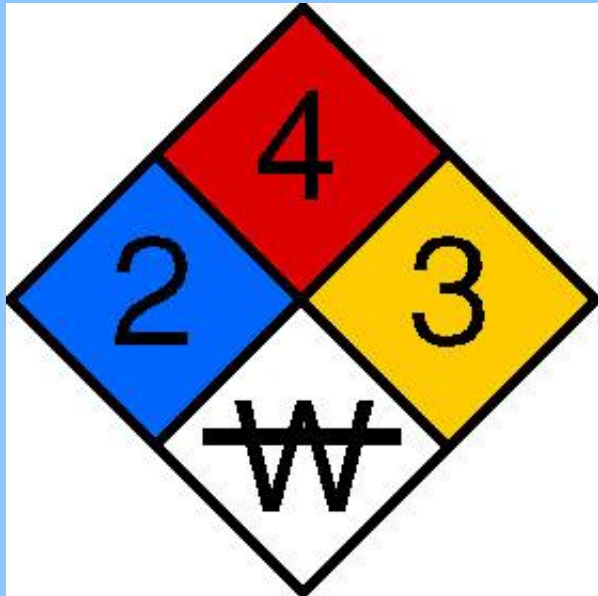
?

- What is the UN Number?

?

- What is the correct guide number?

?



- Given the placard or symbol at the left what is the name of the material?
- What is the UN Number?
- What is the correct guide number?

**All Are Unknown:
By itself, the
NFPA 704 System
does not provide
answers to the
above questions!**

The NFPA 704 System

HEALTH HAZARDS—BLUE

- 0—No significant risk to health.
- 1—Slightly hazardous. Irritation or minor reversible injury is a possibility.
- 2—Hazardous to your health. Minor or temporary injury may occur.
- 3—Extremely hazardous. Injury will occur unless prompt action is taken.
- 4—Lethal. Life-threatening, permanent damage may result from a single or repeated exposure.




FLAMMABILITY HAZARD—RED


- 0—Materials that are normally stable will not burn
- 1—Preheated before ignition (FP 200°F)
- 2—Moderate preheating FP above 100°F and below 200°F
- 3—Materials are capable of ignition at almost any temperature
- 4—Extremely flammable gases or volatile flammable liquids

REACTIVITY HAZARD—YELLOW

- 0—Stable
- 1—Unstable at high temperatures
- 2—Normally unstable
- 3—Capable of detonation, sensitive to heat and/or shock
- 4—Readily capable of detonation

SPECIFIC HAZARD—WHITE

- EXP — Explosives
- OX(Y) — Oxidizer
- ACID — Acid
- COR — Corrosive
- ALK — Alkali
- W — Use no water
-  — Radioactive
-  — Laser emissions
-  — Biological (etiologic)



Note: Prior to the 2007 edition of NFPA 704 the standard used the word “**Reactivity**”. As of 2007 this has been replaced with “**Instability**”. You will likely see both uses for many, many years.

Note: The above guide is **NOT** the “official” NFPA guide. Also, NFPA 704 (2007) only recognizes the “slash W”, OX, and SA. Although often used, all other “special hazard” symbols are **NOT** NFPA 704 compliant.

The NFPA 704 System

For the following slides you are to determine the risk.

In the second of each slide pair I have added any Special Hazard information. In real life Special Hazard Information may not always be present, even when applicable !

Note: Most hazard ratings in the NFPA 704 system, and most other systems, assume the material is in it's normal state, at room temperature, and not in contact with other materials that can alter the hazard characteristics of the rated material.

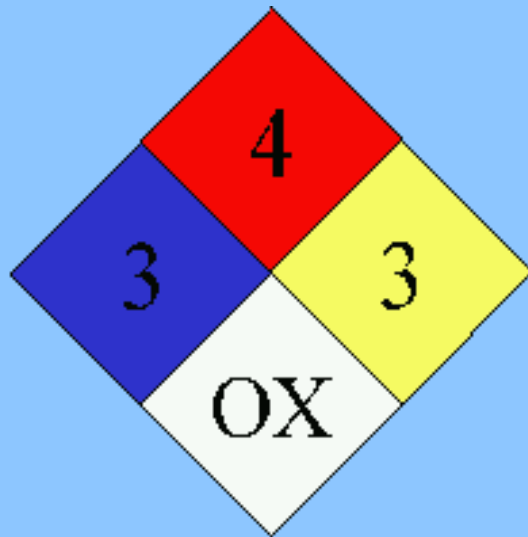


- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?

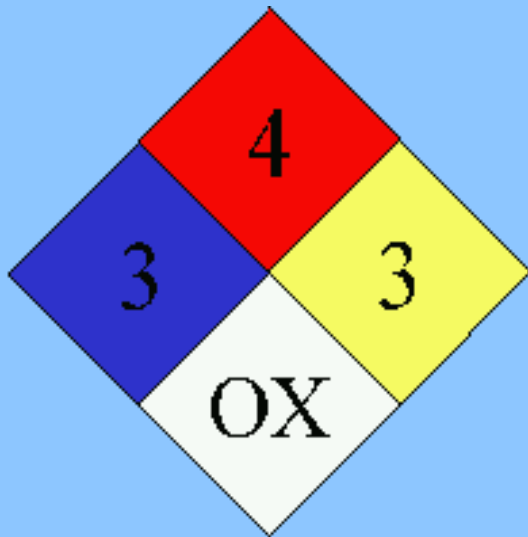
Note: Prior to the 2007 edition of NFPA 704 the standard used the word “Reactivity”. As of 2007 this has been replaced with “Instability”. You will likely see both uses for many, many years.



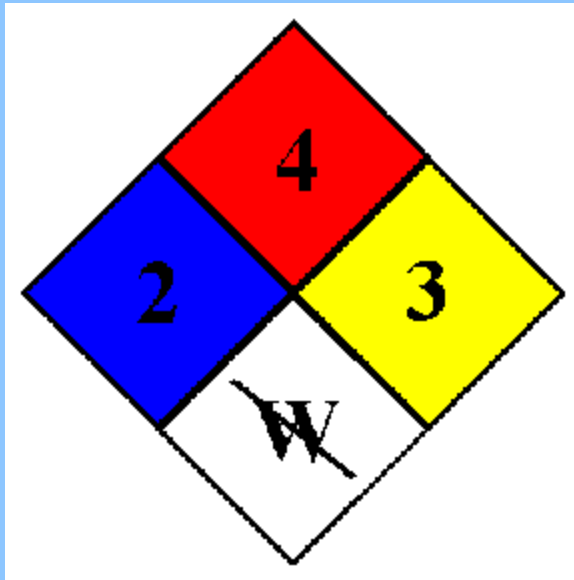
- Health Hazard= 0
- Flammability = 4
- Instability = 0
- Special Info =
**None Noted under
normal conditions.**
(Room temperature and
not mixed with any
other materials)



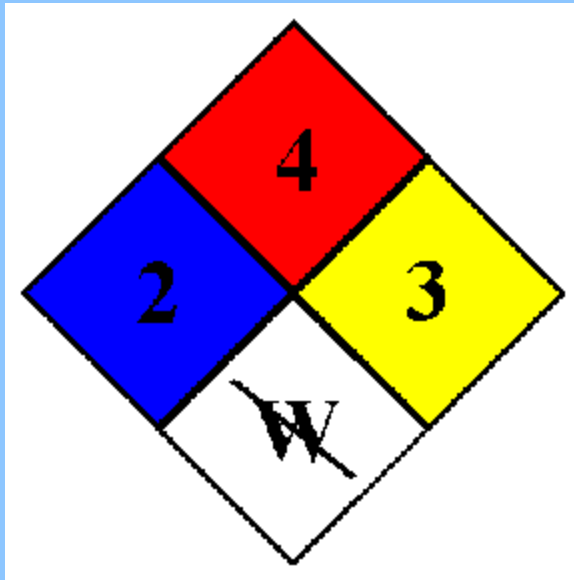
- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- **Health Hazard= 3**
- **Flammability = 4**
- **Instability = 3**
- **Special Info =
Oxidizer**



- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- Health Hazard= 2
- Flammability = 4
- Instability = 3
- Special Info =
Use No Water



- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- **Health Hazard= 2**
- **Flammability = 4**
- **Instability = 3**
- **Special Info =
Use No Water**



- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- **Health Hazard= 3**
- **Flammability = 2**
- **Instability = 1**
- **Special Info =
Use No Water**



- **Health Hazard= ?**
- **Flammability = ?**
- **Instability = ?**
- **Special Info?**



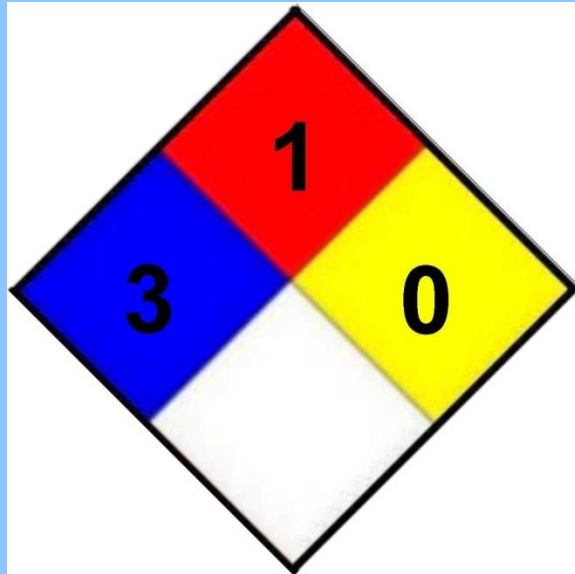
- **Health Hazard= 2**
- **Flammability = 3**
- **Instability = 4**
- **Special Info =
Radioactive**



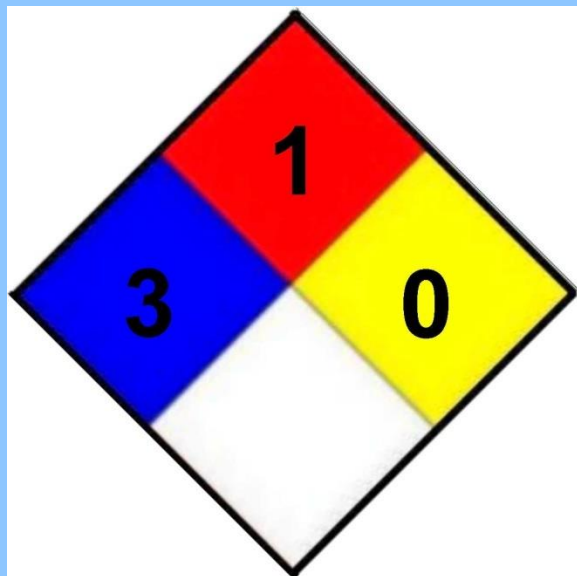
- **Health Hazard= ?**
- **Flammability = ?**
- **Instability = ?**
- **Special Info?**



- **Health Hazard= 3**
- **Flammability = 4**
- **Instability = 3**
- **Special Info =
Use No Water**



- **Health Hazard= ?**
- **Flammability = ?**
- **Instability = ?**
- **Special Info?**



- **Health Hazard= 3**
- **Flammability = 1**
- **Instability = 0**
- **Special Info =
None Noted under
normal conditions**



- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- Health Hazard= 4
- Flammability = 4
- Instability = 4
- Special Info =
Use No Water



- Health Hazard= ?
- Flammability = ?
- Instability = ?
- Special Info?



- **Health Hazard= 3**
- **Flammability = 4**
- **Instability = 3**
- **Special Info =
Use No Water**



- Health Hazard = ?
- **Flammability = ?**
- **Instability = ?**
- Special Info = ?



- Health Hazard = ?
- Flammability = ?
- Instability = ?
- Special Info =
Multiple concerns!

Obviously this facility has multiple hazards. Therefore, detailed pre-emergency planning and obtaining SDS for all products is critical!

Health	1
Flammability	1
Reactivity	0

- Given the placard or symbol at the left what is the name of the material?

?

- What is the UN Number?

?

- What is the correct guide number?

?

Note: As of December 2008 the HMIS still used the word “**Reactivity**”. Whereas, as of 2007, NFPA 704 uses the word “**Instability**”. You will likely see both uses for many, many years.

Health	1
Flammability	1
Reactivity	0

- Given the placard or symbol at the left what is the name of the material?
- What is the UN Number?
- What is the correct guide number?

**All Are Unknown:
By itself, the HMIS
System does not
provide the answers
to the above
questions?**

Health	1
Flammability	1
Reactivity	0

- **By itself, the HMIS does not provide the name of the material, UN number, or ERG Guide Number.**
- The rating numbers are similar to the NFPA 704 System, but may not use the same testing methods.
- The HMIS label may include a PPE Code

Health	1
Flammability	1
Reactivity	0

- By itself, the HMIS does not provide the name of the material, UN number, or ERG Guide Number.
- **The rating numbers are similar to the NFPA 704 System, but may not use the same testing methods.**
- The HMIS label may include a PPE Code

Health	1
Flammability	1
Reactivity	0

- By itself, the HMIS does not provide the name of the material, UN number, or ERG Guide Number.
- The rating numbers are similar to the NFPA 704 System, but may not use the same testing methods.
- **The HMIS label may include a PPE Code**

Note: Be careful as the HMIS System has been modified over the years.

Health	1
Flammability	1
Reactivity	0

You may see labels compliant with the HMIS 1[®]

HMIS 2[®]

or the *LATEST:*

HMIS 3[®] System

POSTER (Left) & POCKET CARDS FOR SOME VERSIONS OF HMIS-I and HMIS II

Hazardous Materials Identification System

HMIS*

HAZARD INDEX	PERSONAL PROTECTION INDEX																									
4 Severe Hazard	A 	H 																								
3 Serious Hazard	B 	I 																								
2 Moderate Hazard	C 	J 																								
1 Slight Hazard	D 	K 																								
0 Minimal Hazard	E 	X Consult your supervisor or S.O.P. for special handling directions.																								
<table border="0" style="width: 100%; font-size: x-small;"> <tr> <td style="text-align: center;">Safety Glasses</td> <td style="text-align: center;">Goggles</td> <td style="text-align: center;">Face Shield or Eye Protection</td> <td style="text-align: center;">Gloves</td> <td style="text-align: center;">Apron</td> <td style="text-align: center;">Sleeves</td> <td style="text-align: center;">Full Body</td> <td style="text-align: center;">Full Face Respirator</td> <td style="text-align: center;">Hood</td> <td style="text-align: center;">Suit & Respirator</td> <td style="text-align: center;">Full Face Respirator</td> <td style="text-align: center;">Airline Feed or Mask</td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">H</td> <td style="text-align: center;">I</td> <td style="text-align: center;">J</td> <td style="text-align: center;">K</td> <td style="text-align: center;">L</td> <td style="text-align: center;">M</td> <td style="text-align: center;">N</td> <td style="text-align: center;">O</td> <td style="text-align: center;">P</td> <td style="text-align: center;">Q</td> <td style="text-align: center;">R</td> </tr> </table>			Safety Glasses	Goggles	Face Shield or Eye Protection	Gloves	Apron	Sleeves	Full Body	Full Face Respirator	Hood	Suit & Respirator	Full Face Respirator	Airline Feed or Mask	A	H	I	J	K	L	M	N	O	P	Q	R
Safety Glasses	Goggles	Face Shield or Eye Protection	Gloves	Apron	Sleeves	Full Body	Full Face Respirator	Hood	Suit & Respirator	Full Face Respirator	Airline Feed or Mask															
A	H	I	J	K	L	M	N	O	P	Q	R															

HEALTH

FLAMMABILITY

REACTIVITY

PERSONAL PROTECTION

* An asterisk (*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD INDEX
 4 Severe Hazard 1 Slight Hazard 0 Minimal Hazard
 3 Serious Hazard 2 Moderate Hazard

HEALTH

FLAMMABILITY

REACTIVITY

PROTECTIVE EQUIPMENT

A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8
I	9
J	10
K	11

L	1
M	2
N	3
P	4
Q	5
R	6
S	7
T	8
U	9
V	10
W	11
X	12

Ask your Supervisor for special handling instructions

										
1	2	3	4	5	6	7	8	9	10	11


HMIS © NFCA • JKA

Hazardous Materials Identification System

HAZARD INDEX

4 Severe Hazard	0 Minimal Hazard
3 Serious Hazard	* An asterisk (*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification.
2 Moderate Hazard	
1 Slight Hazard	

PERSONAL PROTECTION INDEX

A 
B 
C 
D 
E 
F 

HMIS © NFCA • JKA 190-HMI-W 6632

HMIS III

Substance Identity

● **HEALTH**

● **FLAMMABILITY**

● **PHYSICAL HAZARD**

○ **PERSONAL PROTECTION**

Health Hazards

Hazardous Materials Identification System

HAZARD INDEX

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard

0 = Minimal Hazard
An asterisk (*) or other designation corresponds to additional information on this sheet or separate charts which will follow.

PERSONAL PROTECTION INDEX

A	SF2	G	SF2 + ☞ + ☞ + ☞
B	SF2 + ☞	H	☞ + ☞ + ☞ + ☞ + ☞
C	SF2 + ☞ + ☞	I	SF2 + ☞ + ☞
D	☞ + ☞ + ☞ + ☞	J	☞ + ☞ + ☞ + ☞ + ☞
E	SF2 + ☞ + ☞ + ☞	K	☞ + ☞ + ☞ + ☞ + ☞
F	SF2 + ☞ + ☞ + ☞ + ☞	X	Review your supervisor or OSHA for "Special" handling instructions

HEALTH HAZARD INDEX

Blood	Eye	Liver	Nervous System
Kidney	Reproductive	Skin	Respiratory

PHYSICAL HAZARD INDEX

Explosives	Compressed Gas	Corrosive	Flammable
Flammable	Water Reactive	Unstable Reactive	Organic Peroxide

HMIS[®] HMIS[®] HMIS[®] HMIS[®]

HMIS[®]

H		
F		
PH		
PP		

HMIS[®] ©2001 NPCA 329-HM-I-R
HMIS[®] HMIS[®] HMIS[®] HMIS[®]

HMIS III

Substance Identity

HEALTH
 FLAMMABILITY
 PHYSICAL HAZARD
 PERSONAL PROTECTION

Health Hazards

HMIS[®] HMIS[®] HMIS[®] HMIS[®]

HMIS[®]

H

F

PH

PP

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HMIS[®] HMIS[®] HMIS[®] HMIS[®]

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD COMMUNICATION LABELING

Target Organ Information

<p>Hazard Warning Information</p> <p>Hazard warning information is required on all labels placed on hazardous materials. This information includes any words, symbols or pictograms which convey the specific physical or health hazard of a chemical. Hazard warnings must include target organ effects information. Target organ information conveys the effects that a substance has on specific organs. It also includes information on skin exposure.</p>	<p>Physical Hazard</p> <p>The hazard warning information on a label must include the physical hazards of a material. Physical hazard means a chemical which is a compressed, compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable or water.</p>	<p>Health Hazard</p> <p>The label must convey information on the health hazards of a material. A health hazard means a chemical which causes an acute or chronic health effect when an employee is exposed. A health hazard includes any carcinogen, toxic reproductive toxin, irritant, corrosive, sensitizer, neurotoxic, reproductive, reproductive, acute which damage the lungs, skin, eyes or mucous membranes.</p>
---	--	--

Neurotoxic: Agents which produce the primary toxic effects on the nervous system.

Cutaneous Hazard: Chemicals which affect the dermal layer of the body.

Agents which damage the lungs: Chemicals which irritate or damage the respiratory system tissues.

Reproductive toxin: Chemicals which affect the reproductive capabilities including mutations, and effects on fetuses.

Eye Irritants: Chemicals which affect the eye or visual acuity.

Agents which act on the blood or hematopoietic system: Decreases hemoglobin function, deprives the body tissue of oxygen.

Hepatotoxic: Chemicals that are known to promote or produce liver damage.

Nephrotoxic: Chemicals known to promote or produce kidney damage.

HEALTH

FLAMMABILITY

PHYSICAL HAZARD

Personal Protection

Acute Hazard

An acute effect occurs rapidly as a result of short-term exposures to chemicals.

Chronic Hazard

Chronic effects generally occur as a result of long-term exposures to chemicals.

HEALTH

FLAMMABILITY

PHYSICAL HAZARD

Personal Protection

Consult the MSDS for more information

THE HMIS SYSTEM(S)

Additional HMIS information may be found at
<http://www.paint.org/hmis/index.cfm>

**For the following slides you are
to determine the risk.**

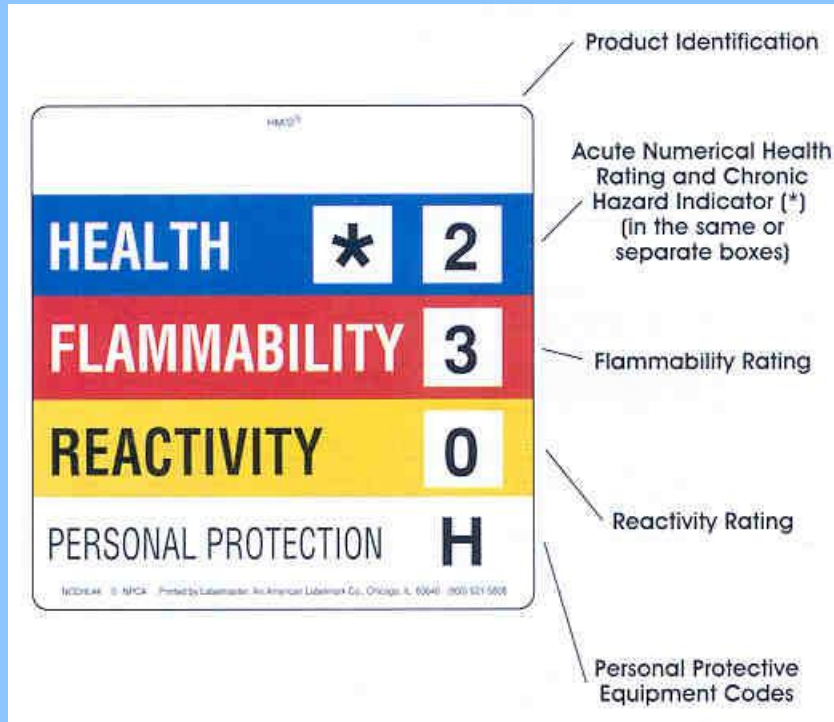
**In the second of each slide pair I have
added any Special Hazard information.**

Route of Entry	3	Health
Health Hazards	4	Flammability
Physical Hazards	3	Reactivity
Target Organs	G	Protective Equipment

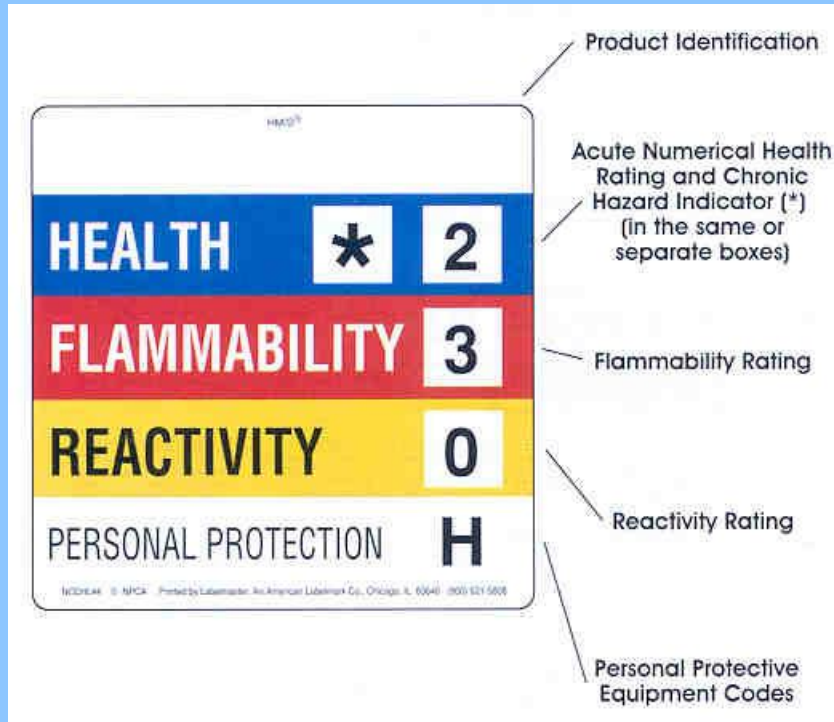
- **Health Hazard= ?**
- **Flammability = ?**
- **Reactivity = ?**
- **Special Info?**

Route of Entry	3	Health
Health Hazards	4	Flammability
Physical Hazards	3	Reactivity
Target Organs	G	Protective Equipment

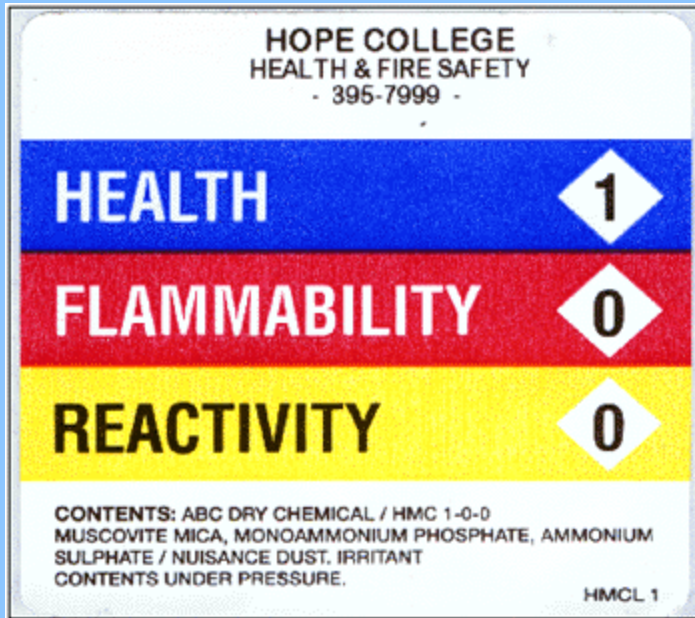
- **Health Hazard= 3**
- **Flammability = 4**
- **Reactivity = 3**
- **Special Info = Code G** (See the pocket card)



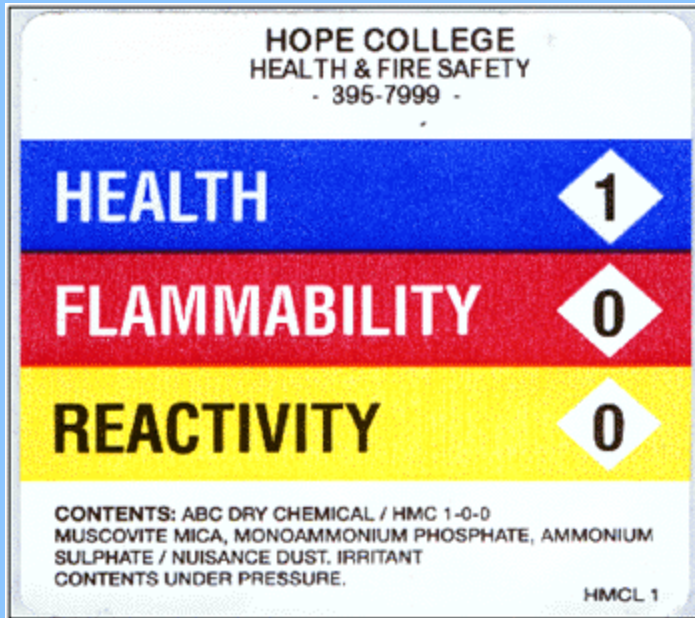
- Health Hazard= ?
- **Flammability = ?**
- **Reactivity = ?**
- Special Info?



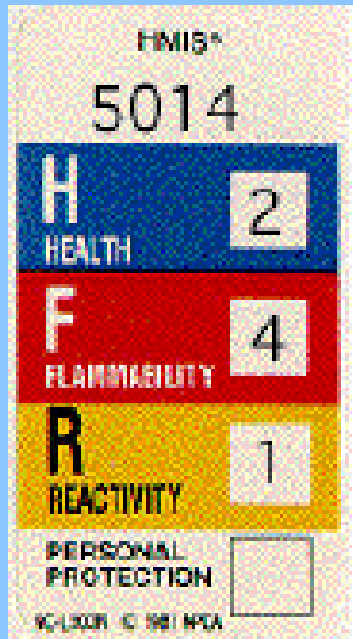
- Health Hazard= 2
- **Flammability = 3**
- **Reactivity = 0**
- Special Info = **Code “H”**



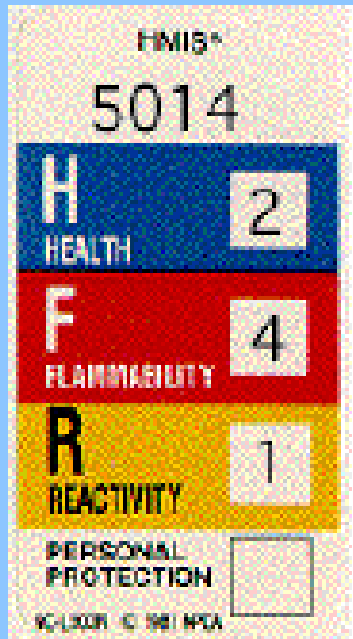
- Health Hazard= ?
- Flammability = ?
- Reactivity = ?
- Special Info?



- Health Hazard= 1
- Flammability = 0
- Reactivity = 0
- Special Info =
No Personal Protection
Letter Code is used, but
note the contents and
potential effects do
appear in the white
space at the bottom.



- Health Hazard= ?
- **Flammability = ?**
- **Reactivity = ?**
- Special Info?



- Health Hazard= 2
- **Flammability = 4**
- **Reactivity = 1**
- Special Info = **None Noted ?**

Health	1
Flammability	1
Reactivity	0

- **Health Hazard= ?**
- **Flammability = ?**
- **Reactivity = ?**
- **Special Info?**

Health	1
Flammability	1
Reactivity	0

- **Health Hazard= 1**
- **Flammability = 1**
- **Reactivity = 0**
- **Special Info =
None Noted ?**

- Health Hazard= ?

- Flammability = ?

- Reactivity = ?

- Special Info?



- Health Hazard= 4

- Flammability = 4

- Reactivity = 4

- Special Info =
Code “X”



HMIS Label

ACETONE	
1	Health
3	Flammability
0	Reactivity
C	Protective Equipment
HAZARD RATING	
4 EXTREME	1 SLIGHT
3 SERIOUS	0 MINIMAL
2 MODERATE	

- Health Hazard= ?
- Flammability = ?
- Reactivity = ?
- Special Info?

HMIS Label

ACETONE	
1	Health
3	Flammability
0	Reactivity
C	Protective Equipment
HAZARD RATING	
4 EXTREME	1 SLIGHT
3 SERIOUS	0 MINIMAL
2 MODERATE	

- Health Hazard= 1
- Flammability = 3
- Reactivity = 0
- Special Info =
Code C

危険の警告	
健康障害の危険 4 致命的 3 非常に危険 2 危険 1 やや危険 0 通常	火災の危険 引火点 4 73°F以下 3 100°F以下 2 200°F以下 1 200°F超 0 不燃
特定の危険 ACID - 酸 ALK - アルカリ COR - 腐食性 P - 重合性 ☣ - 放射性 ☠ - 水の使用厳禁	反応性 4 爆発の可能性あり 3 衝撃と熱で爆発の可能性あり 2 激しい化学作用 1 加熱すると不安定になる 0 安定

- Health Hazard= ?
- Flammability = ?
- Reactivity = ?
- Special Info?

危険の警告	
健康障害の危険 4 致命的 3 非常に危険 2 危険 1 やや危険 0 通常	火災の危険 引火点 4 73°F以下 3 100°F以下 2 200°F以下 1 200°F超 0 不燃
特定の危険 ACID - 酸 ALK - アルカリ COR - 腐食性 P - 重合性 ☣ - 放射性 ☠ - 水の使用厳禁	反応性 4 爆発の可能性あり 3 衝撃と熱で爆発の可能性あり 2 激しい化学作用 1 加熱すると不安定になる 0 安定

- Health Hazard= ?
- Flammability = ?
- Reactivity = ?
- Special Info?

This is printed in Japanese. I threw it in for a laugh. Good luck trying to read it if you encounter one.

OTHER HAZARD IDENTIFICATION SYSTEMS

Other systems do exist!

For example, some corporations may use the “HFR” system on some of their tanks within their plants.

When this system is used within the plant the letters and numbers are **NOT color coded**

HFR EXAMPLE

If you observed the following stenciled
on a bulk storage tank:

H3 F2 R1

It would mean:

Health = 3

Flammability = 2

Reactivity = 1

“HFR” SYSTEM PRACTICE

Review the following examples

H4 F4 R4

H0 F4 R0

H2 F2 R4

H1 F0 R1

H4 F4 R0

H0 F0 R0

ALDRICH PRODUCT LABELS (Proprietary identification label ?)

Aldrich product labels

Old

- A Product Name and Description
- B Product Number
- C Lot Number
- D Package Size
- E CAS Registry Number
- F Bar Code
- G Physical Properties
- H Chemical Formula
- I Hazard Pictogram
- J Further Hazard Information

New

- B Product Number
- D Package Size
- C Lot Number
- F Bar Code
- H Chemical Formula
- I Hazard Pictogram
- J Further Hazard Information

Pictograms

Explosive

Oxidizer

Flammable

Toxic

Harmful or Irritant

Corrosive

Environmentally Toxic

A COMBINATION LABEL (Proprietary identification label ?)

DELCO
CLEANING SYSTEMS

DNB-1430

DESCRIPTION

DNB 1430 is a heavy duty liquid cleaner formulated mainly for the transportation industry, although it is used successfully in many industries. It offers a combination of emulsifiers, solvents, and highly alkaline builders that penetrate and route out heavy grease, soil and grime. DNB 1430 is designed for the heavier soil loads that your lower alkaline products will not remove. It is an ideal cleaner for tractor trailers and heavy duty concrete cleaning.

MIXING INSTRUCTIONS

- (1) Wear rubber gloves, face shield, and protective clothing while mixing in a plastic or steel 55 gallon drum using a pressure washer for water and agitation.
- (2) Using a 55 gallon drum to mix your chemical, start by adding 18 gallons (1/3 full) of cold water to the drum.
- (3) While adding the next 18 gallons (2/3 full) of cold water with the pressure washer slowly add the DNB-1430 "POWDER".
The best results are when the powder enters the water near the nozzle. KEEP THE NOZZLE UNDER THE WATER.
- (4) While adding the next 15 gallons of cold water with the pressure washer slowly add the DNB-1430 "LIQUID" near the nozzle.

This makes R-430 Liquid Concentrate.

DIRECTIONS

- **TRAILER CLEANING:** Set metering valve to deliver from (100 to 1) to (50 to 1) depending on soil and grease conditions.
- **HEAVY DUTY STEAM CLEANING:** Set metering valve on equipment to 30 to 1.
- **PRESOAK:** Mix concentrate 4 to 1 with water then prespray or hand scrub. Excellent on diesel smoke. Follow up with regular truck or car wash detergent (Example - R109 Delco Red).
- **TWO STEP SYSTEMS:** Use as step number 1, mix concentrate 3 to 1.
- **CONCRETE CLEANING:** Set metering valve 30 to 1. Prespray oil spots at 4 to 1.

CAUTION

DNB-1430 contains sodium hydroxide. Do not get in eyes, on skin, or on clothing. Inhalation of high mist concentrations may be irritating. When handling, wear rubber gloves, eye glasses, and protective clothing.

FOR INDUSTRIAL USE ONLY

Distributed By
Delco Cleaning Systems
2513 Warfield St., Ft. Worth, TX 76106
817-625-4213
U. S. WATS 1-800-433-2113 • FAX 817-625-2059
MEXICO WATS 95-800-433-2113
email:delco@dcs1.com • URL:http://www.dcs1.com

HEALTH	3
FLAMMABILITY	0
REACTIVITY	2
PERSONAL PROTECTION	COR



CORROSIVE

8

EMERGENCY CONTACT NUMBER
1-800-255-3924

CORROSIVE SOLID.
n.o.s.,8,UN-1759,PGII
(contains Sodium hydroxide)



The GHS

The GHS (Globally Harmonized System of Classification and Labeling of Chemicals) is here!

The intent of the system is to make identifying special hazards, such as systemic toxins and aquatic pollutants easier, as well as provide instructions on appropriate protective equipment.

The GHS is already in use in many countries, including the United States.

IMPORTANT: See pages 14 and 15 of the 2016 Emergency Response Guidebook for basic information.

For details on OSHA implementation of the GHS in the United States visit:

<http://www.osha.gov/dsg/hazcom/>

The GHS



Hazard Communication Standard Labels

OSHA has updated the requirements for labeling of hazardous chemicals under its Hazard Communication Standard (HCS). All labels are required to have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample revised HCS label, identifying the required label elements, is shown on the right. Supplemental information can also be provided on the label as needed.

For more information:



U.S. Department of Labor

www.osha.gov (800) 321-OSHA (6742)


SAMPLE LABEL

CODE _____ } **Product Identifier**
Product Name _____ }
Company Name _____ } **Supplier Identification**
Street Address _____ }
City _____ State _____ }
Postal Code _____ Country _____ }
Emergency Phone Number _____ }

Keep container tightly closed. Store in a cool, well-ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measures against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO₂) fire extinguisher to extinguish.
First Aid
If exposed call Poison Center.
If on skin (or hair): Take off immediately any contaminated clothing. Rinse skin with water.

Hazard Pictograms



Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor.
May cause liver and kidney damage.

Precautionary Statements

Supplemental Information
Directions for Use

Fill weight: _____ Lot Number: _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____



- **You find the symbol at left on a label. What does this signify?**



- You find the symbol at left on a label. What does this signify?
- **It could signify any of the following:**
 - Irritant
 - Skin sensitizer
 - Acute toxicity
 - Respiratory tract irritant
 - Hazardous to ozone layer



- You find the symbol at left on a label. What does this signify?



- You find the symbol at left on a label. What does this signify?
- **A Health Hazard such as:**
 - Carcinogen
 - Mutagen
 - Reproductive toxicity
 - Respiratory sensitizer
 - Target organ toxicity
 - Aspiration toxicity



What is the difference between the two symbols at left?












- What is the difference between the two symbols at left?
- **The top one could signify any of the following:**
 - Flammables
 - Pyrophorics
 - Self heating
 - Emits flammable gas
 - Self reactives
 - Organic peroxides
- **The bottom one signifies it is an oxidizer.**

Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

<p>Health Hazard</p>  <ul style="list-style-type: none"> ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> ▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> ▪ Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> ▪ Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> ▪ Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> ▪ Acute Toxicity (fatal or toxic)

For more information:

For details regarding the above please visit

http://www.osha.gov/Publications/HazComm_QuickCard_Pictogram.html

Proprietary GHS Samples:

AVS-797

RCV-4728

PPG SAFETY AND HEALTH INDEX SYSTEM

HEALTH	FLAMMABILITY	REACTIVITY	PERSONAL PROTECTION
2	3	0	F

3* OR 4* INDICATES THAT THE MATERIAL MAY CAUSE CHRONIC HEALTH HAZARDS

MODERATE EYE/SKIN/LUNG HAZARD
PPE DEPENDS ON USE & EXPOSURE POTENTIAL

PURCHASE ORDER # (400) 83298	CONT TYPE (90) DRUM	
CUSTOMER PART # (241) RCV-4728		
LOT # (10) 01.06.27N3-1		
NET WEIGHT, POUNDS (3200) 396	GROSS WEIGHT POUNDS 434	TARE WEIGHT POUNDS 38
SERIAL SHIP CNTR CODE (00) 0 0071699 500000093 5		

MHWPCASTV

Manufacturer: ABC CHEMICAL MSDS REF: 1234

PRODUCT IDENTIFIER TOLUENE

HEALTH	2
FLAMMABILITY	3
REACTIVITY	0
PERSONAL PROTECTION	J

PERSONAL PROTECTIVE EQUIPMENT			
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Boots	<input checked="" type="checkbox"/> Gloves
<input type="checkbox"/> Full Body Protection Suit	<input type="checkbox"/> Respirator	<input checked="" type="checkbox"/> Hand Protection	<input checked="" type="checkbox"/> Eye Protection
<input checked="" type="checkbox"/> Head and Neck Protection	<input type="checkbox"/> Respirator	<input type="checkbox"/> Hand Protection	<input type="checkbox"/> Eye Protection

DANGER!
HIGHLY FLAMMABLE LIQUID
AND VAPOUR.

REFER TO SAFETY DATA SHEET



The GHS

IMPORTANT:

For Information on Safety Data Sheets
(formerly known as MSDS)

see the next two slides and visit:

http://www.osha.gov/Publications/HazComm_QuickCard_SafetyData.html

OSHA Safety Data Sheets

Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/ effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

OSHA Safety Data Sheets

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).

Employers must ensure that SDSs are readily accessible to employees.

See Appendix D of 1910.1200 for a detailed description of SDS contents.

http://www.osha.gov/Publications/HazComm_QuickCard_SafetyData.html



Safety and Health Topics

Hazard Communication



GHS

The Globally Harmonized System
of Classification and Labeling of Chemicals

OSHA has estimated that more than 32 million workers are exposed to 650,000 hazardous chemical products in more than 3 million American workplaces. This poses a serious problem for exposed employers and their employees.

The basic goal of an effective hazard communication program is to ensure employers and employees know the identities and hazards of chemicals in their workplaces. When employers and employees have such information, it can be used to design and implement appropriate protective measures to reduce the incidence of adverse effects.

The following questions link to information that can assist employers and employees to ensure that hazard communication is properly addressed in their workplaces.



[What is hazard communication?](#)



[What OSHA standards apply?](#)

[Standards](#) | [Preambles to Final Rules](#) | [Directives](#) | [Standard Interpretations](#)



[Where may information for hazard determinations be found?](#)



[What information is available regarding the elements of a hazard communication \(HAZCOM\) program?](#)

[Example Programs](#) | [General Resources](#)



[What is the Globally Harmonized System of Classification and Labeling of Chemicals?](#)



[What additional information is available?](#)

[Related Safety and Health Topics Pages](#) | [Other Resources](#)

In Focus

- [Hot Topics](#)
- [Hazard Communication/GHS – Revised Standard](#)
- [Alliances](#)
- [OSHA Compliance Assistance](#)
- [Enforcement of MSDS Requirement](#)

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Content Reviewed 12/29/2008



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[« Hazard Communication](#)

Effective Dates

The table below summarizes the phase-in dates required under the revised Hazard Communication Standard (HCS):

Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015*	Compliance with all modified provisions of this final rule, except:	Chemical manufacturers, importers, distributors and employers
December 1, 2015	The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

<http://www.osha.gov/dsg/hazcom/effectivedates.html>

Intermodal Transportation

Hazard Identification Issues

Intermodal Shipments ...

- **Can present special identification problems**

Intermodal Shipments ...

- Can present special identification problems
- **While most fire departments will not have to deal with a sea response ...**

Intermodal Shipments ...

- Can present special identification problems
- While most fire departments will not have to deal with a sea response ...
- **Your department may have to respond to a port, highway, rail, or other emergency involving intermodal containers.**

Intermodal Shipments ...

- Can present special identification problems
- While most fire departments will not have to deal with a sea response ...
- Your department may have to respond to a port, rail, highway, or other emergency involving intermodal containers
- **Therefore, take your time to properly identify the container(s) and product(s) involved.**

(Some example Intermodal Shipments follow)





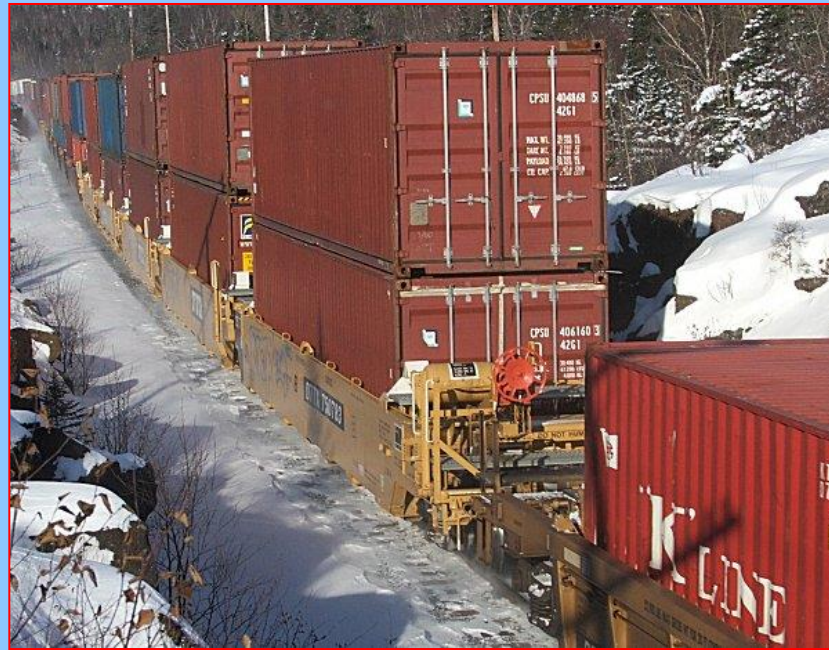


COFCs Double Stacked

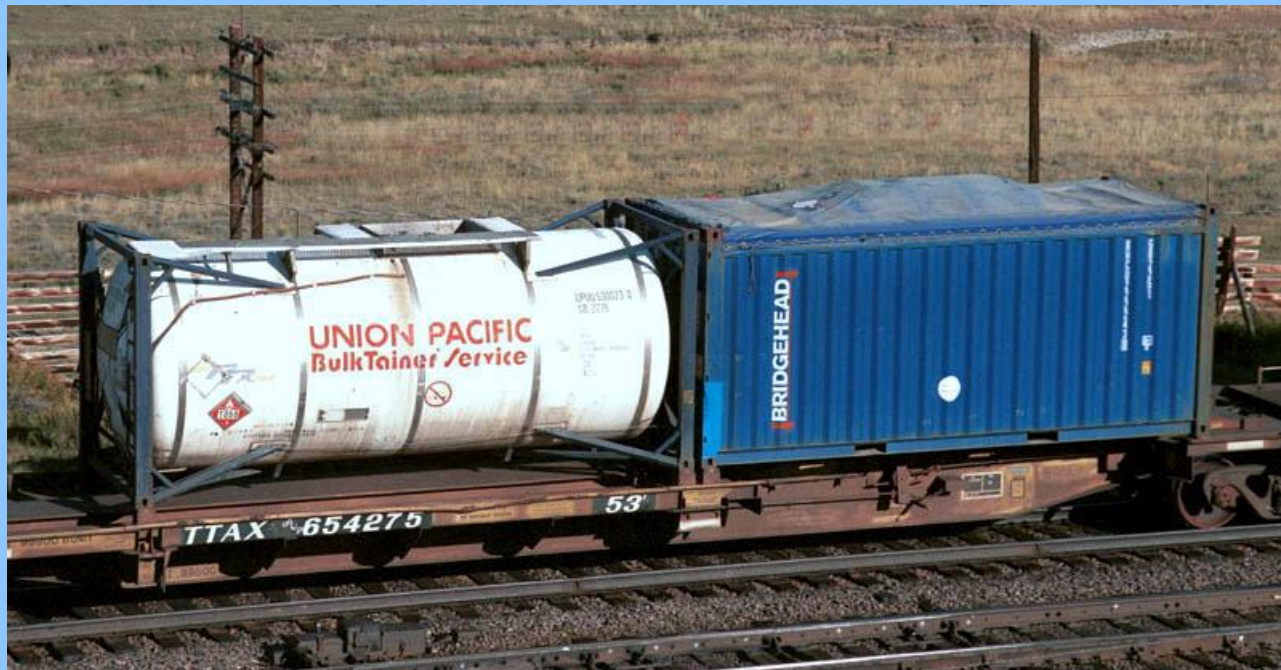


Photo © 2006 Chris Wilson

COFCs (Top) TOFC (Bottom)



IM-101 (Left) and a COFC (Right)



“TCSZ” Rail Shipment



Containers on a Flatbed Trailer (Left) vs. Regular Highway Trailer (Right)



IM-101 Acid Shipment (Left) Refrigerated IM Shipment (Right)



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7700 Clocktower Drive

Kirtland, Ohio 44094

(440) 525-7252

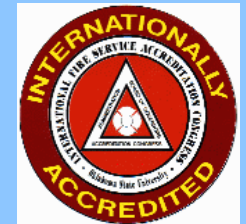
Lsilvi@lakelandcc.edu

IFSAC is currently the only organization in the world recognized by “CHEA” to grant fire and emergency related (including “Emergency Management”) program accreditation.

IFSAC membership or accreditation is NOT limited to one college per state. Every college in the United States that holds regional accreditation may seek IFSAC voting membership and program accreditation.

For colleges outside the United States appropriate governmental recognition is required to become a voting IFSAC member and seek program accreditation.

If your college is not accredited by IFSAC please visit <https://ifsac.org/> to learn more.



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