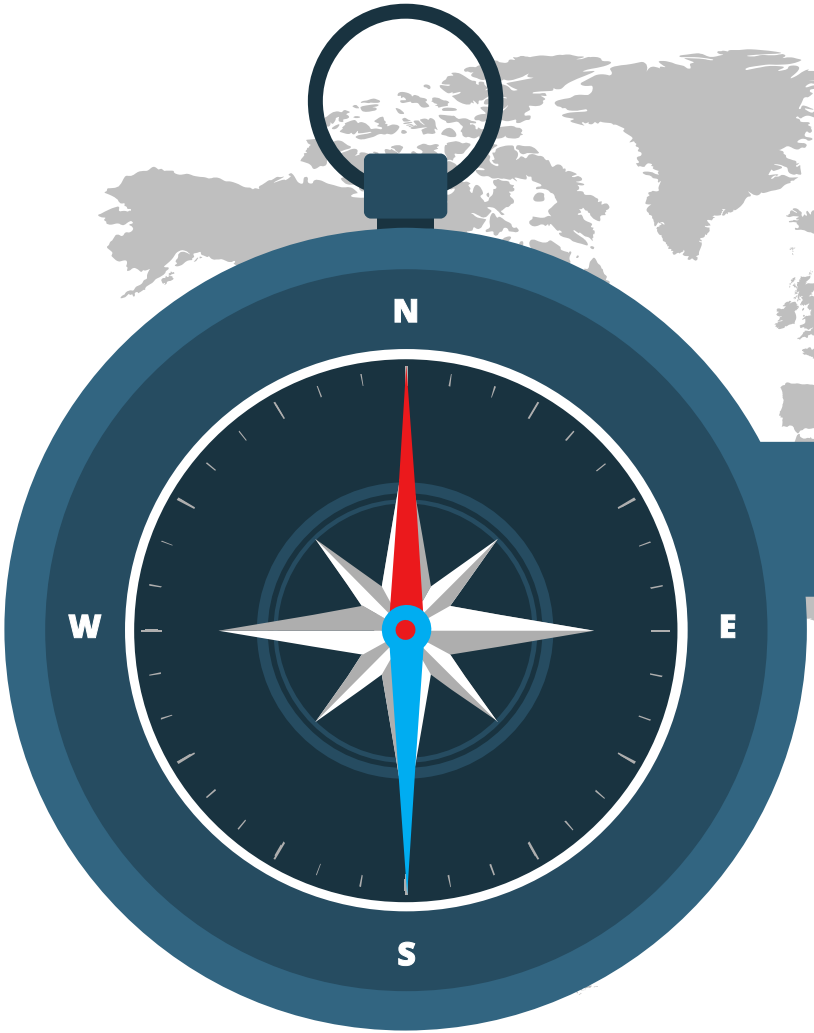
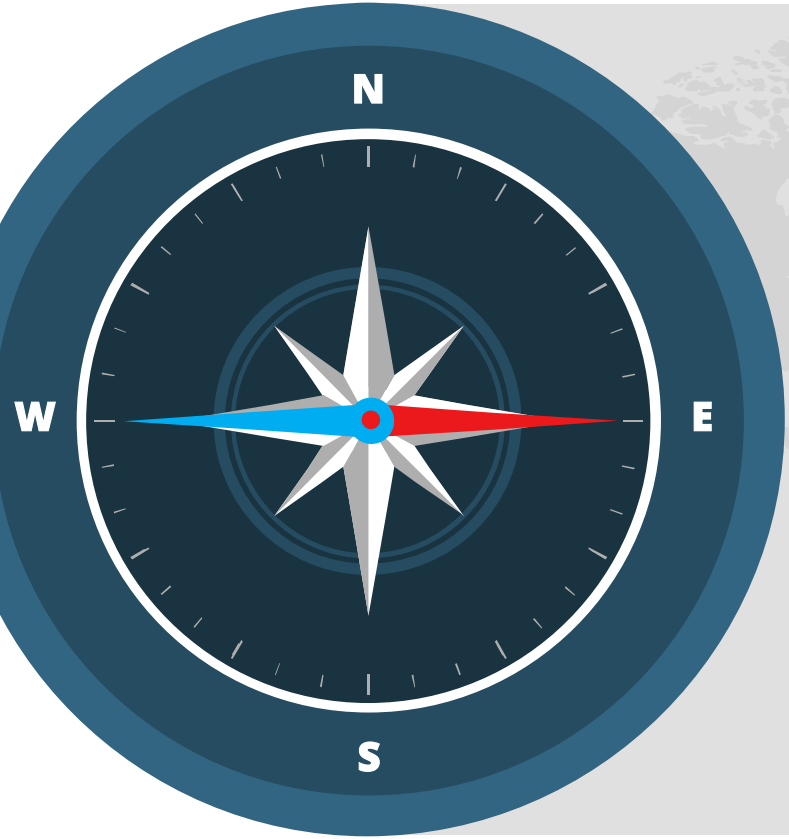


COMPASS

A Guide to Hazard Assessment

Containers



- Back to Basics Initial Assessment
- Development Tool
- Primary Hazard Identification
- Rapid Decision Making

Container

Shape, Size, Material

Senses

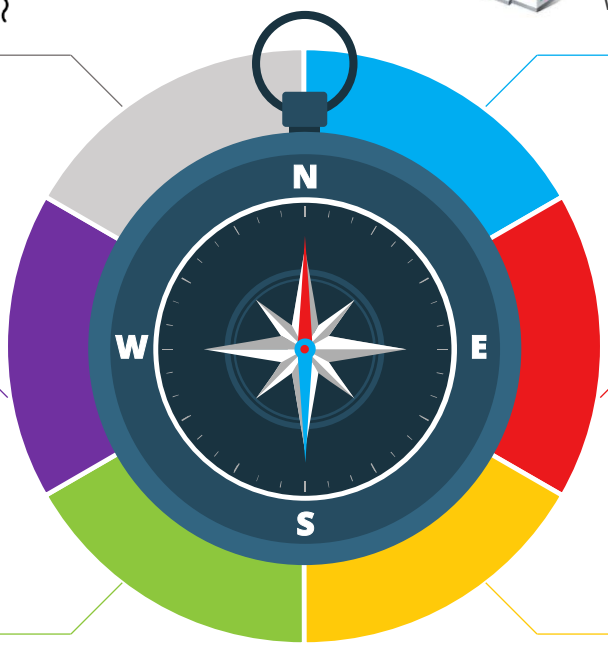
Legit/Non-Legit.

Occupancy/Location

What/Where

SDS/Shipping Papers

BOL, DGD, Manifest, etc



Markings

Colors, Labels

Appearance

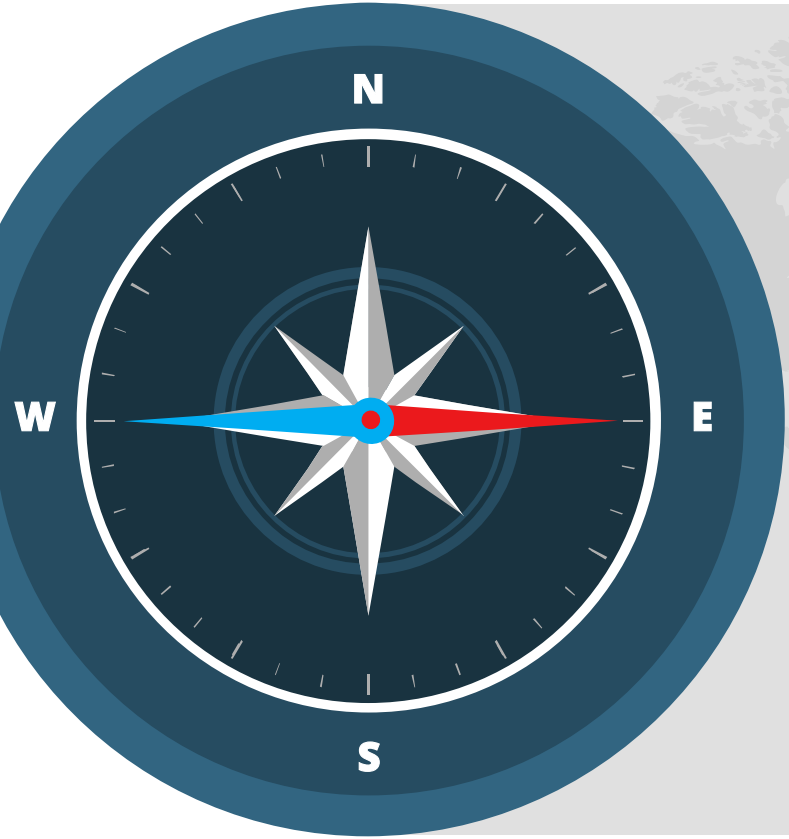
Smoke Bad, Colored Smoke Worse.

Placards

Specifically DOT

Containers

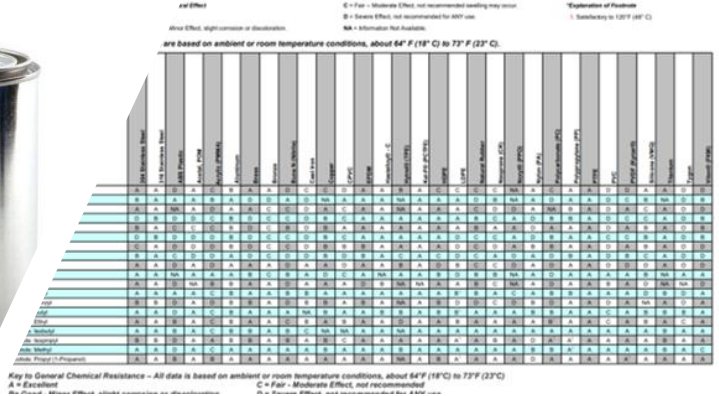
Containers



- Bulk Packaging
- Shipping/Transport
- Fixed Facilities
- Other Sh!#


ECOLAB
LIQUID
HD-395
3266
8
CORROSIVE
LIQUID, BASIC,
INORGANIC,
N.O.S., UN3266


ALLEY
EPTANE
ORATORY GRADE
FLAMMABLE LIQ
UN1206


are based on ambient or room temperature conditions, about 64° F (18° C) to 73° F (23° C).
Key to General Chemical Resistance – All data is based on ambient or room temperature conditions, about 64°F (18°C) to 73°F (23°C)
A = Excellent
C = Fair - Moderate Effect, not recommended

Material

Chemical Compatibility Chart

Ratings -- Chemical Effect

A = Excellent.

B = Good -- Minor Effect, slight corrosion or discoloration.

C = Fair -- Moderate Effect, not recommended swelling may occur.

D = Severe Effect, not recommended for ANY use.

NA = Information Not Available.

****Explanation of Footnote***

1. Satisfactory to 120°F (48° C)

All data are based on ambient or room temperature conditions, about 64° F (18° C) to 73° F (23° C).

	304 Stainless Steel	316 Stainless Steel	ABS Plastic	Acetal, POM	Acrylic (PMMA)	Aluminum	Brass	Bronze	Buna N (Nitrile)	Cast Iron	Copper	CPVC	EPDM	Hastelloy® - C	Hytrel® (TPE)	Kel-F® (PCTFE)	HDPE	LDPE	Natural Rubber	Neoprene (CR)	Noryl® (PPO)	Nylon (PA)	Polycarbonate (PC)	Polypropylene (PP)	PTFE	PVC	PVDF (Kynar®)	Silicone (VMQ)	Titanium	Tygon	Viton® (FKM)
Acetaldehyde	A	A	D	A	C	B	A	A	D	C	C	D	A	A	B	A	C	C	C	C	NA	A	C	A	A	D	D	A	A	D	D
Acetamide	B	A	A	A	B	A	D	D	A	D	NA	A	A	A	NA	A	A	A	D	B	NA	A	D	A	A	D	C	B	NA	D	B
Acetate Solvents	A	A	NA	A	D	A	A	C	C	D	A	C	A	A	NA	A	A	A	C	D	D	A	NA	B	A	D	A	C	A	D	D
Acetic Acid	D	B	D	D	C	B	D	C	C	D	B	C	A	A	A	A	A	A	B	C	A	D	B	B	A	D	C	C	A	D	B
Acetic Acid, 20%	B	A	C	C	C	B	D	C	B	D	B	A	A	A	A	A	A	A	B	A	A	D	A	A	A	D	A	B	A	D	B
Acetic Acid, 80%	D	B	D	D	D	B	D	C	C	D	B	C	A	A	A	A	A	D	C	C	A	D	B	A	A	C	C	B	A	D	B
Acetic Acid, Glacial	C	A	D	D	D	B	D	C	C	D	B	B	B	A	A	A	A	D	C	D	A	B	B	A	A	D	A	B	A	D	D
Acetic Anhydride	B	A	C	D	D	A	D	C	D	D	B	D	B	A	C	A	C	D	C	A	D	A	D	B	A	D	B	C	A	D	D
Acetone	A	A	D	A	D	A	A	A	D	A	A	D	A	A	B	A	D	B	C	C	D	A	D	A	A	D	D	D	A	D	D
Acetylene	A	A	NA	A	A	A	B	C	B	A	D	C	A	NA	A	A	B	D	B	B	NA	A	D	A	A	A	A	B	NA	A	A
Acrylonitrile	A	A	D	NA	B	B	A	A	D	A	A	A	D	B	NA	NA	A	A	B	C	NA	A	D	A	A	B	A	D	NA	NA	D
Alcohols: Amyl	A	A	A	A	C	B	A	A	B	B	A	A	A	A	A	A	A	B[1]	B	A	C	A	B	B	A	A	A	D	B	D	A
Alcohols: Benzyl	B	B	D	A	D	B	B	A	D	B	B	A	B	A	NA	A	B	D	D	C	D	B	D	A	A	D	A	NA	A	D	A
Alcohols: Butyl	A	A	D	A	C	B	A	A	A	NA	B	A	A	B	B	A	B	B[1]	A	A	A	B	B	A	A	C	A	B	B	B	A
Alcohols: Ethyl	A	A	B	A	C	B	A	A	C	B	A	B	A	A	D	A	A	B	A	A	A	A	B[1]	A	A	C	A	B	A	C	A
Alcohols: Isobutyl	A	A	B	A	C	B	B	A	B	C	NA	NA	A	A	NA	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A
Alcohols: Isopropyl	B	B	D	A	A	B	B	A	B	A	B	C	A	A	A	A	A	A[1]	A	B	A	D	A[1]	A[1]	A	A	A	A	B	A	A
Alcohols: Methyl	A	A	D	A	C	A	A	A	A	A	B	A	A	A	B	A	A	A	A	A	A	B	B	A[1]	A	A	A	A	B	A	C
Alcohols: Propyl (1-Propanol)	A	A	B	A	B	A	A	A	A	A	A	A	A	A	NA	A	B	A[1]	A	A	A	D	A	A	A	A	A[1]	A	A	A	A

Key to General Chemical Resistance – All data is based on ambient or room temperature conditions, about 64°F (18°C) to 73°F (23°C)

A = Excellent

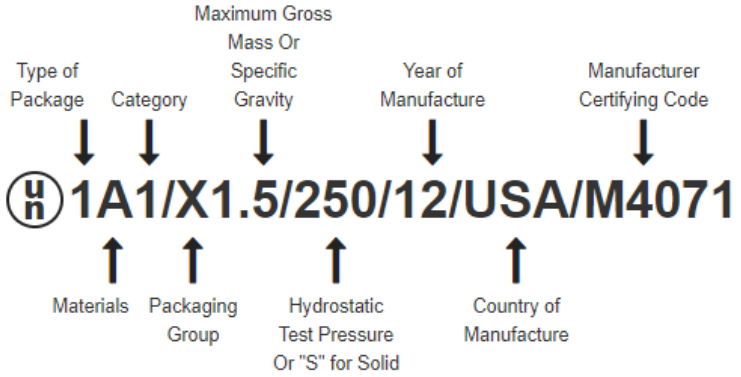
B= Good - Minor Effect, slight corrosion or discoloration

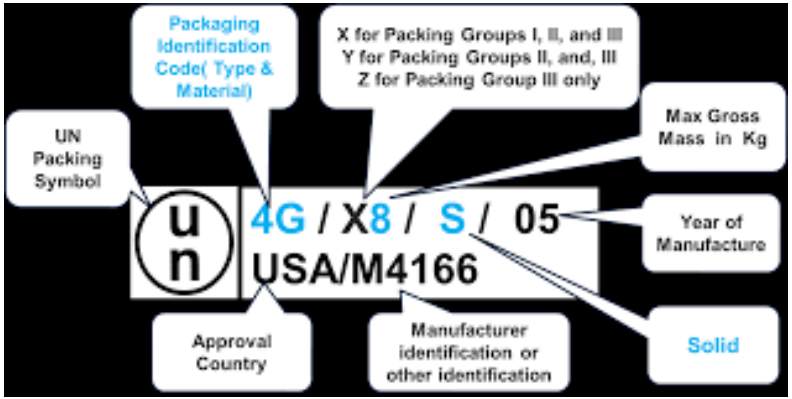
C = Fair - Moderate Effect, not recommended

D = Severe Effect, not recommended for ANY use

UN Markings

Markings for LIQUIDS:





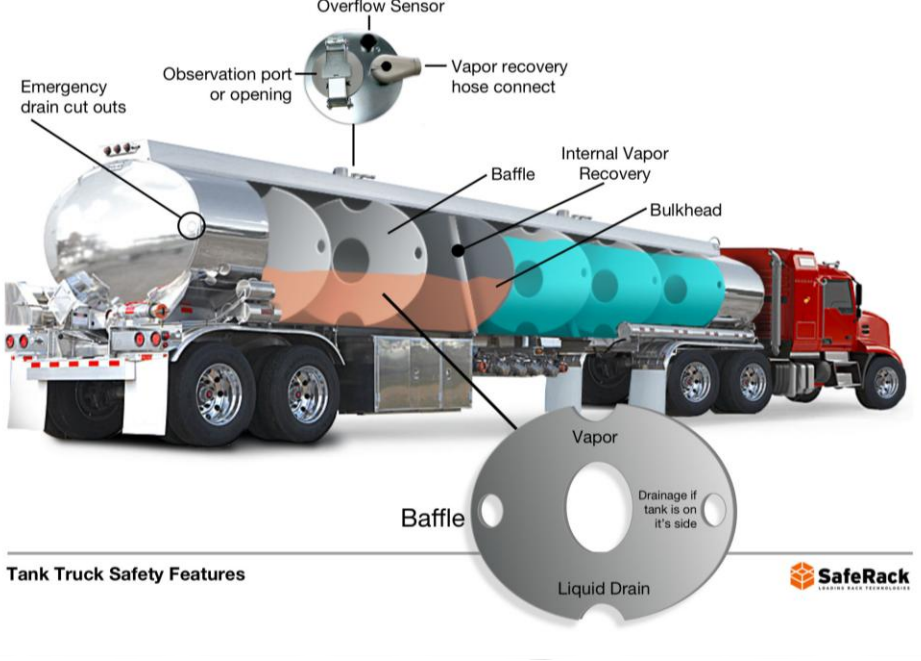
Construction – Pressure Vessels

Low Pressure Chemical Tank – MC-307

Container Shapes

Overturn Protection

Round or Horseshoe Shaped Cross Section



Construction – Low Pressure

Fixed Facility Storage

Other Sh!#


GOLD
MERCURY


LAB ALLEY
POWERING SCIENCE
QUADRUPLE
DISTILLED
MERCURY
99.9995%PURE


Ferric Sulfate
Magnesium Sulfate
Baker's Analyzed
Chemical Reagents
Ammonium Bicarbonate
Sodium Formate
POTASSIUM BICARBONATE
SODIUM TARTRATE
Ferric Ammonium Sulfate
Magnesium Acetate
FISHER SCIENTIFIC CO.
EIMER AND AMEND

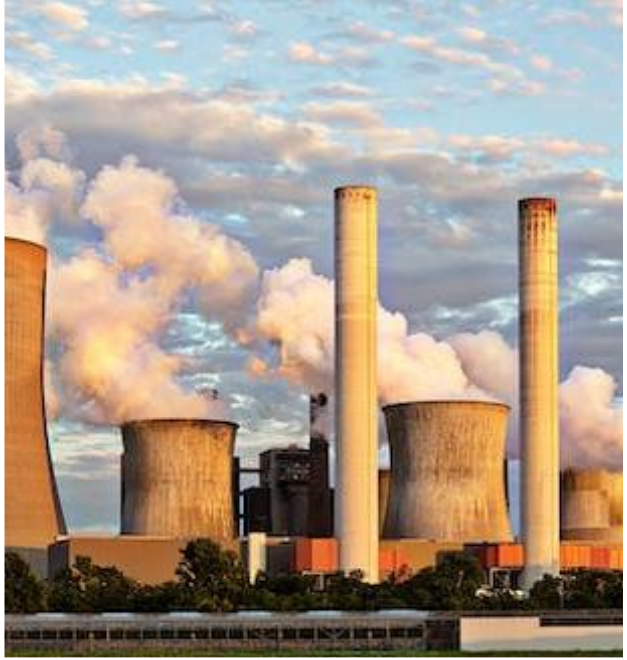
What is the Primary Hazard?

One More


VENTING IS NORMAL
CT-X18
CENTRAL
CRYOGENICS
1977
NITROGEN
REFRIGERATED LIQUID


How about this one?

What’s The Hazard?



Occupancy/Location


SHINSEGAE FOODS


COUNTRY BOYS
SHOP
GARDE


N
W
E
S


N
W
E
S


N
W
E
S

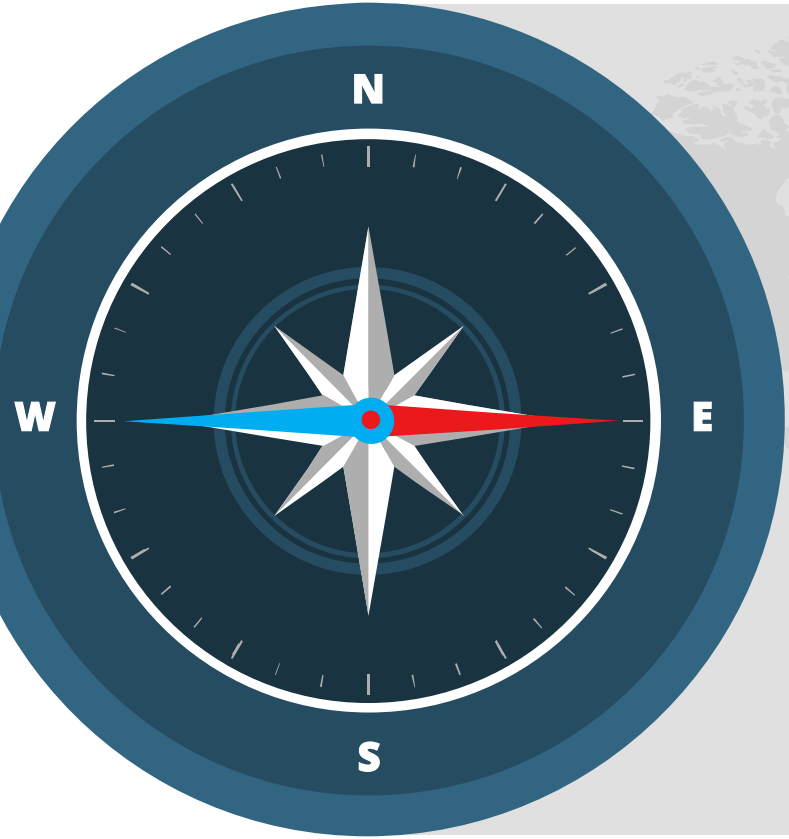

PRODUCT IDENTIFIER
(CAS #67-63-0)
ISOPROPYL ALCOHOL
REFERENCE
PT375111
WARNING !
PRECAUTION:
HEALTH 2
FLAMMABILITY 3
REACTIVITY 0
PERSONAL PROTECTION J
3
REFER TO SAFETY DATA SHEET
PERSONAL PROTECTIVE EQUIPMENT
SHIPPING DESCRIPTION
ISOPROPYL ALCOHOL
UN 1092
FIRST AID:


2
3
1
W


OIL-BASED PAINT
HEALTH * 4
FLAMMABILITY 2
PHYSICAL HAZARD 0
PERSONAL PROTECTION H

Markings

Containers



704 Diamond

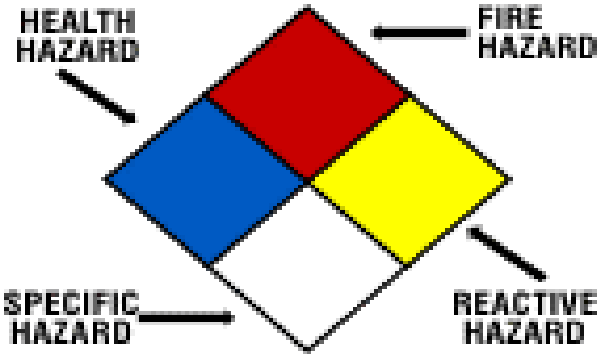
HMIS

GHS HAZCOM

UN Markings

Pop Quiz

NFPA DIAMOND



COLOR BAR

- FIRE HAZARD
- HEALTH HAZARD
- REACTIVE HAZARD
- SPECIFIC HAZARD

HEALTH HAZARD

4-Deadly
3-Extremely Hazardous
2-Hazardous
1-Slightly Hazardous
0-Normal Material

FIRE HAZARD

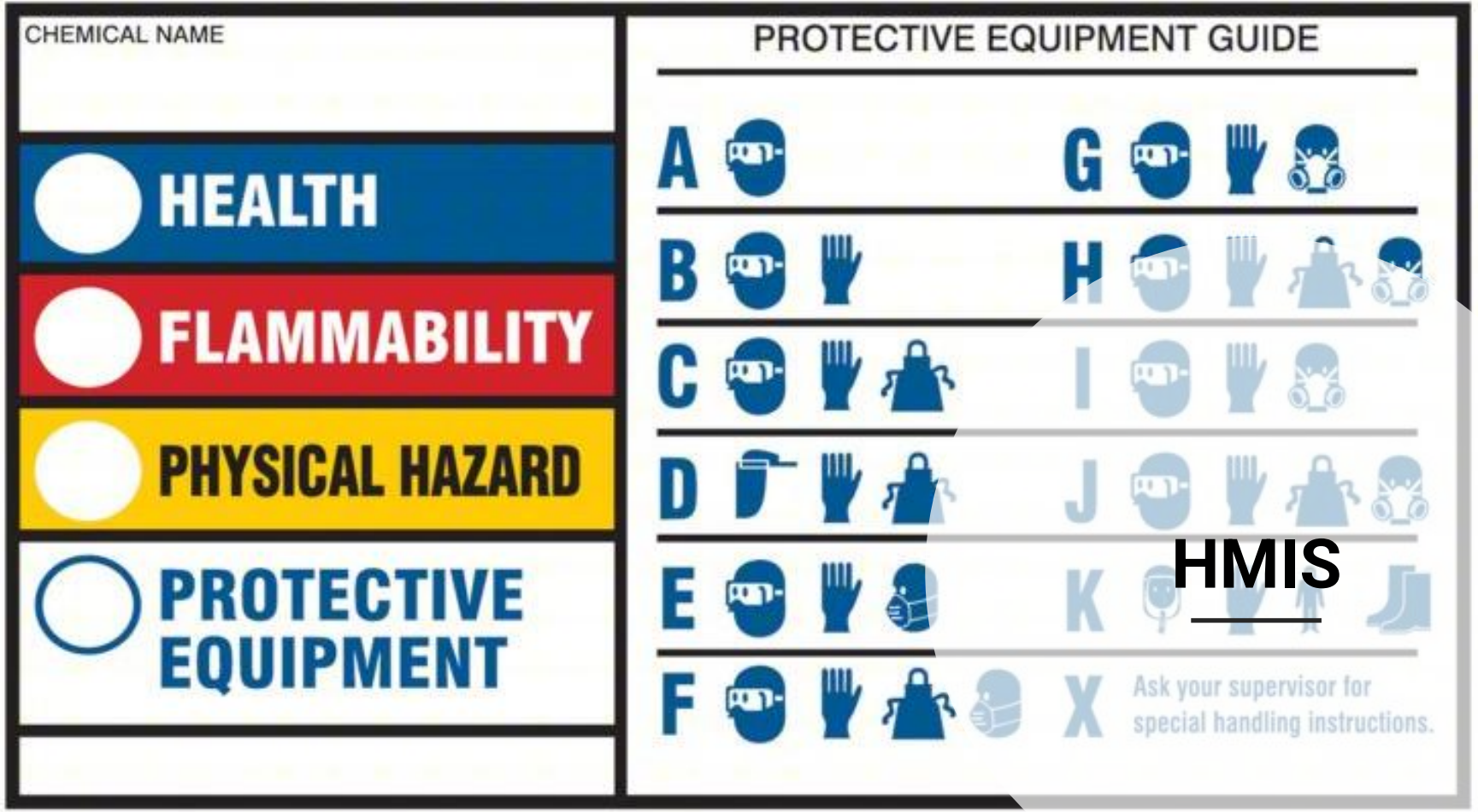
Flash Point
4 - Below 73 F
3 - Below 100 F
2 - Below 200 F
1 - Above 200 F
Will Not Burn

REACTIVE HAZARD

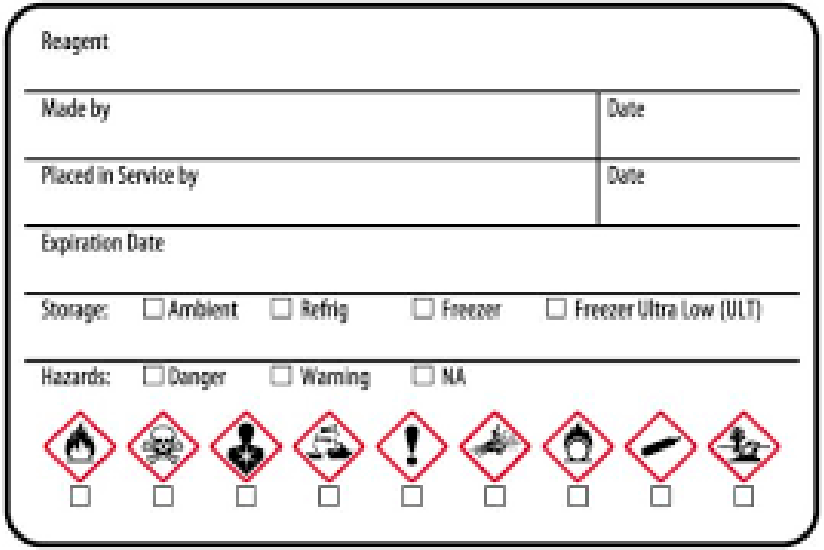
4-May Detonate
3-May Detonate With Heat Or Shock
2-Violent Chemical Heat Or Shock
1-Not Stable If Heated
0-Stable

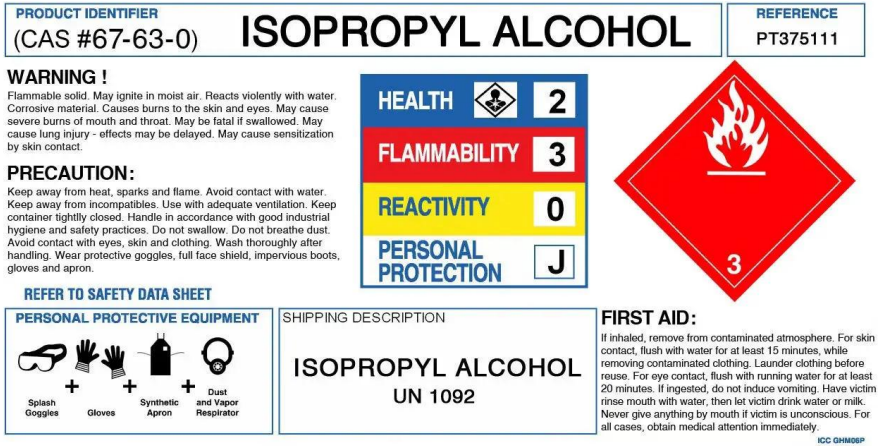
SPECIFIC HAZARD

Oxidizer	OXY
Acid	ACID
Alkali	ALK
Corrosive	COR
Use No Water	W
Radiation Hazard	☢


CHEMICAL NAME
HEALTH
FLAMMABILITY
PHYSICAL HAZARD
PROTECTIVE EQUIPMENT
PROTECTIVE EQUIPMENT GUIDE
A
B
C
D
E
F
G
H
I
J
K
X
Ask your supervisor for special handling instructions.
HMIS

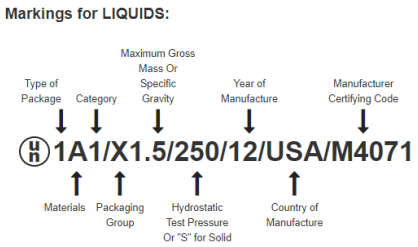
GHS HAZCOM

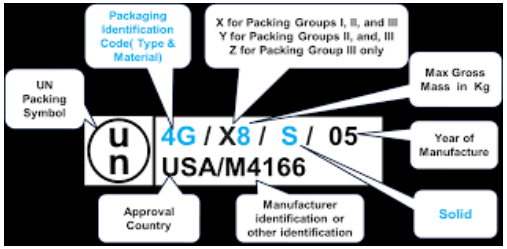

Reagent
Made by
Date
Placed in Service by
Date
Expiration Date
Storage:
Ambient
Refrig
Freezer
Freezer Ultra Low (ULT)
Hazards:
Danger
Warning
N.A

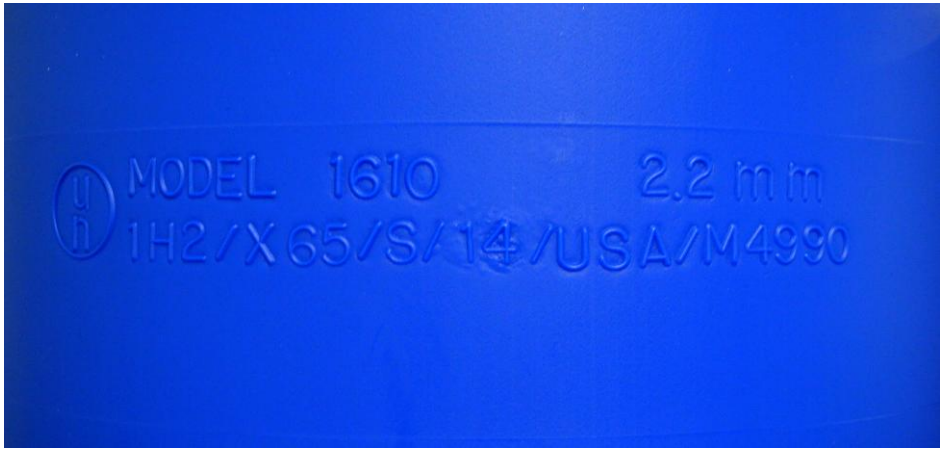

PRODUCT IDENTIFIER
(CAS #67-63-0)
ISOPROPYL ALCOHOL
REFERENCE
PT375111
WARNING !
Flammable solid. May ignite in moist air. Reacts violently with water. Corrosive material. Causes burns to the skin and eyes. May cause severe burns of mouth and throat. May be fatal if swallowed. May cause lung injury - effects may be delayed. May cause sensitization by skin contact.
PRECAUTION:
Keep away from heat, sparks and flame. Avoid contact with water. Keep away from incompatibles. Use with adequate ventilation. Keep container tightly closed. Handle in accordance with good industrial hygiene and safety practices. Do not swallow. Do not breathe dust. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Wear protective goggles, full face shield, impervious boots, gloves and apron.
HEALTH 2
FLAMMABILITY 3
REACTIVITY 0
PERSONAL PROTECTION J
3
REFER TO SAFETY DATA SHEET
PERSONAL PROTECTIVE EQUIPMENT
Splash Goggles
Gloves
Synthetic Apron
Dust and Vapor Respirator
SHIPPING DESCRIPTION
ISOPROPYL ALCOHOL
UN 1092
FIRST AID:
If inhaled, remove from contaminated atmosphere. For skin contact, flush with water for at least 15 minutes, while removing contaminated clothing. Launder clothing before reuse. For eye contact, flush with running water for at least 20 minutes. If ingested, do not induce vomiting. Have victim rinse mouth with water, then let victim drink water or milk. Never give anything by mouth if victim is unconscious. For all cases, obtain medical attention immediately.
ICC GHM08P

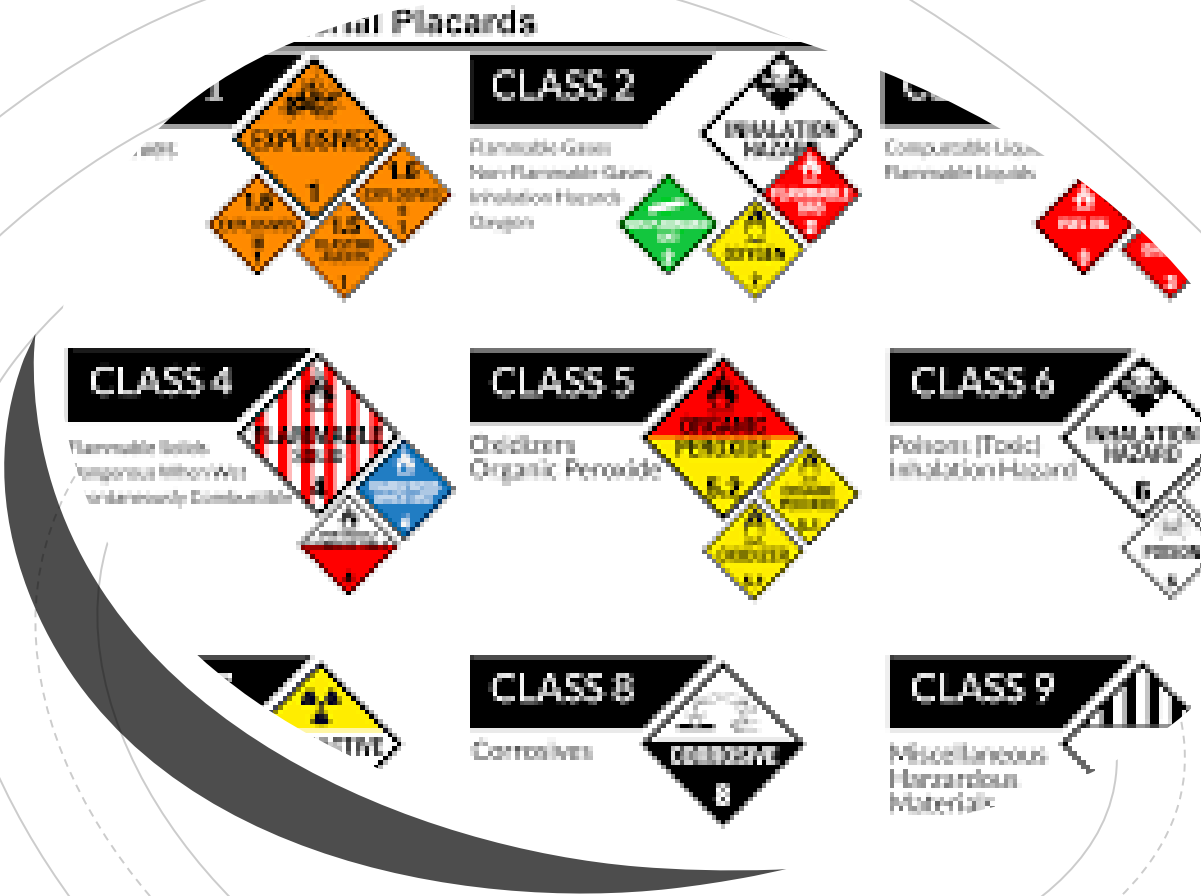
UN Markings


bitly


Markings for LIQUIDS:
Type of Package
Category
Maximum Gross Mass Or Specific Gravity
Year of Manufacture
Manufacturer Certifying Code
1A1/X1.5/250/12/USA/M4071
Materials
Packaging Group
Hydrostatic Test Pressure Or "S" for Solid
Country of Manufacture

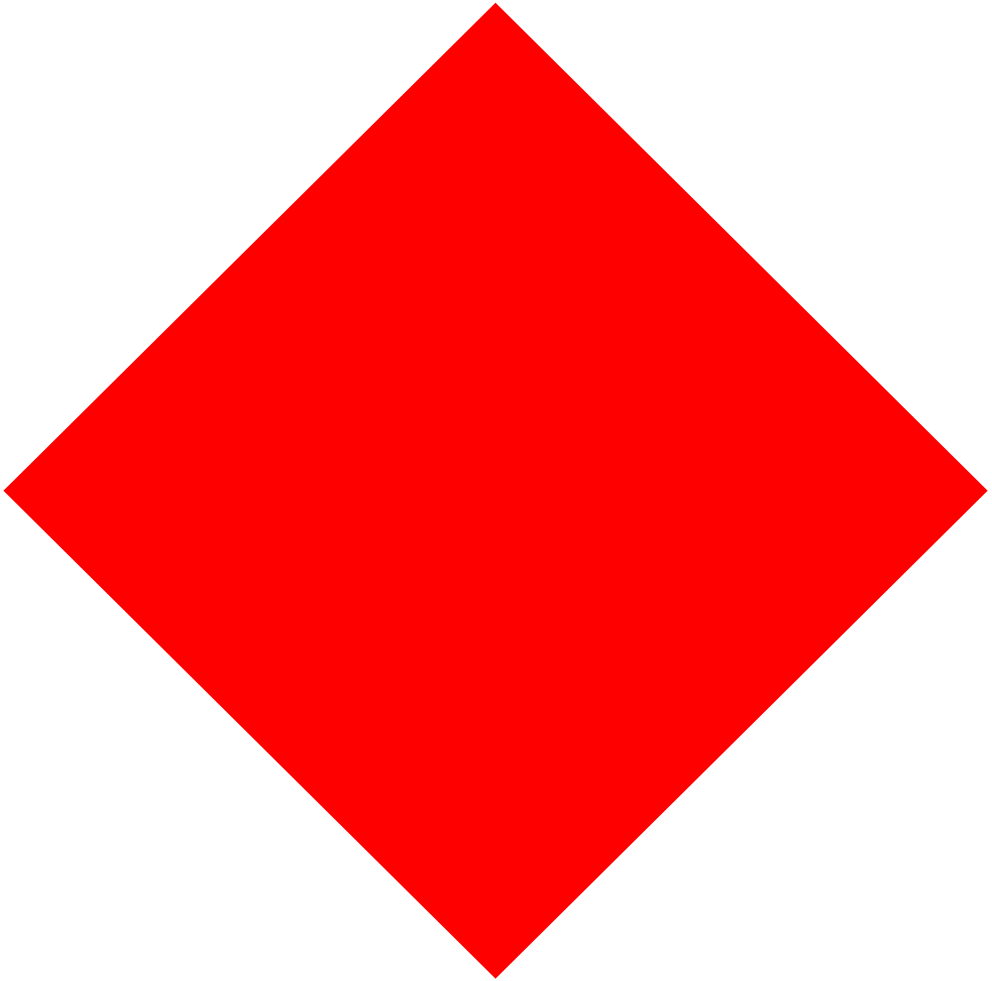

Packaging Identification Code(Type & Material)
X for Packing Groups I, II, and III
Y for Packing Groups II, and, III
Z for Packing Group III only
UN Packing Symbol
Max Gross Mass in Kg
4G / X8 / S / 05
USA/M4166
Year of Manufacture
Approval Country
Manufacturer identification or other identification
Solid


MODEL 1610
2.2 mm
1H2/X65/S/14/USA/M4990


Placards
CLASS 2
EXPLOSIVES
INHALATION HAZARD
CLASS 4
CLASS 5
ORGANIC PEROXIDE
CLASS 6
INHALATION HAZARD
CLASS 8
CORROSIVE
CLASS 9
Miscellaneous Hazardous Materials

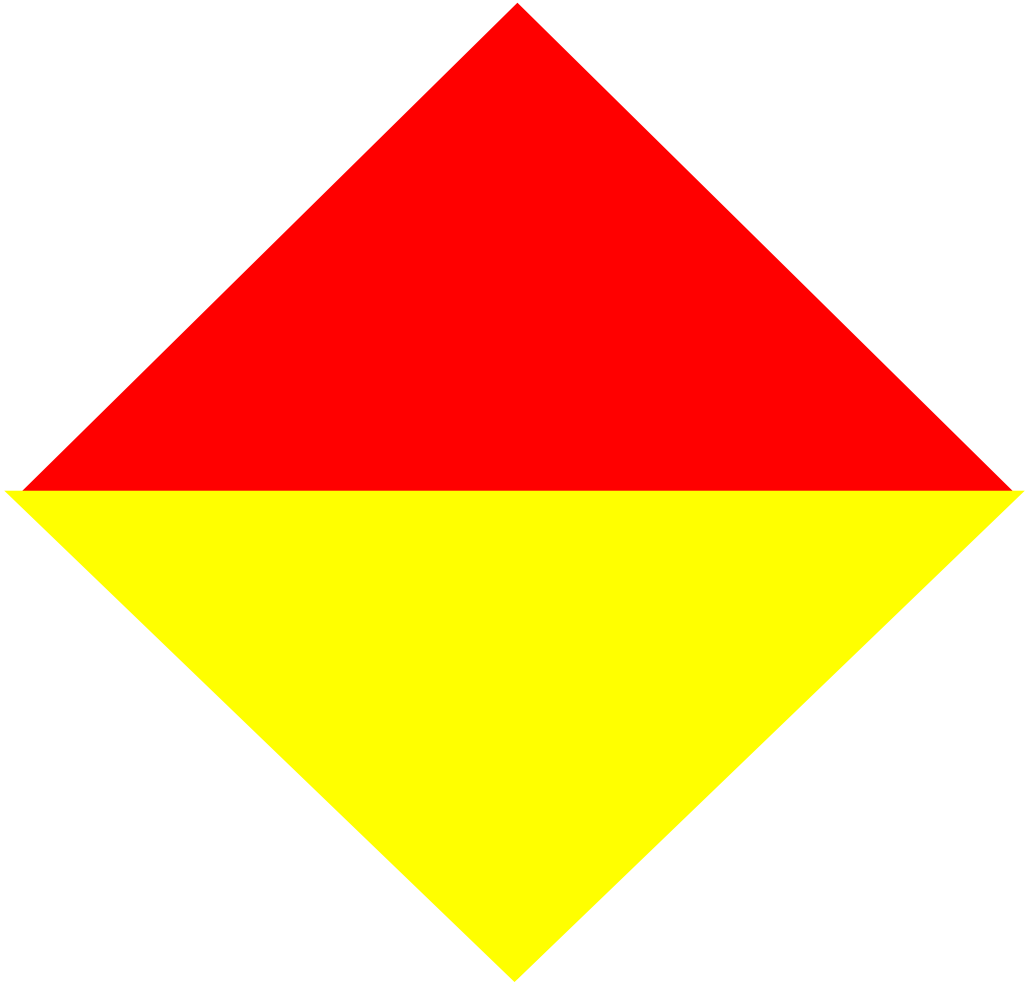
Placards

Primary Hazard

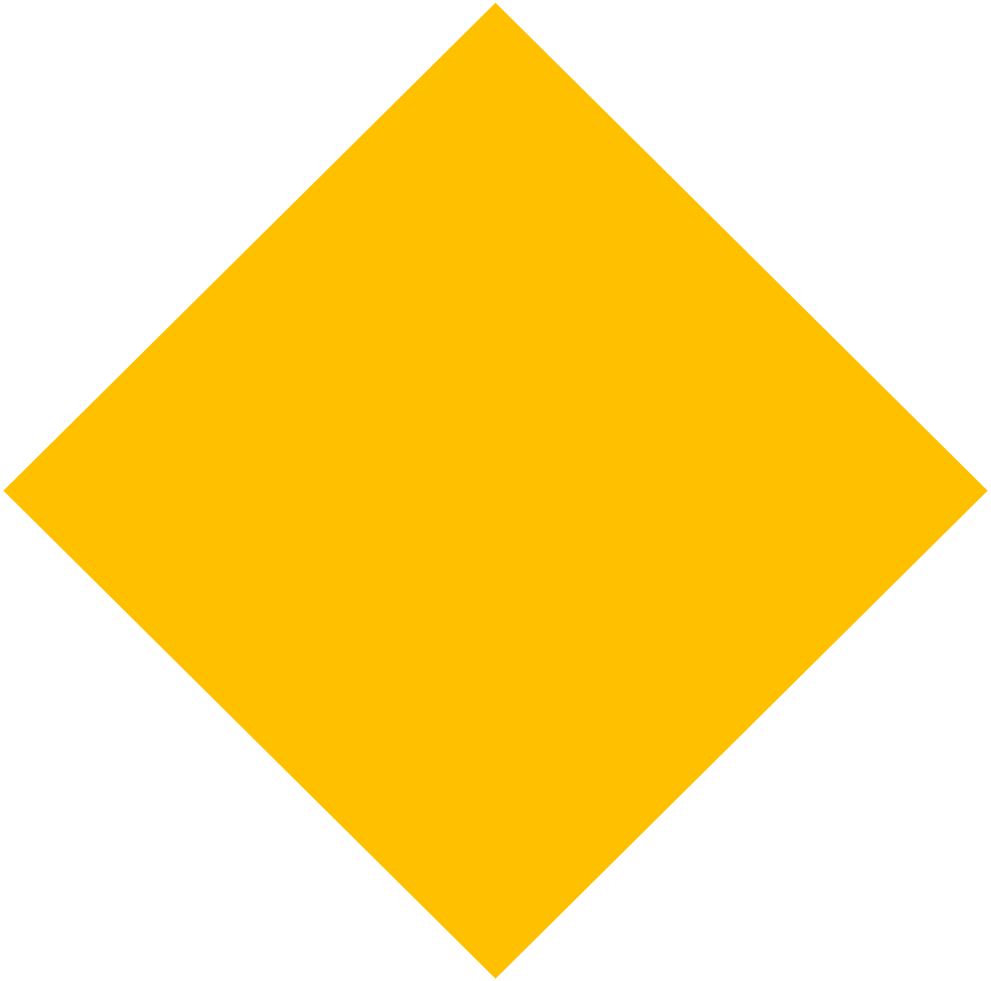


Primary Hazard

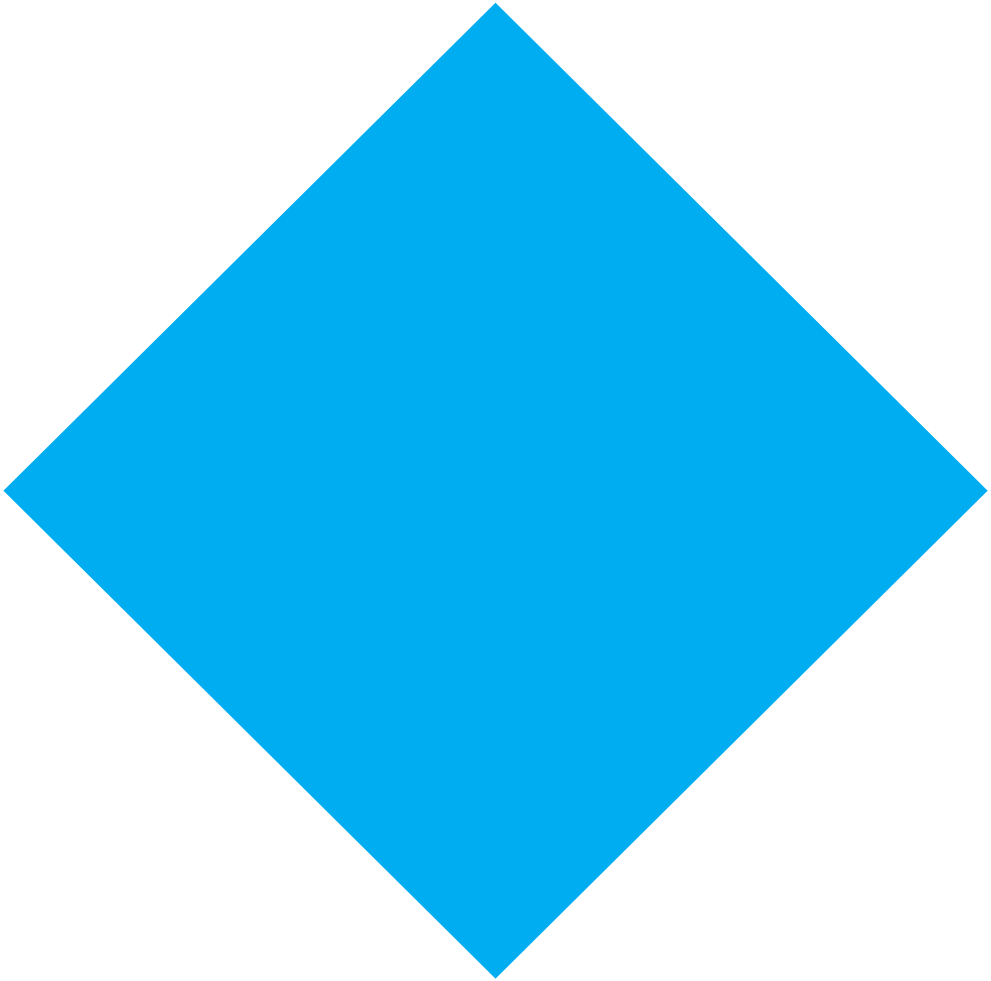
Primary Hazard



Primary Hazard



Primary Hazard

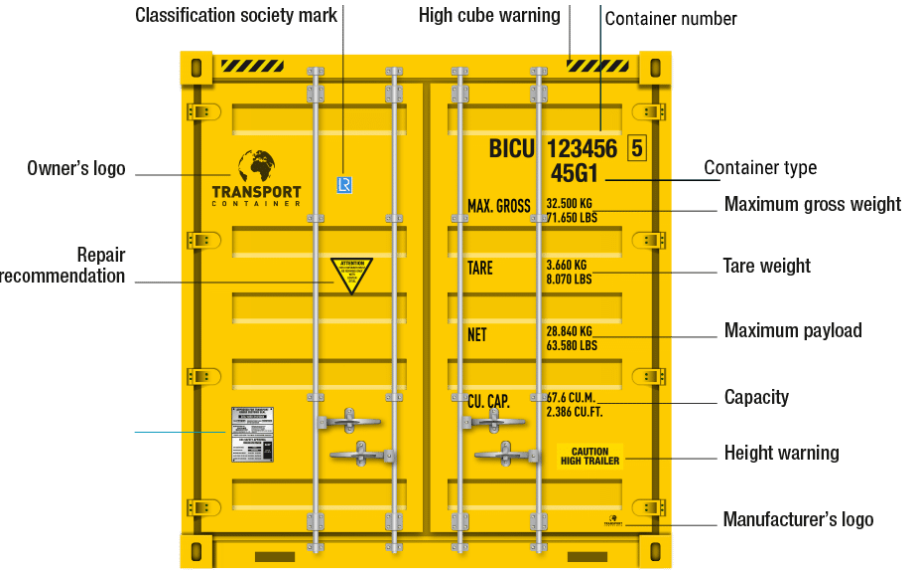



1
EXPLOSIVE 1.1 1
EXPLOSIVE 1.2 1
EXPLOSIVE 1.3 1
1.4 EXPLOSIVE 1
1.5 BLASTING AGENT 1
1.6 EXPLOSIVE 1
FLAMMABLE GAS 2
NON-FLAMMABLE GAS 2
INHALATION HAZARD 2
FLAMMABLE LIQUID 3
DANGEROUS 4
FLAMMABLE SOLID 4
COMBUSTIBLE 4
OXIDIZER 5.1
ORGANIC PEROXIDE 5.2
INFECTIOUS SUBSTANCE 6
INHALATION HAZARD 6
POISON 6
FISSILE 7
RADIOACTIVE I 7
RADIOACTIVE II
RADIOACTIVE III
CORROSIVE
9
CARGO AIRCRAFT ONLY
EMPTY

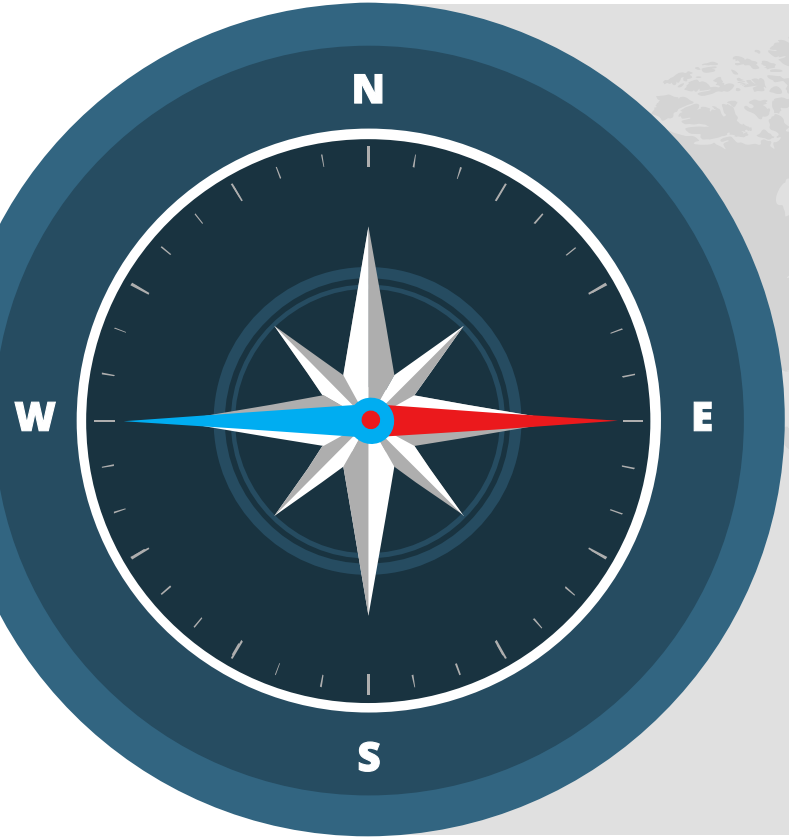
Anatomy of a Placard

Does this worry anyone?

Container Markings



When Are Placards Required?



- General – 1001lb of any single category
- Table 1 Categories – Any amount
- Bulk Packaging
- Mixed Loads

Table 1

Placard Table 1 – Any Amount

Category of Material (hazard class or division number and additional description, as appropriate)	Placard Name	Placard Design Section Reference (§)
1.1	EXPLOSIVES 1.1	172.522
1.2	EXPLOSIVES 1.2	172.522
1.3	EXPLOSIVES 1.3	172.522
2.3	POISON GAS	172.540
4.3	DANGEROUS WHEN WET	172.548
5.2 (Organic peroxide, Type B, liquid or solid, temperature controlled)	ORGANIC PEROXIDE	172.522
6.1 (Material poisonous by inhalation – see 49 CFR 171.8 of this subchapter)	POISON INHALATION HAZARD	172.555
7 (Radioactive Yellow III label only)	RADIOACTIVE*	172.556

*RADIOACTIVE placard also required for exclusive use shipments of low-specific activity material and surface contaminated objects transported in accordance with §173.427(a) of this subchapter.

When will you see this?

Which concerns you more?

Well…..


HAZARDOUS WASTE
KEEP CONTAINER CLOSED AT ALL TIMES
DO NOT FILL WITHIN 2" OF CONTAINER TOP
FOR EMERGENCIES OR WASTE PICK UP

What’s the priority?

Well.....

Appearance


...colored smoke
is worse

Bad Day

Destressed Vegetation

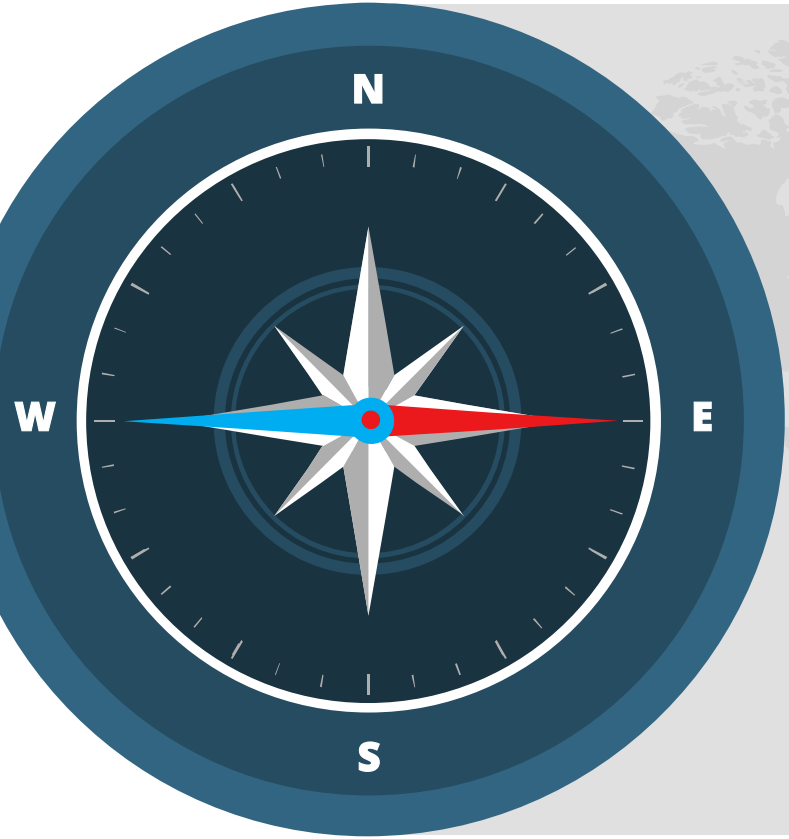
Dead Things

BLEVE

Reactions

Shipping Papers/SDS

Shipping Documents – Another Pop Quiz



- Dangerous Good Declaration (DGD)
- Dangerous Cargo Manifest
- Consist
- Bill of Lading (BOL)

Where do you find these?

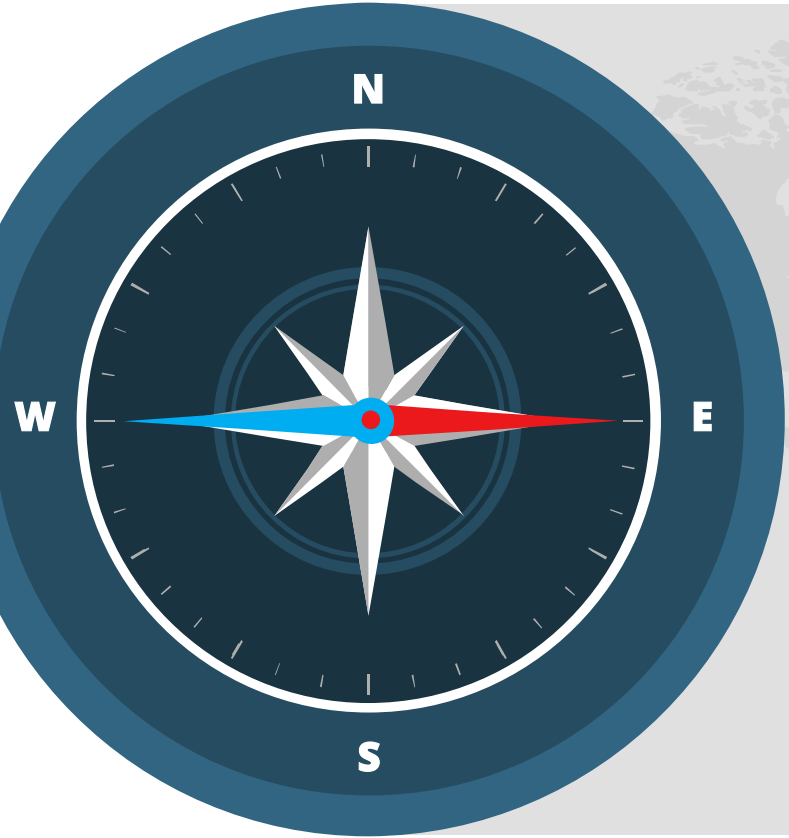
Senses

We Know the Rules

When did you last calibrate your left nostril?

No Brainer

Colorimetrics



Summary

Container (Shape, Material, Construction)

Occupancy/Location (What Activity Occurs at the Location)

Markings (704 Diamond, Labels, UN Markings)

Placards (DOT/UN)

Appearance (Color, Behavior)

SDS/Shipping Papers

Senses

Missing Letter A (A Compass) A = Assume Hazardous Until you PROVE Otherwise

Generally, the further NORTH on the compass, the less risk associated with the assessment step

Assess the Scene

Assess the Scene

What About This?

One More

One more…really this time

Questions?

More Information?

Monique@nwffenviro.com

907-654-5580

V-Card