

**Kelly Gene Cook, Sr**  
**Civil and Environmental Engineering**  
**ENVIRONMENTAL AND INSTRUMENTATION LABORATORY**

## **CHEMICAL CLASSIFICATION**

**NFPA Hazard Codes.** The National Fire Protection Association developed a standard label to display chemical hazard ratings.



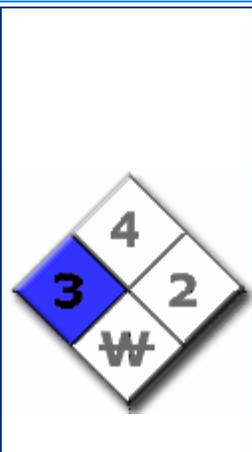
The NFPA label is required by many institutions, industries, and municipalities. The left diamond is printed in blue and indicates toxicity (health hazard), the top diamond is printed in red and indicates flammability, and the right diamond is printed in yellow and indicates reactivity. The bottom diamond is printed in white and is reserved for special warnings such as radioactivity or reactivity with water.

**Storage Code.** Some manufacturers provide color-coded labels to categorize chemicals for storage purposes. Chemicals with a common storage color may be stored together, except when indicated otherwise. Chemicals with different storage color labels should be stored in different areas. The following is a commonly accepted code.

Symbol	Storage Code	Description
<b>R</b>	Red	<b>Flammable.</b> Store in area segregate for flammable reagents.
<b>Y</b>	Yellow	<b>Reactive and Oxidizing.</b> May react violently with air, water, or other substances. Store away from flammable and combustible materials.
<b>B</b>	Blue	<b>Health Hazard.</b> Toxic if inhaled, ingested, or absorbed through the skin. They should be stored in a secure area.
<b>W</b>	White	<b>Corrosive.</b> May harm skin, eyes, mucous membranes. They should be stored away from red, yellow, and blue-coded reagents.
<b>G</b>	Gray	<b>Moderate or Minimal Hazard.</b> Present no more than moderate hazard in any of categories above. For general chemical storage.
 <b>STOP</b>	Exception	Reagent incompatible with other reagents of the same color bar. Store separately.

**NFPA Hazard Code Ratings.** Potential hazard are rated numerically, as per degree of danger, inside the universal NFPA symbol. Each section may be color coded to indicate specific hazards:

#### Blue: Health

	<b>0</b>	Material which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.
	<b>1</b>	Material which on exposure would cause irritation but only minor residual injury even if no treatment is given.
	<b>2</b>	Material that on intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.
	<b>3</b>	Material that on short exposure could cause serious temporary or residual injury.

<b>4</b>	Material that on very short exposure could cause death or major residual injury.
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**Red: Flammability**

	<b>0</b>	Material will not burn.
	<b>1</b>	Material must be pre-heated before ignition can occur. Flash Point At or Above 200°F (93.4°C)
	<b>2</b>	Material must be moderately heated or exposed to relatively high ambient temperature before ignition can occur. Flash Point At or Above 100°F (37.8°C) - Below 200°F (93.4°C)
	<b>3</b>	Liquids and solids that can be ignited under almost all ambient temperature conditions. Flash Point At or Above 73°F (22.8°C) - Below 100°F (37.8°C) Boiling Point At or Above 100°F (37.8°C)
	<b>4</b>	Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or that are readily dispersed in air and that will burn readily. Flash Point Below 73°F (22.8°C) Boiling Point Below 100°F (37.8°C)

**Yellow: Reactivity**

	<b>0</b>	Material that in itself is normally stable, even under fire exposure conditions, and is not reactive with water.
	<b>1</b>	Material that in itself is normally stable, but which can become unstable at elevated temperatures and pressures.
	<b>2</b>	Material that readily undergoes violent chemical change at elevated temperatures and pressures or which reacts violently with water or which may form explosive mixtures with water.
	<b>3</b>	Material that in itself is capable of detonation or explosive decomposition or reaction but requires a strong initiating source or which must be heated under confinement before initiation or which reacts explosively with water.

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Material that in itself is readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.

### White: Special warnings

White, field of the hazard signal can have variable content, depending on who prepared the signal. The 1990 edition of the National Fire Codes (section 704, chapter 5) specifies only "**TWO**" NFPA 704 approved symbols. Additional symbols are commonly included. The field may also be left blank if no special hazards are present.

	<b>OX</b>	Material possesses oxidizing properties. A chemical which can greatly increase the rate of combustion/fire.
	<b>W</b>	Unusual reactivity with water. This indicates a potential hazard using water to fight a fire involving this material.(i.e. don't put water on it)

Symbols, abbreviations, and words that some organizations use in the white Special Hazards section are shown below. These uses are not compliant with NFPA 704, but some times they are present on an MSDS or container label:

	<b>ACID</b>	This indicates that the material is an acid, a corrosive material that has a pH lower than 7.0
	<b>ALK</b>	This denotes an alkaline material, also called a base. These caustic materials have a pH greater than 7.0
	<b>COR</b>	This denotes a material that is corrosive (it could be either an acid or a base).
		The international symbol for radioactivity is used to denote radioactive hazards; radioactive materials are extremely hazardous when inhaled.
		This is another symbol used for corrosive.
		The skull and crossbones are used to denote a poison or highly toxic material.

		Indicates an explosive material. This symbol is somewhat redundant because explosives are easily recognized by their Instability Rating.
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