



CITY OF  
SANTA ROSA

**Fire Department**

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**FIRE DEPARTMENT  
INFORMATION BULLETIN**

**SUBJECT: NFPA - HAZARD WARNING MARKING REGULATIONS**

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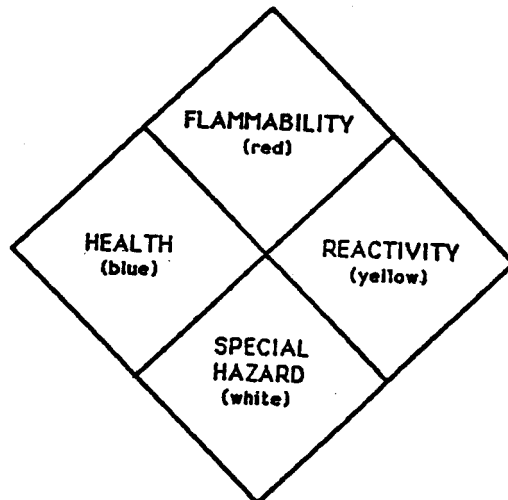
1994 Uniform Fire Code (UFC), Article 80

National Fire Protection Association (NFPA) 704

National Fire Protection Association (NFPA) 49

Santa Rosa City Code (SRCC), Chapters 18-16 & 18-44

**NOTE:** Due to the large amounts of hazardous materials that are being stored and used within the City of Santa Rosa, an immediate warning system to identify their presence is needed for emergency response personnel. The diamond-shaped placard gives at a glance a general idea of the inherent hazards and the order of severity of these hazards under emergency conditions such as spills, leaks and fires. The diagram identifies the "Health", "Flammability", and "Reactivity" hazards of materials and indicates the order of severity of each hazard by the use of numerical grading, from four (4), indicating severe hazard or extreme danger, to zero, indicating no required warning. The bottom quadrant is used to identify special hazards important to emergency response personnel.



**INFORMATION BULLETIN**  
**NFPA - HAZARD WARNING MARKING REGULATIONS**

**NUMBER SELECTION FOR EACH HAZARD CATEGORY**

The placard warning system numbers for each hazard category are defined in NFPA-704. A sampling of placards for some commonly encountered chemicals is attached and are also referenced in NFPA-49 "Hazardous Chemicals Data". They may also be found on the Material Safety Data Sheets (MSDS) for many products. The numbers are generally determined according to the following criteria:

**HEALTH**

- 4 Materials that, on very short exposure, could cause death or major residual injury including those materials which have an inhalation LC50 of 1000 parts per million (ppm) or less, an oral LD50 of 5 mg/Kg or less, or a dermal LD50 of 40 mg/Kg or less.
- 3 Materials that, on short exposure, could cause serious temporary or residual injury, including those materials which have an inhalation LC50 of 3000 parts per million (ppm) or less, an oral LD50 of 50 mg/Kg or less, or a dermal LD50 of 200 mg/Kg or less.
- 2 Materials that, on short exposure, could cause temporary incapacitation or possible residual injury, including those materials which have an inhalation LC50 of 5000 parts per million (ppm) or less, an oral LD50 of 500 mg/Kg or less, or a dermal LD50 of 1000 mg/Kg or less.
- 1 Materials that, on short exposure, could cause serious irritation, but only minor residual injury, including those materials which have an inhalation LC50 of 10000 parts per million (ppm) or less, an oral LD50 of 2000 mg/Kg or less, or a dermal LD50 of 2000 mg/Kg or less.
- 0 Materials that, on short exposure under fire conditions, would offer no hazards beyond that of ordinary combustibles.

**FLAMMABILITY**

- 4 All flammable gases and Class I-A flammable liquids, i.e. liquids with a flash point below 73°F and a boiling point below 100°F.
- 3 Class I-B and C flammable liquids, i.e. liquids with flash point below 100°F, but a boiling point above 100°F. Materials that burn with extreme rapidity are also included, e.g. nitrocellulose or organic peroxides.
- 2 Class II and III-A flammable/combustible liquids, i.e. flash point greater than 100°F, but not exceeding 200°F. Highly combustible solids are also

**INFORMATION BULLETIN  
NFPA - HAZARD WARNING MARKING REGULATIONS**

included.

**FLAMMABILITY** (Continued)

- 1 Class III-B combustible liquids, i.e. flash point greater than 200°F, and most ordinary combustible materials.
- 0 Materials that will not burn.

**REACTIVITY**

- 4 Materials readily capable of detonation or explosive reaction at normal temperatures and pressures. Includes materials that are very sensitive to heat, shock or light. Examples would include: Explosives A & B and Organic Peroxides.
- 3 Materials which when heated and under confinement are capable of detonation and which may react violently with water. A -W- should appear as a special hazard if an explosive reaction with water can be expected. Examples would include: Blasting Agents, Fireworks, and Ammonium Nitrate Fertilizer.
- 2 Materials which will undergo a violent chemical change at elevated temperatures and pressures but do not detonate. A -W- should appear as a special hazard if contact with water may cause a violent reaction or may cause potentially explosive mixtures to be formed. Examples would include: Combustible Metals and Water Reactive Corrosive Materials.
- 1 Materials which are normally stable, but may become unstable in combination with other materials or at elevated temperatures and pressures. A -W- should appear as a special hazard if a vigorous but not violent reaction with water may take place. Examples would include: most common Corrosive and Oxidizing Materials.

**SPECIAL HAZARDS**

Special hazard symbols such as -W- (water reactive), OXY (oxidizing material), CRY\* (cryogenic material), COR\* (corrosive material), or the biohazard\* or radiation\* warning symbols will be added to the white bottom section of the placard when available information indicates that one of these special hazards exists. When multiple special hazards exist, white panels will be added below the placard to list the additional special hazards that apply.

\* *Indicates that these are Santa Rosa Fire Department practices that have modified or are in addition to NFPA 704 recommendations.*

**INFORMATION BULLETIN  
NFPA - HAZARD WARNING MARKING REGULATIONS**

**REQUIREMENTS FOR PLACARDS AND THEIR PLACEMENT**

**PLACARD SIZE REQUIREMENTS**

The required measurements for facility placards are a minimum of fifteen inches by fifteen inches (15"x15") with each category diamond seven and a half inches by seven and a half inches (7 1/2"x7 1/2"). Each category diamond on the placard must have the proper background color. The numbers are to be five inches (5") in height with a three-quarter inch (3/4") stroke and the number is to be centered within its five hundred sixty two and one-half square inch (562.5 sq.in.) diamond. The numbers may be either white or black providing sufficient contrast is made against the background color in each category.

Placards for building or area subdivisions must be no smaller than eight inches by eight inches (8"x8") with the same category diamond color requirements. Numbers should be contrasting white or black and be of an appropriate size to be easily read within each category diamond.

**FACILITY PLACARDS**

Facility and building placards identify the highest hazard rating in each category based on the combined materials in a category rating exceeding threshold quantities. Placards shall be affixed to buildings or areas within the facility on each side where entry can be made at an appropriate height to be easily seen upon approaching. A placard must be placed at the property line on a facility gate or post if a placarded building or area within a facility cannot be easily seen when approaching the property. Placards will be required when the following amounts of materials are stored or used at a facility.

**SUBDIVISION PLACARDS**

Subdivisions (rooms or compartments) of buildings or areas within a facility will be placarded to indicate the greatest possible hazards within those subdivisions. Placards that are placed to identify hazards in building or area subdivisions due to storage or process shall be affixed next to access points into the subdivisions. These placards must be visible when doors into subdivisions are open or closed. Placards will be required when the following amounts of materials are stores or used in a subdivision.

**QUANTITY DETERMINATION**

The following table is intended to provide guidance in determining the quantities of each classification which warrant placarding.

**INFORMATION BULLETIN  
NFPA - HAZARD WARNING MARKING REGULATIONS**

<b>Hazard Category</b>	<b>Rating Number</b>	<b>Amount requiring outside placarding on a building or area within a facility</b>
<b>HEALTH</b>	4	Any amount
	3	Any amount
	2	More than 100 lbs. or 10 gals. or 50 cu.ft. (aggregate totals of weight or volume)
	1	More than 500 lbs. or 55 gals. or 200 cu.ft. (aggregate totals of weight or volume)
<b>FLAMMABILITY</b>	4	More than 1 lb. or 1 gal. or 50 cu.ft. (aggregate totals of weight or volume)
	3	More than 100 lbs. or 10 gals. or 50 cu.ft. (aggregate totals of weight or volume)
	2	More than 500 lbs. or 55 gals. or 1000 cu.ft. (aggregate totals of weight or volume)
	1	More than 1000 lbs. or 110 gals. or 2000 cu.ft. (aggregate totals of weight or volume)
<b>REACTIVITY</b>	4	More than 10 lbs. or 5 gals. or 10 cu.ft. (aggregate totals of weight or volume)
	3	More than 10 lbs. or 5 gals. or 50 cu.ft. (aggregate totals of weight or volume)
	2	More than 100 lbs. or 55 gals. or 200 cu.ft. (aggregate totals of weight or volume)
	1	More than 100 lbs. or 55 gals. or 1000 cu.ft. (aggregate totals of weight or volume)

**NOTE: PLACARDS WILL NOT BE REQUIRED FOR UNDERGROUND STORAGE OF MOTOR FUELS**

**INFORMATION BULLETIN**  
**NFPA - HAZARD WARNING MARKING REGULATIONS**  
**COMMONLY ENCOUNTERED HAZARDOUS MATERIALS**  
**IN SANTA ROSA BUSINESSES**

<b>CHEMICAL</b>	<b>HEALTH</b>	<b>FIRE</b>	<b>REACTIVITY</b>
Acetylene (Dissolved in Acetone)	1	4	3
Acetic acid	2	2	1
Acetone	2	3	0
Ammonia	3	1	0
Ammonium hydroxide	3	0	0
Ammonium nitrate	1	0	3
Arsine	4	4	1
Acetonitrile	2	3	0
Argon (gas)	0	0	0
Argon (cryogenic)	3	0	0
Butane	1	4	0
Butyl alcohol	2	3	0
Calcium hypochloride	1	0	3
Carbon disulfide	2	4	0
Carbon monoxide	3	4	0
Carbon tetrachloride	3	0	0
Chlorine (gas)	3	0	1
Chloroacetic acid	3	1	0
Chloroform	2	0	0
Chromic acid	3	0	1
Chloropicrin	4	0	3
Diborane	3	4	3
Dichlorosilane	3	4	2
Diesel fuel	0	2	0
Diethylether	2	4	1
Ethylene oxide	2	4	3
Ethanol (grain alcohol)	1	3	0
Ethylene glycol	1	1	0
Gasoline	2	3	0
Hydrazine	3	3	2
Hydrochloric acid	3	0	0
Hydrofluoric acid	4	0	0
Hydrogen cyanide	4	4	2
Hydrogen peroxide (35-52%)	2	0	1
Hydrogen	0	4	0
Isopropyl alcohol	2	3	0
Methane	1	4	0
Methylethyl ketone	2	3	0

**INFORMATION BULLETIN**  
**NFPA - HAZARD WARNING MARKING REGULATIONS**  
**COMMONLY ENCOUNTERED HAZARDOUS MATERIALS**  
**IN SANTA ROSA BUSINESSES (Continued)**

<b>CHEMICAL</b>	<b>HEALTH</b>	<b>FIRE</b>	<b>REACTIVITY</b>
Methylene chloride	2	1	0
Nitric acid (70%)	3	0	2
Nitric acid (40%)	3	0	0
Nitrous oxide	1	0	1
Oxygen	0	0	1
Oxygen (cryogenic)	3	0	2
Ozone	3	0	2
Perchloroethylene	2	0	0
Phenol	4	2	0
Phosphine	3	4	1
Phosphoric Acid	2	0	0
Phosphorous oxychloride	3	0	2
Potassium cyanide	3	0	0
Potassium hydroxide	3	0	1
Propane	1	4	0
Silane	2	4	3
Sodium cyanide	3	0	0
Sodium hydroxide	3	0	1
Sodium hypochlorite	3	0	1
Stoddard solvent	2	2	0
Sulfuric acid (>93%)	3	0	2
Sulfuric acid (>80%)	3	0	1
Toluene	2	3	0
Trichloroethane	2	0	0
Trichloroethylene	3	0	0
Waste Oil	1	2	0
Xylene	2	3	0