



NEC Hazardous Location Definitions

Class I

Class I Division 1:

A Class I Division 1 location is a location

- 1) In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under normal operating conditions, or
- 2) In which ignitable concentrations of such flammable gases, flammable liquid-produced vapors, or combustible liquids above their flash points may exist frequently because of repair or maintenance operations or because of leakage, or
- 3) In which breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors and might also cause simultaneous failure of electrical equipment in such a way as to directly cause the electrical equipment to become a source of ignition.

Class I Division 2:

A Class I Division 2 location is a location

- 1) In which volatile flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems or in case of abnormal operation of equipment, or
- 2) In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are normally prevented by positive mechanical ventilation and which might become hazardous through failure or abnormal operation of the ventilating equipment, or
- 3) That is adjacent to a Class I Division 1 location, and to which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors above their flash points might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.

Class II

Class II Division 1:

A Class II Division 1 location is a location

- 1) In which combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures, or
- 2) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electrical equipment, through operation or protection devices, or from other causes, or
- 3) In which Group E combustible dusts may be present in quantities sufficient to be hazardous.

Class II Division 2:

A Class II Division 2 location is a location

- 1) In which combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures; or
- 2) Where combustible dust accumulations are present but are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus, but could as a result of infrequent malfunctioning of handling or processing equipment become suspended in the air; or

- 3) In which combustible dust accumulations on, in, or in the vicinity of the electrical equipment could be sufficient to interfere with the safe dissipation of heat from electrical equipment, or could be ignitable by abnormal operation or failure of electrical equipment.

Class III

Class III Division 1:

- 1) A Class III, Division 1 location is a location in which easily ignitable fibers/flyings are handled, manufactured, or used.

Class III Division 2:

- 2) A Class III, Division 2 location is a location in which easily ignitable fibers/flyings are stored or handled other than in the process of manufacture.

NOTE: Luminaires manufactured by Paramount Industries, Inc. for Class III locations carry a Class II, Division 2, Group G label issued by Underwriters Laboratories.

Group Classifications

For a complete list of materials in these group classifications, please see the following two pages.

(1) Group A (Class I) Acetylene

(2) Group B (Class I)

Flammable gas, flammable liquid-produced vapor, or combustible liquid-produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value less than or equal to 0.45 mm or a minimum igniting current ratio (MIC ratio) less than or equal to 0.40.

(Typical Class I group B material is hydrogen.)

(3) Group C (Class I)

Flammable Gas, flammable liquid-produced vapor, or combustible liquid-produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value greater than 0.45 mm and less than or equal to 0.75 mm, or minimum igniting current ratio (MIC ratio) greater than 0.40 and less than or equal to 0.80. (Typical Class I group C material is ethylene.)

(4) Group D (Class I)

Flammable gas, flammable liquid-produced vapor, or combustible liquid-produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value greater than 0.75 mm or a minimum igniting current ratio (MIC ratio) greater than 0.80. (Typical Class I group D material is propane.)

Class II Group Classifications

(1) Group E (Class II)

Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, or other combustible dusts whose particle size, abrasiveness, and conductivity present similar hazards in the use of electrical equipment.

(2) Group F (Class II)

Atmospheres containing combustible carbonaceous dusts that have more than 8 percent total entrapped volatiles or that have been sensitized by other materials so that they present an explosion hazard. Coal, carbon black, charcoal, and coke dusts are examples of carbonaceous dusts.

(3) Group G (Class II)

Atmospheres containing combustible dusts not included in Group E or F, including flour, grain, wood, plastic, and chemicals.

Definitions taken from National Electrical Code 2008 Edition



Classification of Hazardous Locations

SELECTED FLAMMABLE GASES AND VAPORS OF LIQUIDS CLASSIFIED AS CLASS I, GROUP A, B, C, & D:

Group Classification and Autoignition Temperature (AIT) of Selected Flammable Gases and Vapors of Liquids having Flash Points below 100°F (37.8°C)

Material	Group
Acetaldehyde	C
Acetone	D
Acetonitrile	D
Acetylene	A
Acrolein (inhibited)	B
Acrylonitrile	D
Allyl Alcohol	C
Allyl Chloride	D
Ammonia	D
n-Amyl Acetate	D
sec-Amyl Acetate	D
Benzene	D
1,3-Butadiene	B
Butane	D
1-Butanol	D
2-Butanol	D
n-Butyl Acetate	D
iso-Butyl Acetate	D
sec-Butyl Acetate	D
Butylamine	D
Butylene	D
Butyl Mercaptan	C
n-Butylaldehyde	C
Carbon Monoxide	C
Chlorobenzene	D
Chloroprene	D
Crotonaldehyde	C
Cyclohexane	D
Cyclohexene	D
Cyclopropane	D
1,1-Dichloroethane	D
1,2-Dichloroethylene	D
1,3-Dichloropropene	D
Dicyclopentadiene	C
Diethyl Ether	C
Diethylamine	C
Di-isobutylene	D
Di-isopropylamine	C
Dimethylamine	C
1,4-Dioxane	C
Di-n-propylamine	C
Epichlorohydrin	C
Ethane	D
Ethanol	D
Ethyl Acetate	D
Ethyl Acrylate (inhibited)	D
Ethylamine	D
Ethyl Benzene	D
Ethyl Chloride	D
Ethylene	C
Ethylenediamine	D
Ethylene Dichloride	D
Ethylenimine	C
Ethylene Oxide	B
Ethyl Formate	D
Ethyl Mercaptan	C
n-Ethyl Morpholine	C
Formaldehyde (Gas)	B

Material	Group
Gasoline	D
Heptane	D
Heptene	D
Hexane	D
2-Hexanone	D
Hexenes	D
Hydrogen	B
Hydrogen Cyanide	C
Hydrogen Selenide	C
Hydrogen Sulfide	C
Isoatmyl Acetate	D
Isoamyl Alcohol	D
Isobutyl Acrylate	D
Isobutylaldehyde	C
Isoprene	D
Isopropyl Acetate	D
Isopropylamine	D
Isopropyl Ether	D
Isopropyl Glycidyl Ether	C
Liquefied Petroleum Gas	D
Manufactured Gas (more than 30% H ₂)	B
Mesityl Oxide	D
Methane	D
Methanol	D
Methyl Acetate	D
Methylacetylene	C
Methylacetylene-Propadiene (stabilized)	C
Methyl Acrylate	D
Methylamine	D
Methylcyclohexane	D
Methyl Ether	C
Methyl Ethyl Ketone	D
Methyl Formal	C
Methyl Formate	D
Methyl Isobutyl Ketone	D
Methyl Isocyanate	D
Methyl Mercaptan	C
Methyl Methacrylate	D
2-Methyl-1-Propanol	D
2-Methyl-2-Propanol	D
Monomethyl Hydrazine	C
Naphtha (Petroleum)	D
Nitroethane	C
Nitromethane	C
Nonane	D
Norene	D
Octane	D
Octene	D
Pentane	D
1-Pentanol	D
2-Pentanone	D
1-Pentene	D
Propane	D
1-Propanol	D
2-Propanol	D
Propionaldehyde	C
n-Propyl Acetate	D
Propylene	D
Propylene Dichloride	D
Propylene Oxide	B

Material	Group
n-Propyl Ether	C
Propyl Nitrate	B
Pyridine	D
Styrene	D
Tetrahydrofuran	C
Toluene	D
Triethylamine	C
Tripropylamine	D
Turpentine	D
Unsymmetrical Dimethyl Hydrazine (UDMH)	C
Valeraldehyde	C
Vinyl Acetate	D
Vinyl Chloride	D
Vinylidene Chloride	D
Xylenes	D

Group Classification and Autoignition Temperature (AIT) of Vapors of Selected Liquids Having Flash Points 100°F (37.8°C) or Greater, but less than 140°F (60°C)

Material	Group
Acetic Acid	D
Acetic Anhydride	D
Acrylic Acid	D
Allyl Glycidyl Ether	B
t-Butyl Acetate	D
n-Butyl Acrylate (inhibited)	D
N-Butyl Glycidyl Ether	B
Cumene	D
Cyclohexanone	D
p-Cymene	D
Decene	D
Diethyl Benzene	D
Di-isobutyl Ketone	D
Dimethyl Formamide	D
Dipentene	D
Ethyl sec-Amyl Ketone	D
Ethyl Butanol	D
Ethyl Butyl Ketone	D
Ethylene Chlorohydrin	D
Ethylene Glycol Monoethyl Ether	C
Ethylene Glycol Monoethyl Ether Acetate	C
Ethylene Glycol Monomethyl Ether	D
2-Ethylhexaldehyde	D
Ethyl Silicate	D
Formic Acid (90%)	D
Fuel Oils	D
sec-Hexyl Acetate	D
Hydrazine	C
Iso-octyl Aldehyde	C
Kerosene	D
Methyl Amyl Alcohol	D
Methyl n-Amyl Ketone	D
o-Methylcyclohexanone	D
alpha-Methyl Styrene	D
Morpholine	C
Naphtha (Coal Tar)	D
1-Nitropropane	C

Material	Group
2-Nitropropane	C
Propionic Acid	D
Tetramethyl Lead	C

Group Classification and Autoignition Temperature (AIT) of Vapors of Selected Liquids Having Flash Points 140°F (60°C) or Greater, but less than 200°F (93.3°C)

Material	Group
Acetone Cyanohydrin	D
Adiponitrile	D
Aniline	D
Benzyl Chloride	D
n-Butyl Formal	C
t-Butyl Toluene	D
n-Butyric Acid	D
Chloroacetaldehyde	C
1-Chloro-1-Nitropropane	C
Cresol	D
Cyclohexanol	D
n-Decaldehyde	C
n-Decanol	D
Diacetone Alcohol	D
o-Dichlorobenzene	D
1,1-Dichloro-1-Nitroethane	C
Diethylaminoethanol	C
Diethylene Glycol Monobutyl Ether	C
Diethylene Glycol Monomethyl Ether	C
N-N-Dimethyl Aniline	C
Dimethyl Sulfate	D
Dipropylene Glycol Methyl Ether	C
Dodecene	D
Ethylene Glycol Monobutyl Ether	C
Ethylene Glycol Monobutyl Ether Acetate	C
2-Ethyl Hexanol	D
2-Ethyl Hexyl Acrylate	D
2-Ethyl-3-Propyl Acrolein	C
Furfural	C
Furfural Alcohol	C
Hexanol	D
Isodecaldehyde	C
Iso-octyl Alcohol	D
Isophorone	D
Methylcyclohexanol	D
2-Methyl-5-Ethyl Pyridine	D
Monoethanolamine	D
Monoisopropanolamine	D
Monomethyl Aniline	C
Nitrobenzene	D
Nonyl Alcohol	D
n-Octyl Alcohol	D
Phenylhydrazine	D
Propiolactone	D
Propionic Anhydride	D
Tetrahydrophthalene	D
Tridecene	D
Triethylbenzene	D
Undecene	D
Vinyl Toluene	D



Classification of Hazardous Locations

SELECTED NONCONDUCTIVE DUSTS CLASSIFIED AS CLASS II, GROUP F and G:

Ignition Sensitivity Equal to or Greater than 0.2; Explosion Severity Equal to or Greater than 0.5

AGRICULTURAL DUSTS

Alfalfa Meal
Almond Shell
Apricot Pit
Cellulose
Cherry Pit
Cinnamon
Citrus Peel
Cocoa Bean Shell
Cocoa, natural, 19% fat
Coconut Shell
Corn
Corn cob Grit
Corn Dextrine
Cornstarch, commercial
Cornstarch, modified
Cork
Cottonseed Meal
Cube Root, South Amer.
Flax Shive
Garlic, dehydrated
Guar Seed
Gum, Arabic
Gum, Karaya
Gum, Manila (copal)
Gum, Tragacanth
Hemp Hurd
Lycopodium
Malt Barley
Milk, Skimmed
Pea Flour
Peach Pit Shell
Peanut Hull
Peat, Sphagnum
Pecan Nut Shell
Pectin
Potato Starch, Dextrinated
Pyrethrum
Rauwolfia Vomitoria Root
Rice
Rice Bran
Rice Hull
Safflower Meal
Soy Flour
Soy Protein
Sucrose
Sugar, Powdered
Tung, Kernels, Oil-Free
Walnut Shell, Black
Wheat
Wheat Flour
Wheat Gluten, gum
Wheat Starch
Wheat Straw
Woodbark, Ground
Wood Flour
Yeast, Torula

CARBONACEOUS DUSTS

Asphalt, (Blown Petroleum Resin)
Charcoal
Coal, Kentucky Bituminous
Coal, Pittsburgh Experimental
Coal, Wyoming
Gilsonite
Lignite, California
Pitch, Coal Tar
Pitch, Petroleum
Shale, Oil

CHEMICALS

Acetoacetanilide
Acetoacet-p-phenetidide
Adipic Acid
Anthranilic Acid
Aryl-nitrosomethylamide
Azelaic Acid
2,2-Azo-bis-butyronitrile
Benzoic Acid
Benzotriazole
Bisphenol-A
Chloroacetoacetanilide
Diallyl Phthalate
Dicumyl Peroxide 40-60
Dicyclopentadiene Dioxide
Dihydroacetic Acid
Dimethyl Isophthalate
Dimethyl Terephthalate
3,5 - Dinitrobenzoic Acid
Dinitrotoluamide
Diphenyl
Ditertiary Butyl Paracresol
Ethyl Hydroxyethyl Cellulose
Fumaric Acid
Hexamethylene Tetramine
Hydroxyethyl Cellulose
Isotoc Anhydride
Methionine
Nitrosoamine
Para-oxy-benzaldehyde
Paraphenylene Diamine
Parateritary Butyl Benzoic Acid
Pentaerythritol
Phenylbetanaphthylamine
Phthalic Anhydride
Phthalimide
Salicylanilide
Sorbic Acid
Stearic Acid, Aluminum Salt
Stearic Acid, Zinc Salt
Sulfur
Teraphthalic Acid

DRUGS

2-Acetyl amino-5-nitrothiazole
2-Amino-5-nitrothiazole
Aspirin
Gulasonic Acid, Diacetone
Mannitol
Nitropyridone
1-Sorbose
Vitamin B1, mononitrate
Vitamin C (Ascorbic Acid)

DYES, PIGMENTS, INTERMEDIATES

Beta-naphthalene-azo-Dimethylaniline
Green Base Harmon Dye
Red Dye Intermediate
Violet 200 Dye

PESTICIDES

Benzethonium Chloride
Bis(2-Hydroxy-5-chlorophenyl) methane
Crag No. 974
Dieldrin (20%)
2,6-Ditertiary-butyl-paracresol
Dithane
Ferbam
Manganese Vancide
Sevin
a,a Trithiobis (N,N Dimethylthioformamide)

THERMOPLASTIC RESINS & MOLDING COMPOUNDS

Acetal Resins
Acetal, Linear (Polyformaldehyde)
Acrylic Resins
Acrylamide Polymer
Acrylonitrile Polymer
Acrylonitrile - Vinyl Pyridine Copolymer
Acr
ylonitrile-Vinyl Chloride-Vinyl-dene Chloride Copolymer (70-20-10)
Methyl Methacrylate Polymer
Methyl Methacrylate - Ethyl Acrylate Copolymer
Methyl Methacrylate-Ethyl Acrylate-Styrene Copolymer
Methyl Methacrylate-Styrene-Butadiene-Acrylonitrile Copolymer
Methacrylic Acid Polymer
Cellulosic Resins
Cellulose Acetate
Cellulose Triacetate
Cellulose Acetate Butyrate
Cellulose Propionate
Ethyl Cellulose
Methyl Cellulose
Carboxymethyl Cellulose
Hydroxyethyl Cellulose
Chlorinated Polyether Resins
Chlorinated Polyether Alcohol
Nylon (Polyamide) Resins
Nylon Polymer
(Polyhexa-methylene Adipamide)
Polycarbonate Resins
Polycarbonate
Polyethylene Resins
Polyethylene, High Pressure Process
Polyethylene, Low Pressure Process
Polyethylene Wax
Polymethylene Resins
Carboxypolymethylene
Polypropylene Resins
Polypropylene (No Antioxidant)
Rayon Resins
Rayon (Viscose) Flock

Styrene Resins
Polystyrene Molding Cmpd.
Polystyrene Latex
Styrene-Acrylonitrile (70-30)
Styrene-Butadiene Latex (> 75% Styrene; Alum Coagulated)

Vinyl Resins
Polyvinyl Acetate
Polyvinyl Acetate/Alcohol
Polyvinyl Butyral
Vinyl Chloride - Acrylonitrile Co-polymer
Polyvinyl Chloride - Dioctyl Phtha-late Mixture
Vinyl Toluene - Acrylonitrile Buta-diene Copolymer

THERMOSETTING RESINS & MOLDING COMPOUNDS

Allyl Resins
Allyl Alcohol (Derivative CR-39)
Amino Resins
Urea Formaldehyde Molding Compound
Urea Formaldehyde - Phenol Form-aldehyde Molding Compound (Wood Flour Filler)
Epoxy Resins
Epoxy
Epoxy - Bisphenol A
Phenol Furfural
Phenolic Resins
Phenol Formaldehyde
Phenol Formaldehyde Molding Compound (Wood Flour Filler)
Phenol Formaldehyde, Polyalky-lene - Polyamine Modified
Polyester Resins
Polyethylene Terephthalate
Styrene Modified Polyester - Glass Fiber Mixture
Polyurethane Resins
Polyurethane Foam, No Fire Retardant
Polyurethane Foam, Fire Retardant

SPECIAL RESINS AND MOLDING COMPOUNDS

Alkyl Ketone Dimer Sizing Compound
Cashew Oil, Phenolic, Hard
Chlorinated Phenol
Coumarone-Indene, Hard
Ethylene Oxide Polymer
Ethylene-Maleic Anhydride Copolymer
Lignin, Hydrolyzed, Wood-Type, Fines
Petrin Acrylate Monomer
Petroleum Resin (Blown Asphalt)
Rosin, DK
Rubber, Crude, Hard
Rubber, Synthetic, Hard (33% S)
Shellac
Sodium Resinate
Styrene - Maleic Anhydride Copolymer