



Explosion Proof CODE NOMENCLATURE

"Explosion Proof" is only a generic term. When applied to equipment it does not by itself assure that the item is safe to use in a hazardous location. Required are additional code designations as issued by agencies in the United States, Canada, Europe and other parts of the world.

In North America and many other countries explosion proof electrical equipment must conform with NFPA 70 National Electrical Code (NEC). Western Europe and some other countries work with CENELEC standards or accept equipment certified under either system.

An "Explosion Proof" designation under the NEC must include a "**Class**", a "**Group**" and a "**Division**". Class I refers to gases, Class II to dusts, and Class III to fibers and flyings. Groups relate to the ignitability of the material. Two Divisions are defined as outlined below.

CLASS

A Class is specified with a Roman numeral I, II, or III:

Class I - Gases

Locations where flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures.

Class II - Dusts

Locations where the presence of combustible dust present a fire or explosion hazard.

Class III - Fibers and Flyings

Locations where easily ignitable fibers or flyings are present but not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures.

GROUP

Groups are defined by letters. Groups A, B, C and D fall under Class I. Group A is the most easily ignited, Group D the least. Groups E, F and G fall under Class II. (See reverse side of bulletin for partial classification of materials by groups. For more complete summary refer to NFPA 497M "Classification of Gases, Vapors and Dusts for Electrical Equipment in Hazardous (Classified) Locations".

DIVISION

Divisions are defined with numeral 1 or 2.

Division 1

The hazardous concentration of flammable gases, vapors or suspended combustible dusts are present continuously, intermittently or periodically under normal operating conditions.

Division 2

Volatile, flammable liquids or flammable gases present, but normally confined within closed containers or systems from which they can escape only under abnormal operating or fault conditions. Combustible dusts not normally in suspension nor likely to be thrown into suspension.

EXAMPLE

Laboratory Handling Ethyl Ether in Open Containers: [Class I, Group C, Division 1](#)
Room Only Storing Sealed Metal Cans of Ethyl Ether: [Class I, Group C, Division 2](#)



Classification of Gases, Vapors and Dusts

Group A

acetylene

Group B

formaldehyde (Gas)
hydrogen

Group C

acetaldehyde
allyl alcohol
butyl mercaptan
n-butyraldehyde
carbon monoxide
crotonaldehyde
dicyclopentadiene
diethyl ether
diethylamine
1, 1-dimethyl hydrazine
di-isopropylamine
dimethylamine
1, 4-dioxane
di-n-propylamine
epichlorohydrin
ethylene
ethyl mercaptan
hydrogen cyanide
hydrogen selenide
hydrogen sulfide
isobutyraldehyde
methylacetylene
methyl ether
methyl mercaptan
monomethyl hydrazine
morpholine
nitroethane
nitromethane
2-nitropropane
propionaldehyde
n-propyl ether
tetrahydrofuran
triethylamine
valeraldehyde

Group D

acetic acid (glacial)
acetone
acetonitrile
acrylonitrile
ammonia⁽²⁾
n-amyl acetate
sec-amyl acetate
benzene
butane
1-butanol (butyl alcohol)
2-butanol
n-butyl acetate
sec-butyl acetate
butylamine
chlorobenzene
cyclohexane
cyclohexene
cyclopropane
1, 1-dichloroethane
1, 2-dichloroethylene
1, 3-dichloropropene
di-isobutylene
ethane
ethanol (ethyl alcohol)
ethyl acetate
ethyl benzene
ethyl chloride
gasoline
heptane
heptene
hexane
hexenes
isoamyl acetate
isoprene
isopropyl ether
LPG (liquefied pet gas)
methane (natural gas)
methanol (methyl alcohol)
methyl acrylate
methyl amine
methyl cyclohexane
methyl ethyl ketone
methyl isobutyl ketone
methyl isocyanate
methyl methacrylate

Group D

2-methyl-1 propanol
(isobutyl alcohol)
naphtha (petroleum)
nonane
nonene
octane
octene
pentane
1-pentanol (amyl alcohol)
2-pentanone
1-pentene
propane
1-propanol (propyl alcohol)
2-propanol (isopropyl alcohol)
propylene
styrene
toluene
turpentine
vinyl chloride
xylenes

Group E

Atmospheres with combustible metal dusts regardless of resistivity, or other combustible dusts of similar hazardous characteristics having resistivity of $<10^5$ ohm-cm.

Group F

Atmospheres with carbon black, charcoal, coke or coke dusts which have more than 8% total volatile material⁽¹⁾ or atmospheres containing these dusts sensitized by other materials so that they present an explosion hazard, and having resistivity $>10^2$ ohm-cm but equal to or $<10^8$ ohm-centimeter.

Group G

Atmospheres with combustible dusts with resistivity of 10^5 ohm-centimeter or greater.

(1) Carbon Black per ASTM D 1620; charcoal coke and coke dust per ASTM D271.

