automatically to prevent ready access to live current-carrying parts.

§ 1926.407 Hazardous (classified) locations.

(a) Scope. This section sets forth requirements for electric equipment and wiring in locations which are classified depending on the properties of the flammable vapors, liquids or gases, or combustible dusts or fibers which may be present therein and the likelihood that a flammable or combustible concentration or quantity is present. Each room, section or area shall be considered individually in determining its classification. These hazardous (classified) locations are assigned six designations as follows:

Class I, Division 1
Class I, Division 2
Class II, Division 1
Class II, Division 2
Class III, Division 1
Class III, Division 2

For definitions of these locations see § 1926.449. All applicable requirements in this subpart apply to all hazardous (classified) locations, unless modified by provisions of this section.

(b) Electrical installations. Equipment, wiring methods, and installations of equipment in hazardous (classified) locations shall be approved as intrinsically safe or approved for the hazardous (classified) location or safe for the hazardous (classified) location. Requirements for each of these options are as follows:

(1) Intrinsically safe. Equipment and associated wiring approved as intrinsically safe is permitted in any hazardous (classified) location included in its listing or labeling.

(2) Approved for the hazardous (classified) location—(1) General. Equipment shall be approved not only for the class of location but also for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present.

NOTE: NFPA 70, the National Electrical Code, lists or defines hazardous gases, vapors, and dusts by “Groups” characterized by their ignitable or combustible properties.

(ii) Marking. Equipment shall not be used unless it is marked to show the class, group, and operating temperature range, based on operation in a 40-degree C ambient, for which it is approved. The temperature marking shall not exceed the ignition temperature of the specific gas, vapor, or dust to be encountered. However, the following provisions modify this marking requirement for specific equipment:

(A) Equipment of the non-heat-producing type (such as junction boxes, conduit, and fitting) and equipment of the heat-producing type having a maximum temperature of not more than 100 degrees C (212 degrees F) need not have a marked operating temperature or temperature range.

(B) Fixed lighting fixtures marked for use only in Class I, Division 2 locations need not be marked to indicate the group.

(C) Fixed general-purpose equipment in Class I locations, other than lighting fixtures, which is acceptable for use in Class I, Division 2 locations need not be marked with the class, group, division, or operating temperature.

(D) Fixed dust-tight equipment, other than lighting fixtures, which is acceptable for use in Class II, Division 2 and Class III locations need not be marked with the class, group, division, or operating temperature.

(3) Safe for the hazardous (classified) location. Equipment which is safe for the location shall be of a type and design which the employer demonstrates will provide protection from the hazards arising from the combustibility and flammability of vapors, liquids, gases, dusts, or fibers.

NOTE: The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installations which will meet this requirement. The guidelines of this document address electric wiring, equipment, and systems installed in hazardous (classified) locations and contain specific provisions for the following: wiring methods, wiring connections, conductor insulation, flexible cords, sealing and drainage, transformers, capacitors, switches, circuit breakers, fuses, motor controllers, receptacles, attachment plugs, meters, relays, instruments, resistors, generators, motors, lighting fixtures, storage battery charging equipment, electric cranes, electric hoists and similar equipment, utilization equipment, signaling systems, alarm systems, remote control systems, local loud speaker and communication systems, ventilation piping.
live parts, lightning surge protection, and
grounding. Compliance with these guidelines
will constitute one means, but not the only
means, of compliance with this paragraph.

(c) Conduits. All conduits shall be
threaded and shall be made wrench-
tight. Where it is impractical to make
a threaded joint tight, a bonding jump-
er shall be utilized.

[51 FR 25318, July 11, 1986, as amended at 61
FR 5510, Feb. 13, 1996]

§ 1926.408 Special systems.

(a) Systems over 600 volts, nominal.
Paragraphs (a)(1) through (a)(4) of this
section contain general requirements
for all circuits and equipment operated
at over 600 volts.

(1) Wiring methods for fixed installa-
tions—(i) Above ground. Above-ground
conductors shall be installed in rigid
metal conduit, in intermediate metal
conduit, in cable trays, in cablebus, in
other suitable raceways, or as open
runs of metal-clad cable designed for
the use and purpose. However, open
runs of non-metallic-sheathed cable or
of bare conductors or busbars may be
installed in locations which are acces-
sible only to qualified persons. Metallic
shielding components, such as tapes,
wires, or braids for conductors, shall be
grounded. Open runs of insulated wires
and cables having a bare lead sheath or
a braided outer covering shall be sup-
ported in a manner designed to prevent
physical damage to the braid or sheath.

(ii) Installations emerging from the
ground. Conductors emerging from the
ground shall be enclosed in raceways.
Raceways installed on poles shall be of
rigid metal conduit, intermediate
metal conduit, PVC schedule 80 or
equivalent extending from the ground
line up to a point 8 feet (2.44 m) above
finished grade. Conductors entering a
building shall be protected by an enclo-
sure from the ground line to the point
of entrance. Metallic enclosures shall
be grounded.

(2) Interrupting and isolating devices—
(i) Circuit breakers. Circuit breakers lo-
cated indoors shall consist of metal-en-
closed or fire-resistant, cell-mounted
units. In locations accessible only to
qualified personnel, open mounting of
circuit breakers is permitted. A means
of indicating the open and closed posi-
tion of circuit breakers shall be pro-
vided.

(ii) Fused cutouts. Fused cutouts in-
stalled in buildings or transformer
vaults shall be of a type identified for
the purpose. They shall be readily ac-
cessible for fuse replacement.

(iii) Equipment isolating means. A
means shall be provided to completely
isolate equipment for inspection and
repairs. Isolating means which are not
designed to interrupt the load current
of the circuit shall be either
interlocked with a circuit interrupter
or provided with a sign warning
against opening them under load.

(3) Mobile and portable equipment—
(i) Power cable connections to mobile ma-
achines. A metallic enclosure shall be
provided on the mobile machine for en-
closing the terminals of the power
cable. The enclosure shall include pro-
visions for a solid connection for the
ground wire(s) terminal to ground ef-
effectively the machine frame. The
method of cable termination used shall
prevent any strain or pull on the cable
from stressing the electrical connec-
tions. The enclosure shall have provi-
sion for locking so only authorized
qualified persons may open it and shall
be marked with a sign warning of the
presence of energized parts.

(ii) Guarding live parts. All energized
switching and control parts shall be en-
closed in effectively grounded metal
cabinets or enclosures. Circuit break-
ers and protective equipment shall
have the operating means projecting
through the metal cabinet or enclosure
so these units can be reset without
locked doors being opened. Enclosures
and metal cabinets shall be locked so
that only authorized qualified persons
have access and shall be marked with a
sign warning of the presence of ener-
gized parts. Collector ring assemblies
on revolving-type machines (shovels,
draglines, etc.) shall be guarded.

(4) Tunnel installations—(i) Applica-
tion. The provisions of this paragraph
apply to installation and use of high-
voltage power distribution and utiliza-
tion equipment which is associated
with tunnels and which is portable and/
or mobile, such as substations, trailers,
cars, mobile shovels, draglines, hoists,
drills, dredges, compressors, pumps,