

Glossary

The following glossary contains definitions reprinted with permission from the glossaries of UL48, UL879, Neon Rules workbook and NFPA 70.

ACCESS: Capability or way of approaching.

ACCESSIBLE (as applied to wiring methods): Capable of being removed or exposed without damaging the building structure or finish, or not permanently closed in by the structure or finish of the building.

ACCESSIBLE (as applied to equipment): Admitting close approach; not guarded by locked doors, elevation, or other effective means.

ACCESSIBLE (readily accessible): Capable of being reached quickly for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, etc.

ACCESSIBLE PART: A part that is not guarded by its location or by other means and that is capable of being touched by a person.

ACCESSIBILITY BARRIER: A material provided to limit access to: a) uninsulated live parts, b) dead metal parts that are at a risk of being energized and are not grounded, c) live parts insulated with materials not intended to be subjected to user contact, or d) moving parts that present a risk of injury. If all or part of the barrier also serves as an enclosure, see Enclosure.

ACRYLIC SIGN FACE: Plastic material cut to shape to act as a rain shield in a neon letter

ADHESIVE: A bonding material (i.e. epoxy, paste, cement) placed between parts to be fastened together that adheres to each part, and remains the securement medium between the parts.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

AMPACITY: The current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

ARCING: The brand of sparks or incandescent light formed when an electric discharge is conducted from one electrode or conducting surface to another, characterized by relatively high current and low potential between electrodes.

APPROVED: Acceptable to the Authority Having Jurisdiction.

ATTACHMENT PLUG: A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle.

Authority Having Jurisdiction: The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

FPN: The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

AWNING SIGN: A permanently connected sign having flexible or rigid plastic face and covering material secured over a supporting frame and which provides protection from weather. The sign illumination provides down-lighting on an area intended for pedestrian traffic, a kiosk, or similar types.

BACKLIT LETTERS: Letters built with metal or opaque faces with neon tubing inside for illumination. The letter will be mounted away from the wall surface to allow the light to emit from the back and reflect against the wall. (See Reverse Channel Letters)

BARE CONDUCTOR: A conductor having no covering or electrical insulation whatsoever.

BARRIER: See Accessibility Barrier, Insulating Barrier, Isolating Barrier, Thermal Barrier, and Water shield.

BLOCK-OUT PAINT: A paint, generally black, used to coat a neon tube to block the emission of light from a neon tube. Generally applied over the electrode, it can also be applied at various points along a neon tube.

BONDING: The permanent joining of metallic parts to form a positive electrically conductive path that provides electrical continuity between dead metal parts and is capable of conducting any fault current which occurs.

BONDING CONDUCTOR: A conductor that electrically connects the non-current carrying metal parts such as enclosure parts, frame parts and dead metal parts of electrical components to each other and the equipment grounding means.

BONDING JUMPER: A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected.

BONDING JUMPER, EQUIPMENT: The connection between two or more portions of the equipment grounding conductor.

BONDING JUMPER, MAIN: The connection between the grounded circuit conductor and the equipment grounding conductor at the service.

BONDING PLATES: A plate used for bonding

BONDING STRAPS: See bonding jumper

BOOT: A component designed to fit over the end of neon tubing to enclose the splice between the lead of the electrode and GTO cable lead.

BRANCH CIRCUIT: The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).

CANOPY: A device provided with a sign, or separately, that is used to cover an outlet box. A canopy is capable of being secured to an outlet box or to a ceiling.

CANOPY SIGN: A sign that is supported and suspended from an outlet box by a chain, stem, or cable.

CAPACITANCE COUPLING: The ability of high voltage lines to act as a liner capacitor when placed in close parallel proximity with ground. The source of the energy is from the electrostatic field. The intensity will grow, the higher the voltage, the closer the proximity, and the longer the length parallel.

CIRCUIT: See "Branch Circuit"

CIRCUIT BREAKER: A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. The automatic opening means can be integral, direct acting with the circuit breaker, or remote from the circuit breaker.

CLASS 2 CIRCUIT: A circuit involving a potential of not more than 30 V rms. (42.4 V peak) or 60 V DC supplied by a primary battery, a Class 2 transformer, or by a combination of a transformer and fixed impedance that, as a unit, complies with all the performance requirements for a Class 2 transformer. A circuit derived from a line-voltage circuit by connecting resistance in series with the supply circuit as a means of limiting the voltage and current is not identified as a Class 2 circuit.

Channel Letter, Illuminated: A letter shape or art form fabricated from metal, plastic or other suitable means to be used open face with exposed neon or as a "sign body" to exclude elements or as an "enclosure" when fitted with a recognized components sign face. (Front of letter is illuminated)

COLD CATHODE LIGHTING: Another name for neon tubing, generally referred to as cold cathode when used for general lighting and in diameters of 18mm and 25mm.

COLLAR FERRULE: The portion of a receptacle housing that is used solely as a mounting means inside a sign enclosure.

CONCEALED: Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

CONDITIONS OF ACCEPTABILITY: The conditions placed on a product by a testing laboratory to insure its safe operation.

CONDITIONS OF USE: Parameters and specifications that identify the proper use of a component according to the requirements that it has been determined to comply and limitations of the use of the component in a sign or outline lighting. For components that are not covered by this standard, the terminology having the same definition is Conditions of Acceptability.

CONDUCTORS: See "Bare Conductor" "Insulated Conductor"

CONDUIT: A raceway used to rout and protect wires from physical damage.

CONNECTOR, PRESSURE (solderless): A device that establishes a connection between two or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder.

CONTROLLER: A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected.

CONVENIENCE RECEPTACLE: A receptacle that is installed on or within a permanently-connected non-Form-1 sign, and supplied from a branch-circuit separate from other sign circuits and rated not more than 20 amperes, 125 volts.

DEAD METAL PARTS: Parts which have zero potential or are not likely to become energized.

DEDICATED RECEPTACLE: A receptacle that is a) Installed on or within a non-Form-1 sign; b) Intended for the connection of a specific product; and c) Marked for such use.

DEMAND FACTOR: The ratio of the maximum demand of a system, or part of a system, to the total connected load of a system or the part of the system under consideration.

DEVICE: A unit of an electrical system that is intended to carry but not utilize electric energy.

DISCONNECT SWITCH: A switch used to open the conductor(s) from the source of supply.

DISCONNECTING MEANS: A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

DOUBLE BACK: A 180 degree return bend made in neon tubing near an electrode.

DRAIN HOLES: Holes provided in the lower sections of signs and letters to allow moisture to drip from the sign or letters.

DRAW BOX: An electrical box used to gather excessive wire between letters or signs.

ELECTRIC DISCHARGE: A method of illumination whereby current is passed through a gas medium. This includes neon, cold cathode, fluorescent, and high-intensity-discharge types of illumination.

ELECTRIC DISCHARGE LIGHTING: Electric discharge lighting includes any combination of fluorescent lamps, high-intensity discharge (HID) lamps, and gas tubes (neon).

ELECTRIC SIGN: A fixed, stationary, or portable self-contained, electrically illuminated utilization equipment with words or symbols designed to convey information or attract attention.

ELECTRICAL LOADS (Primary): The loads calculated or measured to size the wire and the overload equipment in the branch circuit feeding the signs or letters.

ELECTRICAL LOADS (Secondary): The loads calculated or measured to size transformers and power supplies.

ELECTRODE: One of two conducting elements at the end of a neon tube that emits or collects electrons.

ELECTRODE CLEARANCE: The clearance to be maintained from earth ground or another conductor.

ELECTRODE RECEPTACLE: An insulating receptacle constructed of porcelain, glass, or similar material intended to accept electrodes of neon tubing. An individual receptacle may or may not be provided with an integral outer housing of metal or other material.

ELECTRODE RECEPTACLE: The receptacle used to enclosed the electrode and its connection.

ELECTRODE SPLICE ENCLOSURE: An enclosure specifically intended to enclose a splice between a GTO Cable conductor and the leads of a neon tube electrode.

ELECTRODE SPLICE ENCLOSURE PAINT: A latex, oil base, or acrylic paint or alkyd enamel intended to be applied over electrode splice enclosures and neon tube electrodes for coloring.

ELEVATION POSTS: See tube supports.

ENCLOSED: Surrounded by a case, housing, fence, or walls that prevent persons from accidentally contacting energized parts.

ENCLOSURE: A material provided to enclose electrical parts and components to contain a potential risk of fire. See Accessibility Barrier when an enclosure also serves as an accessibility barrier.

ENCLOSURE MATERIAL: The material used to make the enclosure. (Metal enclosure)

ENCLOSURE SIGN FACE: A sign face (see Sign Face) that also acts as part of the electrical enclosure of a sign.

ENERGIZED: Electrically connected to a source of voltage.

EQUIPMENT: A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as a part of, or in connection with, an electrical installation.

EXPOSED (as applied to live parts): Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.

EXPOSED (as applied to wiring methods): On or attached to the surface or behind panels designed to allow access.

EXPOSED PART: A part that is subjected to handling in normal use without removing a part, such as a door, cover, or other part, the removal of which requires the use of a tool. A live part is determined to be exposed to unintentional contact when it is not guarded or isolated from being inadvertently touched by a person.

EXTERNALLY OPERABLE: Capable of being operated without exposing the operator to contact with live parts.

FACTORY INSTALLED SIGN COMPONENT: A component intended for use in signs and outline lighting having a structural body providing a means for factory assembly of the component as part of a sign and outline lighting. Factory assembled signs and outline lighting are determined to comply with the end product requirements at a manufacturing facility.

FEEDER: All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit over current device.

FIELD AND FACTORY INSTALLED SIGN COMPONENT: A component intended for use in 1) skeletal neon signs and outline lighting installations and 2) factory assembled signs and outline lighting. Skeletal neon signs and outline lighting have a sign face that is the neon tubing itself and the body of the sign or outline lighting system is the building structure onto which it is installed.

FIELD WIRING TERMINAL: A terminal connection expected to be made in the field rather than as part of a manufacturing process.

FITTING: An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.

FIRE HAZARD: An unsafe condition which could result in a fire.

FLAMMABILITY RATING: A rating placed on a combustible; at which temperature it can be expected to support combustion.

FLEXIBLE CONDUIT: Conduit not rigid by design and intended to be used in shapes as required.

FLEXIBLE SIGN FACE: A sign face (see Sign Face) constructed of a cloth-type material that has been laminated that is not rigid enough to support itself.

GLASS CUP AND CONDUIT PLUG ASSEMBLY: A listed product used to exit a wall of a building and provide continuous protection for GTO wire from the wall exit to the splice at the electrode, and protect the electrode connection.

GROUND: A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

GROUNDING: Connected to earth or to some conducting body that serves in place of the earth.

Grounded, Effectively: Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of

voltages that may result in undue hazards to connected equipment or to persons.

GROUNDING CONDUCTOR: Supply conductor connected to ground at the building supply source. Also known as common or neutral.

GROUNDING: A conductive connection between all exposed dead metal parts capable of becoming energized and all dead metal parts within the enclosure that are exposed to contact during any servicing operation of electrical equipment and the earth or some conducting body that serves in place of the earth.

GROUNDING CONDUCTOR: A conductor provided to bond the dead metal of a product to earth ground.

GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI): A device intended for protection of persons that functions to de-energize a circuit, or portion thereof, within an established period of time when a current to ground exceeds a predetermined value that is less than that required to operate the supply-circuit overcurrent protective device.

GTO CABLE: Gas tube oil ignition cable. A cable rated for 5, 10, or 15 kV for use between the secondary or output of a neon supply and neon tubing and between segments of neon tubing.

GTO CABLE CONNECTOR: A connector used to splice two lengths of GTO cable at a point other than at the electrode of neon tubing.

GTO SLEEVING: An insulation material specifically identified for use over GTO cable. See the definition for Sleeveing.

GUARD: A part provided primarily for the purpose of limiting user access to components with a potential risk of injury to persons (for example, high-temperature or moving parts).

GUARDED: Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.

HALO LETTERS: see backlit letters.

HIGH-INTENSITY DISCHARGE (HID) LAMP: A lamp that produces light from an electric discharge between electrodes in a gas or vapor at low or high pressure. Common types include mercury vapor and metal halide lamps.

HIGH-VOLTAGE CIRCUIT: A circuit involving a potential of more than 600 volts.

HIGH VOLT CONNECTION: A device used to connect wires with voltages from 600 - 7500 volts.

IDENTIFIED (as applied to equipment): Recognizable as suitable for the specific purpose, function, use, environment, application, etc., where described in a particular Code requirement. Suitability of equipment for a specific purpose, environment, or application may be determined by a qualified testing laboratory, inspection agency, or other organization concerned with product evaluation. Such identification may include labeling or listing.(also see "conditions of acceptability")

ILLUMINATED CHANNEL LETTERS: Letters with neon illumination.

INERT GAS: A gas referenced as neon and argon for this document.

INSULATING BARRIER: A barrier provided in place of a required electrical spacing and is in direct contact with live parts.

INSULATED CONDUCTOR: A conductor encased within material of composition and thickness that is recognized by the NFPA Code as electrical insulation.

IN SIGHT FROM (within sight from, within sight): Where the NFPA Code specifies that one equipment shall be "in sight from," "within sight from," or "within sight," etc., of another equipment, the specified equipment is to be visible and not more than 50 ft (15.24 m) distant from the other.

INTERNATIONAL ASSOCIATION OF ELECTRICAL INSPECTORS (IAEI):

INTERNATIONAL SIGN ASSOCIATION (ISA):

ISOLATED (as applied to location): Not readily accessible to persons unless special means for access are used.

ISOLATING BARRIER: A barrier provided to maintain separation between circuits of opposite polarity or a barrier provided to reduce a required electrical spacing and is not in direct contact with live parts.

ISOLATED PART: A part not readily accessible to persons unless special means for access are used.

LABELED: Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

LAMP: Incandescent, fluorescent, or HID lighting used in a sign.

Listed: Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that the equipment, material, or services either meets appropriate designated standards or has been tested and found suitable for a specified purpose.

FPN: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. Use of the system employed by the listing organization allows the authority having jurisdiction to identify a listed product.

LIVE PARTS: Energized conductive components.

LIVE PART: A metal or other conductive part that has a potential difference during operation with respect to ground or any other conductive part.

Location, Damp: Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture. Examples of such locations include partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.

Location, Dry: A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

Location, Wet: Installations under ground or in concrete slabs or masonry in direct contact with the earth; in locations subject to saturation with water or other liquids, such as vehicle washing areas; and in unprotected locations exposed to weather.

LOW-VOLTAGE CIRCUIT: A circuit involving a potential of not more than 600 volts, and having characteristics in excess of those of a Class 2 circuit.

LUMINOUS TUBE: See the definition for Neon Tube.

METAL CLAD HOUSINGS: An electrode enclosure, which is made from glass, or porcelain and enclosed in metal.

METAL ENCLOSED RECEPTACLE: see metal clad housing.

METAL RETAINER: Material made from metal used to retain a rain shield material on a neon letter.

NATIONAL ELECTRIC CODE (NEC): NFPA-70

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

NEON TUBE: A small diameter glass cylinder, evacuated of air and filled with an inert gas, such as neon, which emits light when excited by a high voltage neon transformer or power supply.

NEON TUBE CLEAR COAT: A clear coating of a vinyl type material applied over the length of a neon tube to protect other coatings and mechanically strengthen a neon tube.

NEON TUBE LUBRICANT: A compound applied to the end of a neon tube for the purpose of making it easier to slide a close fitting electrode splice enclosure over the end of an electrode.

NEON TUBE TINT: A coating applied to neon tubes to block the emission of one or more light frequencies to change the overall appearance of the light from a neon tube.

OPEN HOLE: An aperture in an accessibility barrier or enclosure that is not covered or filled by another part. Typically, open holes are provided for ventilation, mounting means, and supply connections.

OPENING: An aperture in an enclosure that is covered or filled by a plug or knockout and that has the potential of becoming an open hole. Typically, openings relate to supply connections, commonly referred to as a knockout, and accessibility for inspection of splices.

ORDINARY TOOLS: For the purposes of these requirements, ordinary tools are defined as flat blade and Phillips head screwdrivers, nut drivers, and pliers.

OUTDOORS: See damp location.

OUTLET: A point on the wiring system at which current is taken to supply utilization equipment.

OUTLET BOX: A box used on a wiring system, usually an outlet. It is provided with means for connection to a wiring system and intended primarily to enclose splices and wiring devices, and, where permitted, is not prohibited from use as the support of a sign or other equipment intended for similar installation. This box is or is not provided with studs or a bar hanger or with clamps for securing cable, tubing, or conduit.

OUTLINE LIGHTING: An arrangement of incandescent or electric-discharge lighting that outlines or calls attention to certain features such as the shape of a building or the decoration of a window.

OVERCURRENT: Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault. A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations.

OVERLOAD: Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload.

PART:

ACCESSIBLE: An electrical or moving part that is accessible to a user during user servicing.

EXPOSED: An electrical or moving part that is accessible to a user during normal use.

ISOLATED: An electrical part that is isolated from ground reference as a result of an electrical component such as a ferromagnetic transformer.

LIVE: A part that is electrically energized.

PENDANT-TYPE: A receptacle housing intended to be mounted to the end of the gas tube without any other direct support.

PLASTIC TRIM CAP: Material made of plastic used to retain a rain shield on a neon letter.

POLYCARBONATE: Generic name for a plastic material which is defined as unbreakable. (GE Lexan)

POLYMERIC MATERIAL: A material made of a chemical compound mixture formed by polymerization and consisting of repeating structural units. Polymeric materials include thermoplastic, thermosetting, and elastomeric materials. A thermoplastic material is capable of being easily softened and resoftened by repeated heating. A thermosetting material cures by chemical reaction when heated and, when cured, cannot be resoftened by reheating. An elastomeric material is capable of being stretched at room temperature to at least twice its length under low stress and returns to its original length when the stress is released.

PRESSURE WIRE CONNECTOR: A wiring terminal that secures and makes electrical connection for one or more wires. This is accomplished by means of a tightening device that presses and captures a straight segment of the conductor(s) between conductive surfaces.

Qualified Person: One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved.

QUALIFIED SERVICING: Any servicing performed by persons trained to repair and operate the equipment, and who are familiar with the risks involved. Some examples of qualified servicing include the replacing of components such as ballasts, lampholders, switches, and electric-discharge tubing.

RACEWAY: An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in the NFPA Code. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquidtight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, under floor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

RAINPROOF: Constructed, protected, or treated so as to prevent rain from interfering with the successful operation of the apparatus under specified test conditions.

RAINTIGHT: Constructed or protected so that exposure to a beating rain will not result in the entrance of water under specified test conditions.

RECEPTACLE: A receptacle is a contact device installed at the outlet for the connection of an attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is two or more contact devices on the same yoke.

RECESSED SIGN: A sign intended to be installed in a cavity behind a wall surface so that part of the sign is behind the wall surface.

RECOGNIZED COMPONENT SIGN BACK: A material designed and tested for use as a sign back material (GE Lexan)

RECOGNIZED COMPONENT SIGN FACE: A material designed and tested for use as a sign face material (GE Lexan)

RECOGNIZED COMPONENTS: Components evaluated for use in a Listed sign.

REMOTE-CONTROL CIRCUIT: Any electric circuit that controls any other circuit through a relay or an equivalent device.

REMOTE WIRING: Wiring which is away from the neon letters. (behind the wall)

RESISTANCE: That property of a conductor by which it opposes the flow of an electric current, resulting in the generation of heat in the conductor is the electromotive force needed for a unit current, usually expressed in ohms.

RETURN: The end of the neon tubing circuit, which is returning to the transformer or power supply.

Reverse Channel Letter: Illuminated. A letter shape or art form fabricated from metal, plastic or other suitable means to be used open face with exposed neon or as a "sign body" to exclude elements or as an "enclosure" when fitted with a recognized components sign face. (Rear of letter is illuminated)

RAG FACE: See Flexible Sign Face.

RIGID SIGN FACE: A polymeric material formed as a sign face that is rigid enough to be self supporting when secured in place and does not require a tensioning system.

SECONDARY-CIRCUIT- FAULT TRANSFORMERS: Transformers which comply with UL 2161.

SECONDARY TERMINALS: The terminals of the transformer or power supply which are used to connect to the high voltage circuit.

SECONDARY WIRING: The high voltage circuits of neon circuits.

SECTION SIGN: A sign consisting of preassembled sections (for shipping purposes) which, when connected in the field, form a complete sign.

SIGN: A self-contained, cord- or permanently-connected, electrically illuminated product, usually with advertising or other words, numbers, or symbols, intended for use in a nonresidential environment to convey information or attract attention.

SIGN, FIXED: A sign that is intended to be permanently connected to a power supply circuit.

SIGN, PORTABLE: A sign that has a power-supply cord for connection to a power supply circuit. A portable sign is provided with a concealed, nonpermanent, means for mounting, such as keyhole slots.

SIGN, STATIONARY: A cord-connected sign that is not portable.

SIGN BODY: Part of the overall exterior of a sign, not including the sign face. A sign body may function as the supporting structure of a sign, as an accessibility barrier, and/or as a water shield. A sign body may also function, in combination with the sign face, as an insulating barrier and/or enclosure.

SIGN ENCLOSURE: A portion of a sign that is relied upon to enclose current-carrying parts. (ex. Channel letter with a recognized component sign face)

SIGN FACE: Part of the overall exterior of a sign, not including the sign body, that is orientated not more than 45 degrees from vertical, is intended to convey a message or display an art form and transmits or reflects an internal light source. A sign face may function as a

water shield and/or accessibility barrier. A sign face may also function, in combination with the sign body, as an insulating barrier and/or enclosure.

SIGN FACE TENSIONING: Clamps, fasteners, and the like provided to secure a flexible sign face material across the sign and maintain sufficient tension on the sign face material to keep it flat.

SIGN, FIXED: A sign intended to be permanently connected to an electrical source of supply.

SIGN, PORTABLE: A sign that: a) when provided with mounting means is removable from its intended mounting without the use of tools; b) has a weight of 22.7 kgs (50 lbs.) or less c) has a weight length dimension that does not exceed 575 kg-mm (1500 lb.-in); and d) is connected to an electrical source of supply by a power-supply cord.

SIGN, STATIONARY: A cord-connected sign that is not portable. A sign that is: a) intended to be fastened in place or located in a dedicated space; b) removable from its intended mounting with the use of no more than ordinary tools; and c) connected to an electrical source of supply by a power supply cord.

SKELETON LIGHTING (outline lighting): An arrangement of incandescent lamps or electric-discharge lighting to outline or call attention to certain features such as the shape of a building or the decoration of a window.

Skeleton Tubing: Neon tubing that is itself the sign or outline lighting and not attached to an enclosure or sign body.

SLEEVING: A covering, or an insulating or protective sheath, or both, that is intended to cover an electrical part, such as a conductor, a connection, or a splice.

SOLVENT: A material that acts as a catalyst on parts to be fastened that causes fusing of the parts to each other, after which the material evaporates and no longer exists as a fastening medium.

SPACING: Distance requirements of conductors and earth ground parts.

SPECIAL PERMISSION: The written consent of the authority having jurisdiction.

SPLICE: Any point where one wire is connected to another wire. A wire terminating at a pressure wiring terminal, wire binding screw, or electrode lead is identified as a splice.

STANDOFFS: Tube supports or wire supports.

STRAIN-RELIEF: A knot, bushing, or other means determined to be equivalent as intended to prevent strain from being transmitted to a wire or cord at a termination point inside a sign.

Switch, General-Use: A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage.

Switch, General-Use Snap: A form of general-use switch constructed so that it can be installed in device boxes or on box covers, or otherwise used in conjunction with wiring systems recognized by this Code.

Switch, Isolating: A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means.

TAKE UP BOX: see pull box

THERMAL BARRIER: A barrier provided to reduce the transfer of thermal energy from one component to another where maximum temperature considerations are required.

THIRD PARTY CERTIFICATION ORGANIZATION: Any Nationally Recognized Testing Laboratory, which can List products in accordance with a UL Standard.

THRU-WALL CONNECTORS: Connectors Listed for use in applications where a thru- wall penetration is required.

TUBE BENDER: Person who produces neon tubing.

TUBE (high-voltage electric-discharge): A small diameter glass cylinder, evacuated of air and filled with an inert gas such as neon, which emits light when excited by a high voltage gas-tube-transformer or power supply.

TUBE SUPPORT: An elevation post or standoff used to secure neon tubes in place on a sign body.

TWISTED CONNECTIONS: Connections referred to for secondary connections from GTO wire to electrodes; or from electrodes to electrodes.

UL 48: The Standard for Electric Signs in North America.

UNDERWRITERS LABORATORIES, INC: (UL)

UNGROUND CONDUCTOR: A supply conductor that is considered live or hot.

USER SERVICEABLE PART: A replaceable component, adjusting knob or screw intended to be replaced or adjusted by the user of a sign.

USER SERVICING: Any servicing that is performed by persons other than those trained to maintain a particular sign. Replacement of electric-discharge tubing is not determined to be user servicing. Some examples of user servicing are a) Attaching an accessory by means of separable connectors, or by means of an attachment plug to a dedicated receptacle; b) Resetting or replacing a protective device in a sign or a receptacle circuit that is overloaded by the user; c) Resetting a circuit breaker or replacing a fuse, automatic starter, or lamp, that is accessible without the use of a tool; and d) Changing of advertising material and routine cleaning.

UTILIZATION EQUIPMENT: Equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes.

VOLTAGE, NOMINAL: A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/240 volts, 480Y/277 volts, 600 volts). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

VOLTAGE TO GROUND: For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

WALL EXIT CONNECTORS: see thru-wall connectors

WATER SHIELD: A material relied upon to reduce or prevent the entrance of water into a sign or onto current-carrying parts within a sign

WATERTIGHT: Constructed so that moisture will not enter the enclosure under specified test conditions.

WATER TEST: A test conducted by a testing organization for exclusion of water from an electric sign.

WEATHERPROOF (WP): Constructed or protected so that exposure to the weather will not interfere with successful operation. Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

WIRE BINDING SCREW: A screw used as a post around which a wire is to be wrapped.

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GEMINI CHANNEL LETTERS

Available in 3 styles, 5 sizes, with or without plastic face. Cans are available in any color or preprimed eggshell white. Most orders ship the next business day.



**Gemini Helvetica
Channel**



**Gemini Times Bold
Channel**



**Gemini Brush Script
Channel**

TECHNICAL SPECIFICATIONS

Heat Resistance: Field tested to 168° F

A black channel letter with Red acrylic face was mounted to a duranodic painted aluminum background in a 4-sided box to minimize air movement around the letter. The letter was then exposed to direct sunlight, and the single neon tube was energized. Peak ambient air temperature was 107°F, peak surface temperature achieved inside the letter was 168°F at 3:00 pm. All components remained functional and no deformity of components resulted.

Failure Rates of Channel Components:

Acrylic Face 194°F

Gemini Channel Letter 184°F

Trimcap 190°F

Recommended Illumination Sources: Neon, Fiber optics, L.E.D.s, and low voltage incandescent, and fluorescent.

Consult with various industry directories for information concerning suppliers of illumination.

Conductivity: N/A Artek is a non-conductive flame retardant material.

Gemini channel letters are non-conductive and will not arc due to the insulating properties of Artek.

Corrosion Resistance: Artek is a corrosion resistant polymer not subject to oxidation.

Gemini channel letters have been field tested in harsh climates with salt air & chemical vapors without visible effect.

Dimension: All sizes of Gemini channel letters have 5" depths.

Specifications met or exceeded:

UL 48 for Electric Signs

UL 746C for Weatherability

UL 94v-0 Certification

Gemini Channel Letters are a recognized sign component by:

Underwriters Laboratory

Underwriters Laboratory Canada

Canadian Standards Association