

## Glossary of Terms

### A

**abrasion-resistance** A measure of the ability of a wire or wire covering to resist damage by mechanical means.

**accelerated aging** A test in which voltage, temperature, or other test parameters are increased above normal operating values to obtain observable deterioration in a relatively short time. The plotted results give service life within the context of the test.

**adapter** A device usually attached to the rear of connectors that provides for the attachment of harnessing components, such as strain-relief clamps, heat-shrinkable boots, and braid.

**adhesive (hot melt)** Dual-wall tubing and pre-coated molded parts whose inner layer melts and flows when heated, fills voids in the areas being covered, and forms a mechanical bond to the substrate. Unlike an encapsulant, an adhesive forms a mechanical bond to the substrate.

**adhesive liner** Lining that melts and flows inside a sleeve or molded part, filling any voids in between the substrate and the sleeve or molded part. DuraSeal has an adhesive liner.

**aging** Change in the properties of a material over time and under specific conditions. Generally refers to environmental stimulus such as heat and light.

**altitude immersion seal** A seal able to withstand substantial pressure change (for example, from sea level to 75,000 feet).

**amnesia** The tendency over time for a heat-shrinkable elastomeric tubing or molded part to fail to recover completely to its specified recovered size. See shelf life.

**ampacity** See current-carrying capacity.

**amplitude** The magnitude of variation in a changing quantity from its zero value. The word requires modification — as with adjectives such as peak, maximum, rms, etc. — to designate the specific amplitude in question.

**arc voltage** voltage that continues to pass through a surge protector during activation of GDT (approx. 20 volts)

**ASTM (American Society for Testing and Materials)** A nonprofit industry-wide organization that formulates test methods and material specifications, and publishes standards, testing methods, recommended practices, definitions, and other materials.

**attenuation** A reduction in power. It occurs naturally during wave travel through lines, waveguides, space or a medium such as water. It may be produced intentionally by placing an attenuator in a circuit. The amount of attenuation is generally expressed in decibels per unit of length.

**AWG (American Wire Gauge)** The recognized method (in the United States) of specifying conductor size. The higher the gauge number, the smaller the conductor size.

### B

**back mounted** A connector attached to the inside of a panel or box with its mounting flanges inside the equipment.

**band marking** A continuous circumferential band applied to a wire at regular intervals for identification.

**bare conductor** A conductor not covered with insulating material.

**barrel** 1.) Connector barrel: The section of the terminal, splice, or contact that accommodates the stripped conductor. 2.) Insulation barrel: The section of the terminal, splice, or contact that accommodates the conductor insulation. 3.) Open barrel: The section of a cap that accommodates the conductor.

**batch number** See lot number.

**bayonet coupling** A quick-coupling device for plug and receptacle connectors. Mating is accomplished by rotation of the two parts under pressure.

**beaming** Crosslinking by means of high-energy electrons.

**bellmouth** Flared at the mouth. The rear of a properly crimped wire barrel will have a slight flare (bellmouth) to relieve the strain on the wire strands as they leave the area of high compression and take their natural "lay". A bellmouth condition may also be present in front of the wire barrel.

**binder** A spiral wrapping of a thread to hold together the members of a cable.

**blocking** The sticking together of insulated wires; usually caused by heat.

**BNC connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 or 75 ohms, and is designed to operate in the 0 to 4 GHz frequency range. It features quick connect/disconnect by pin and cam bayonet coupling.

**body** Main or largest portion of a connector to which other portions are attached.

**bonding temperature** Temperature above which adhesive melts and flows sufficiently to form an adhesive bond between substrates.

**braid** A weave of metal fibers used as a shield covering for an insulated conductor or group of insulated conductors. When flattened it may be used as a grounding strap.

**braid angle** The angle between the braid strands and the axis of the cable.

**breakdown voltage** The voltage at which an insulator or dielectric fails to maintain the applied voltage.

**breakout** A region in a harness assembly where a wire or a group of wires is detached to form a separate, terminated branch. Also known as a transition.

**brittle temperature** The temperature below which a material becomes brittle, often measured by a cold impact test.

**broad-band E** Interference generated over a wide range of frequencies (e.g., automotive ignition noise).

**bulkhead** A term used to define a mounting style of connectors. Bulkhead connectors are designed to be inserted into a panel cutout from the rear (component side) of the panel.

**bunch stranding** A method of twisting individual strands to form a finished stranded conductor. Specifically, a number of strands twisted together in a common direction and with a uniform pitch (or twist) per inch.

**bus** A communal circuit over which data or power is transmitted.

### C

**cable** Two or more wires in a twisted or parallel configuration. Also, a shielded wire.

**cable clamp** A mechanical clamp attached to the cable side of a termination assembly to support the cable or wire bundle. It provides strain relief and absorbs vibration and shock that would otherwise be transmitted by the cable terminations.

**cable clamp adapter** A mechanical adapter that attaches to the rear of a termination assembly to allow the attachment of a cable clamp.

**cable sealing clamp** A device consisting of a gland nut designed to seal around the jacket of a cable.

**cabler** A machine that mechanically assembles a group of insulated wires.

**cabling** The act of twisting together two or more insulated components to form a cable.

**capacitance** The property of an electrical conductor (dielectric in a capacitor) that permits the storage of energy as a result of electrical displacement. The basic unit of capacitance is the farad, however, measurement is more commonly in microfarads or picofarads.

**carrier** A group of strands or ends used to form a finished braid.

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**cavity** A metallic enclosure in some types of tubes and circuits within which resonant fields may be excited at the microwave frequency to which the cavity is tuned. Usually referred to as resonant cavity. See also: contact cavity.

**characteristic impedance** The ratio of voltage to current at any point along a transmission line on which there are no standing waves.

**chemical resistance** The ability of an insulation to withstand the presence of materials—such as acids, bases, water, salt water, and fuels—that can deteriorate the insulation, or that, if penetrable to the conductor, can cause dielectric loss of insulating qualities.

**Cheminox cables** Raychem's registered trade name for coaxial cables.

**circuit** The interconnection of a number of electrical elements or parts to accomplish a desired function.

**circular mil area (CMA)** A unit of area equal to the area of a circle whose diameter is 1 mil (0.001 inch). Used chiefly in specifying cross-sectional areas of conductors. (See AMP Brochure No. 4402-8, Computing Circular Mil Area for AMP Terminals and Splices).

**clocking** The arrangement of connector inserts, jackscrews, polarizing pins, sockets, keys/keyways, or housing configurations to prevent the mismatching or cross-mating of connectors. See also polarization.

**closed entry contact** A female contact designed to prevent the entry of a pin or probing device having a cross-sectional dimension (diameter) greater than the mating pin.

**coax** See coaxial cable.

**coaxial cable** A transmission line consisting of two conductors concentric with and insulated from each other. In its flexible form it consists of either a solid or stranded center conductor surrounded by a dielectric. A braid is then woven over the dielectric to form an outer conductor. A weatherproof plastic covering, usually vinyl, is placed on top of the braid.

**cold bend** A test conducted by wrapping tubing or cable around a mandrel or by bending it in an arc while at a low temperature.

**cold flow** Permanent deformation of polymeric materials (insulation) at ambient temperature due to mechanical force or pressure (not due to heat softening).

**cold impact** A test performed by subjecting a component to a specified impact during exposure to low temperature. It measures the brittleness of the material.

**cold joint** A soldered joint made with insufficient heat. (Solder hasn't completely flowed and wet the substrate.)

**color code** A means of identifying cable components using solid colors or stripes. Also, the scheme that assigns a number from 0 to 9 for each of 10 colors.

**color stability** The time and temperature ranges within which the color of a material will remain within the specified color limit.

**component** A wire or cable that is combined with other wires or cables to make a multicomponent cable.

**compound** An insulating or jacketing material made by formulating polymeric materials and additives.

**Compound Under Strands (CUS)** A problem that occurs when loose stranding, or overheating during extrusion, allows compounds to get under individual strands of conductor.

**concentric stranding** A method of stranding conductor. Specifically, the final conductor is built up in layers so that the inner diameter of a succeeding layer is always equal to the outer diameter of the underlying layer.

**concentricity** Ratio (expressed as a percentage) of the thinnest to the heaviest wall thickness. Measured on expanded or recovered tubing, or wire insulation, or jacketing.

**conductivity** The capability of a material to carry electrical current, usually expressed as a percentage of copper conductivity (copper being 100%). Specifically, the ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.

**conductor** The metallic strand or strands used to carry an electric current.

**conductor resistance** The resistance to flow of the electrical current along a conductor. Expressed in ohms/1000 feet. (Usually referenced to 20°C).

**conduit** A tubular raceway for holding wires or cables.

**configuration** Arrangement of contacts in a multiple-contact connector.

**connector** A device used to physically and electrically connect two or more conductors.

**connector classes** Categories based on shape, function, and smallest-size contact in a series.

**connector insert** In connectors with metal shells, the part that holds contacts in proper arrangement while electrically insulating them from each other and from the shell.

**contact** The element in a connector that makes the actual electrical connection. Also the parts of a connector that actually carry the electrical current, and are touched together or separated to control the flow.

**contact crimp** A contact whose rear portion is a hollow cylinder that accepts the conductor. A crimping tool is applied to swage or form the contact metal firmly against the conductor. Sometimes referred to as a solderless contact.

**contact durability** The number of insertion and withdrawal cycles that a connector must be capable of withstanding while remaining within the performance levels of the applicable specification.

**contact engaging and separating force** Force required to either engage or separate contacts. Values are generally established for maximum and minimum forces.

**contact inspection hole** A hole, perpendicular to the cylindrical rear portion of screw machined contacts, used to check the depth to which wire has been inserted into the barrel.

**contact resistance** Measurement of electrical resistance of mated contacts when assembled in a connector under typical service use. Electrical resistance is determined by measuring from the rear of the electrical area of one contact to the rear of the contact area of the mating contact (excluding both crimps) while carrying a specified test current.

**contact size** The diameter of the engagement end of a pin contact; also related to the current-carrying capacity of a contact.

**contact, two-piece** A contact made of two separate parts joined by swedging, brazing or other means of fastening to form a single contact. While this provides the mechanical advantages of two metals, it also has the inherent electrical disadvantage of difference in conductivity.

**continuity** A continuous path for the flow of current in an electrical circuit.

**continuous operating temperature** Maximum temperature at which a component will maintain an acceptable lifetime performance, based on accelerated aging prediction.

**continuous service** Conditions (time, temperature, environment) that describe the lifetime requirements of a component.

**core** 1.) In cables, a component or assembly of components over which additional components, such as a shield or a sheath, are applied.  
2.) Inner wall of dual-wall heat-shrinkable tubing.

**corona** A discharge of electricity appearing as a bluish-purple glow on the surface of, and adjacent to, a conductor when the voltage gradient exceeds a certain critical value. It is caused by the ionization of surrounding air by high voltage.

**coupling ring** The portion of a plug that aids in the mating and demating of a plug and receptacle and holds the plug to the receptacle.

## Glossary of Terms

**cover, electrical connector** An item specifically designed to cover the mating end of a connector for mechanical and/or environmental protection. Also known as a dust cover.

**coverage** A calculated percentage that defines the completeness with which a braid or shield covers the surface of the underlying insulated conductor or conductors.

**crimp** The final configuration of a terminal barrel after the necessary compression forces have been applied to cause a functional union between the terminal barrel and the wire.

**crimp height** A top to bottom measurement of the crimped barrel, using a crimp height comparator in the prescribed manner. (Refer to AMP Instruction Sheet 7424).

**crimping dies** A term used to identify the shaping tools that, when moved toward each other, produce a certain desirable shape to the barrel of the terminal or contact that has been placed between them. Crimping dies are often referred to as die sets or as die inserts.

**crimping head** Tooling containing jaws and linkage for use in pneumatic or hydraulic powered units to crimp loose-piece contacts/terminals that may be too large for hand tool applications.

**crimping tool** A term commonly used to identify a hand held mechanical device that is used to crimp a contact, terminal or splice.

**crosslinking** The formation of bonds between molecular chains in a polymer by means of chemical catalyzation or electron bombardment. The properties of the resulting thermosetting material are usually improved.

**crosslinking by irradiation** A method of crosslinking polymers that makes a nonflowing material. This generally improves the properties of the polymer.

**crossstalk** A magnetic or electrostatic coupling which causes the unwanted transfer of energy from one circuit (disturbing circuit) to another circuit (disturbed circuit)

**crystallinity** The portion of polymer chains that are ordered in a regular (as opposed to amorphous) structure or a crystal lattice. Crystallinity tends to improve mechanical properties and fluid resistance. Crystalline or semi-crystalline materials have a well-defined melting point (shrink temperature) at which the structure becomes disordered and the polymer flows.

**CSA (Canadian Standards Association)** An agency that has developed standard specifications for products with particular emphasis on safety in the end use.

**curing** See thermoset.

**current** A movement or flow of electrons. Also, the measure of this flow, expressed in amperes.

**current-carrying capacity** The maximum current an insulated conductor is capable of carrying without exceeding its insulation- and /or jacket-temperature limitations under specified ambient conditions. Also known as ampacity.

**current rating** The maximum continuous electrical flow of current recommended for a given situation. It is expressed in amperes.

**cutout** The hole, usually round or rectangular, cut into a metal panel in order to mount a connector. The cutout may also include holes for mounting screws or bolts.

**cut-through resistance** Resistance of solid material to penetration by an object (typically a closely controlled knife edge) under conditions of pressure, temperature, and other elements.

**cycle** One complete sequence of values of an alternating quantity, including a rise to maximum in one direction and return to zero; a rise to maximum in the opposite direction and return to zero. The number of cycles occurring in one second is called the frequency.

## D

**dB** Abbreviation — see decibel.

**D.C. sparkover voltage** defined as the maximum voltage across a device before it discharges the energy to ground when subjected to a slowly rising voltage ramp. A rate of rise of 100V/s is usually chosen for testing purposes.

**decibel** A unit expressing the ratio of two voltages, currents or powers. It is equal to 20 times the common logarithm of the ratio of two voltages across or two currents through equal loads, or 10 times the common logarithm of the two powers. One decibel is approximately the smallest change in audible power that can be recognized by the human ear.

**die closure** Term used to designate a crimping area (crimping chamber) when the dies are fully closed or bottomed. Die closure is checked with go/no go plug gage to insure that the crimp produced by the tooling satisfies the crimp height specification.

**dielectric** A material that serves as an insulator. The amount of resistance to voltage in a given insulation.

**dielectric breakdown** The voltage required to cause an electrical failure or breakthrough of the insulation. Determined by a destructive test. See also breakdown voltage.

**dielectric constant (also K)** The ratio of the capacitance between two electrodes with a solid, liquid, or gaseous dielectric, to the capacitance with air between the electrodes. Also called permittivity and specific inductive capacity. Generally low values are desirable for insulation.

**dielectric strength** The maximum voltage a dielectric can withstand without rupture. Usually expressed as volts per mil.

**dielectric withstanding voltage** The maximum potential gradient that a dielectric material can withstand without failure.

**Direct Current Resistance (DCR)** The resistance offered by any circuit to the flow of direct current.

**direction of lay** The lateral direction in which the strands or elements of a cable run over the top of the cable as they recede from the observer. Expressed as right-hand or left-hand lay.

**discontinuity** Rated interconnection: a broken connection (open circuit) or the loss of a specified connection characteristic. Transient phenomena: Short term (temporary) interruption or unacceptable variation in current or voltage.

**dissipation** Unusable or lost energy, such as the production of unused heat in a circuit.

**dissipation factor** The ratio between the permittivity and the conductivity of a dielectric.

**distortion** An unwanted change or addition to a signal or waveform when it is amplified. This definition excludes noise which is an extraneous signal superimposed on the desired signal.

**drain wire** In a cable, an uninsulated conductor laid over the component, or components, in a foil-shield cable. Used as a ground connection.

**dummy load** A dissipative device used at the end of a transmission line or waveguide to convert transmitted energy into heat, so essentially no energy is radiated outward or reflected back to its source.

**dust cover** See cover, electrical connector.

## E

**EID** See Expanded ID.

**elastic memory** The ability of a crosslinked polymer to be deformed to some predetermined shape, hold that shape for a period, and then return to its original shape upon the application of heat.

**elastomer** A material that exhibits very low or zero crystallinity and a high degree of flexibility (rubber is a synonym).

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**electromagnetic compatibility (EMC)** The ability of an electronic device to operate in its intended environment without its performance being affected by EMI and without generating EMI that will affect other equipment.

**electromagnetic interference (EMI)** Unwanted electrical or electromagnetic energy that causes undesirable responses, degrading performance or complete malfunctions in electronic equipment. See also: noise.

**electromotive force (emf)** See voltage.

**elongation** The ultimate elongation, or elongation at rupture. Expressed as a percentage of original length.

**EMI** Abbreviation for electromagnetic interference.

**encapsulant** Description related to the way dual-wall tubing products and precoated molded parts melt and flow when heated, filling any void in the area being covered. Unlike an adhesive, an encapsulant does not form a mechanical bond to the substrate.

**encapsulation** Covering and sealing.

**end** The number of fibers or strands per carrier in braiding operations.

**environmentally sealed** A unit is provided with gaskets, seals, grommets, potting or other means to keep out moisture, dust, air or dirt which might reduce or impair its performance.

**epoxy** A family of thermosetting resins usually used as adhesives or encapsulants.

**ETFE (Ethylenetetrafluoroethylene)** A fluoropolymer used as base resin for SPEC 55 wire and HCTE.

**Expanded ID (EID)** The specified minimum (as supplied) internal diameter of tubing.

**expansion ratio** An expression of how much larger the inside diameter of a tubing is before shrinking. Specifically, the relationship of the minimum (expanded) inside diameter of tubing to the maximum (recovered) inside diameter, expressed as a ratio. See also shrink ratio.

**extraction tool** A tool used for removing contacts from a connector body.

**extrusion** A process that conveys plastic insulation material, generally via a screw, through forming dies and subsequently cools the insulation material to form a predetermined shape.

### F

**feedthrough** A connector or terminal block, usually having double-ended terminals, which permits distribution and bussing of electrical circuits. Also used to describe a bushing in a wall or bulkhead, separating compartments at different pressure levels, with terminations on both sides.

**ferrule** A short tube used to make solderless connections to shielded or coaxial cable. Also molded into the plastic inserts of multiple contact connectors to provide strong, wear-resistant shoulders on which contact retaining springs can bear.

**filler** A material used in a cable construction to fill large interstices, thus providing a round construction; can be shaped, round, or in mastic forms. A nonfunctional member used in a cable to provide a more circular cross section.

**flame-resistant** A descriptor applied to a material that is inherently resistant to burning.

**flame retardant** A descriptor applied to a material that has been made or treated so as to resist burning.

**flat braid** A braided shield composed of flat strands.

**flat cable** A cable with each component in a single, flat plane.

**flat conductor** A conductor having a rectangular cross section, as opposed to a round or square cross section.

**flex life** A measure of the susceptibility of a conductor or other device to failure due to fatigue from repeated bending.

**fluoropolymer** A polymer that contains atoms of fluorine.

**flux** A liquid or solid that, when heated, exercises a cleaning and protective action upon surfaces. Used to promote or facilitate fusion during soldering or welding.

**frequency modulation (fm)** A scheme for modulating a carrier frequency in which the amplitude remains constant but the carrier frequency is displaced in frequency proportionally to the amplitude of the modulating signal. An fm broadcast is practically immune to atmospheric and man-made interference.

**fretting corrosion** A form of accelerated oxidation that appears at the interface of contacting materials undergoing slight cyclic relative motion. All non-nobel metals (tin) are susceptible to some degree of fretting corrosion and will suffer contact resistance increases.

**front mounted** A connector is said to be front mounted when it is attached to the outside of the mating side of a panel. A front mounted connector can only be installed or removed from the outside of the equipment.

**front release contacts** Connector contacts that are released from the front side of the connector and then removed from the back, wire side of the connector.

**full recovery temperature, minimum** See recovery temperature.

### G

**gauge** A term used to denote the physical size of a wire. See also AWG.

**giga** A prefix meaning one billion ( $10^9$ ).

**gigahertz (GHz)** One billion cycles per second ( $10^9$  cps).

**ground** A connection, intentional or accidental, between an electrical circuit and the earth or some conducting body (e.g. chassis) serving in place of earth.

**grounding conductor** A conductor that provides a current return path from an electrical device to ground.

### H

**hardness** A general term that correlates with strength, rigidity, and resistance to abrasion or penetration. Measured on Shore or Rockwell scales. See also shore.

**harness** A system providing electrical connection between two or more points.

**heat aging** A test that subjects components or materials to temperatures above normal operating values to evaluate changes in performance in order to predict service life. See also accelerated aging.

**heat shock** A test to determine the stability of a material by continuously exposing it to an extremely high temperature for a short period of time. The test was developed both to demonstrate that the material is crosslinked and to observe any problems in dripping, cracking, or flowing.

**heat-shrinkable** A type of plastic material that has been cross-linked. A term describing tubes, sleeves, caps, boots, films or other forms of plastic which shrink to encapsulate, protect or insulate connections, splices, terminations and other configurations.

**hermetic** Airtight, impervious to external influence, as in a hermetic package. Often used to describe metal-to-metal solder or weld-sealed packages.

**hermetic seal** Hermetically sealed connectors are usually multiple contact connectors where the contacts are bonded to the connector by glass or other materials and permits maximum leakage rate of gas through the connector of 1.0 micron ft./hr. at one atmosphere pressure for special applications.

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**hertz (Hz)** International standard term for cycles per second. Named after the German physicist Heinrich R. Hertz (e.g., 60 cycles per second is equal to 60 hertz or 60 Hz).

**hookup wire and cable** Wiring used to connect various points in electronic assemblies.

**hot-melt adhesive** An adhesive that becomes activated by heating. When heated, it melts, flows over the substrate surface, and forms an adhesive bond. Reheating causes the adhesive to remelt.

### I

**ID (Internal Diameter)** The inside or internal diameter of a tubing.

**impedance (Z)** The total opposition offered by a component or circuit to the flow of alternating or varying current. Impedance is expressed in ohms and is similar to the actual resistance in a direct current circuit. In computations, impedance is handled as a complex ratio of voltage to current.

**impedance match** A condition in which the impedance of a component or circuit is equal to the internal impedance of the source, or the surge impedance of a transmission line. This gives maximum transfer of energy from the source to the load, as well as minimum reflection and distortion.

**impulse discharge current**

is defined as the peak current of an impulse which the device can withstand ten times (5 of each polarity) at fixed time intervals) without substantially affecting device performance. The test normally used to determine this capacity uses the 8/20ms waveform as depicted at right where T1=8ms and T2=20ms.

**impulse sparkover voltage** defined as the maximum level of voltage across a device before it discharges the energy to ground when subjected to a voltage impulse. The three common waveform profiles used to determine this capacity are:

**impulse test** A high-voltage test designed to locate pinholes in the insulation of a wire or cable by applying a voltage while the wire or cable is being drawn through an electrode.

**inductance** One cause of reactance. An electromagnetic phenomenon in which the expanding and collapsing of a magnetic field surrounding a conductor or device tends to impede changes in current. The effects of inductance become greater as frequencies increase. The basic unit for inductance is the henry.

**input impedance** The impedance that exists between the input terminals of an amplifier or transmission line when the source is disconnected. The circuit, signal level and frequency must be specified.

**insert** Melttable thermoplastic ring placed within a SolderSleeve device. Aids in encapsulation and sealing.

**insert (connector)** Part that holds the contacts in their proper arrangement and electrically insulates them from each other and from the shell.

**insert arrangement (connector)** The number, spacing, and arrangement of contacts in a termination assembly.

**insert cavity (connector)** A defined hole in the connector insert into which the contacts are inserted.

**insertion loss** The loss in load power due to the insertion of a component, connector or device at some point in a transmission system. Generally expressed in decibels as the ratio of the power received at the load before insertion of the apparatus, to the power received at the load after insertion.

**insertion tool (connector)** A tool used to insert removable contacts into a connector.

**inspection hole** A hole placed at one end of a contact barrel to permit visual inspection, to ensure that the conductor has been inserted to the proper depth in the barrel prior to crimping or soldering.

**insulated terminal** A solderless terminal with an insulated sleeve over the barrel to prevent a short circuit in certain installations.

**insulation crimp** The area of a terminal splice or contact that has been formed around the insulation of a wire.

**insulation, electrical** A nonconductive material usually surrounding or separating two conductive materials. Often called the dielectric in cables designed for high-frequency use.

**insulation grip** The ability of certain crimped terminals to hold firmly in place both the conductor and a small portion of insulation. This prevents the conductor from being exposed due to insulation receding away from the terminal.

**insulation resistance** The electrical resistance between two conductors separated by an insulating material.

**insulation, thermal** A nonconductive material that prevents the passage of heat.

**interconnection** The joining of one individual device with another.

**interface** The two surfaces of a multiple-contact connector that face each other when the connector is assembled.

**interference** An electrical or electromagnetic disturbance that causes undesirable response in electronic equipment.

**interstice** In a cable construction, the space or void left between or around the cabled components.

**irradiation** In insulations, the exposure of the material to high-energy emissions for the purpose of favorably altering the molecular structure via crosslinking.

### J

**jack** A connecting device into which a plug can be inserted to make circuit connections. The jack may also have contacts which open or close to perform switching functions when the plug is inserted or removed. See also: receptacle.

**jacket** 1.) A material covering over a wire or cable assembly. 2.) Outer covering of a dual-wall heat-shrinkable tubing.

**jackscrew** A screw attached to one half of a two-piece, multiple-contact connector and used to draw both halves together and to separate them.

### K

**Kapton** DuPont's trade name for polyimide film.

**key (connector)** A short pin or other projection that slides into a mating slot or groove to guide two parts being assembled.

**keying (connector)** Mechanical arrangement of guide pins and sockets, keying plugs, contacts, bosses, slots, keyways, inserts, or grooves in a connector housing, shell or insert that allows connectors of the same size and type to be lined up; used in situations where there is danger of making a wrong connection.

**keyway** The slot or groove in which a key slides.

**kV (kilovolt)** A unit equal to 1000 volts.

**Kynar** Trade name (of Elf Atochem North America) for polyvinylidene fluoride and its copolymers.

## Glossary of Terms

### L

- lacing cord or twine** Used for lacing and tying cable forms, hookup wires, cable ends, cable bundles, and wire harness assemblies. Available in various materials and impregnants.
- lanyard** A device, attached to certain quick-disconnect connectors, that permits uncoupling and separation of connector halves by a pull on a wire or cable.
- lay** Refers to direction or sometimes the ratio of lay length to core diameter.
- lay length** A term used in cable manufacturing to denote the distance of advance of one member, or a group of spirally twisted members in one turn, measured axially. The lay of any helical element of a cable or conductor is the axial length of a turn of the helix of that element.
- life cycle** A test to determine the length of time before failure in a controlled, usually accelerated environment.
- line impedance** Impedance as measured across the terminals of a transmission line; frequently the characteristic impedance of the line.
- liner** See core.
- longitudinal change (shrink tubing)** The change in length of tubing when recovered. Expressed in the percent of change from the original length.
- loss** Electrical energy that is dissipated as heat.
- loss factor** The product of the power factor and dielectric constant of an insulating material.
- lot number** The number that identifies one production run of material. Also known as a batch number.
- low-loss dielectric** An insulating material that has a relatively low dielectric loss, such as polyethylene or Teflon.
- lug** A termination, usually crimped or soldered to a conductor, that allows connection to be made with a retaining screw.

### M

- marking** A printed identification number or symbol applied to the surface of a wire or cable.
- matched impedance** The coupling of two circuits in such a way that the impedance of one circuit equals the impedance of the other.
- mate** To join two connectors in a normal engaging mode.
- maximum discharge current** defined as the peak current of an impulse which the device can withstand once without substantially affecting device performance.
- mega (M)** A prefix meaning one million ( $10^6$ ).
- megarad** A unit for measuring radiation dosage.
- melt/flow index** Measurement of the flow of thermoplastic material under given conditions of temperature and pressure. Expressed as grams per unit of time.
- melting point** The temperature at which crystallinity disappears when crystalline material is heated.
- MIL** A unit equal to one one-thousandth of an inch (.001"); used in measuring the diameter of a conductor or thickness of insulation over a conductor.
- Military Specification** Military requirements. The demand imposed upon a system to meet a military operational need.
- MIL-SPEC** Abbreviation for Military Specification, which is a document the U.S. Government issues to define a product that will be used in military end-use applications.
- milking off** Action that occurs when the inner layer (the encapsulant or adhesive) of the tubing or molded part acts as a lubricant, allowing the tubing to slip off the substrate (because the tubing wants to recover to a smaller diameter).

- minimum full recovery temperature** See recovery temperature.
- mismatch** The condition in which the impedance of a source does not match or equal the impedance of the connected load. This reduces power transfer by causing reflection.
- MO (Manufacturing Order)** A series of operation-work-order cards identifying materials to be used and the type and quantity of products to be manufactured. An MO is controlled and issued by Production Control to the manufacturing operation.
- MOD Code (Material Modification Code)** A code designating a particular stage in the production process. Most MOD codes describe the way the product is packaged.
- MS (Manufacturing Specification)** A set of process instructions used in the manufacturing of tubing products. Customer Logistics, Product Management, or Manufacturing Engineering initiate the MS; Manufacturing Engineering controls it. The product design and quality parameters are provided to Manufacturing Engineering by Product Development and Quality Assurance. Successful trial runs of a new product or design usually precede the initiation of an MS (see SMO). A proprietary Raychem document, an MS is not available to customers.
- multiconductor** More than one component within a single-cable complex.
- multiple-conductor cable** A combination of two or more components cabled together.

### N

- narrow-band** EMI generated from a device operating at a specific and limited range of frequencies. See also: electromagnetic interference (EMI).
- N Connector** A large radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in the 0 to 11 GHz frequency range. It has a threaded coupling and is physically larger than a TNC connector.
- nick** A small cut or notch in conductor strands or insulation.
- noise** An extraneous signal in an electrical circuit, capable of interfering with the desired signal. Classes of noise include burst of popcorn noise, intermediate frequency noise at low audio frequencies, white (thermal) noise, etc. Signals from power supply or ground line coupled into an amplifier output may be considered noise.
- nominal** A descriptor applied to a dimension representing the center of the range of tolerance or a value if no tolerance is applied.

### O

- "O" crimp** An insulation support crimp for open barrel terminals and contacts. In its crimped form it resembles an "O" and conforms to the shape of the round wire insulation. "O" crimp is also used to describe the circumferential crimps used on COAXICON ferrules.
- OFT (Optional Flame Test)** Canadian Standards Association's test for flame-retardance. Tubing with an OFT rating is highly flame-retardant.
- ohm** The unit of measurement for electrical resistance. A circuit is said to have a resistance of one ohm when an applied emf of one volt causes a current of one ampere to flow.
- operating temperature** The maximum internal temperature at which a system, harness, or connector may operate in continuous service; generally expressed as a time and temperature.
- operating temperature range** The range between the maximum and the minimum internal temperature of insulation in a system, harness, or connector in continuous service. The lower limit is determined by low-temperature flex test.
- Optional Flame Test** See OFT.

## Glossary of Terms

### P

**packaging** The process of physically locating, connecting, and protecting devices or components.

**panel** The side or front (usually metal) of a piece of equipment on which connectors are mounted.

**panel mount** A method of fixing a connector to a board, panel or frame. The mounted connector is usually the receptacle or female connector. The plug or male connector is usually the removable portion.

**PC (Production Control)** Group responsible for directing and regulating the movement of goods through the entire manufacturing cycle, from the requisitioning of raw materials to the delivery of the finished products.

**PCN** See RPN.

**peripheral seal** A seal provided around the periphery of connector inserts to prevent the ingress of fluids or contaminants at the perimeter of mated connectors.

**permeability (chemical)** The passage or diffusion (or rate of passage) of a gas, vapor, liquid or solid through a barrier without physically or chemically affecting it.

**permeability (magnetic)** The measure of how much better a material is than air as a path for magnetic lines of force. Air is assumed to have a permeability of 1.

**permittivity** See dielectric constant.

**pick** The number of crossovers of braiding units per inch of cable.

**pigtail** A short conductor or wire extending from an electrical or electronic device to serve as a jumper or ground connection.

**pin contact** An electrical terminal, usually in a connector. Normally a smaller termination than a lug.

**plastic deformation** Change in dimensions under a load that does not recover when the load is removed.

**plasticizer** A softener or lubricant added to a compound to make it easier to process or more flexible in use.

**plating** The overlaying of a thin coating of metal on metallic components to improve conductivity, facilitate soldering, or prevent corrosion.

**plug** The part of a connector that is normally "removable" from the other, permanently mounted part; usually that half of a two-piece connector that contains the pin contacts.

**plug connector** An electrical connector that is intended to be attached to the free end of a conductor, wire, cable, or bundle, and that couples or mates to a receptacle connector.

**poke through** A term describing stray wires in a solder joint that poke through the insulation.

**polarization (connectors)** A mechanical arrangement of inserts or the shell configuration (referred to as clocking in some instances) that prohibits the mating of mismatched plugs and receptacles. See also clocking.

**polyamide** A polymer formed by the reaction of a diamine and a diacid. Nylons are commercial polyamides characterized by toughness, solvent resistance, and sharp melting point.

**polymer** A material of high molecular weight formed by the chemical union of monomers.

**polyolefin** A family of polymers (such as polyethylene and polypropylene) made from olefin monomers.

**potting** The permanent sealing of the cable end of a connector with a compound or material that thermosets into an elastomer, to exclude moisture and/or to provide strain relief.

**pre-etching** The act of surface preparation before encapsulating.

**pretinned** Description of an electrical component to which solder has been applied prior to soldering.

**pretinned solder cup** Solder cup whose inner surfaces have been precoated with a small amount of solder.

**preform** Usually, the solder ring in a SolderSleeve device.

**primary insulation** The inner member of a dual-wall wire insulation. The insulation applied directly on the conductor. Also referred to as the core. See also core.

**printed circuit board (pcb)** An insulating board serving as a base for a printed circuit. When the printing process is completed, the board may include printed components, as well as printed wiring.

**propagation delay** Time required for an electronic digital device, or transmission network to transfer information from its input to its output.

**propagation delay time** The time between the application of a digital input waveform and the corresponding change in input waveform. It is measured between reference points on the waveforms. The time is generally different for positive-going and negative-going waveforms.

**pulse** A change in the level, over a relatively short period of time, of a signal whose value is normally constant.

**pulse width** The length of time that the pulse voltage is at the transient level. Electronic pulse widths are usually in the millisecond ( $10^{-3}$ ), microsecond ( $10^{-6}$ ) or nanosecond ( $10^{-9}$ ) range.

**push-back** That property of a braid or shield that allows the braid or shield to be pushed back easily along the cable core.

**PVC (Polyvinyl chloride)** A polymer compound used as wire insulation.

**PVDF** Polyvinylidene fluoride.

### Q

**quality assurance** Systematic, planned, and documented activities designed to provide confidence that a product will meet specifications.

**quality control** Activities that monitor, measure, and control the characteristics of a material, component, or product to documented specifications.

**quick disconnect** A type of connector shell that permits rapid locking and unlocking of two connector halves.

### R

**RA flux** Rosin-activated flux.

**radiation crosslinking** The act of crosslinking a material with ionizing radiation. (Most Raychem products are radiation crosslinked, with an electron beam as the form of ionizing radiation.) See also crosslinking by irradiation.

**rated temperature** The maximum temperature at which a component can operate for extended periods with acceptable changes in its basic properties.

**rated voltage** The maximum voltage at which an electric component can operate for extended periods without undue degradation.

**rear release contacts** Connector contacts designed to be released and removed from the rear (wire side) of the connector. The removal tool engages the contact from the rear and pulls the contact out of the connector contact retainer.

**receptacle** Usually the fixed or stationary half of a two-piece multiple contact connector. Also the connector half usually mounted on a panel and containing socket contacts.

**recover (heat-shrinkable components)** Activation of the elastic memory principle (usually with heat) to cause a tubing or molded part to return to its original size.

**Recovered ID (RID)** In heat-shrink tubing, the guaranteed maximum internal diameter of tubing after being freely recovered.

## Glossary of Terms

**recovery temperature** The minimum temperature required to fully shrink a product, that is, for the product to recover completely.

**removable contact** A contact that can be mechanically joined to or removed from an insert. Usually special tools are required to lock the contact in place or remove it for repair or replacement.

**residual impulse** defined as the voltage that will pass through the device prior to activation of the GDT.

**residual voltage** defined as the small amount of voltage left on the line after an impulse passes.

**resistance** A measure of the difficulty in moving electrical current through a conductor or insulation when a voltage is applied. It is measured in ohms.

**resonance** A frequency at which capacitive reactance and inductive reactance are equal and therefore cancel one another's effects.

**RF** Abbreviation for radio frequency.

**RG/U** Symbol used to designate coaxial cables that are made to Government Specification (e.g., RG-58U; in this designation the "R" means radio frequency, the "G" means Government, the "58" is the number assigned to the government approval, and the "U" means it is a universal specification).

**ribbon cable** Flat cable with conductors that have been individually insulated together. Its structure is usually characterized by individual colors of insulation for each conductor, although a single color may be used for all conductors.

**RID** See Recovered ID.

**rise time** The time required for a component or logic circuit to change from the quiescent to the transient state when an input is applied. (i.e. elapsed time between application of input and attainment of full output level).

**RMA flux** Rosin-mildly-activated flux.

**root mean square (rms)** The effective value of an alternating current, corresponding to the direct current value that will produce the same heating effect.

**rope lay** A type of conductor lay that uses stranded conductors as components to build a larger conductor.

**RPN (Raychem Product Number)** A 10-digit number (such as 123456-4-001) assigned to every standard product and every product manufactured on a special manufacturing order (SMO). The first 6 digits represent the PCN (Product Control Number), followed by a 1-digit MOD Code, and finally a 3-digit suffix. See also MOD Code and SMO.

**RT and RW specifications** Specification that describes standard product properties. Qualification and acceptance inspection criteria are incorporated into RT and RW specifications. RT and RW specifications are issued and controlled by the Specifications Group.

## S

**SCD (Specification Control Drawing)** Drawing that defines configuration and material parameters. Issued and controlled by the specifications group, SCDs are frequently used in conjunction with RT Specifications for Thermofit products.

**scoop-proof** A feature that prevents the damage of contacts during misaligned mating.

**sealant** Soft, tacky, pliable material that seals where mechanical strength is not required.

**sealed** Environmentally protected by the thermoplastic inserts or core of encapsulant/ adhesive that has melted down around the substrate.

**sealing plug** A plug that is inserted to fill an unoccupied contact aperture in a termination assembly.

**secant modulus** A measure of material stiffness; stiffer material has a higher secant modulus. More specifically, the secant modulus is the ratio of stress (nominal) to corresponding strain at any specified point on the stress-strain curve. It is expressed in force per unit area (usually kilograms per square centimeters or pounds per square inch), and reported together with the specified stress or strain.

**semi-rigid** A cable containing a flexible inner core and a relatively inflexible sheathing.

**service life** Period of time during which the product is expected to perform satisfactorily.

**service loop** The extra cable required at a breakout to facilitate maintenance and servicing.

**service rating** The maximum voltage or current that a termination is designed to carry continuously.

**sheath** The outer covering of a jacket over the insulated conductors to provide mechanical protection for the conductors. Also known as the external conduction surface of a shielded transmission line.

**shelf life** Generally, the length of time a product or material may be stored without deterioration. Specifically, the length of time during which shrink tubing will retain its expanded ID and return to its recovered ID. Usually not a concern—except for some "amnesic" materials. See amnesia.

**shell (connector)** The outside case, usually metallic, into which the insert (body) and contacts are assembled. Shells of mating connector halves usually provide for proper alignment and polarization as well as for protection of projecting contacts.

**shield/shielding (cable)** A conducting envelope, composed of metal strands, which enclose a wire, group of wires or cable so constructed that substantially every point on the surface of the underlying insulation is at ground potential or at some predetermined potential with respect to ground.

**shield/shielding (circuit)** The metal sleeving surrounding one or more of the conductors in a wire circuit to prevent interference, interaction or current leakage. Shielding protects a circuit against crosstalk.

**Shielding Effectiveness (SE)** The reduction in field strength resulting from interposing a metallic barrier between a source and receptor of electromagnetic energy.

**shock (mechanical)** (1) An abrupt impact applied to a stationary object. (2) An abrupt or nonperiodic change in position, characterized by suddenness, and by the development of substantial internal forces.

**shore** A scale for comparing hardness. Higher Shore values represent harder materials. The hardness of a polymer, for example, is usually represented as Shore A or Shore D, with D being harder.

**shrink ratio** An expression of how much the inside diameter of shrink tubing will reduce in size when recovered. The inverse of the expansion ratio. See also expansion ratio.

**shrink temperature, minimum** The minimum temperature at which a product begins to recover.

**SHV** Abbreviation for standard high voltage.

**signal cable** A cable designed to carry current of less than 12 amperes per conductor.

**sine wave** A wave which can be expressed as the sine of a linear function of time, space or both. A waveform, often viewed on an oscilloscope, of a pure alternating current or voltage.

**skew** Any out-of-squareness of the cut end of a piece of tubing after shrinking.

**skin effect** The tendency of alternating currents to flow near the surface of the conductor, thus being restricted to a small part of the total cross-sectional area. This effect increases the resistance and becomes more marked as the frequency rises.

## Glossary of Terms

**sleeve** The insulated or metallic covering over the barrel of a terminal.

**SMO (Special Manufacturing Order)** An order to evaluate manufacturing and production capability for a new or changed design for a customer and to provide development samples of potential products for customers. SMO products are separate and distinct from standard products. New, potential products are usually run as SMO products for a minimum of three times before being considered for manufacture as a standard product.

**solder** An alloy that melts at relatively low temperatures and is used to join metals with higher melt points.

**solder contact** A contact or terminal having a cup, hollow cylinder, eyelet or hook to accept a wire for a conventional soldered termination.

**solder cup** A tubular end of a terminal into which a wire conductor is inserted prior to being soldered.

**solderability** The property of a metal surface that allows it to be readily wetted by molten solder. See also wetting.

**soldering** A process of joining metallic surfaces with solder without melting the base metal.

**SolderSleeve device** A device of flux-coated solder preform encapsulated in a heat-recoverable plastic sleeve. Upon the application of heat, the flux and solder will melt and flow as the sleeve recovers, forcing the solder around and onto the metallic parts being joined, thus forming an electrically insulated and strain-relieved joint.

**solid conductor** A conductor composed of one single strand.

**solvent resistance** The ability of a material to retain physical and electrical properties after being immersed in specific solvents.

**SPC** Silver-plated copper.

**SPC (Statistical Process Control)** The use of statistical techniques such as control charts to analyze a process or its output so as to take appropriate actions to achieve and maintain a state of control and to improve the capability of the process.

**specific gravity** The ratio of the density (mass per unit volume) of a material to that of water.

**specific inductive capacity** See dielectric constant.

**splice** A joint connecting conductors with good mechanical strength and conductivity; a terminal that permanently joins two or more wires.

**standard high voltage (SHV)** A quick connect/disconnect connector series employing a bayonet lock coupling and designated to operate safely up to 5000 volts AC. It is the industry standard connector specified by the National Bureau of Standards (NBS) for high voltage use by the Atomic Energy Commission (AEC).

**standing-wave** Distribution of current and voltage on a transmission line, resulting from two sets of waves traveling in opposite directions.

**standing wave ratio** The ratio between maximum and minimum current or voltage along a line. It is a measure of the mismatch between the load and the line. It is equal to 1 when the line impedance is perfectly matched to the load. (In which case the maximum and minimum are the same, as current and voltage do not vary along the line). The perfect match would be a 1 to 1 ratio.

**strain relief** The technique for or act of removing or lessening the strain or stress on a joint, splice, or termination. SolderSleeve devices provide strain relief.

**strain relief clamp** See cable clamp.

**strand** A single unit of a conductor.

**stranded conductor** A conductor composed of more than one single strand. The strands in stranded conductors are usually twisted or braided together.

**strip** To remove insulation from a wire or cable.

**stripe** A continuous longitudinal or spiral color strip applied on the surface of a wire, cable, or tubing for identification.

**substrate** The material—such as a wire, post, or tab—over which an interconnection device is used.

**super high frequency (shf)** The Federal Communications Commission designation for the band from 3,000 to 30,000 MHz in the radio spectrum.

**surface resistance** The ratio of the direct current applied to an insulation system to the current that passes across the surface of the system.

## T

**tape wrap** A term denoting a spirally or longitudinally applied tape material wrapped around insulated or uninsulated wire and used as a mechanical barrier.

**TC** Tinned copper.

**tear test** A test to determine the tear strength of an insulating material. Usually includes exposure to given thermal conditions or a programmed series of conditions for prescribed periods of time.

**temperature rating** The maximum temperature at which the insulating material may be used in continuous operation without loss of its basic properties. Usually time dependent.

**tensile** The amount of axial load (longitudinal stress) required to break or pull the wire from the crimped barrel of the terminal, splice or contact.

**tensile strength** The greatest longitudinal stress that a substance or union can bear without tearing or pulling apart. In crimped terminations, it is the greatest longitudinal stress that a terminal can bear without the wire separating from the terminal.

**thermal rating** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination of materials. In electrical terminations, the effect can cause inserts and other insulation material to pull away from the metal parts.

**thermal shock** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination materials. The effect can cause inserts and other insulation materials to pull away from metal parts.

**thermochromic indicator** Special compound that changes color when the proper wetting temperature has been reached in the solder joint.

**thermoplastic** A material that softens (melts and flows) when heated and becomes firm when cooled. A type of plastic that can be remelted a number of times without any important change in properties. Nylon, GE's Lexan, and PVC—examples of this type of plastic—are resilient after molding.

**thermoset** A material that hardens or sets when heated and, once set, cannot be resoftened by heating. This application of heat is called "curing."

**thermosetting plastic** A type of plastic in which an irreversible chemical reaction takes place while the plastic is being molded under heat and pressure.

**thermosetting adhesive** A curing adhesive that requires heat to promote curing. This type of plastic will not soften when reheated. See epoxy.

**time-delay** A circuit that delays the transmission of an impulse for a definite and desired period of time.

**TNC Connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in a 0 to 11 GHz frequency range. Reliability is assured by a threaded coupling that can be safely wired to prevent accidental disconnect.

**tolerance** The total amount by which a quantity is allowed to vary from nominal; thus, the tolerance is half the algebraic difference between the maximum and minimum limits.

**traceability** The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification. The lot number/manufacturing order (MO) number, or SMO number used to identify items or groups of items is traceable back to inspection and procurement records.

## Glossary of Terms

**transmission cable** Two or more transmission lines. If the structure is flat, it is sometimes called flat transmission cable to differentiate it from a round structure such as a jacketed group of coaxial cables. See also transmission line.

**transmission line** A signal-carrying circuit with controlled electrical characteristics; used to transmit high-frequency or narrow-pulse signals.

**triaxial cable** A concentrically constructed cable, with a common axis, composed of a center conductor, first shield, and second shield, all insulated from each other.

### U

**UG** Symbol used to describe coaxial connectors that were made to a Government specification. This specification is now obsolete.

**UL (Underwriters' Laboratories)** A nonprofit independent testing organization that operates a listing service for electrical and electronic materials and equipment.

**ultra-high frequency (uhf)** A Federal Communications Commission designation for the band from 300 to 3000 MHz on the radio spectrum. In television — channels 14 to 83 or 470 to 890 MHz.

**ultraviolet degradation** The degradation caused by long-time exposure of a material to sunlight or other ultraviolet rays.

### V

**velocity of propagation** The ratio of the speed of a radio frequency wave within a cable or dielectric as compared with the same wave in free space.

**very high frequency (vhf)** A Federal Communications Commission designation for the band from 30 to 300 MHz on the radio spectrum.

**voice-frequency (vf)** Any frequency within that part of the radio frequency range essential to speech transmission of a commercial quality (i.e., 300 to 3400 Hz). Also referred to as telephone frequency.

**volt (V)** The unit of measurement for electromotive force (emf). It is equivalent to the force required to produce 1 ampere through a resistance of 1 ohm.

**voltage (E)** The term most often used to designate electrical pressure that exists between two points and is capable of producing a flow of current when a closed circuit is connected between the two points. Voltage is measured in volts, millivolts, microvolts and kilovolts. The terms electromotive force (emf), potential, potential difference and voltage drop are often referred to as voltage.

**voltage breakdown** The voltage necessary to cause insulation failure.

**voltage drop** The voltage developed across a component or conductor by the flow of current through the resistance or impedance of that component or conductor.

**voltage hold over** refers to the maximum line voltage at which recovery of the GDT to its inactive state will take place within a specified period of time (normally 150ms) after an induced lightning pulse (normally 10/1000ms) has been applied.

**voltage rating** The voltage that may be continuously applied to wire.

**volume resistivity** Reciprocal of conductivity; the resistance of a material to the flow of electrical current, usually expressed in ohm-cm.

**VSWR (Voltage Standing Wave Ratio)** A measure of the uniformity of impedance along a transmission line, or the quality of the impedance match between a line and the source or load.

**VW-1** A rating determined by the Underwriters' Laboratories' (UL) optional Vertical Wire Flame Test—the most difficult flame test for tubing. Tubings with a VW-1 rating are highly flame-retardant.

### W

**wall thickness** The thickness of the applied insulation or jacket.

**water absorption test** A method to determine the water uptake of a material. It is time and temperature dependent.

**water blocking** The sticking together of insulated wires; usually caused by heat.

**wavelength** The distance between two points which are in phase on adjacent waves. It is the distance traveled by the wave in the same span of one cycle. Electromagnetic waves (both light and radio) have a speed in space of about 300,000,000 meters (186,000 miles) per second. Thus wavelength in meters is equal to 300,000,000 divided by frequency.

**wetting (solder)** The formation of a relatively uniform, smooth, unbroken, and adherent film of solder to a base metal. Also, the free flow of solder alloy, with proper application of heat and flux, on a metallic surface to produce an adherent bond.

**wicking** The longitudinal flow of a liquid in a wire or cable construction due to capillary action. (This may also apply to solder.)

**wire** A single conductor covered with insulation.

**wire dress** The orderly arrangement of wires and laced harnesses.

**withstanding voltage** The test voltage an electrical connector can withstand for one minute without showing evidence of electrical breakdown when the voltage is applied between conductors and grounding devices of the connectors in various combinations.

### Z

**Z** Letter symbol used to represent impedance in ohms.

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