Product-Related Scopes of NEMA Subdivisions

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National Electrical Manufacturers Association

Division 1. Industrial Automation

Division 2. Lighting Systems Division

Division 3. Electronics Division

Division 5. Building Systems Division

Division 6. Insulating Materials Division

Division 7. Wire and Cable Division

Division 8. Power Equipment Division

Diagnostic Imaging and Therapy Systems Division

All products described in this booklet are within the scopes of subdivisions in NEMA.

INDUSTRIAL AUTOMATION DIVISION

1-CM Carbon/Manufactured Graphite Section

1. Firms that have primary material manufacturing facilities for at least one of the following products, which fall within the Carbon/Manufactured Graphite Section.
   - 1.1 Electrode Group: Graphite electrodes, cathodes, open arc electrodes, gouging and welding rods, plates and parts, EDM, electrochemical anodes, electrolytic anodes, grounding anodes, heating rods, powdered graphite, and spectroscopic materials.
     - 1.1.1 Excluded are: Metal welding rods, metal (but not metal impregnated) EDM electrodes, metal electrolytic anodes, heating rods or elements and spectroscopic materials that are not carbon, graphite and its compounds.
   - 1.2 Electrical Components Group: Brushes and contacts; plates for electrical use. Rectifier anodes, rheostat discs, telephone parts, lighting arresters, pantograph parts and brush holders.
     - 1.2.1 Excluded are: Any of the above not made of carbon, graphite and its com-pounds, except for brush holders.
   - 1.3 Mechanical Group: Bearings, seals, rings, valve parts, valve seats, friction parts (brakes), rupture discs, piston rings, turbine packing rings, pistons, check parts, pipe slides, dash pots, compressor vanes and rotors, end plates, graphite lubricants, refractory coated graphite for mechanical uses including mechanical applications made from carbon and graphite fibers and their composite structures.
     - 1.3.1 Excluded are: Metal parts or rings, ceramic or plastic parts or rings.

1-EW Arc Welding Section

The products included within the jurisdiction of this Section have been detailed and are included in the scopes of its constituent Voting Classifications as follows:

1. **Welding Power Sources Voting Classification and Dues Center**
   - 1.1 Electrical equipment, including all associated control devices, applying to the following:
     - a. Engine driven welding power supplies
     - b. Utility-powered welding power supplies
     - c. Plasma cutting and plasma welding power supplies
     - d. Associated electrical attachments such as water coolers, chillers.
   - 1.2 Automatic and manual devices to feed continuous electrode wire including:
     - a. Combination welding products containing a power supply, wire feeder and/or torch
     - b. Stand-alone wire feeding devices.
   - 1.3 Resistance welding equipment including:
     - a. AC transformers
     - b. Other resistance welding power supplies
     - c. Controls
   - 1.4 MIG gun, plasma welding and cutting torches and stick electrode holders.

1-IS Industrial Automation Control Products and Systems Section

The scope of the Industrial Automation Control Products and Systems Section comprises products primarily used in industrial applications to monitor, control, or actuate power utilization apparatus, including motors. Such equipment is rated not more than 750 volts DC nor 15,000 volts AC. This includes, but is not limited to:

1. Motor controls and accessories—used to start, stop, protect, accelerate, decelerate, reverse, and/or control the speed of motors.
2. Machine logic control and systems—hardware and associated software used in the supervision, monitoring, and/or control of industrial processes.
3. Man/machine interface—devices that require human intervention and are used to control/communicate the status of machines or manufacturing processes.
4. Position control and monitoring—devices that do not require human intervention and are used to control/communicate the status of machines or manufacturing processes.
5. Systems integration—services to plan, develop, implement, and manage

integrated manufacturing and/or process control systems.

6. Communications and software for industrial automation control products and systems.

Excluded from the product scope are:

- Automatic and manual temperature and humidity controls and panels that are in the scope of the Residential Control Section of the types principally used in air conditioning, refrigeration, and comfort heating of non-industrial areas;
- Motors, generators, and motor-generators covered by *Medium Alternating-Current Machine Group*, which function as control when constituting part of adjustable speed drives; and
- Specific components and systems covered by the product scopes of other NEMA Sections.

1-MG Motor and Generator Section

The product scope of the Section comprises the product scopes of its constituent Groups. Excluded from the scope of this Section are:

- Welding generators.
- Booster, dynamic braking and absorption type machine.
- Isolated electric farm lighting plant.
- Variable speed generator equipment for railway passenger cars.
- Main propulsion motors, generators and motor generator sets mounted on railroad and transit
- Locomotives and cars.
- Automotive accessory and toy motors, generators and motor-generator sets.
- Motors, generators, exciters and motor-generators or exciter sets mounted on airborne craft.
- Alternating-current generators for hydraulic turbine drive above 10,000 kVa.
- Synchronous condensers.
- Frequency changers and phase converters.

1. Medium Alternating-Current Machine Group

All alternating-current motors, generators (specifically including those for geared turbine drive) and motor-generators, exclusive of welding and engine type motors and generators, when built in frames, 1 hp, 1700-1750 rpm continuous open type and larger, up to and including ratings built in frames corresponding to the rating continuous open type given in the table below and excluding such motors, generators, and motor-generators included specifically within the scope of any other Group of the Motor and Generator Section.

1.1 All alternating-current motors, generators or motor-generators which constitute part of variable speed drives which fall within the range of the following table:

Motors, Squirrel-Cage and Wound		Motors Synchronous HP		Alternators Resolving Field Type
Speed	Rotor	Utility pF	.8PF	kW .8PF
3600	500	200	150	...
1800	500	200	150	150
1200	350	200	150	150
900	250	150	125	100
720	200	125	100	100
600	150	100	75	75
514	125	75	60	60

1.2 Note I—In computing the maximum size motor or generator falling within the scope of this Group, synchronous speed shall be used.

1.3 Note II—It is understood that the following are included in the scope of this Group:

1.3.1 Machines sold as sets of parts (but not renewal parts) such as hermetic motor parts, universal motor parts, etc.

1.3.2 Alternating-current motors which form part of gear motors, motor-generator sets, adjustable speed drives, etc.

2. Medium Direct-Current Machine Group

2.1 All direct-current motors, generators and exciters, except those defined in *Small Machine Group*, with continuous drip-proof ratings, or equivalent capacities, up to and including:

- ≤ 1.25 HP per rpm
- Generators ≤ 1.0 KW per rpm
- Continuous rip-proof equivalent capacities of machines rated for other duties, temperatures, and/or enclosures are the continuous ratings that would be obtained from machines with the

same armature core but with drip-proof enclosures and current temperature standards.

2.2 All motor-generator or exciter sets whose largest output machine rating is direct-current and within the scope of paragraph 2.1 above.

2.3 Specifically excluded from the product scope of this Group are:

- AISE mill motors.
- Motors and generators included specifically in the scope of any other Group of the Motor and Generator Section.

3. Large Machine Group

The product scope of the Large Machine Group comprises the product scopes of its constituent Voting Classifications.

4. Large Alternating-Current Machine Voting Classification

All alternating-current motors and generators (specifically including those for geared turbine drive) of ratings larger than those given in *Medium Alternating-Current Machine Group* and all ratings of alternating current motors and generators of the revolving field type of 450 rpm and slower speeds. Specifically excluded from the product scope of this Group are alternating-current generators for hydraulic turbine drives above 10,000 kVa.

5. Large Direct-Current Machine Voting Classification

All direct-current motors and generators (specifically including those for geared turbine drives) and motor-generator sets of ratings larger than those given in *Medium Direct-Current Machine Group*.

6. Small Machine Group

All alternating-current motors built in frames smaller than that frame having a continuous rating of 1 hp, open type, 1700–1750 rpm and all generators in the corresponding frame sizes, excluding

6.1 Small synchronous motors of the type generally used in household clocks and timing devices.

6.2 Motors and generators included specifically in the scope of any other Group of the Motor and Generator Section

1-PE Power Electronics Section

(See Arc Welding Section, Industrial Automation Control Products and Systems Section)

1. Power Conversion Equipment used in Uninterruptible Power Systems

Power conversion equipment used in uninterruptible power systems, including, but not limited to:

1.1 Static electrical power conversion equipment such as, but not limited to, the following:

1.1.1 AC/DC power converters

1.1.2 DC/AC power converters

1.1.3 AC/AC power converters

1.1.4 DC/DC power converters

1.2 Flywheel energy storage systems

2. Power Conversion Equipment used in Energy Producing Systems

Power conversion equipment used in energy producing systems of 1000 V and below, including, but not limited to, the following energy producing systems:

2.1 Microturbines

2.2 Fuel cells equal to or larger than 1 kVA

2.3 Photovoltaics

2.4 Utility-connected power sources

3. Voltage Regulators

Equipment of 1000 V and below that provides a regulated or filtered AC output such as, but not limited to:

3.1 Active filters

3.2 Dynamic voltage restorers

3.3 Active power factor correction circuits

4. Battery Charger (Cycle Type) Voting Classification

Battery Chargers (cycle types) used in commercial and industrial battery powered applications such as, but not limited to:

4.1 Industrial truck

4.2 Electric vehicle (off-road and on-road)

4.3 Automatic guided vehicle

5. Excluded are

- Motor Drives
- Arc welding power sources
- Solid state transfer switches
- Electronic tap changers
- Constant voltage (ferro-resonant) transformers
- Products covered in other NEMA sections

LIGHTING SYSTEMS DIVISION

2-BL Ballast Section

The scope of the Ballast Sectioncovers any device, other than the lamp itself, whose primary function is to provide operating power to a light source. This scope includes, but is not limited to:

1. Electronic and electromagnetic ballasts used for fluorescent, high intensity discharge (HID), and low pressure sodium (LPS) lighting systems, used in both interior and exterior applications;
2. Transformers and other conversion devices used in the operation of low voltage filament lighting systems; and
3. Light emitting diode (LED) drive circuits and microwave power supplies for electrodeless lamps.

2-EM Emergency Lighting Section

Automatic, standby, emergency and auxiliary electric power equipment of all voltages, rechargeable battery operated, incorporating a charging means, a battery and switch over device to supply power to emergency and egress lighting loads automatically upon failure of the normal power supply. This scope also specifically includes all types of electrically illuminated exit and directional signs.

2-LC Lighting Controls Section

The purpose of the Lighting Controls Section of the NEMA Lighting Division is to promote the benefits of the application of lighting controls, monitor and communicate about issues affecting lighting controls and the lighting systems they serve, provide a forum for manufacturers of lighting controls, lighting control systems and lighting equipment to address lighting control systems issues of mutual concern, and resolve technical, market, and application issues for products within the Lighting Controls Section scope.

The Lighting Controls Section scope includes "non power current carrying" devices, techniques, and protocols used in the control of lighting. "Non-power current carrying" devices are devices that do not carry line voltage current to the lighting (or other) loads. Low voltage power supplies typically power these devices, and they supply control data (input signals) to a master lighting controller or to the lighting control system. Thus, the Lighting Controls Section scope includes the following:

1. Control devices (non power current carrying)
   1.1 Programmable master lighting controllers
   1.2 Light sensors
   1.3 Occupancy sensors
   1.4 Manual override sensors
      1.4.1 On/off controls
      1.4.2 Light level controls
      1.4.3 "Scene select" controls
2. Lighting Controls Protocols
   2.1 Such as DALI controls protocols
3. Gateways between Lighting Controls Protocols and Building Management Protocols
4. Existing and emerging lighting control technologies such as but not limited to:
   4.1 Wireless
   4.2 Power line carrier control of lighting systems

2-LE Luminaire Section

1. Lighting equipment made of any material or combination of materials consisting of a complete lighting unit (exclusive of the light source) designed and constructed to collect, distribute, direct, refract, reflect, or diffuse light from any electric light source so as to provide general and/or localized artificial illumination for all work places in industry and/or for public, institutional and commercial interiors. Also includes area lighting equipment made of any material, or combination of materials, including a means of suspension, and designed for use with integral light sources, or separate light sources, and designed and constructed to collect, distribute, direct, refract, reflect, or diffuse light from any electric light source to provide general artificial illumination (including systems described as louvered ceilings, luminous panel ceilings, and shielded or baffled systems). Includes products and systems used to generate and/or conduct light from its source through a light guide/optical fiber to one or more locations for the purpose of illumination.
   1.1 Sockets, fittings, attachments, glassware and other accessories only when sold as an integral part of the lighting.
   1.2 All lighting equipment as described above which uses any form of incandescent lighting as its primary integrated light source.
   1.3 All lighting equipment as described above which uses any form of high intensity discharge lighting (including low pressure sodium) as its primary integrated light source.

1.4 All lighting equipment as described above which uses any form of fluorescent lighting as its primary integrated light source.

2. Lighting fixtures designed for outdoor application including incandescent, fluorescent, low pressure sodium, and high intensity discharge (HID) fixtures. Products included fall within four basic categories:

2.1 Roadway Lighting: Lighting fixtures generally used for street, bridge, tunnel, roadway, interchange and highway illumination.

2.1.1 Architectural type fixtures: Fixtures with roadway optics, architecturally pleasing in design and mounted up to 50 feet above base.

2.1.2 Cobra Head fixtures: Fixtures of the generic type generally classified as cobra head regardless of where fixture is used:
Including cobra heads with various lens configurations.

2.1.3 High Mast fixtures: Fixtures mounted 50 feet or more above base.

2.1.4 Specialty Roadway fixtures: Including LPS, fluorescent, deep set-back and outdoor fixtures not included in 2.1.1, 2.1.2, or 2.1.3.

2.1.5 Dusk to Dawn fixtures: Outdoor security fixture, near vertical (NEMA head 201 SA/RMA).

2.1.6 Luminaire supports, suspension hangers and accessories not sold as an integral part of a pole and luminaire support combination. Also newels, ornamental brackets and fittings.

2.1.7 Photoelectric street lighting control devices.

2.2 Area Lighting: Non-aimable lighting generally used for parking, walkways and courtyards.

2.2.1 Architectural Large Area fixtures: Area lighting fixtures with wattage of 250 watts or more (not including high masted lighting defined in 2.1.3 above).

2.2.2 Small Area fixtures: Including post top, building mounted and bollard fixtures using lamps of less than 250 watts.

2.2.3 Garden, Patio, Yard and Other Residential fixtures: Including all incandescent, fluorescent and HID/LPS type fixtures, but excluding dusk to dawn fixtures defined in 2.1.5.

2.2.4 Attachments, accessories and repair and renewal parts of products listed in Area Lighting.

2.3 Floodlighting: Aimable Lighting fixtures for exterior application.

2.3.1 General and heavy-duty floodlighting fixtures.

2.3.2 Sports lighting fixtures: Luminaries designed for sports lighting applications.

2.3.3 R and PAR Type fixtures: Fixtures designed to use R-type and PAR-type lamps.

2.3.4 Quartz Lighting fixtures: Quartz fixtures of residential, commercial and industrial exterior applications.

2.3.5 Attachments, accessories and repair and renewal parts for products listed in floodlighting.

2.4 Specialty Lighting: Special purpose fixtures for signs, excluding those fixtures within the jurisdiction of the scope of Transportation Management Systems and Associated Control Devices Section, service station island, underwater fountain, and pool lighting.

3. Adverse Location Lighting: Lighting units generally referred to as vapor-tight, explosion-proof, water-tight, dust-tight, and marine.

3.1 Hazardous location lighting fixtures as covered by UL 844.

3.2 Marine duty lighting fixtures as covered by UL 595.

Excluded from the Section Scope are:

- Searchlights (regardless of light source).
- Airport lighting equipment, such as runway approach, runway taxiway and ramp lighting.
- Devices in the Scope of the Ballast Section of the Lighting Systems Division.
- Lighting units generally referred to as residential, showcase, exterior-floor, ornamental and residential portable lamps such as but not limited to floor lamps, table lamps, bed lamps, desk lamps, pin-up lamps.

- Renewal parts for products within the Section Scope unless specifically covered above.

2-LL Lamp Section

Electric lamps for general lighting including large incandescent lamps, projection lamps, three-way lamps, reflector and PAR lamps, infrared lamps, tungsten halogen lamps, decorative lamps, special purpose incandescent lamps, miniature and subminiature incandescent lamps (including automotive), sealed beam lamps, fluorescent lamps, compact fluorescent lamps (pin-based and medium screw-based), general lighting high intensity discharge lamps, UV and miscellaneous electric discharge lamps, lamps for holiday lighting.

Excluded from the Section scope are:

- Stage, studio, and photographic lamps.
- Light sources covered in the scope of another NEMA product section.

2-SL Solid State Lighting Section

The Solid State Lighting Section encompasses products and technologies including but not limited to the following:

1. Semiconductor Light Sources – Lighting Emitting Diodes (LEDs), Laser Diodes, Organic LEDs, and any other semiconductor light source. It will be generally understood that "semiconductor light source" refers to lighting devices that utilize semiconductors as a light source and not necessarily the semiconductor itself.
2. Working jointly with other NEMA Sections, the Section will also cover in its Product Scope those aspects of the following which pertain to the unique requirements of Solid State Lighting Devices:
   - 2.1 Fixtures
   - 2.2 Luminaires and associated hardware
   - 2.3 Power supplies
   - 2.4 Mechanical and electronic controls
   - 2.5 Software for operation or control

ELECTRONICS DIVISION

3-DB Dry Battery Section

1. Primary dry cell batteries such as dry cell primary leclanche, alkaline primary (manganese dioxide, silver, zinc air, mercury), and lithium type batteries. Reserve cells are excluded.
2. Portable rechargeable batteries including but not limited to sealed nickel cadmium, nickel metal hydride, lithium, and zinc air. Lead acid cells are excluded.
3. Portable electric lighting devices designed to be hand-carried or worn on the person and utilizing a self-contained or attached power source. This includes general purpose, industrial, penlight and novelty, and military types.

3-DC Residential & Commercial Controls Section

(Also see Industrial Automation Control Products and Systems Section and Health Care Facility Equipment Section)

1. Automatic controls, mechanically, electro-mechanically, electrically or electronically actuated, responsive to temperature, pressure, humidity, light, electrostatic effect, flow or liquid level, used in equipment or appliances for comfort heating, air-conditioning, refrigeration, clothes washing, drying or ironing, personal grooming, water heating or cooking.
2. Panels for the control of air-conditioning and refrigeration.
3. Panels for the control of electric comfort heating.
4. Relays which control the starting windings of fractional horsepower split phase and capacitor motors used principally for the applications outlined in paragraph 1.
5. Inherent overload protective devices for fractional and integral horsepower split phase and capacitor motors used principally, but not exclusively for the applications outlined in paragraph 1.
6. Motor Driven and other types of programming sequencing devices used principally for the applications outlined in paragraph 1.
7. Class 2 and 3 transformers designed primarily for use with applications outlined in paragraph 1.

The following are specifically excluded:

- Refrigeration expansion and pressure control valves.

- Manually operated nonelectric steam or hot water specialties such as radiator valves, vent valves, temperature and pressure relief valves, traps and steam regulating accessories.
- Relays, contactors, starters and overload devices which fall within the product scope of the Industrial Control and Systems Section.
- Precision snap-acting switches which fall within the product scope of the Precision Snap-Acting Switch Section.
- Constant level float valves for oil burners.
- Transformers included in the scopes of the Transformers Products Section and Electrical Measurting Equipment Section.

3-SB Signaling Protection and Communication Section

1. Signaling Protection and Communication Section

1.1 Audible and visual signals, including bells, horns, speakers and strobes for use in fire alarm systems.

1.2 Automatic detectors for fire protection and other life safety hazards including heat, smoke, flame, gas biohazard detectors, etc

1.3 Smoke Alarms, CO Alarms and combination Alarms.

1.4 Life safety protective signaling systems include:

1.4.1 Fire Detection and Notification

1.4.2 Mass Notification

1.4.3 First Responder Interface

1.4.4 Elevator Monitor Status

1.4.5 BAS and Smoke Control Interface

1.4.6 Suppression, Supervisory and other Special Hazardous System Monitoring

1.4.7 Supervisory Signaling Station Notification

1.4.8 Electronic Security

1.4.8.1 Access Control

1.4.8.2 CCTV

1.4.8.3 Intrusion

1.4.8.4 Combination Systems

1.5 Two Voting Classifications have been authorized but are not yet organized.

1.5.1 Paging Systems, Devices or Accessories Voting Classification paging systems, devices or accessories including those of the audible and visual type.

1.5.2 Manual and Automatic Operated Contact Devices Voting Classification manual and automatic operated contact devices of the type principally used as accessories for, or components of products falling with the scope of the Signaling, Protection and Communication Section.

2. Health Care Communication and Emergency Call Systems Group

2.1 Nurse Call Systems

2.2 Doctor Paging Systems

2.3 Room Monitoring Systems

2.4 Other Healthcare Communications Methods

2.4.1 Patient Monitoring

2.4.2 Patient Access Control

3-TS Transportation Management Systems and Associated Control Devices Section

The scope of the Transportation Management Systems and Associated Control Devices Section (TMSACD) includes, but is not limited to products, subsystems, equipment, components, and services principally used to design, install, operate, and maintain vehicular transportation systems and related elements. The items included in the scope provide the means to realize integrated transport information management and control systems that are compatible with the intermodal operation of Intelligent Transportation Systems. These items fall under the following general categories:

1. Signal Display and Signal Elements

Elements used to display and control the flow of vehicular and pedestrian traffic consisting of, but not limited to mechanical, electromechanical, and/or solid-state devices and components. These elements are primarily used (a) for reporting of vehicular and pedestrian traffic conditions and flows, and (b) for providing real-time information on traffic conditions to the motorist or pedestrian.

1.1 Annunciation devices, such as, signal heads, pedestrian displays, etc.

1.2 Changeable message signs (CMS) and variable message signs (VMS)

2. Fixed, Configurable and Programmable Traffic Controllers and Subassemblies

Elements used to execute traffic control algorithms and coordinate other associated traffic control devices.

2.1 TS1 traffic controllers

2.2 TS2 traffic controller assemblies

2.3 Model 170, 179, 2070 controllers

2.4 Open advanced traffic controllers (OATC)
2.5 Conflict monitors
2.6 Malfunction management units
2.7 Auxiliary devices
2.8 Ramp meters
2.9 Arterial masters
2.10 Field processors and controllers
2.11 Variable geometry flow control units, such as, reversible lane controllers, etc.
2.12 VMS controller unit

3. Communications Interface Devices and Systems

Elements used to support the exchange of signals, data, and information between the elements of a transportation management system.

3.1 Bus interface units
3.2 NTCIP interface units
3.3 Radio interface units
3.4 Telecommunications interface units, such as, modems, circuit switches, bridges, etc.

4. Software and Firmware Modules

Software for *Fixed, Configurable and Programable Traffic Controllers and Subassemblies* elements, including, but not limited to the following:

4.1 Operating system software
4.2 Program generation and management software
4.3 Network management software for NTCIP units, etc.
4.4 Communications network system software
4.5 Transportation management center software

5. Mounting, Protection, Power Supply, and Fastening Equipment

Elements used to mount, contain, protect, or fasten the device and components associated with the transportation management system. All mechanical, electromechanical, electric and electronic equipment used to provide power, housing, and physical support for *Signal Display and Signal Elements*, *Fixed, Configurable and Programmable Traffic Controllers and Subassemblies* and *Communications Interface Devices and Systems* elements, including, but not limited to the following:

5.1 Terminals and facilities
5.2 Cabinets and enclosures for signal, signal and traffic control elements
5.3 Traffic poles
5.4 Load switches

6. Computing Assemblies for Transportation Management Systems

Elements used to supervise, coordinate, and program the elements of a transportation management system. Computers and high-level controllers used in a traffic management center to monitor, control and supervise transportation management systems for vehicular and pedestrian traffic within a single or multiple jurisdiction(s), including, but not limited to the following:

6.1 Stationary & mobile traffic management center computers
6.2 Pollution monitoring computers
6.3 Incident monitoring and reporting stations
6.4 Toll collection and management station

7. Associated Devices for Transportation System Management Control Devices

Devices used to support intermodal operation, such as, dedicated platform controllers, displays, sensors, and actuators used in equipment to monitor, start, stop, and control the movement of pedestrian and vehicles across intermodal areas and to monitor the operating environment, including, but not limited to the following:

7.1 Air and water pollution sensors dedicated for monitoring transportation infrastructure
7.2 Automatic Vehicle Location devices used in traffic management systems
7.3 Data Collection and Monitoring devices used to measure characteristics of road usage (e.g. weight-in-motion)
7.4 Detection devices such as, inductive loop detectors, traffic cameras, ultrasonic, sensors, etc.

Excluded from the Section scope are products, subsystems, equipment, components, and services covered within the scope of other NEMA sections.

BUILDING SYSTEMS DIVISION

5-CT Cable Tray Section

Metal cable trays are mechanical support systems for cables, raceways, and insulated conductors and are classified as follows:

1. Ladder type.
2. Trough-type
3. Channel-type
4. Single rail type
5. Wire mesh/basket type
6. Other cable tray systems

Non-metallic cable trays are mechanical support systems for cables, raceways, and insulated conductors and are classified as follows:

1. Ladder Type A—ladder-type nonmetallic cable tray is a pre-fabricated nonmetallic structure consisting of two longitudinal side rails.
2. Trough Type A—trough-type nonmetallic cable tray is a pre-fabricated nonmetallic structure with ventilated or solid bottom within integral or separate longitudinal side rails.
3. Other cable tray systems.

5-EN Enclosures Section

Products covered by the NEMA Enclosures Section include metallic and non-metallic enclosures intended for use with electrical equipment, and associated products used with these enclosures that meet the environmental requirements. Products include, but are not limited to, enclosures without other equipment installed, enclosures that form part of another product, enclosures that are intended for use in specific applications, and associated products that provide a part of the environmental protection when used with these enclosures. Also included are:

1. Wireway, Telephone Cabinets, Auxiliary gutter and Auxiliary Enclosures: Wireway, auxiliary gutter, telephone cabinets and auxiliary enclosures intended to house electrical circuits and components:
   - 1.1 Wireway
     Troughs with hinged or removable covers for housing and protecting electrical wires and cable in which conductors are laid in place after the wireway(s) have been installed as a complete system.
   - 1.2 Auxiliary Gutters
     Gutters which are intended to supplement wiring spaces at meter centers, distribution centers, switchboards, and similar points of wiring systems and which may enclose conductors or busbars, but which shall not be used to enclose switches, over-current devices, appliances, or other similar equipment.
   - 1.3 Telephone Cabinets
     Cabinets with door(s) and lock(s) intended to house telephone connections.
   - 1.4 Auxiliary Enclosures
     Auxiliary enclosures which are miscellaneous enclosures having hinged or screw covers intended to house electrical circuits and components.

These enclosures are intended to meet the environmental conditions described *in NEMA Standard 250—Enclosures for Electrical Equipment (1000 volts Maximum)*, and include the following applications:

Non-Hazardous Locations— Types 1, 2, 3, 3R, 3S, 4, 4X, 5, 6, 6P, 12, 12K and 13.

Hazardous Locations— Types 7, 8, 9, and 10. Hazardous locations (other than mines) are classified according to the flammability or combustibility of the materials that may be present and also according to the likelihood that a flammable or combustible concentration is present.

5-FB Conduit Fittings Section

1. Fittings and accessories for use with rigid metallic conduit, intermediate metal conduit, electrical metallic tubing, nonmetallic sheathed cables, portable cords, service entrance cables, flexible metallic conduit, liquid-tight flexible metallic conduit, liquid-tight nonmetallic flexible conduit, armored and metal clad cables; including the following types:
2. Angle adapters; benders; bending hickeys; bushings (including insulating and cap); bushing nipples; conduit and cable straps; clamps; hangers and staples; conduit unions; cast conduit bodies, covers and cover gaskets; connectors; couplings; enlargers, entrance caps, elbows and fittings (including gooseneck plate); fish wire, fixture hickeys and extensions; grounding and bonding fittings; insulated end fittings; locknuts; panel extensions; reducers.
3. Cast outlet boxes, covers and gaskets. Cast junction and pull boxes, covers and gaskets and FS and FD boxes and accessories.
4. Excludes all products within the scope of the Pin and Sleeve Plug, Receptacle, and Connector Section.
5. Excluded also are conduit elbows, threaded conduit couplings, conduit nipples, and

electrical metallic tubing elbows, as included in the product scope of the Steel Rigid Conduit and Electrical Metallic Tubing Section.

1. Hazardous Location Boxes and Fittings Voting Classification and Dues Center

1.1 Includes cast outlet boxes, conduit fittings, and cable sealing fittings for hazardous (classified) locations. (Note: UL Listing Categories include: EBNV, QBCR and/or CYMX.)

2. Cable Tie Voting Classification and Dues Center

2.1 Includes metallic, nometallic and composite cable ties and associated fixing devices within the scope of IEC 62275 and UL 1565.

5-FU Fuse Section

(Also see Wiring Device Section)

1. Non-renewable plug fuses.
2. Non-renewable cartridge fuses, not exceeding 1000 volts AC 1200 volts DC or less.
3. Renewable cartridge fuses and renewal links or elements, 600 volts or less.
4. Fuse holders and fuse blocks.
5. Excluded are all other types, such as miscellaneous and special purpose fuses.

5-HC Health Care Facility Equipment Section

1. Medical Modular Walls and Consoles Integrated service centers and products that comprise integrated service centers for patient utilities in health care facilities. Such utilities include, but are not necessarily limited to:
   1.1 Electrical power system distribution equipment, grounded or isolated.
   1.2 Clinical gas and suction system components.
   1.3 Intercommunication system components.
   1.4 Medical lighting fixtures and controls.
2. Isolating Systems and Panels Prefabricated systems designed to provide a source of ungrounded isolated power for patient areas of health care facilities. Prefabricated power and/or ground modules.
3. Ancillary Equipment Isolation transformers, line isolation monitors, ground integrity meters or monitors, and other test equipment related to power sources in patient areas of health care facilities.
4. Excluded are: Products within the product scope of other Sections of NEMA.

5-LVDE Low Voltage Distribution Equipment Section

The scope of the Low Voltage Distribution Equipment Section comprises equipment primarily used in industrial, commercial and residential applications to distribute and switch electrical power and to protect the electrical circuit. Such equipment is rated at not more than 1,000V AC nor 1,200V DC. The products are in four distinct groups as shown below and include but are not limited to:

1. Molded Case Circuit Breakers Product Group

1.1 Molded case circuit breakers interrupting current in air, single and multi-pole, assembled as complete units in supporting and enclosing housings of insulating materials and providing overload and/or short circuit protection. Molded case circuit breakers include circuit breakers, circuit breaker frames, and circuit breaker trip units. Devices are thermal-magnetic, dual magnetic, or electronic trip and may exist in a number of styles including, but not limited to, the following:

1.1.1 Instantaneous only circuit breakers (MCP)
1.1.2 Circuit breakers and ground fault circuit interrupter (GFCI)
1.1.3 Circuit breaker with equipment ground fault protection
1.1.4 Circuit breakers and arc fault circuit interrupter (AFCI)
1.1.5 Marine circuit breakers
1.1.6 Naval circuit breakers
1.1.7 Classified circuit breakers
1.1.8 Mining duty circuit breakers
1.1.9 Circuit breakers with secondary surge arrestors
1.1.10 Circuit breakers with transient voltage surge suppressors (TVSS)
1.1.11 Circuit breakers for use with uninterruptible power supplies
1.1.12 Current limiting circuit breakers
1.1.13 Integrally fused circuit breakers
1.1.14 Remote control circuit breakers
1.1.15 Circuit breakers with SWD, HID, and/or HACR ratings
1.1.16 Special purpose circuit breakers

1.2 Insulated case circuit breakers interrupting current in air assembled as complete units in supporting and enclosing housings of insulating

materials and providing overload and short circuit protection. Insulated case circuit breakers include circuit breakers, circuit breaker frames, and circuit breaker trip units. Devices are thermal magnetic or electronic trip and may exist in a number of styles including, but not limited to, the following:

1.2.1 Naval circuit breakers
1.2.2 Marine circuit breakers
1.2.3 Mining duty circuit breakers
1.2.4 Circuit breakers with HACR ratings

1.3 Molded case switches interrupting current in air, single and multi-pole, consisting of molded case circuit breaker assemblies or insulated case circuit breaker assemblies, without overload tripping mechanisms, intended primarily for use as disconnectors or isolators.

1.4 Accessories and electrical and remote operating mechanisms, either internal or external, intended for use with molded case circuit breakers, insulated case circuit breakers, and molded case switches, such as, but not limited to the following:

1.4.1 Trip elements (e.g. shunt trip, UV trip).
1.4.2 Ground Fault sensors, when ground fault protection is integral with the circuit breaker or tripping system.
1.4.3 Current limiting fuse elements specifically for use with molded case breakers, when the fuse elements are integral with the circuit breakers.
1.4.4 Connection means including but not limited to mounting bases, plug-in connections, drawout bases, bus connectors, and wire connectors

1.5 Enclosures of the type described in NEMA Standards Publication 250 - *Enclosures for Electrical Equipment (1000 Volts Maximum)*, intended to house single circuit breakers.

Exclusions:

- Renewal parts.
- Molded case circuit breakers, interrupting in air, of the type used exclusively by the various branches of the Armed Forces of the United States.
- Circuit Breaker products in the scope of Outdoor High Voltage Power Circuit Breaker Voting Classification.

2. Panelboards (Including Loadcenters) and Distribution Boards Product Group

(See Switchgear Section and Industrial Automation Control Products & Systems Section)

2.1 Panelboards and Enclosing Cabinets—Single panelboards, panel assemblies or groups of panel units and accessories suitable for assembly in the form of a single panelboard, intended for commercial and industrial construction, including bus structure, equipment enclosures, fronts, and with or without switches and/or overload protective devices (fuses or circuit breakers) and ground fault sensors. Includes door, lock, directory frame and gutter spacing.

2.2 Distribution Switchboards—Assemblies of devices for switching, measuring, ground fault sensing, transformation, circuit control and/or protection usually assembled on a framework designed for floor mounting.

2.3 Theater Control Boards—Boards for the control of circuits including dimming of lights for theaters, auditoriums, schools, lodges, etc.

2.3.1 Exclusions:
Resistance, reactor, electronic and auto-transformer dimmers. (Also see Industrial Automation Control Products & Systems Section)

2.4 Load Center Equipment

2.4.1 Panelboard devices accepting circuit breaker or fusible branches with or without circuit breaker or fusible mains and primarily intended for residential and light commercial construction.
2.4.2 Panelboard devices in combination with a single meter socket. These devices have one or more main disconnects and may or may not accept circuit breaker or fusible branches/feeders.
2.4.3 Exclusions:
Devices having receptacles or their provisions and intended for use with supply cords. (See 2.7)

2.5 Combination meter socket and circuit breaker equipment having multiple meter sockets and circuit breakers. This

category includes multiple or group metering and the accessories including the main disconnects, tap boxes, pull boxes, etc.

2.6 Power outlet and temporary service devices having receptacles and/or power cords or their provisions to supply power to mobile homes, RVs, construction sites, etc. This category of devices may also be combined with meter sockets.

2.7 Equipment Ground Fault Protection Devices Equipment ground fault protection devices sold separately or as an integral part of the products in this Section's scope.

2.8 Specifically *included* in the equipment specified in paragraphs 2.1 through 2.7 are the enclosures that form a part of those items and meeting requirements of one or more enclosure types specified in NEMA Standards Publication 250.

2.9 Specifically excluded from the scope are products within the scopes of the Conduit Fittings, Switchgear and Industrial Automation Control Products & Systems Sections.

3. Switches Product Group

3.1. Air break switches, fused or unfused, and their accessories open and enclosed, including but not limited to the following:

3.1.1 Disconnecting and Isolating Switches (Safety Switches) described as General Duty or Heavy Duty Butt contact switches, blade contact switches, and sliding contact switches intended to serve as either circuit disconnectors or isolators.

3.1.2 Bolted Pressure Contact Switches
Switches operating with a mechanical tightening of the moving contact by the final motion of the operating mechanism, intended to serve either as circuit disconnectors or isolators.

3.1.3 High Pressure Butt Contact Switches
Switches having butt-type contacts and a spring-charged mechanism intended to serve either as circuit disconnectors or isolators.

3.1.4 Pull Out Switches
Separately mounted, manually operated, isolating or disconnecting switches in which the switch is operated by physically removing (pulling out) a section of the switch assembly.

Exclusions

- Snap Switches (See *Wiring Device Section*)

4. Busway Product Group

4.1 Products consisting of enclosed sectionalized prefabricated busbars rated at 100 amperes or more, and fittings classified as follows:

4.1.1 Feeder Busways: Busway having no plug-in openings and intended primarily for conduction electric power from sources of supply to centers of distribution.

4.1.2 Plug-In Busways: Busway having plug-in openings on one or both sides at spaced intervals and offering the means for electrical connection of plug-in or bolt-on devices to the busbars.

4.1.3 Accessories:

4.1.3.1 All power take-off devices applicable to busways within the scope of this Section.

4.1.3.2 All corrective, protective, and indicating devices applicable to busways within the scope of this Section.

4.1.4 Exclusions: Specifically excluded from this scope are trolley ducts and lighting ducts.

Note: Busway enclosures may be constructed of a metallic, non-metallic, or composite material.

5-OS Outlet and Switch Box Section

General:

Metallic, nonmetallic, and composite electrical boxes of the type described in NEMA Outlet and Switch Box Standards (e.g., NEMA OS 1 and NEMA OS 2), for use in applications of 1000 volts AC and 1200 volts DC or less.

Included are:

1. 100 cubic inches (1640 cm_3) or less in volume, including flush and surface mounted device boxes, outlet boxes, multiple gang boxes, utility boxes, and boxes with provision for supporting of fixtures or ceiling suspended fans, and conduit bodies having volume markings.

2. Multiple gang device boxes greater than 100 cubic inches (1639 cm_3).
3. Floor boxes, concrete rings/boxes.
4. Specialty boxes including but not limited to swimming pool junction boxes, multiple gang types used to separate electric light, power, Class 1, and non-power limited fire alarm circuits from Class 2 and Class 3 circuits, and boxes specifically to house Class 2 and Class 3 circuits.
5. Box accessories including but not limited to extension rings, bar hangers, box extenders and covers, except flush device cover plates.

Excluded are:

- Boxes and cabinets which have interior pre-assembled wiring.
- Hinged cover and pre-assembled screw cover metal cabinets.
- Junction boxes and fittings for under floor duct systems.
- Fittings and accessories manufactured as part of surface raceway systems.
- Combination and parts of such excluded products.
- Products within the scope of other NEMA Sections.
- FS and FD boxes.

5-PP Ground Fault Personnel Protection Section

1. The purpose of this Section is to further the development of, in association with other related NEMA Sections, technology, application standards, product standards, and consumer and user education.
2. The products included are intended primarily to protect normal* human beings from harmful effects of electric shock by sensing ground fault(s) and/or leakage current(s) on grounded and/or ungrounded systems rated 1000 volts AC or DC and below, and interrupting the electric circuit to the load when a fault current to ground and/or leakage current(s) exceeds some predetermined value that is less than that required to operate the over-current protective device of the supply circuit.
3. The interrupting mechanism of this equipment may be separate from the sensing device or integral with the sensing device. Ground fault circuit interrupters may be combined with other signaling or limiting products.
4. Excluded are products primarily intended for ground fault protection for equipment.

***The word "normal" as used here is intended to exclude persons who are electrically sensitive, either because of their unusual current conductivity or a physical defect.

5-PR Pin and Sleeve Plug, Receptacle, and Connector Section

Field wireable current-carrying plugs, receptacles and connectors of the pin and sleeve type which serve as connections for power, control or signaling for use on both AC and DC circuits. Also, included are field mechanically and electrically interlocking types.

5RN Steel Conduit and Electrical Metallic Tubing Section

1. Rigid steel conduit, including elbows, threaded couplings, and nipples customarily furnished on or with rigid steel conduit.
2. Steel electrical metallic tubing, including elbows customarily furnished with steel electrical metallic tubing.
3. Steel intermediate metal conduit including elbows, threaded coupling, and nipples customarily furnished on or with steel intermediate metal conduit.

5-TC Polymer Raceway Products Section

1. Polymer raceway products. Polymer raceways, fittings and accessories systems intended for electrical and selected communication and signaling applications. For purposes of this scope, polymer raceway systems are enclosed channels designed expressly for holding wires, cables, or busbars as covered by the following categories:
   - 1.1 Thermoplastic Raceway Voting Classification
     - 1.1.1 Thermoplastic raceway
     - 1.1.2 Thermoplastic elbows, conduit bodies, and fittings
     - 1.1.3 Thermoplastic boxes
     - 1.1.4 Accessories for use with thermoplastic raceways
   - 1.2 Thermoset Raceway Voting Classification
     - 1.2.1 Thermoset raceway
     - 1.2.2 Thermoset elbows, conduit bodies, and fittings
     - 1.2.3 Thermoset boxes
     - 1.2.4 Accessories for use with thermoset raceways

2. Specifically included are rigid nonmetallic conduit, flexible nonmetallic conduit and liquid-tight extra flexible nonmetallic conduit, polyethylene and polyolefin conduit, polymer guards (anti-climbing, guy, pole hub, ground wire, riser cables, tree and u-cable), nonmetallic wire duct, and, polymer underfloor and surface nonmetallic raceways. Specifically excluded are wireways, auxiliary gutters, and enclosures, as well as those products covered within the scopes of the Outlet and Switchbox Section, Conduit Fittings Section, Panelboard Product Group, and Busway Product Group.
3. Surface metal raceway and strut-type channel raceway.

5-VS Low Voltage Surge Protective Devices Section

1 For low-voltage power, control and communications systems.
- 1.1 For surge suppression on circuits rated 1000v (RMS) ac and below:
- 1.2 For surge suppression on circuits rated 1500 dc and below.

2 These devices include components, modules, assemblies, or hybrid circuits comprised of active or passive elements (linear or non-linear) or any combination of these elements, packaged to divert, clamp, filter or in any other way limit surge voltages.

5-WD Wiring Device Section

1. 5-WD-1 Current-Carrying Wiring Devices and Certain Non-Current-Carrying Wiring Devices and Supplies

(Also see *Industrial Automation Control Products and Systems Section, Fuse Section, and Switches Product Group*)

1. The product scope of the Wiring Device Section covers certain current-carrying wiring devices and certain non-current-carrying wiring devices and supplies. These are defined as follows:

1.1 Current-Carrying Wiring Devices. A current-carrying wiring device is defined as an electrical or electronic product that serves primarily as a connection and/or control point for electrical circuits within a range of 0 to 400 amperes 0-600 volts AC, DC and AC-DC (660 watts, 1000 vac fluorescent) and which may possibly consume energy in the performance of its prime functions.

1.1.1 Lampholders:

1.1.1.1 Incandescent—Non-metallic outer shell, threaded, medium base only, key, keyless, push through and pull types (excluding outlet box type and socket interiors). Metal outer shell, threaded, medium base only, key, keyless, push through and pull types (Excluding outlet box type and socket interiors).
Outlet box, threaded medium base only, pull and keyless types.
Weatherproof, threaded, medium base only.
All other incandescent (including but not limited to admedium, bayonet, candelabra, cleat, fixture, husk, intermediate, lumiline, medium, miniature, mogul, pin-type, sign, socket interiors sold separately, all bases).

1.1.1.2 Fluorescent
Bi-pin
Slimline.
All other fluorescent (including but not limited to recessed contact, circline, panelescent and starter holders).

1.1.1.3 All other lampholders (including but not limited to cold cathode, neon and quartz lamps).

1.1.2 Convenience and Power Outlets
General use types including those with integral GFCI, AFCI, protection). (Except pin and sleeve, appliance and radio—

1.1.2.1 2-pole, 2-wire, (flush, all types, all amperages).

1.1.2.2 2-pole, 3-wire and up flush).
Locking, 15 amperes and under.
Locking, 20 amperes and over.
Non-locking, 15 amperes and under.

Non-locking, 20 amperes and over.
1.1.2.3 Other types, e.g., surface outlets.

1.1.3 Attachment Plug Caps and Flanged Inlets (including motor bases). General use types, including fused, fuseless, switch and switchless including attachment plugs with integral GFCI, AFCI and LCDI protection. (Excluding pin and sleeve, appliance and radio-television types).
1.1.3.1 2-pole, 2-wire, all types, all amperages.
1.1.3.2 2-pole, 3-wire and up.
Locking, 15 amperes and under. Locking, 20 amperes and over.
Non-locking, 15 amperes and under.
Non-locking, 20 amperes and over.

1.1.4 Connector Bodies and Flanged Outlets
General use including fused, fuseless, switch and switchless. (Excluding pin and sleeve, appliance and radio-television types).
1.1.4.1 2-pole, 2-wire, all types, all amperages.
1.1.4.2 2-pole, 3-wire and up.
Locking, 15 amperes and under.
Locking, 20 amperes and over.
Non-locking, 15 amperes and under.
Non-Locking, 20 amperes and over.

1.1.5 Switches, General Use
1.1.5.1 AC flush mounted (except mercury)
Single pole—15 amperes and under.
Single pole—over 15 amperes.
Other than single pole (including but not limited to double pole 3-way, 4-way—all amperages.
1.1.5.2 AC-DC flush mounted (except mercury) Single pole - all amperages. Other than single pole (Including but not limited to double pole 3-way, 4-way).
1.1.5.3 All others (including but not limited to surface mounted).
1.1.5.4 Dimmers Switches
Incandescent
Infinitely variable—600 watts or less.
Infinitely variable—over 600 watts.
All others (including but not limited to high-low switches and software driven).
Fluorescent, All types, All ratings.
High Intensity Discharge—All types, All ratings.
1.1.5.5 Touch Switches—All types, All ratings.
1.1.5.6 Remote Control Switches—All types, all ratings, of remote control switches for the purpose of remotely performing such functions as turning equipment on and off, speed control, volume control, intensity control, or programming. They may be hand-held, plug-in or suitable for outlet box installation. Such switches include, but are not limited to the following types:
Radio frequency Power line carrier
Infrared
Sound Activated-Voice
—Random Noise
—Specific whistle
Specifically excluded are remote control switches of the type included in the scope of the Industrial Control and Systems Section.

1.1.5.7 Motion Sensing Switches—All types, all ratings of motion sensing switches primarily intended for use in controlling lighting circuits or convenience outlets in residential and commercial occupancies. These devices may be surface mounted, or mounted in an outlet box. Sensing means may include, but are not limited to:
Photocell
Passive Infrared
Ultrasonic
Microwave

1.1.5.8 Timer Switches—Branch circuit types, all ratings, primarily intended for controlling lighting and/or convenience outlets in residential and commercial occupancies. These devices may be surface-mounted, or mounted in an outlet box. Timing means include, but are not limited to:
Fixed
Mechanical Clock Operated
Solid State
Programmable
Software Driven

1.1.5.9 Ceiling Fan Speed Control Switches—All types, all ratings.

1.1.6 Multiple Outlet Assemblies, Surface Extensions and Power Distribution Poles, including relocatable power taps without surge protection including those with integral GFCI, AFCI and LCDI protection.

1.1.7 Certain Miscellaneous Current Carrying Wiring Devices including those with integral GFCI, AFCI, protection.
1.1.7.1 Combination devices.
1.1.7.2 Fluorescent starters.
1.1.7.3 Adapters, current taps and cube taps.
1.1.7.4 Pilot lights (flush mounted outlet box type).

1.2 Non-Current Carrying Wiring Devices and Supplies
Non-current carrying wiring devices and supplies are those products utilized in conjunction with the installation and operation of current carrying wiring devices.
1.2.1 Switch, Outlet, FM/TV, Blank and Telephone Plates
1.2.1.1 Metallic.
1.2.1.2 Non-metallic.
1.2.2 Certain Miscellaneous Non-Current Carrying Wiring Devices (Including but not limited to chain, connectors and end bells, elastomer covers for plugs and connectors, insulating links, pilot jewels, plate screws, pull cords, yokes, and child safety caps).

Excluded are:

- Appliance switches.
- Cutouts designed for bus bar assembly only.
- Enclosing cabinets.
- Fuses, circuit breakers, and safety switches.
- Products of the type principally used in automobiles and aircraft.
- Knife, time, solenoid and automotive switches.
- Pin and sleeve type or pin and socket type devices.
- Products of the type principally designed for use in hazardous areas, i.e., explosion-proof, dust-ignition-proof.
- Products of the type principally used in radio and television equipment.
- Terminal blocks. (Industrial Automation Control Products and Systems Section).
- Precision snap-acting switches.
- Photo electric relays.
- Products within the product scope of another NEMA Subdivision.

2. Undercarpet Premise Wiring Systems

Undercarpet premise wiring systems for power distribution, telecommunications, and data communications for applications of 600 volts or less. These systems normally include such items as flat conductor power cable, undercarpet telephone and data cable, associated shielding, connectors, terminators, adapters, boxes and devices.

INSULATING MATERIALS DIVISION

6-IM Insulating Materials Section

1. Flexible Insulation and Mica Voting Classification

All flexible sheet and tape materials used for electrical insulation, and all forms of built-up electrical insulation comprising mica splittings and/or mica paper in combination with suitable binders, and with or without re-enforcing materials and products made there from. Excluded are fish paper and those products falling within the scope of the Industrial Laminate Section.

2. Industrial Laminate Voting Classification

The basic product scope of this Section consists of laminated plastics in any form (but excluding fabricated parts) using papers, fibers (woven or other) or other materials as a reinforcement with thermosetting or thermoplastic resins as binder.

1. Electromechanical Laminates Voting Classification
   Unclad laminates primarily used for electrical insulation (excluding unclad laminates used as base in additive circuitry processes).
2. Electronics Laminates Voting Classification
   All metal-clad laminates and unclad materials used as a base in additive circuitry processes. Also, included are B-stage prepregs (semi-cured materials) for use as an adhesive and/or encapsulating layer of multi-layer circuitry.

3. Electrical Insulating Resins Voting Classification

The product scope of the Section comprises the product scopes of its constituent Groups.

Excluded from both Groups: Resins and compounds used in products of the Insulating Materials and Wire and Cable Divisions as defined in the NEMA Product Scopes, and compounds containing more than 50% silicone in the resin portion, all molding and coating powders, and core-plate enamels.

1. Synthetic Organic Resin Group
   Synthetic organic resins/polymers and hardeners used as thermoset or thermoplastic electrical or electronic insulation, except for sales to manufacturers of compounded products described in the Resin Combinations Group.

2. Resin Combinations Group
   Products in the Synthetic Organic Resin Group in combination with solvents, additives, fillers, reinforcing materials, and curing agents.

4. Electrical Tubing and Sleeving Voting Classification

The product scope of the Section includes flexible and semi-rigid electrical insulating tubular products, but not limited to: Fabric-based plastic and rubber, including heat-shrinkable and spiral wound products.

6-LD Decorative Laminate Section

Decorative laminated plastic sheets and other forms, composed of papers, fabrics, and/or other cores using thermosetting condensation resins as a binder material, laminated at a minimum of 750 pounds per square inch.

6-MW Magnet Wire Section

1. All insulated conductors of the types generally used in the creation of an electromagnetic field.
2. Excluded are bare electrical conductors of all shapes.

WIRE AND CABLE DIVISION

7-HW High Performance Wire and Cable Section

1. Wires and cables, produced to both domestic and international standards and specifications, which are used primarily with devices which produce, transmit, receive, detect, distribute, control, record, or modify electrical signals and power.
2. Specifically included are insulated signal and communications wire and cable, including voice and data types used for internal premises wiring, and such products as coaxial cable, microphone cable, hookup wire, appliance wiring material, multiconductor electronic cable, flat cable, motor lead wire, power-limited circuit cable, CATV drop and trunk lines, thermocouple wire, thermostat cable, shipboard, airframe, automotive, and transit wire and cable.
3. Excluded are exterior telephone (distribution) cables and other wire and cable types, which are specifically included in the scope of any other NEMA product section.
4. Fabricated conductors – uninsulated electrical conductors, solid or composite-strands, fabricated of copper alloys, bare or metal clad.

7-MO Modular Wire Section

The Product Scope of the NEMA Modular Wiring Section covers wiring systems used in outdoor locations, field-installed wiring assemblies using off-site manufactured subassemblies for branch circuits, remote control circuits, signaling circuits, and communication circuits in accessible areas. The product included under this scope (as found in *UL 183-Manufactured Wiring Systems*) are to be installed in accordance with Article 604 of the National Electrical Code, ANSI/NFPA 70.

7-RV/7-VR Building Wire and Cable / Power and Control Cable Section

1. Building Wire and Cable Group Voting Classification

The following products shall be within the jurisdiction of this Group:

1.1 All types of building wires and cables as identified in the National Electrical Code (NEC), Underwriters Laboratories (UL) standards, Canadian Electrical Code (CEC), Canadian Standards Association (CSA) standards, Mexican Electrical Code (MEC), and Asociación Nacional de Normalización y Certificación del Sector Eléctrico (ANCE) standards.

1.1.1 UL, CSA and ANCE categories of building wire as follows:

UL/CSA/ANCE Standard, Category

UL 4/CSA C22.2.2 No. 51, Armored Cables

UL 44/CSA C22.2 No. 38/NMX-J-451, Thermoset-Insulated Wires and Cables

UL 83/CSA C22.2 No. 75/NMX-J-010, Thermoplastic Insulated Wires and Cables

UL 493, Thermoplastic Insulated Underground Feeder and Branch Circuit Cables

UL 719/CSA C22.2 No. 48, Nonmetallic Sheathed Cables

UL 854/CSA C22.2 No. 52, Service Entrance Cables including single, paralleled, or cabled conductors, with XLP insulation, with or without an overall covering, which are NRTL Listed as Type SE, Type USE or USE-2 combined with another NRTL Type on the same wire or cable. Excluded are similar constructions with rubber insulation which are reported in the scope of the Power and Control Cable Section.

UL 1063/CSA C22.2 No. 127, Machine Tool Wires and Cables / Equipment Wires

UL 1569, Metal Clad Cables - 600V Type MC cables containing 4 conductors or less, in sizes 14 - 10 AWG, sold in standard packages and utilized as a building wire.

1.1.2 Product construction and wire and cable types within the categories identified in 1.1.1 are described in the NEC CEC, MEC and the NEMA Guide for Classification of all Types of Insulated Wire and Cable, and in the standards referenced herein.

1.1.3 Specifically excluded are wire and cable products used primarily in utility stations or industrial power wiring systems.

1.2 All types of flexible metal conduit as identified in Article 348 of the National Electrical Code® (NEC®) and in compliance with UL 1/CSA C22.2 No. 56. All types of liquidtight flexible metal conduit as identified in Article 350 of the National Electrical Code® (NEC®) and in compliance with UL 360/CSA C22.2 No. 56.

2. Power and Control Cable Group Voting Classification

2.1 All types of solid dielectric insulated wires and cables including thermosetting (XLPE and rubber) and thermoplastic, single and multiconductor, jacketed, sheathed, or armored for power and control applications.

2.2 Specifically included are the following cables as may be defined in the NEC and the NEMA Classification of All Types of Insulated Wire and Cable Products.

2.2.1 *0 to 2000 Volt Power and Control Cable*

Airport Lighting Cable
Bus Drop Cable
Cables multiplexed or paralleled, with or without concentric neutrals
Cathodic Protection Cable
Control Cable
Fire Alarm Cable
Fire-Protective Signalling Cable, non-power limited
Type FCC Flat Conductor Cable
Gas Tube Sign and Ignition Cable
Type ITC Instrumentation Tray Cable
Irrigation Cable
Locomotive Cable
Type MC Metal Clad Cable
Network Cable
Oil Well Cable
Pole and Bracket Cable
Power Cable
Secondary Underground Distribution Cable
Series Lighting Cable
Service Drop and Secondary Cable
Service Entrance Cable including single, paralleled, or cabled conductors, with rubber insulation, with or without an overall covering, which are NRTL Listed as Type USE or USE-2 combined with another NRTL Type on the same wire or cable. Excluded are similar constructions with XLP insulation which are reported in the scope of the Building Wire and Cable Section.
Spacer Cable & Primary Aerial Cable
Submarine Cable
Type TC Power & Control Tray Cable
Traffic Control & Signal Cable
Water Well Pump Cable, Armored and Unarmored

2.2.2 *2001 to 15kV*

Airport Lighting Cable
Oil Well Cable
Type MV Power Cable
Type MV/MC Metal Clad Cable
Pole and Bracket Cable
Power Cable
Primary Underground Distribution Cable
Street Lighting Cable
Submarine Power Cable

2.2.3 *15.1kV and Over*

Type MV Power Cable
Type MV/MC Metal Clad Cable
Power Cable
Primary Underground Distribution Cables
Submarine Power Cable
Transmission Cable

2.2.4 *Welding Cable (All Types)*

2.2.5 *Paper Power Cable*

Paper insulated cable of the types used for the transmission and distribution of electrical energy, except dry paper apparatus leads, and excluding pipe, oil, accessories and supervision.

2.2.6 Thermoset, and other types of low energy circuit control cable, except cable insulation with asbestos.

2.3 Specifically excluded are:

2.3.1 Wires and Cables suitable for applications of 135°C and over reported in the scope of the High

Performance Wire and Cable Section.

2.3.2 Rubber sheathed portable cords and cables reported in the scopes of the Portable Power Cable Group and Dues Center and the Flexible Cords Section.

2.3.3 Such types of shipboard cable as IEEE-45 and MIL-C-915.

2.3.4 Types of cable reported in the scope of the Building Wire and Cable Section.

2.3.5 600V Type MC cable in sizes 10 AWG or smaller, 4 conductors or less, sold in standard packages and utilized as a building wire, shall be within the scope of the Building Wire and Cable Section.

3. Portable Power Cable Group and Dues Center

3.1 Mining and earth moving machinery cable involving insulated cable used in power supply applications with mining and dredging machinery, as follows:

3.1.1 Bore hole and dredge cable, armored and unarmored (all voltages).

3.1.2 Mining and earth moving machine cable (all voltages) including:
mine locomotive reel cable
mine shuttle car cable
mine drill cable
earth moving machine cable
mine cable, flat, round, single or multiconductor Type W, G, G-GC, etc., shovel cable, Types SHD and SHD-GC, etc.

3.1.3 Mine power feeder cable, (all voltages);

3.2 Excluded are all cables in the scope of the Flexible Cords Section.

7-XC Flexible Cords Section

1. Fixture and Appliance Wire Voting Classification and Dues Center

1.1 All fixture wires, appliance wires and flexible cords as so classified by the National Electrical Code, by Underwriters Laboratories Inc., or by Canadian Standards Association excluding those types specifically covered in the Power and Control Cable Section, the Building Wire and Cable Section, and the High Performance Wire and Cable Section. It includes but is not limited to the following:

C	HPD
CL751	HPN
CL752	HSJ
CL901	HSJO
CL902	HSJOO
CL903	PD
CL904	POT-64
CL906	POT Tinsel
CL907	PXT
CL908	PXWT
CL909	RFH-2
CL1051	S
CL1052	SE
CL5053	SEO
CL1054	SEOO
CL1055	SJ
CL1151	SJE
CL1152	SJEO
CL1251	SJEOO
CL1252	SJO
CL1253	SJOO
CL1254	SJT
CL1255	SPE-1
CXTW	SPE-2
CXWT	SPE-3
DR	SPT-1
DRT	SPT-2
E	SPT-3
EO	SRD
ETP	SRDE
ETT	SRDT
FFH-2	ST
GTFC	SP-1
GTFPD	SP-2
GTFPO	SP-3
STO	TEWN
STOO	TF
STW	TFF
SV	TFFN
SVE	TFN
SVEO	TPT
SVEOO	TS
SVO	TST
SVOO	TVC
SVT	TX
SVTO	TXF
SVTOO	TXFW
SJTO	XTW
SJTOO	XF
SJOW	
SJTW	
SO	
SOO	

SOW

1.2 Variation in the above cordage types designate special characteristics such as oil resistant, outdoor (W types), and additional items of a specific construction nature are also covered.

1.3 Excluded are the following types having ratings above 135°C, which are covered in the scope of High Performance Wire and Cable Section:

CL-1501	PTF
CL-1502	PTFF
CL-2001	SF-1
PF	SF-2
PFF	SFF-1
PGF	SFF-2
PGFF	XFF

2. Power Supply Cord and Cord Sets Voting Classification and Dues Center

Seasonal use cord sets (UL 817), cord sets and power-supply cords, flexible and applicable wire of the types included in Fixture and Appliance Wire Voting Classification and Dues Center, cut to length, with any trimming operation thereon, and with or without a molded on fitting or an attached wiring device.

3. Industrial Portable Power Cable Voting Classification and Dues Center

Portable power cables and electric vehicle cables including the following types:
Portable power cable type PPE
Flexible stage and lighting power cable types SC, SCE, SCT
Electric vehicle charging cable types EV, EVE, EVT

4. Plug Blades Voting Classification and Dues Center

Blades, pins, and female contacts for 100 and 250-volt power cords including pre-assembled male and female inserts for automated and semi-automated production.

POWER EQUIPMENT DIVISION

8-CC Electrical Connector Section

1. 8-CC-I Electric Power Connector Voting Classification

All connectors whether bolted, welded, or expansion fittings of the type generally used in the construction of indoor and outdoor substations.
Specifically excluded from the scope are:

- Connectors generally used for indoor wiring of industrial, commercial, or residential buildings.
- Components of equipment which are to be reported as part of the ultimate product in its appropriate group.
- Those connectors in which the pressure to fix the connector to the electrical conductor is applied externally, changing the size and/or shape of the connector.
- Those products which are included in the product scopes of other Voting Classifications or other NEMA Subdivisions.

2. Pressure Connector Voting Classification

Pressure Connectors of the kind generally used in installations conforming to the National Electrical Code, for terminating or joining No. 8 AWG and larger electrical conductors.

2.1 Pressure Connectors are of the following types:
2.1.1 Those in which the pressure to fix the connector to the electrical conductor is applied by integral screw, cone, or other mechanical means.
2.1.2 Those in which the pressure to fix the connector to the electrical conductor is applied externally, changing the size and/or shape of the connector.
2.2 Insulation piercing copper & aluminum
2.2.1 Mechanical tool applied
2.2.2 Other installation means (e.g. new technology)

Specifically excluded from this product scope are the following:

- Those products which are included in the product scopes of other NEMA Subdivisions.
- Fixture or pig-tail connectors such as, but not limited to, wire nuts.
- Strips of connectors suitable for automatic installation.
- Insulated connectors of the type described in paragraph 2 above.

3. Overhead Lines Connector Voting Classification

Connectors for outdoor overhead lines, as described in the following categories:

3.1 Split bolt and vise type connectors, with and without washers or spacers. Includes copper split bolts and vise type connectors, aluminum split bolt and vise type connectors, and plated split bolt and vise type connectors, unfilled or filled with compound. Service entrance connectors, bolted & mechanical type, copper or aluminum, with or without washers or spacers.
3.2 Bolted clamps and U-bolt parallel connectors and/or clamps, clamps with one or more bolts, copper or aluminum, plated or un-plated, with or without spacers, including center bolt type, with or without liners, unfilled or filled with inhibitor or contact paste.
3.3 Compression splices, dead-ends and repair sleeves, tool installed, full or partial tension for connecting overhead line conductors. Full tension sleeves for ACSR may be of the double or single-sleeve type.
3.4 Compression parallel tap connectors, tool installed, copper or aluminum, plated or unplated, filled or unfilled with inhibitor contact paste, with or without tabs, one piece assemblies.
3.5 Hot line or hot tap clamps, either “V ” type main and eye bolt tap or parallel groove main and tap types, designed to be manually installed on overhead conductors with conventional “shotgun” hot sticks.
3.6 Wedge connectors, copper & aluminum
3.6.1 Fired-on using a pyrotechnic charge
3.6.2 Mechanical tool applied
3.6.3 Other installation means
3.7 Insulation piercing copper & aluminum
3.7.1 Mechanical tool applied
3.7.2 Other installation means

4. Underground Distribution Type Cable Connectors and Accessories Voting Classification

Insulated or uninsulated separable and non-separable, cable connectors, splices, joints and

accessories involving the connecting of cable to cable, or cable to equipment at voltages from 125 volts up through and including 69 kV. Applications include non-utility as well as utility electrical distribution systems, and cover all conductor sizes commonly employed in commercial, industrial, urban, residential and street lighting systems.

4.1 Included are:

4.1.1 Low Voltage Connectors, insulated or uninsulated mechanical or compression, for application in residential and medium density underground distribu- tion circuits operating at 600 volts or below. Typical product descriptions are:

4.1.1.1 Junction bars; associated terminals or plug connectors.

4.1.1.2 Multi-conductor terminals for joining cable to transformer spades or studs.

4.1.1.3 Insulated splices or splice kits, consisting of both bare connector and insulating materials.

4.1.2 Voltage Insulated Connectors, separable and non-separable, functioning as connectors, splices, cable joints, terminations, or circuit element housings, in shielded cable systems operating at voltages above 600 volts. Typical product descriptions are:

4.1.2.1 Elbow connectors or termina- tors, bushing well inserts, junction modules, and operation accessories, loadbreak and non-loadbreak (de-energized), fused and unfused.

4.1.2.2 Splices, taps, cable joints, plugs, receptacles and accessories.

4.1.2.3 Insulated splices or splice kits, consisting of both bare connector and insulating materials.

4.1.3 Connector Components installed in or on equipment that ultimately will be joined to, and function with, connectors described in paragraphs 1 and 2. Typical product descriptions are:

4.1.3.1 Bushings, loadbreak and non-loadbreak de-energized), high or low voltage.

4.1.3.2 Bushing wells.

4.1.3.3 Parking stands and operating accessories.

Excluded are:

- Low Voltage, insulated or uninsulated, connectors, junctions, cable limiters, and limiter assemblies recommended for, and expressly designed to meet performance and application requirements of underground distribution network systems.
- High Voltage cable terminating devices performing the functions of pothead terminators, or stress cones in cable riser or equipment terminal applications.
- Tapes, insulation kits, or insulation materials that are not part of kits that include connectors for the cable conductor.
- Lead Wiping Sleeves, stuffing boxes, or other devices used to terminate paper, cloth, or liquid impregnated cable insulation system.

5. Grounding Products Voting Classification

Includes:

5.1 Copper-clad, zinc-plated, hot-dip galvanized and stainless steel ground rods.

5.2 Couplers for copper-clad, zinc-plated, hot-dip galvanized and stainless steel ground rods.

5.3 Chemical rods and other technologies

5.4 Connectors

5.4.1 Mechanical, including ground clamps for station construction.

5.4.2 Hydraulic installed.

5.4.3 Fired-on installation.

5.4.4 Installed by other means (e.g. exothermic, et.al.).

6. Installation Tooling Classification

Includes:

6.1 Mechanical

6.2 Hydralic
6.2.1 Low pressure, <3000 lb/in$_2$.
6.2.2 High pressure, >3000 lb/in$_2$.
6.3 Battery powered tools.
6.4 Pyrotechnic (firing-on).
6.5 Other means (new technology).

8-CP Capacitor Section

(Also see Surge Arrester Section)
Includes Power Capacitors only of the following types:

1. Shunt Capacitors
   1.1 Capacitor units of 1/2 kVa and larger for power factor improvement and other low frequency AC applications.
   1.2 Assemblies of capacitor units with accessories and control to form complete capacitor installations.
2. Series Capacitors
   2.1 Capacitor units of 1/2 kVa and larger for series connection in low frequency ac circuits.
   2.2 Assemblies of capacitor units with accessories and control to form complete capacitor installations.

8-EI Electrical Measuring Equipment Section

8-EI1 Electrical Metering Group and Dues Center

Electro-mechanical and solid-state equipment and systems for measurement, display, recording, processing and telemetry for electricity metering and associated information. Such equipment and systems to include electricity meters for measurement of real and reactive energy and demand; time-of-use meters; demand recording and translating systems; load management and data acquisition components intended for use, by or under the direction and control of an electrical utility, for the measurement, telemetry, and/or control of electricity consumed by utility customers; as well as renewal parts thereof, and such other devices as are used exclusively for the measurement and/or control of electricity.

Excluded are products and systems in the product scope of other NEMA subdivisions where such products and systems differ in primary function.

1.1 Electromechanical Electricity Metering Voting Classification

1.1.1 Electromechanical watthour meters, combined electromechanical watthour and demand meters, combined electro-mechanical watthour meters and control devices, electromechanical time-of-use watthour meters, electromechanical demand meters, and magnetic tape pulse recorders, as well as renewal parts thereof, and such other electromechanical or compound technology devices as are used exclusively for the measurement and control of energy and/or demand.

1.1.2 The products to be covered by the above scope are:
Induction Watthour Meters
Mechanical Demand Registers
Thermal Demand Registers
Mechanical Pulse Initiators
Magnetic Tape Pulse Recorders
Multiple Rate Mechanical Registers

1.2 Solid-State Electricity Metering Voting Classification

1.2.1 Solid-state watthour meters, combined solid-state watthour and demand meters, combined solid-state time-of-use watthour and demand meters, solid-state time-ofuse watthour meters, combined solid-state watthour meters and control devices, and solid-state pulse recorders/processors, as well as renewal parts thereof, and such other solid-state devices as are used exclusively for the measurement and control of energy and/or demand.

The products to be covered by the above scope are:
Solid-State Watthour Meters
Solid-State Pulse Recorders
Solid-State Registers,
Demand Registers or combination
Electronic Sensing Pulse Initiators
Solid-State Load Management Terminals

8-EI2 Instrument Transformer Group and Dues Center

2.1 Transformers, including renewal parts thereof, designed for use with measuring or control devices. These may be divided into two classes known as instrument transformers and tripping transformers, defined as follows:

2.2 Instrument Transformer-An instrument transformer is a current or potential (voltage) transformer suitable for use with measuring devices; that is, one in which the conditions of phase and of current or voltage in the primary circuit are represented with acceptable accuracy in the secondary circuit. (This includes metering outfits consisting of a combination current and/or potential transformer. Bushing-current transformers for installation over the terminal bushing of power circuit breakers are specifically excluded.)

2.3 Tripping Transformer-A tripping transformer is a transformer similar to an instrument transformer but designed solely to operate tripping or control mechanisms.

8-EI3 Meter Mounting and Test Equipment Group and Dues Center

Equipment of the type generally used for mounting and/or testing watthour or demand meters such as sockets, boxes, enclosures, test blocks, test tables, and test kits. Excluded here from is equipment incorporating such devices, but performing, in addition, any other function than mounting and/or testing. Also excluded is laboratory and field measuring equipment such as meters, instruments, and instrument transformers.

8HV High Voltage Insulator Section

(Also see Outdoor High-Voltage Switches Voting Classification)

1. Insulators or insulating parts of wet-process porcelain or toughened glass, or non-ceramic composites, whether or not assembled with metal parts, used in the transmission or distribution of electrical energy or for use as a part of a large electrical machine or piece of equipment (excluding assembled bushings and tubes used in secondary wiring at voltages not in excess of 440 volts and excluding fiberglass guy strain insulators).
2. Clamps, fittings and accessory hardware used directly with such insulators or insulating parts and/or affecting their functioning, except crossarm pins, bus clamps and pillar insulator spacers.

8-LA Surge Arrester Section

(Also see Capacitor Section)

1. High Voltage Surge Arresters Voting Classification and Dues Center

1.1 For medium- and high-voltage power ac systems, valve-type
- 1.1.1 Station class
- 1.1.2 Intermediate (line) class
- 1.1.3 Distribution class
- 1.1.4 Secondary class

1.2 For Medium- and High- Voltage power dc systems
- 1.2.1 For railway cars, trolley busses and feeder circuits
- 1.2.2 For secondary circuits
- 1.2.3 For power systems

1.3 Gaps not inherently self-clearing, used for purpose of voltage limitation

1.4 Capacitors of the type generally used for protection against lightning

1.5 Resistors designed for the purpose of affording protection from lightning or other abnormal voltages to circuits or equipment associated therewith.

8-SG Switchgear Section

1. High Voltage Fuse Voting Classification

High Voltage fuses, single-pole air switches, fuse disconnecting switches, and accessories (all rated above 1000 volts) for ac distribution systems as follows:

Note: All types of fuses rated 601 to 1000 volts designed and tested prior to 1985 are covered by this scope. Future standards developed should consider this fact.

1.1 Enclosed, open and open link types of distribution cutouts, fuses, and fuse disconnecting switches.

1.2 Distribution and power type current limiting fuses.

1.3 Power fuses.

1.4 Distribution single pole air switches.

1.5 Distribution oil cutouts.

1.6 Capacitor fuses.

1.7 Oil immersed fuses, including current limiting type.

1.8 Fuse supports, fuse mountings, fuse hooks, fuse tongs, fuse links, removable switch blades and accessories, used exclusively with the products listed above.

2. Outdoor High Voltage Power Circuit Breaker Voting Classification

2.1 Oil Circuit Breakers rated above 1000 Volts for ac service.

Note: Excluded from this scope are automatic circuit reclosers.

2.1.1 Attachments for these circuit breakers, such as bushing current transformers, bushing potential devices, interlocks, under voltage devices, shunt trips, over-current trips, etc., and auxiliaries sold with the breakers such as closing relays, structural steel supports, etc.

2.1.2 Renewal and spare parts designed exclusively for use in these circuit breakers and not included in the scope of some other subdivision.

2.2 Oilless and Low Oil Content Circuit breakers rated above 1000 Volts for ac service.

2.2.1 Attachments for these circuit breakers such as bushing current transformers, bushing potential devices, interlocks, undervoltage devices, shunt trips, over-current trips, etc., air or gas supply and storage equipment.

2.2.2 Renewal and spare parts designed exclusively for use in these circuit breakers and not included in the scope of some other subdivision.

3. Power Switchgear Assemblies, Low and Medium Voltage Power Circuit Breakers, Medium Voltage Load Interrupter Switches Voting Classification

3.1 Power switchgear assemblies including, but not specifically limited to, equipment for the control and protection of apparatus used for power generation, conversion, transmission, and distribution.

3.1.1 Low voltage metal enclosed power ac circuit breaker switchgear assemblies, indoor and outdoor, rated 600 volts ac or less, either drawout or stationary.

3.1.2 Low voltage metal enclosed power dc circuit breaker switchgear assemblies, indoor or outdoor, rated 3000 volts dc or less, either drawout or stationary.

3.1.3 Metal-clad switchgear assemblies, indoor or outdoor, rated above 1000 volts ac, including drawout medium voltage power circuit breakers and/or load interrupter switches.

3.1.4 Metal enclosed/interrupter switchgear assemblies, indoor or outdoor, rated above 1000 volts ac, including drawout or stationary medium voltage load interrupter switches.

3.1.5 Station type cubicle switchgear, indoor or outdoor, rated above 1000 volts ac, including stationary medium voltage power circuit breakers.

3.1.6 Metal enclosed power bus and connections when furnished external to the metal enclosed switchgear assemblies.

3.1.7 Control switchboards, indoor or outdoor, rated 600 volts ac or 250 volts dc or less consisting of the following types:

3.1.7.1 Vertical switchboards, open or enclosed

3.1.7.2 Dual switchboards

3.1.7.3 Duplex switchboards

3.1.7.4 Control desks (console)

3.1.7.5 Benchboards

3.1.7.6 Dual and duplex benchboards

3.1.7.7 Fixed rack cabinets

3.1.7.8 Swing back cabinets

3.1.8 Renewal and spare parts designed exclusively for any switchgear assemblies enumerated in this section and not included in the scope of some other subdivision.

3.2 Low Voltage Power Circuit Breakers rated 1000 volts ac or less

3.2.1 Low Voltage ac power circuit breakers

3.2.2 Low Voltage ac integrally fused power circuit breakers

3.2.3 Low Voltage ac power circuit protectors

3.2.4 Functional components for circuit breakers listed in 3.2 above for

remote closing, remote opening, automatic opening, auxiliary contacts, attachments, etc.

3.2.5 Renewal and spare parts designed exclusively for use in the products enumerated in 3.2 above and not included in the scope of some other subdivision.

3.3 Low Voltage Power Circuit Breakers rated 3200 Volts dc or less

3.3.1 General purpose dc power circuit breakers

3.3.2 General purpose dc power circuit breakers for mining applications

3.3.3 Semi-high-speed dc circuit breakers

3.3.4 High-speed dc circuit breakers

3.3.5 Rectifier circuit breakers

3.3.6 Field discharge circuit breakers

3.3.7 Functional components for circuit breakers listed in 3.3 above for remote closing, remote opening, automatic opening, auxiliary contacts, attachments, etc.

3.3.8 Renewal and spare parts designed exclusively for use in the products enumerated in 3.3 above and not included in the scope of some other subdivision.

3.4 Medium Voltage Indoor Oilless Drawout Power Circuit Breakers rated above 1000 Volts for ac service

3.4.1 Functional components for these circuit breakers for remote closing, remote opening, auxiliary switches, interlocks, etc.

3.4.2 Renewal and spare parts designed exclusively for use in these circuit breakers and not included in the scope of some other subdivision.

3.5 Medium Voltage Load Interrupter Switches rated above 1000 Volts for ac service.

3.5.1 Functional components for load interrupter switches for remote closing, remote opening, auxiliary switches, interlocks, etc.

3.5.2 Renewal and spare parts designed exclusively for use in these switches and not included in the scope of some other subdivision.

4. Outdoor High-Voltage Switches Voting Classification

4.1 Power Switching Equipment rated above 1000 Volts ac and/or 3200 Volts dc

4.1.1 Grounding Switches

4.1.2 Group-Operated Multiple Horn-Gap and Disconnecting Switches

4.1.3 Hook-Operated Disconnecting Switches

4.1.4 Excluded from this scope: Porcelain-housed hook operated discon-necting switches

4.1.5 Insulator Unit Adapters and Fittings for Equipment in this Scope

4.1.6 Interrupter Switches

4.1.7 Oil-Immersed Disconnecting Switches

4.1.8 Switch Hooks or Sticks

4.1.9 Indoor Insulator Units and Accessories

4.1.10 Interlocks, Auxiliary Switches, and Accessories designed with or for equipment in this scope

4.2 Crossarms, Buck Arms and Pole-Top Frames used as Switch Mountings, either steel or aluminum

4.3 Outdoor Stations structures of steel, aluminum or wood

4.4 Renewal and spare parts designed exclusively for use in the products enumerated above and not included in the scope of some other subdivision.

Note: Excluded from this scope are outdoor insulator units when sold separately, since they come within the scope of the High Voltage Insulator Section.

5. Reclosers, Sectionalizers and Padmounted Switching Equipment Voting Classification

5.1 Reclosers, sectionalizers and padmounted switching equipment rated above 1000 volts for ac service.

5.1.1 Overhead, padmounted and submersible self-contained automatic circuit reclosers and fault interrupters.

5.1.2 Overhead, padmounted and submersible automatic line sectionalizers and fault interrupters.

5.1.3 Overhead, padmounted and submersible distribution switches with no fault current interrupting rating, encapsulated or tank contained, not having an air interrupting medium, for switching capacitors or line sectionalizing. All for alternating current distribution systems.

5.2 Renewal and spare parts designed exclusively for use in the products enumerated above and not included in the scope of some other subdivision.

8-SM Steam Turbine Section

1. The products included within the jurisdiction of this Section are:

1.1 Land Steam Turbine Units:

Land steam turbine generator units rated up to 33,000 kw inclusive.

Note: Excluded are all classes of equipment for aircraft applications.

1.2 Mechanical Drive Steam Turbines:

1.2.1 Land, navy and marine mechanical drive steam turbines.

1.2.2 Reduction gears used with land, navy and marine mechanical drive steam turbines.

Note: A mechanical drive steam turbine is one which drives mechanical equipment such as but not limited to, pumps, fans, line shafts, etc.

Excluded are:

- Marine and navy propulsion turbines and gears.
- All classes of equipment for aircraft application.
- Air or gas expansion turbine.
- Multi-valve turbines to drive utility boiler feed pumps for central station applications.

8-TP Transformers Products Section

8-TP1 Dry Type and Specialty Transformer Voting Classification and Dues Center (Also see Electrical Measuring Equipment Section)

1. Specialty Transformer Voting Classification

1.1 Luminous Tube Transformers

1.2 Ignition Transformers

1.3 Series Circuit Lighting Transformers

1.4 Miscellaneous Transformers (All Other Dry Transformers classified as Specialty Transformers and Reactors not specifically excluded or included in the Scope of the Residential Controls Section).

2. Dry-Type Transformer (Except Pad-Mounted Distribution Transformers, Secondary Unit Substation Transformers, and URT Units) Voting Classification 500 kVa and below

General Purpose Transformers Single and Three-Phase, Dry-Type Construction, including Core and Coil Units whether sold separately, as such, or sold to other manufacturers.

2.1 Control Transformers (250 kVa and under)

2.2 Industrial Control Transformers

2.3 Single- and Three-Phase, 3 kVa and below, All Voltages.

2.4 Single- and Three-Phase, 3.01 kVa thru 15 kVa, 600 Volts and Below.

2.5 Single- and Three-Phase, 3.01 kVa thru 15 kVa, 601 Volts and Above.

2.6 Single-Phase 15.01 kVa thru 100 kVa, 600 Volts and Below

2.7 Single-Phase 15.01 kVa thru 100 kVa, 601 Volts thru 5,000 Volts.

2.8 Single-Phase 15.01 kVa thru 100 kVa, 5,001 Volts and Above

2.9 Three-Phase 15.01 kVa thru 100 kVa, 600 Volts and Below

2.10 Three-Phase 15.01 kVa thru 100 kVa, 601 Volts thru 5,000 Volts

2.11 Three-Phase 15.01 kVa thru 100 kVa, 5,001 Volts and Above

2.12 Single-Phase 100.01 kVa and Above, 600 Volts and Below

2.13 Single-Phase 100.01 kVa thru 500 kVa, 601 volts thru 5,000 Volts.

2.14 Single-Phase 100.01 kVa thru 500 kVa, 5,001 Volts and Above

2.15 Three-Phase 100.01 kVa and Above, 600 Volts and Below

2.16 Three-Phase 100.01 kVa thru 500 kVa, 601 Volts thru 5,000 Volts

2.17 Three-Phase 100.01 kVa thru 500 kVa, 5,001 Volts and Above

2.18 Saturable Reactors

2.19 Miscellaneous Transformers

3. Dry-Type Transformer Voting Classification Above 500 kVa and All kVa Rating of: Dry-Type Pad Mounted Distribution Transformers, Dry-Type Secondary Unit Substation Transformers, and Dry-Type URT Units

3.1 Dry-Type Pad-Mounted Distribution Transformers (Including Integral Accessories) & URT Units All Voltages-Single-Phase, 50 kVa & Smaller

3.2 Dry-Type Pad-Mounted Distribution Transformers (Including Integral Accessories) & URT Units All Voltages-Single-Phase, 51 to 500 kVa

3.3 Dry-Type Pad-Mounted Distribution Transformers (Including Integral Accessories) & URT Units All Voltages-Three-Phase, 500 kVa & Smaller

3.4 Dry-Type Pad-Mounted Distribution Transformers (Including Integral Accessories) & URT Units All Voltages-Three-Phase, 501 kVa & Larger

3.5 Dry-Type Small Power Transformers, self-cooled equivalent ratings of 501-10,000 kVa, single-and three-phase, high voltage 601 volts and above, and all low voltages. Conventional transformers and autotransformers; primary unit substation transformers; and core and coil units.

3.6 Dry-Type Secondary Unit Substation Transformers, all kVa ratings (based on self-cooled nameplate ratings), single- and three-phase, all high voltages, and low voltages below 1000 volts. (Includes core and coil units for ultimate use in secondary unit substation, all units with secondary switching equipment, and units without secondary switching equipment with a secondary flange or throat for connection to such equipment. Excluded are: Military, industrial and consumer electronic transformers and those products included in the scope of the Instrument Transformer Group.

8-TP2 Transformer Voting Classification and Dues Center

(Also see Electrical Measuring Equipment Section)

1. The product scope comprises the product scopes of its constituent Voting Classifications. Repair and renewal parts, spare parts and accessories, including bushings, are included in the product scope of the Voting Classification to which they apply.

Excluded are:

- Instrument transformers (see Instrument Transformer Group).
- The following of the type generally used for street and aviation ground lighting service.
  - Regulating or constant current transformers.
  - Individual lamp and group lamp transformers (dry type or liquid).
- Also excluded are industrial control transformers and reactors used in motor power circuit applications.

3. The product scopes of the constituent Voting Classification are:

3.1 Distribution Transformer Voting Classification

3.1.1 Transformers, liquid-immersed, single and three phase 167-kVa and smaller, 18-kVa and below, including subway transformers. All other transformers, liquid-immersed, single and three phase, 500-kVa and smaller, all voltages. (Excluding Transformers in 3.2.2, 3.4, and 3.6).

3.2 Small Power Transformer Voting Classification

3.2.1 Transformers, liquid-immersed, single and three phase, 501 to 10,000 kVa inclusive, all voltages. Transformers, for Primary Unit Substations, 10,000 kVa and smaller. Based on self-cooled nameplate rating. (Excluding Transformers in 3.2.2, 3.4, and 3.6).

3.2.2 Secondary Unit Substation Transform-ers, liquid-immersed, all kVa's, all high-voltage ratings, low-voltage ratings 600 volts and below.

3.3 Large Power Transformer Voting Classification

Transformers (including Primary Unit Substation Transformers) liquid-immersed, single and three-phase, all voltages, 10,001 kVa and larger (based on self-cooled nameplate rating for OA/FA or OA/FA/FA or OA/FOA/FOA) and all ratings of regulating transformers.

3.4 Network Transformer Voting Classification

Network Transformers, liquid-immersed, all ratings, less Network Protectors.

3.5 Transmission and Distribution Voltage Regulator Voting Classification

3.5.1 Transmission and Distribution Voltage Regulators, including:

3.5.1.1 Induction Voltage Regulators of all kVa ratings, 1201 volts and above.

3.5.1.2 Step Voltage Regulators 1201 through 69,000 volts, single-phase, 416-kVa and smaller, three-phase 2500-kVa and smaller.

3.6 Reactor and Special Purpose Transformer Voting Classification

3.6.1 Reactors and Special Purpose Transformers, liquid-immersed single and three-phase, all kVa's all voltages, including: Reactors, Furnace Transformers, Rectifier Transformers, Locomotive Transformers Grounding Transformers, Ground Fault Neutralizers, Mobile Transformers, Mobil Unit Substations, and Integral Single-Circuit Unit Substations.

DIAGNOSTIC IMAGING AND THERAPY SYSTEMS DIVISION

9-MS Magnetic Resonance (MR) Section

Complete magnetic resonance (MR) imaging and/or scanning systems or MR magnets for diagnostic purposes on humans, and MR compatible accessory devices such as radio frequency coils, patient monitoring devices, and stereotactic localization devices.

9-NU Nuclear Section

All equipment, components, and accessories, used for nuclear in vivo studies. These products include but are not limited to:

Equipment:
- Scanners
- Scintillation camera
- Diagnostic probe systems

Accessories:
- Film systems
- Image processing system
- Data processing systems
- Crystals

9-MII Medical Imaging Informatics Section

All equipment, components, and accessories used in medical imaging informatics. (Excluded are components in other NEMA product scopes.)

These products provide one or more of the following functions:
- Information and Workflow management in the imaging department.
- Integration of imaging information with other information in the imaging department.
- Connection to image acquisition devices with analog or digital output.
- Digital archiving and storage. Storage devices dedicated to specific acquisition devices are excluded.
- Communication using local and/or extended networks, telecommunications, or video net works.
- Analog or digital electronic display, capable of being used for more than one image acquisition device.
- Image coding (e.g., data compression, error detection and correction)
- Image processing
- Integration of imaging and/or information systems
- Image distribution

Products include, but are not limited to:
- Electronic archives with data base management (e.g., optical disk jukeboxes)
- Analog to digital converters, for example, film digitizers
- Digital to analog converters, for example, ink jet printers, laser printers, and multiformat cameras
- HIS/RIS Interfaces and functions
- Image workstations with or without image processing and/or manipulation functions.
- Gateways
- Software

9-RT Radiation Therapy Section

All equipment, components, and accessories used for planning and executing radiation therapy, which employs X-ray, ion, electron, neutron, microwave, radio frequency or isotope radiation. (Note that relative to Section membership manufacturers of products which may be incorporated into or used as an accessory with a medical system or instrument and are also used in essentially the same form in other non-medical applications are not eligible. However, such products should be included by the NEMA manufacturers in their report of net domestic sales for dues purposes.) These products include but are not limited to:

Equipment:
- Betatrons
- Hyperthermia
- Ionizing radiation equipment used for radiation
- Linear Accelerators
- Neutron Generators
- Proton Accelators
- Radionuclide Radiation Therapy Equipment (including
- Brachytherapy devices)
- Radiographic Simulators
- CT Simulators
- Treatment Planning Systems
- Record and Verify Systems
- Portal Imaging Systems

Accessories:
- Dosimeters
- Water Phantom and Film Dosimetry Systems
- Instrumentation
- Localizing and Positioning Devices
- Monitoring Equipment
- Test Equipment
- Treatment Couches

Treatment Planning Equipment
X-Ray Tubes
Quality Assurance Tools

9-UD Ultrasound Imaging Section

All ultrasound diagnostic instruments and systems. These products include but are not limited to:
Equipment:
Imaging Systems
Monitoring Systems
Measuring Systems
Accessories:
Ultrasound Transducers
Test Instrumentation
Ultrasound Display Equipment

9-XR X-Ray Imaging Products Section

All equipment, accessories, and devices used in the application of X-rays for medical diagnostic, dental, inspection, and nondestructive testing or analysis purposes. (Note that relative to Section membership, manufacturers of products which may be incorporated into or used as an accessory with a medical diagnostic imaging system and are also used in essentially the same form in other non-medical applications are not eligible. However, such products should be included by the NEMA manufacturer in their report of net domestic sales for dues purposes.) These products include but are not limited to:
X-Ray Systems:
Radiography
Mobile Radiography
Digital Radiography
RF
Mammography
Digital Mammography
Angiography
CT
Tomographic
Cardiac
Stationary C Arms
Mobile C Arms
Vascular
Fluoroscopy
Digital Fluoroscopy
Urological
Combination Systems that include one of the above systems (e.g. CT-PET, etc.)
X-Ray Equipment:
Generators
Tables: Tilting, Bucky, G.U. and Special Procedures
Tubestands: Floor to ceiling, ceiling mount
Mobile and portable X-ray units
Fluoroscopes
X-ray tubes and housings
Spot film devices
Image Intensifier tubes
Mammography Units
Rapid film changers
Film holders, Cassette changers
C, U, and L Supports
Digital Imaging Equipment
Head stands
CT & X-Ray Tomography
Automatic X-Ray Exposure Controls
Timers
Grids, Buckys
Cameras-TV, Cine, Spot, Video format (single and multiple)
Recorders
Image Display Devices (e.g. CRT monitor, etc.)
Accessories:
Rotor Controllers
X-ray tube heat monitors
Automatic X-ray exposure controls
Localizing and positioning devices (i.e. lasers, etc.)
Automatic processors
Manual processors
Film drying equipment
Film holders
Film illuminators and view boxes
Stereoscopes
Film storage and retrieval equipment
Leaded X-ray protective devices
Cassettes
Screens
Stationary grids
Test, monitoring and instrumentation equipment

1. Dental X-Ray Equipment Group

All equipment, components, and accessories, used in the application of dental X-rays. These products include but are not limited to:
Equipment:
X-ray dental units
Dental X-ray tubes
Components:
Remote controls
Accessories:
Automatic processors
Manual processors
Film drying equipment
Film illuminators and view boxes
Leaded X-ray protective devices

2. Industrial X-Ray Equipment Group

All equipment, components, and accessories, used in the application of X-rays for inspection, gauging,

analysis, nondestructive testing, etc. These products would include but not be limited to:

Equipment:
- Inspection equipment
- Gauging equipment
- Analytical equipment
- X-ray tubes
- Dollies, crawlers, tube mounts
- Baggage inspection units
- Diffraction equipment
- Image intensifier tubes
- Linear accelerators and betatrons
- Spectographic equipment

Components:
- Cameras

Accessories:
- Film handling equipment
- Film processing equipment
- Film interpretation equipment
- Grids, filters, etc.

3. Computed Tomography Group

All equipment, components, and accessories, used in the application of X-rays for medical diagnostic examination, (Please note that relative to Section membership, manufacturers of products which may be incorporated into or used as an accessory with a medical diagnostic imaging system and are also used in essentially the same form in other non-medical applications are not eligible. However, such products should be included by the NEMA manufacturer in their report of net domestic sales for dues purposes.) These products include but are not limited to:

1. To review and coordinate all work of the Association in the development of technical standards and specifications concerning energy management, both within the Association and in cooperation with other organizations, subject to final approval of the Codes and Standards Committee as set forth in Article II, Section 4, Subsection D, Paragraph 2 of the NEMA By-Laws. The Council shall review all energy management standards proposals prior to submittal to the Codes and Standards Committee.
2. To establish an Engineering Committee which is authorized to:
   - 2.1 review technical matters requiring Council input and
   - 2.2 develop energy management standards and specifications outside of the scope of any single NEMA Section, when directed by the Council.
3. Membership of the Engineering Committee shall consist of one voting representative and alternate(s) of any member of the Association; and non-voting members who are representatives of non-member companies or outside bodies, as approved by the Council. The Officers of the Engineering Committee shall be a Chairman and a Vice Chairman appointed by the Council. The majority of the members of the Engineering Committee shall constitute a quorum at all meetings.
4. To review and make recommendations on proposed changes in Subdivision scopes concerning energy management products and systems, prior to submittal to the Product Scopes Committee.
5. To coordinate and administer for NEMA, activities related to the field of energy management which are not within the scope of a particular Section of NEMA.

Equipment:
- X-Ray Generator
- Image Processor
- Scan Unit
- Display Terminals

Components:
- Recorders
- Cameras

Accessories:
- Film processing equipment
- Film handling equipment
- Film interpretation equipment
- Positioning and localizing devices