



Cleaning and Disinfecting Guidance for Electrical Equipment

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Cleaning and Disinfecting Guidance for Electrical

During the SARS-CoV-2 (COVID-19) pandemic, members of the National Electrical Manufacturers Association (NEMA) received questions regarding the cleaning and disinfecting of electrical equipment. This guidance document reflects the responses of electrical manufacturers to common questions related to cleaning and disinfecting electrical equipment. Many NEMA members have developed guidance specific to their products. Readers are encouraged to contact equipment manufacturers to determine if specific recommendations exist.

For this guidance document, “cleaning” refers to the physical removal of dirt and grime, and in the process, some portion of germs on a given surface. “Disinfecting” refers to eliminating a high percentage of germs on a surface or rendering them incapable of reproducing.

1 Use of Disinfectants on Electrical Equipment

The U.S. Environmental Protection Agency (EPA) suggests using List N-approved disinfectants [referenced by the U.S. Centers for Disease Control and Protection (CDC) for routine cleaning and disinfection] to effectively reduce surface contamination. For EPA-registered disinfectants, follow the label directions for safe, effective use. It is important to note that these disinfectants may not be a viable option for certain surfaces, specifically electrical products and components, because disinfectant solutions and solvents, as listed by the EPA, can be harmful to many electrical products and components.

2 Guidance for Cleaning and Disinfecting Electrical Equipment

To clean and disinfect electrical equipment, first, follow the manufacturer’s recommended cleaning methods. The application of EPA List N products can cause a detrimental long-term impact on electrical equipment related to performance, reliability, and the equipment’s continued normal and safe operation. For example, some cleaning products or solvents can cause corrosion of conductive materials and degradation of other materials. As noted in the *National Electrical Code*® (NEC), cleaning agents and lubricating compounds can cause deterioration of materials used for insulating and structural applications in equipment.

The use of devices such as foggers and sprays could allow disinfectant solutions to contaminate the components inside the electrical equipment. Most electrical equipment and components are not designed to protect against fogging and spraying of disinfectant solutions and solvents. In these situations, equipment exposure could result in severe damage, outages, and potential personal injury. Fogging and spraying could also impact the long-term performance of the electrical equipment.

In some instances, the only approved method for cleaning various types of electrical equipment may be to use a lint-free, dry, clean cloth, which provides mechanical cleaning but not disinfection. In very specific situations, using EPA List N products has been approved on hard external surfaces; however, consult the manufacturer to confirm application and acceptability. As noted above, the use of cleaning and disinfecting products is cautioned unless approved by the electrical manufacturer.

Ultraviolet (UV) light sources are commonly used to disinfect water and HVAC systems. UV sources are also used to disinfect the air and surfaces of critical areas in hospitals, laboratories, group facilities, and public spaces. Electrical equipment installed in areas subject to UV light disinfection will be exposed to UV radiation at various intensities and time durations, depending on the design of the disinfection system. Materials used in the fabrication of electrical equipment may degrade when exposed to UV light. Consult the electrical manufacturer to confirm the application and acceptable use of artificial sources of UV light for disinfection on equipment.

3 Recommendations

NEMA recommends the following steps for the cleaning and disinfection of electrical equipment:

- a. Ensure that all required electrical safe work practices are followed before accessing any electrical component for any reason, including cleaning.
- b. If possible, de-energize electrical equipment before cleaning.
- c. Allow hot surfaces to cool before cleaning.
- d. Let cleaning solutions dry before re-energizing.
- e. Ensure that personnel tasked with cleaning electrical equipment have taken appropriate training specified in NFPA 70B.
- f. Consult the equipment manufacturer for instructions regarding equipment cleaning.

Note: Instructions for the use of reusable medical equipment are expected to include validated cleaning and disinfection or cleaning sterilization procedures. See the ISO 17664 series, AAMI TIR12, and AAMI TIR30.

- g. Do not use disinfecting products, including foggers, sprays, or other types of atomized cleaning agents on any electrical equipment components of any material type: plastic, insulating, molded, painted, or metallic, unless specifically instructed by the manufacturer of the electrical equipment.
- h. If you have specific electrical equipment questions regarding cleaning and disinfection, please contact the equipment manufacturer.

NEMA recommends that all personnel working with electrical equipment consider the possibility of contamination and take appropriate steps to protect themselves based on CDC recommendations.

4 References

Below is a list of references that may offer additional information regarding this subject:

1. U.S. Centers for Disease Control and Prevention: <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
2. U.S. Environmental Protection List N: Disinfectants for Use Against SARS-CoV-2 <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>
3. U.S. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1030, *Bloodborne pathogens*: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030>
4. OSHA 29 CFR 1910.132, *Personal Protective Equipment*: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132>

5. *Infectious Diseases Society of America Guidelines on Infection Prevention in Patients with Suspected or Known COVID-19*: <https://www.idsociety.org/practice-guideline/covid-19-guideline-infection-prevention/>
6. Neeltje van Doremalen et al., *Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1*, *New England J. Medicine* 382:1564-1567 (April 16, 2020).
7. NFPA 70, *National Electrical Code*®: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70>
8. NFPA 70B, *Standard for Electrical Equipment Maintenance*: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70B>
9. NFPA 70E, *Standard for Electrical Safety in the Workplace*®: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70E>
10. OSHA 1910, Subpart J (General Environmental Controls) and Subpart S (Electrical):
<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910SubpartJ>
<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910SubpartS>
11. ISO 17664:2021, *Processing of health care products — Information to be provided by the medical device manufacturer for the processing of medical devices* (Parts 1 and 2):
<https://www.iso.org/standard/81720.html>
<https://www.iso.org/standard/74152.html>
12. AAMI TIR12:2020/(R)2023, *Designing, testing, and labeling medical devices intended for processing by health care facilities: A guide for device manufacturers*:
<https://store.aami.org/s/store#/store/browse/detail/a152E00000A5ofcQAB>
13. AAMI TIR30:2011/(R)2016, *A compendium of processes, materials, test methods, and acceptance criteria for cleaning reusable medical devices*:
<https://store.aami.org/s/store#/store/browse/detail/a152E000006j607QAA>

NEMA member companies are committed to safety. For specific contacts within these manufacturing firms, call or write:

National Electrical Manufacturers Association
1812 North Moore Street, Suite 2200
Arlington, Virginia 22209
Telephone: (703) 841-3200

www.makeitelectric.org

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