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##### **DIVISION 2 – EXISTING CONDITIONS**

**02 87 10 CORONAVIRUS/MICROBIAL MITIGATION**

**(alternative: 02 51 29 SURFACE CLEANING DECONTAMINATION)**

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by the following method in Microsoft Word:

Display the FILE tab on the ribbon, click OPTIONS, then DISPLAY. Select or deselect HIDDEN TEXT.

This guide specification section has been prepared by ICP Group for use in the preparation of a project specification section covering materials and procedures to be utilized for disinfecting buildings and spaces after exposure to the SARS CoV-2 (COVID-19) virus, AND/OR as a preventative to maintain a healthy structure and mitigate against viral contamination of surfaces that might cause infection. Note that the use of the term mitigation is intentional. Mitigation is the reduction of a negative factor, and ideally when procedures are executed and environmental conditions permit, risks posed by that negative factor become statistically negligible. Due the complexity of microbial remediation and infection control, this is the desired goal and best practical outcome, and that is why mitigation is utilized rather than abatement, removal or sterilization.

The following should be noted in using this specification: Hypertext links to manufacturer websites are included after manufacturer names to assist in product selection and further research. Hypertext links are contained in violet/blue, e.g.: ([www.benefect.com](http://www.benefect.com) ) Optional text requiring a selection by the user is enclosed within brackets and as red text, e.g.: A Color: [Red.] [Black.]" For assistance in the use of products in this section, contact ICP Group by calling (978) 623-9980, by email at specifications@icpgroup.com, or visit their website at [www.icpmasterworkscommunity.com](http://www.icpmasterworkscommunity.com), and select the menu for *Disinfection & Sanitizing*. This is also where ICP’s education and training resources are accessed.

QUICK REFERENCE GUIDE TO THIS SPECIFICATION PACKAGE

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--------------- BEGIN SECTION --------------

DIVISION 2 – EXISTING CONDITIONS

02 87 10 CORONAVIRUS/MICROBIAL MITIGATION

1.00 GENERAL REQUIREMENTS

* 1. **WORK INCLUDED**

1. **Provide microbial mitigation of potentially infectious, as well as nuisance/degradation and odor causing microbes throughout the stadium.**
2. **This is not an installation or construction specification, although this document utilizes MasterFormat (AIA, CSI)[[1]](#endnote-1). This is a procedural document intended for repeated use as a facility-specific doctrine of operations. This is to be a “living document” or specification to be adjusted with experience. Specifically, one of the target microorganisms to be mitigated against is the SARS-CoV-2 betacoronavirus strain which spread into a global pandemic in 2020. The procedures herein are based on state-of-the-art/state-of-the-practice in cleaning and disinfection as of the date of this document. As science and public health establish new understandings of this virus strain, as other emergent pathogens cause outbreaks and epidemic, this document shall be updated. Ultimate responsibility for the maintenance of this document will be held by the facility Director of Maintenance or their assignee.**
3. **This document does not constitute an ICRA (Infection Control Risk Assessment), but it may provide valuable information in the generation and enrichment of an ICRA (as used to describe the ICRA document used in Healthcare settings.**
4. **For an IDER (Infectious Disease Emergency Response plan) or an EOP (Emergency Operations Plan), this document can provide a sound starting point for development. It is advisable to define early whether the IDER/EOP objectives are to address best practices and minimum protocols when mitigating against uncontrolled community spread already causing active infection; Or, if the IDER/EOP plan to be developed and implemented is driven by preventative SHEP doctrine (Surface Hygiene: Epidemic & Pandemic) to attain for a facility a robust defensive capability.**
5. **Disinfection in response to a suspected or confirmed positive case of SARS-CoV-2 will always be an inherently unique situation that requires a very targeted SOW (Scope of Work) adapted to local and specific factors. Many of the recommendations in this Specification are applicable to emergency response to positive cases/tests. Many of these same recommendations may be utilized in a preventative SOW as well. However, positive SARS-CoV-2 tests will also trigger specific actions such as contact tracing and isolation of potentially contaminated spaces and contents until mitigation can begin. Determination of core elements of a unique incident-response may be beyond in-house capabilities. Professional consultation AND/OR mitigation assistance can be instrumental to containment and success. While the EPA does not license companies that provide cleaning services[[2]](#endnote-2), there are professionals in environmental health & safety (EHS), as well as in biohazard mitigation, that have skills transferrable to microbial mitigation. Overreliance on any specification when professional advice is available is an error that should be avoided.**
6. **Conduct work as specified herein and in supplementary documentation provided by facility operations, and/or from the manufacturers of the cleaning and disinfecting agents chosen.**

1.02 RELATED SECTIONS

1. **Specified elsewhere:**
2. **00 31 26.33 EXISTING MOLD INFORMATION**
3. **02 26 33.12 MOLD ASSESSMENT**
4. **02 51 29 SURFACE CLEANING DECONTAMINATION**
5. **02 51 33 SURFACE REMOVAL DECONTAMINATION**
6. **02 80 00 FACILITY REMEDIATION**
7. **02 87 13 REMOVAL & DISPOSAL OF MICROBIALLY CONTAMINATED MATERIALS**
8. **02 87 13.19 MOLD REMEDIATION CLEARANCE AIR SAMPLING**

**B. References:**

**1. U.S. Centers for Disease Control – Cleaning & Disinfecting[[3]](#endnote-3)**

**2. U.S. Environmental Protection Agency (EPA) - Coronavirus[[4]](#endnote-4)**

**3. U.S. EPA List N[[5]](#endnote-5)**

**4. Stadium Preparedness Guidelines**

**5. NFL-NFLPA Game Day Protocol**

**6. U.S. Food & Drug Administration (FDA, a part of US Health & Human Svcs) – Food Code[[6]](#endnote-6)**

**7. Nevada Department of Agriculture - Official Pesticide Producer Database[[7]](#endnote-7)**

**8. [FOR LIST, PLEASE REFER TO HYPERGLOSSARY IN THIS SPECIFICATION PACKAGE**]

**C. ABBREIVATIONS, ACRONYMS, DEFINITIONS**

* 1. **IDER Infectious Disease Emergency Response plan**
  2. **[PLEASE REFER TO HYPERGLOSSARY AT THE END OF THIS SPECIFICATION PACKAGE]**

D. *Notes to Users of this Document (e.g., EH&S, Staff CIHs, Contingency Planning, Hygiene Service Providers, Architects, Engineers, Designers and Consulting Professionals):*

1. *This specification is supplied as a Compendium Specification. It is a broad and lengthy document intentionally provided in an exhaustive format with the goal being as comprehensive inclusion of project factors as possible.*
2. *The specifier is NOT obligated to utilize this specification in entirety, but instead is encouraged to adopt/adapt/apply those provisions which are applicable to specific projects. Moreover, when addressing a subject manner such as pandemic/outbreak/community-spread, situations that can and will afflict an infinite combination of organizations and their built environment, the user of this Specification and associated materials from ICP is compelled to utilize and target carefully the adoption of information herein.*
3. *The Design Services Team (DST) of the ICP Building Solutions Group has prepared this overall specification.* 
   1. *Consultation was provided by WonderMakers, Inc. (*[*wondermakers.com*](https://www.wondermakers.com/)*) for environmental health & safety content.*
   2. *ZeroDocs* [*(zerodocs.com)*](https://zerodocs.com/) *provided guidance on best practices in specification design versus the demands of an inherently non-standard document.*
4. *Users of this specification are strongly encouraged to engage ICP’s resources and industry expertise in customizing this specification:[[8]](#endnote-8)*
   1. *Web:* [*https://www.icpgroup.com/programs/masterworks/*](https://www.icpgroup.com/programs/masterworks/)
   2. *Email:* [*specifications@icpgroup.com*](mailto:specifications@icpgroup.com)
   3. *Phone: 800-342-3755* 
      1. *(Request connection to the Environmental Remediation Group (*[*Fiberlock*](http://www.fiberlock.com) *and/or* [*Benefect*](http://www.benefect.com) *for product information and field support;*
      2. *and for Specification support ask for* [*MasterWorks*](http://www.icpmasterworkscommunity.com)*)*
5. *All mitigation projects are unique. Ultimately, it is the responsibility of the involved parties (e.g., Architect, Engineer, Consulting Professional, Installer/Applicator, Remediator/Restorer, General Contractor, Owner, Client, Enforcement Authority, EH&S, Contingency Planner, Hygiene Services Provider) to verify on a case-by-case basis that applications of this specification are appropriate.*
6. *Fundamental Principle of General Microbial Contamination Remediation: Microbial Remediation is a complex discipline. While products and their usage described herein are useful and complimentary, the fundamental priority of remediation is cleaning/removal of the contaminant. Many methodologies and precepts are involved which are beyond the capacity of this document.*
7. *Deviation: Certain projects will involve unavoidable circumstances that prevent project execution in full accord with industry professional standards of care, and the tenets of this specification. A separate and specific specification should be developed in consultation with all parties, including product manufacturers, when deviation is the only option for achievement of the objectives of the property owner.*
8. *Coordination: Coordinate with local and State health departments to ensure that current cleaning and disinfecting protocols and guidelines are followed, including when there has been identification of new potential cases of COVID-19.*
9. *Superiority: Where contradicted by federal, state or local laws and regulations, any of the preceding supplant the information in this document.*
10. *Illustrations: While non-traditional, this specification frequently utilizes visual reinforcement and concept introduction in the form of a range of illustration techniques. This is purposeful as the work outlined herein will be done systematically on a repeating cycle for extended time periods. Visual tools are invaluable to both ensure clear understanding of services to 3rd-party bidders, as well as to train/on-board as well as evaluate in-house and/or external staff.*
11. *Nation of Sale or Use: As of the edition date of this Specification, ICP has multiple disinfectants, among which one or more may be sold or used in all jurisdictions of the United States of America, Canada, Australia, and New Zealand. No endorsement or permission is granted by ICP in this Specification, nor in any other means of communication, to export to any nation except these listed.* 
    1. **SUBMITTALS (DISINFECTANTS PROPOSED FOR USE)**
12. **Informational Submittals: [all submittals to be electronic (PDF or MSWord)**
    1. **Manufacturer’s descriptive data for materials proposed for use.**
       1. **Such as Technical Data Sheets (TDS) or similar**
       2. **Product information specific to SHEP (Surface Hygiene: Epidemic & Pandemic) is preferred**
    2. **Manufacturer’s Use Specification** 
       1. **Must be organized using AIA/CSI MasterFormat system/framework**
       2. **Shall be prepared for use under 1 of 2 acceptable MasterWork subdivision headers within Division 2: Existing Conditions. The choices are the following:** 
          1. **02 87 10 Coronavirus/Microbial Mitigation**
          2. **02 51 29 Surface Cleaning Decontamination**
    3. **EPA-registered label (specimen label)[[9]](#endnote-9)**
       1. **As is provided on the disinfectant containers in everyday commerce.** 
          1. **The “Master Label” available from the EPA Pesticide Product Labeling System (PPLS) will not be accepted[[10]](#endnote-10)**
          2. **Disinfectant labels, as used on containers in commerce, are public information and are available, including subregistered products at several U.S. state pesticide databases including:**
             1. **New York State Department of Environmental Conservation (NYSDEC)**

**NYSPAD: Bureau of Pesticides Management - Information Portal** [**http://www.dec.ny.gov/nyspad/products?0**](http://www.dec.ny.gov/nyspad/products?0)

* + - * 1. **Nevada Department of Agriculture (NDA)**

**NDA Official Pesticide Producer Database** [**http://nv.certifyag.com/PestPublic/**](http://nv.certifyag.com/PestPublic/)

* + - * 1. **Alternatives may include Louisiana and Hawaii.**
      1. **For projects in California:**
         1. **Provide a .PDF of information from the website for the California Department of Pesticide Registration (CADPR:** [**https://apps.cdpr.ca.gov/docs/label/labelque.cfm**](https://apps.cdpr.ca.gov/docs/label/labelque.cfm)**) that demonstrates the proposed disinfectant product is registered for sale and use in California.[[11]](#endnote-11)**
  1. **EPA List N Documentation (Current: Within 1 calendar week of submittals. See endnote here[[12]](#endnote-12) for resource and examples)** 
     1. **Must clearly indicate contact time for disinfection; and, which specific harder-to-kill virus, or previously known strain of coronavirus, is cited justification for List N inclusion.**
     2. **A note on List N Contact Times (or dwell times): For any project conducted under this Specification, the installer/applicator wishing to apply any disinfectant for a contact time of less than 10 minutes shall produce and provide at the time of submittals a sworn affidavit that states: In addition to the suspected SARS-CoV-2, the proposed disinfectant used in <10 minutes will also render non-viable 99.999% of any other viruses, bacteria and fungi (molds) present on all hard, non-porous surfaces treated. Except when such an affidavit is received and deemed acceptable, the use of all disinfectants under this Specification will be to achieve a 10 minute wet contact time for the disinfection of hard, non-porous surfaces.**
  2. **Health Canada (HC) Documentation (ONLY FOR PROJECTS IN CANADA)** 
     1. **Health Canada Registered Label[[13]](#endnote-13)** 
        1. **Canada-issued DIN number (Drug Identification Number) must be clearly visible on documentation; OR,**
        2. **Documentation generated from the Health Canada *Drug Product Database Online Query* that demonstrates a disinfectant’s approval in Canada, and corresponding DIN number[[14]](#endnote-14).**
     2. **Acceptable documentation must be provided that absent having an established DIN, the disinfectant is permitted for sale and use in Canada under special and interim provisions, such as issued in response to the pandemic of SARS-CoV-2[[15]](#endnote-15).**
  3. **Secondary Use Label - As will be obtained by the service provider from the manufacturer, and applied as standard operating procedure to all containers of decanted disinfectant such as trigger bottles, compression sprayers, and pails used to feed spray equipment. Usage of secondary use labels (in Canada: Secondary Workplace label) shall be required for projects using this specification regardless of whether disinfectants are mixed from concentrates, or are ready-to-use (RTU)[[16]](#endnote-16).**
  4. **Safety Data Sheet (SDS)**
     1. **Shall be available and submitted in both English and Spanish versions[[17]](#endnote-17).**
     2. **When proposing to use a Concentrated disinfectant, submittals must also include an SDS specifically for the Use Solution, i.e., the product as workers will use it once mixed.**
     3. **FOR CANADA only: Submitted SDS shall comply with WHMIS (Canada’s Workplace Hazardous Materials Information System) 2015 safety data sheet requirements.**

1.4 QUALITY ASSURANCE

1. SAMPLING:
   1. Samples of cleaning and disinfecting products must be supplied upon request when Owner, Owner’s Agent or other party responsible for Quality Assurance need samples to:
      1. Surface Compatibility: Perform testing on inconspicuous area(s) of materials already installed (or representative samples offsite) to assess in advance whether the proposed systematic disinfection plan will unintentionally result in temporary change in appearance, a need for an additional procedure (e.g., wipe or rinse), and/or a permanent change in surface appearance or function.
      2. Occupant Compatibility: When sensitive occupants could smell or perceive odor and/or residues associated with cleaning and disinfecting activities, samples must be made available. Those responsible for Quality Assurance should design an in-person advance opportunity for sensitive occupants to smell products as they will be used; as well as touch mock-up surfaces representative of surfaces post-cleaning & disinfection, and the projected use pattern of such surfaces by occupants.
      3. Note that even when sampling is conducted, the exposure to cleaning and disinfection products must be within reasonable expectations. Occupants, pets, staff, and anticipated visitors should be isolated from activity involving aerosolized/airborne/respirable cleaning or disinfecting liquids. Sensitive surfaces such as bird perches, pet cages, and aquariums should never be exposed to any disinfectant or cleaning product (unless per-approved by a qualified veterinary professional). High-value and/or delicate substrates should be isolated from exposure, and handled by specialists qualified for such items.
   2. Pilot Applications/Mock-Up: Upon request (By Owner, Client, Enforcement Authority, Assessor, Architect or Engineer), it may be determined necessary to provide a mock-up for evaluation of preparation techniques, delivery methods, validation of performance expectations, and anticipated application workmanship.
      1. Clean surfaces designated for verification of suitability of proposed procedures.
      2. Disinfect hard, non-porous surfaces, and sanitize semi-porous/porous surfaces in the scope of the mock-up - for verification of suitability of proposed procedures
      3. Do not proceed with remaining work until pertinent project authority (By Owner, Client, Enforcement Authority, Assessor, Architect or Engineer), approves the mock-up.

1. MINIMUM CREDENTIALS: HYGIENE SERVICE PROVIDER/MITIGATION–REMEDIATOR (Third Party)[[18]](#endnote-18)
   1. Firm Qualifications:
      1. [2] [\_\_] years experience in work of this Section; OR,
      2. [3] [\_\_] years experience in critical cleaning in healthcare, pharmaceutical, nuclear decommissioning, or “clean room” environments
      3. [5] [\_\_] years experience as a professional restoration contractor trained and specialized in the restoration of indoor air quality, as demonstrated by practical and successful experience in one of the following disciplines:
         1. Including mold remediation, water-damage restoration or smoke/fire/wildfire damage restoration, biohazard/trauma scene recovery; and,
         2. Has been a member in good standing for no less than three years of one or more of the following industry organizations:
            1. Indoor Air Quality Association ([IAQA](https://iaqa.org/))
            2. Institute of Inspection, Cleaning and Restoration Certification ([IICRC](https://www.iicrc.org/))
            3. American Bio-Recovery Association ([ABRA](https://www.americanbiorecovery.org/))
            4. Restoration Industries Association ([RIA](https://www.restorationindustry.org/))
            5. The HVAC Inspection, Cleaning and Restoration Association ([NADCA](https://nadca.com/))
      4. [5] [\_\_] years experience as a professional technical applicator of CASE segment construction products:
         1. (Coatings, Adhesives, Sealers and Elastomers); and,
         2. Has been a member in good standing for no less than three years of one or more of the following industry organizations:
            1. Painting Contractors Association ([PCA](https://pcapainted.org/))
            2. The Society for Protective Coatings ([SSPC](https://www.sspc.org/))
            3. National Roofing Contractors Association ([NRCA](https://www.nrca.net/))
      5. Successful completion of at least [3] [\_\_] projects of similar scope and complexity with past [2] [\_\_] years.
   2. Education & Training: Hygiene Service Provider/Mitigation–Remediator
      1. All [contractor workers applying disinfectant OR site supervisors/crew supervisors] shall have documented completion of SHEP training (Surface Hygiene: Epidemic & Pandemic) [Masterworks [[19]](#endnote-19)]or equal from the disinfectant manufacturer. Such training may be On-demand, ILT or VILT.
   3. Minimum Disinfection Fundamentals to be Explicitly Present in All Successful Proposals from External Service Providers:
      1. Use of EPA registered disinfectant that is included on EPA List N (alt. [HC] or other relevant jurisdictions), and manufacturer and product name are approved specifically during the bid process.
         1. Note: Frequently more than one suitable disinfectant may be approved because of different surfaces and building use types necessitating different disinfectants.
         2. Agreement and accountability process whereby substitutions for any reason of accepted proposed disinfectant must be mutually agreed upon in writing by principal parties involved with disinfection and cleaning of each facility at issue.
         3. Reasons for proposed substitution such as availability, or expense must be documented in writing as supportive of the substitution.
      2. Surfaces will be treated with the specific disinfectant approved as bid in accord with:
         1. Consistent with the registered label,
         2. Consistent with label requirements for surface precleaning,
         3. **Consistent with a 10-minute wet contact time, unless previously justified otherwise (See *A note on List N Contact Times (or dwell times)* found at 1.3 SUBMITTALS)**
         4. **Application/Delivery Methods acceptable per the registered label**
         5. **Performance of post-disinfection prescribed steps such as rinses or wipe downs as described/required per the registered label.**
         6. **Applicability to disinfect hard, non-porous surfaces, and to sanitize semi-porous/porous materials as described/required per the registered label. NOTE: disinfectants specified in Section 2 PRODUCTS, or determined to be an “or equal”, will be registered with label use directions for hard, non-porous *AND* semi-porous/porous surfaces.**
2. **INTRA-ORGANIZATION QUALITY CONTROL (EMPOWERMENT & EDUCATION):**
   1. **This section and examples are expected to be progressively impacted by development of guidelines, recommendations, and voluntary standards; into regulations and administrative rules (federal/national, state & local). As disinfection protocols for an emergent pathogen are an inherently iterative process, it is highly recommended that this section be examined and edited by responsible parties involved on a regular schedule.**
   2. **Staff/Facility Maintenance**
      1. **Specific to Housekeeping:** 
         1. **Educate staff and workers performing cleaning, laundry, and trash pickup activities to recognize symptoms of COVID-19 and provide instructions on what to do if they develop symptoms within 14 days after their last possible exposure to the virus.**
      2. **Intended for All Facility Staff:**
         1. **Instruct staff and workers to immediately notify their supervisor and local health department if they develop symptoms of COVID-19.**
         2. **Develop policies for worker protection and provide training to all cleaning and all non-cleaning staff on site prior/during performance of regular job-related tasks. Include as a minimum:**
         3. **PPE Fundamentals**
            1. **When to use PPE.**
            2. **What PPE is necessary.**
            3. **How to properly put on, use, and remove PPE.**
            4. **How to care for PPE issued to staff, where PPE supplies are available and how they are accessed.**
         4. **Proper use of signage (how to communicate both temporary closure due to routine hygiene, but also temporary closure of an evacuated space because of microbial concerns.)**
         5. **Proper empowered responses by immediate occupants**
            1. **When to leave the area, and leave high-risk situations (vomit, bloodborne pathogens) to professional cleanup providers (trained staff on-site or third-party cleanup contractors.**

**Intra-organization facility communication protocols to notify those prepared to deploy external service providers for high-risk activity; or, use highly trained and equipped internal staff.**

* + - * 1. **When and how to use disinfectant issued to work stations/groupings in the facility, such as:**

**Disinfection Materials:**

**Trigger spray bottles**

**EPA-registered, and included on EPA List N**

**Affixed with secondary use label provided by manufacturer**

**Disinfectant Wipes**

**EPA-registered, and included on EPA List N.**

**Hygiene Tasks Frequently Assigned to Staff Both Trained and Empowered**

**Staff Only Areas (No interface with external public [including customers, students, clients])**

**Daily or more frequently treatment of personal work surfaces**

**Team assignments of daily one-step cleaner/disinfectant treatment of low-risk common areas shared by a work grouping.**

**Staff empowerment to assign shared responsibility for treatment of touchpoints at least daily.**

**In multi-shift work environments, consider extension of the transition time between shifts to accommodate cleaning and disinfection (whether done by workstation users, trained in-house staff, external service providers – or a combination thereof.)**

**Areas Involving External Public (regular – such as students; or transactional - such as 1x customer interaction)**

**Disinfectant will be provided such that trained staff person(s) responsible for immediate and narrowly defined space can respond with either/both spray or wipe systematically, and immediately when needed[[20]](#endnote-20).**

* 1. **DISINFECTION AWARENESS COMMUNICATION CAMPAIGNS**

**A screenshot of a cell phone

Description automatically generatedConsult with disinfectant manufacturer and/or distributor for assistance in the form of messaging (e.g., clings, decals, hangers) that can be strategically placed to reinforce the importance that everyone in a facility contributes to surface hygiene. Please refer to the below image as an example:**

1.5 *DISINFECTANT PRODUCT DELIVERY, STORAGE AND HANDLING*

1. *Deliver manufacturer's unopened containers to the work site.* 
   1. *Packaging, including external cartons when applicable, shall bear the manufacturer's name, and product number.*
   2. *Container that immediately holds disinfectant/cleaner liquid product shall bear*
      1. *Manufacturer's name, and product number.*
      2. *Label compliant with both national registration, as well as registration requirements in state/province where disinfectant is to be sold and/or used*
      3. *Identification information to signify manufacturing batch or lot number. This may be an ink stamp, UPC code or sticker. This is typically independent on the container apart from the registered disinfectant label.*
2. *Storage of materials:*
3. *Store only acceptable project materials on site.*
4. *Store in suitable and secured location convenient to progress of work.*
5. *Comply with health and fire regulations. No products listed in the Basis of Design are flammable or combustible.*
6. *Storage temperature shall be between 40° F (4.5 C) and 90° F (32 C), or such other ambient temperature conditions as may be specifically recommended by product manufacturer.*
7. *Products shall not be permitted to freeze on site, and delivery should be refused if freezing during transit is probable.*
8. *Avoid storage directly in hot sun exposures or excessive temperatures.[[21]](#endnote-21)*
9. *Keep containers tightly closed when not in use.*
10. *Store securely closed and upright in original container. Lids or caps can leak if containers are placed on side.*
11. *Keep out of reach of children.*
12. *Handling:* 
    1. *Dispose of materials in accordance with requirements of local authorities having jurisdiction.*

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* 1. *Verify that products are within acceptable shelf life, and do not utilize any product that is older than the maximum shelf life stated by the manufacturer. Products listed in the Basis of Design have a shelf life of two years*

*1.06 SITE CONDITIONS*

*A. Environmental requirements*

1. *Comply with manufacturer’s recommendations as to environmental conditions under which all chemicals can be applied.* 
   1. *Temperature: Do not apply products at temperatures beyond limits stated in the manufacturer’s technical data sheet unless given written permission by the manufacturer.*
      1. *At Application: Surfaces to be cleaned and disinfected and ambient air temperature shall be between 32° F and 110° F.*
   2. *Humidity: There are no minimum humidity requirements although the applicator must be cognizant that low humidity will accelerate drying, When drying is encouraged by low humidity, high temperature, and/or rapid air movement, the applicator may need to compensate with repeated applications during the specified dwell time to ensure that the ten minute wet contact time is attained.*
2. *Surface/Substrate Moisture:*
   1. *Moisture in excess associated with the germination and amplification of microbial activity is to be corrected prior to any remediation work, although this specification may be employed in areas where moisture is a constant at above normal levels, and therefore regular specialty cleaning is necessary for microbial control.*
   2. *Consult manufacturer regarding whether topical dampness (latent moisture tangible by touch) after wet cleaning or recent precipitation is acceptable at time of application of disinfectants. [[22]](#endnote-22)*
3. *Surface Protection/Prevention of Cross-Contamination:* 
   1. *Cover or otherwise protect adjacent areas not designated for cleaning/disinfection.*
   2. *Identify adjacent spaces which could be cross-contaminated by remediation activity.*
   3. *Careful attention should be paid to any occupied areas in the vicinity of the work area.*
   4. *Utilize adequate engineering controls to ensure worker and occupant safety and health, and prevent cross-contamination. Engineering controls may include, but are not limited to, source containment, isolation barriers, pressure differentials, dust suppression, and high efficiency particulate air (HEPA) vacuuming and filtration.*
4. *Provide adequate illumination and ventilation.*

2.00 PRODUCTS

SUMMARY OF MATERIALS IN THIS SECTION:

READY-TO-USE DISINFECTANT & SANITIZER

BOTANICAL (Sustainably derived Thymol from organic essential oils of Thyme)

* Decon 30™ from Benefect®, a brand of ICP ([www.benefect.com](http://www.benefect.com)), OR

CONVENTIONAL (Advanced Generation “QUAT” - Quaternary Ammonium Chloride)

* ShockWave® RTU Fiberlock® Technologies, a brand of ICP ([www.fiberlock.com](http://www.fiberlock.com))

CONCENTRATED DISINFECTANT & SANITIZER (CONVENTIONAL)

* ShockWave Concentrate from Fiberlock Technologies, a brand of ICP ([www.fiberlock.com](http://www.fiberlock.com))

DISINFECTANT WIPES (BOTANICAL)

* Benefect Disinfectant Wipes from Benefect, a brand of ICP ([www.benefect.com](http://www.benefect.com))

2.01 MATERIALS (Basis of Design)

PRODUCTS FORMING BASIS OF DESIGN

1. READY-TO-USE DISINFECTANT, BOTANICAL:
   1. **DECON 30**: [or equal]
      1. Product ID: 20476.
         1. Available in one-gallon/3.79 L container
         2. Available in 55-gallon/208 L container
         3. Other production sizes include [\_\_] Ounce spritz bottle, 5-Gallon, 275-Gallon Tote
   2. Manufactured by BENEFECT
      1. a brand of the ICP BUILDING SOLUTIONS GROUP;
         1. Administrative Offices: 555 Bay St. North, Hamilton, ON CANADA L8L 1H1.
         2. Manufactured at ICP, 405 N. Oakwood Ave., Waukegan, IL 60005 USA
         3. 800-909-2813 or 905-528-7474
         4. [www.benefect.com](http://www.benefect.com)
   3. Key Performance Attributes of Disinfectant
      1. Exposure: Interior/Exterior
      2. Active Ingredient: Botanical Thymol present as a component of Thyme Oil.
      3. Active Ingredient Content: 0.05%
      4. **Environmental/Sustainability Criteria:**
         1. **UL Ecologo 2794**
         2. **WoolSafe approved**
         3. **No synthetic fragrances, dyes, ammonia or chlorine or endocrine disruptors**
         4. **100% Bio-Based Content, no petrochemicals or petroleum derivatives**
         5. **Water-based**
      5. **Color: Clear**
      6. **Odor: Lemon & Thyme**
      7. **USEPA Registration Number: 84683-3-74771 [[23]](#endnote-23)[[24]](#endnote-24)**
      8. **Hospital-Grade Disinfectant (CDC/EPA Pandemic Requirement): Yes**
      9. **EPA MicroOrganism kill Claims (Range, Type): 14 claims on EPA-registered label for pathogenic organisms, including:**
         1. **Bacteria: 5**
            1. **MRSA: Yes.**
         2. **Viruses: 6**
            1. **Influenza: Yes (H1N1, H3N2)**
            2. **Rhinovirus: Yes**
            3. **Norovirus: Yes**
         3. **Fungi (Molds): 3**
      10. **COVID Pandemic:**
          1. **EPA List N for SARS-CoV-2: Yes**
             1. **Qualified on List N for Healthcare: Yes**
             2. **Qualified on List N for Institutional: Yes**
             3. **Qualified on List N for Residential: Yes**
          2. **Health Canada’s COVID-19 interim measure List: Yes**
          3. **EPA Emerging Viral Pathogens program: Yes**
      11. **Health Canada: DIN 02415046**
      12. **EPA Toxicity Category: IV (lowest available rating)**
      13. **EPA-Required Signal Word: None**
      14. **FDA: FDA GRAS (Generally Regarded As Safe) & Food Additives List**
      15. **Polarity: Non-anionic**
      16. **Soil Load (Effective in the presence of): 5% organic soil**
      17. **Foaming: Foaming with Foaming Applicator Device Only**
      18. **Flash Point: none**
      19. **pH: 4.0-5.0 (Not Corrosive)**
      20. **HAPS & Volatile Solvents: Zero**
      21. **Shelf Life: 24 months minimum (Anticipated 5 years)**
      22. **Freeze Thaw: 3+ cycles**
      23. **Contact Time:** 
          1. **Most fungal, bactericidal and virucidal contact times per the USEPA registered label of >10 minutes for disinfection**
          2. **Multiple sanitizing label claims for bacteria: as rapid as 30 seconds.**
      24. **Hard Non-Porous Surfaces (Disinfection): Yes (EPA)**
      25. **Sanitizer for Carpet: Yes (EPA)**
      26. **Used on semi-porous and porous surfaces: Yes (EPA)**
      27. **Use Sites (Structure/Building Types & Purposes): 26**
      28. **Coverage: 600-1200 sq. ft./gallon (Porous up to Hard, Non-Porous)**
      29. **Delivery Methods:**
          1. **Airless Spray: Yes**
          2. **Electrostatic Spray: Yes[[25]](#endnote-25)**
          3. **Compression Spray (Pump-Up): Yes**
          4. **Manual Trigger Spray: Yes**
          5. **Cold Mister/Fogger (ULV): Yes**
          6. **Thermal Fogger: Not recommended**
          7. **Foamer: Yes**
          8. **Manual Methods (e.g., wipe, mop, rag, immersion): Yes**
      30. **Required Post-Disinfection Steps:** 
          1. **Rinse: No – not even on food contact or processing surfaces**
          2. **Wipe: No**
          3. **Air Dry: Yes**
      31. **Specialized Uses Relevant to Microbial Mitigation (per EPA Label):**
          1. **Antimicrobial Laundry Additive: No**
          2. **Personal Protective Equipment (Clean & Sanitize): Yes**
          3. **HVAC applications: Yes – Cooling Coils only**
          4. **Cordon Sanitaire (Outbreak Control): No**
          5. **Food Contact/Food Processing: Yes.** 
             1. **Rinse Food Contact Surfaces: Yes – No rinse required**
      32. **Miscible/Dilution: Ready-To-Use**
          1. **Use Stability (of mixed solution): N/A**
          2. **Hard Water Tolerance: N/A**
      33. **Residual:**
          1. **Aesthetic/Tangible: Virtually none**
          2. **Ongoing Resistance Post Application: None**
2. **READY-TO-USE DISINFECTANT, CONVENTIONAL:** 
   1. **SHOCKWAVE RTU: [or equal]** 
      1. **Product ID: 8316. [or equal]**
         1. **Available in one-gallon/3.79 L container (8316-1-C4)**
         2. **Available in five-gallon/18.79 L container (8316-5)**
         3. **Available in 55-gallon/208 L container (8316-55)**
         4. **Other production sizes include: 275-Gallon Tote**
   2. **Manufactured by FIBERLOCK TECHNOLOGIES, INC.**
      1. **a brand of the ICP BUILDING SOLUTIONS GROUP;** 
         1. **Administrative Offices: ICP, 150 Dascomb Rd., Andover, MA 01810 USA.**
         2. **Manufactured at ICP: 150 Dascomb Rd., Andover, MA 01810 USA**
         3. **800-342-3755 or 978-623-9987**
         4. [**www.fiberlock.com**](http://www.fiberlock.com)
   3. **Key Performance Attributes of Disinfectant**
      1. **Exposure: Interior/Exterior**
      2. **Active Ingredient: Advanced Generation Quaternary Ammonium Chloride (QUAT)**
      3. **Active Ingredient Content: 0.14%**
      4. **Environmental/Sustainability Criteria:**
         1. **Allergen-free fragrance**
         2. **Phosphate Free**
         3. **Water-based**
      5. **Color: Pale Blue to Clear**
      6. **Odor: Fresh Laundry (mild-faint)**
      7. **USEPA Registration Number: 61178-2-73884  [[26]](#endnote-26)**
      8. **Hospital-Grade Disinfectant (CDC/EPA Pandemic Requirement): Yes**
      9. **EPA MicroOrganism kill Claims (Range, Type): 122 claims on EPA-registered label for pathogenic organisms, including:**
         1. **Bacteria: 83**
            1. **MRSA/VRSA: Yes.**
            2. **VRE: Yes**
         2. **Viruses: 31**
            1. **Influenza: Yes. All historic strains related to influenza pandemic**
         3. **Fungi (Molds): 8**
      10. **COVID Pandemic:**
          1. **EPA List N for SARS-CoV-2: Yes**
             1. **Qualified on List N for Healthcare: Yes**
             2. **Qualified on List N for Institutional: Yes**
             3. **Qualified on List N for Residential: Yes**
          2. **Health Canada’s COVID-19 interim measure List: Yes**
          3. **EPA Emerging Viral Pathogens program: No**
      11. **Health Canada: DIN not issued – Acceptable in Canada via Interim List for SARS-CoV-2 pandemic response**
      12. **EPA Toxicity Category: III**
      13. **EPA-Required Signal Word: CAUTION**
      14. **FDA: Not rated.**
      15. **Polarity: Cationic (Positive, Non-ionic surfactant)**
      16. **Soil Load (Effective in the presence of): 5% organic soil**
      17. **Foaming: Foaming with Foaming Applicator Device Only**
      18. **Flash Point: none**
      19. **pH: 11.7 (Not Corrosive)**
      20. **HAPS & Volatile Solvents: Zero**
      21. **Shelf Life: 24 months minimum**
      22. **Freeze Thaw: 3+ cycles**
      23. **Contact Time:** 
          1. **Most fungal, bactericidal and virucidal contact times per the USEPA registered label of >10 minutes for disinfection**
      24. **Hard Non-Porous Surfaces (Disinfection): Yes (EPA)**
      25. **Deodorizer for Carpet: Yes (EPA)**
      26. **Used on semi-porous and porous surfaces: Yes (EPA)**
      27. **Use Sites (Structure/Building Types & Purposes): 22**
      28. **Coverage: 600-1200 sq. ft./gallon (Porous up to Hard, Non-Porous)**
      29. **Delivery Methods:**
          1. **Airless Spray: Yes**
          2. **Electrostatic Spray: Yes[[27]](#endnote-27)**
          3. **Compression Spray (Pump-Up): Yes**
          4. **Manual Trigger Spray: Yes**
          5. **Cold Mister/Fogger (ULV): Yes**
          6. **Thermal Fogger: Not recommended**
          7. **Foamer: Yes**
          8. **Manual Methods (e.g., wipe, mop, rag, immersion): Yes**
      30. **Required Post-Disinfection Steps:** 
          1. **Rinse: No – except food contact**
             1. **Rinse is required for food contact surfaces**
          2. **Wipe: No**
          3. **Air Dry: Yes**
      31. **Specialized Uses Relevant to Microbial Mitigation (per EPA Label):**
          1. **Antimicrobial Laundry Additive: Yes (Bacteriostat)**
          2. **Personal Protective Equipment (Clean & Sanitize): Yes**
          3. **HVAC applications: No**
          4. **Cordon Sanitaire (Outbreak Control): No**
          5. **Food Contact/Food Processing: Yes.** 
             1. **Rinse Food Contact Surfaces**
             2. **Do not use on utensils, glassware.**
      32. **Miscible/Dilution: Ready-To-Use**
          1. **Use Stability (of mixed solution): N/A**
          2. **Hard Water Tolerance: N/A**
      33. **Residual:**
          1. **Aesthetic/Tangible: Seldom**
             1. **Pale white residual of ordinary salt and leftover detergent from cleaning system. When noticed, usually only on high-gloss or glass (e.g. mirrors)**
             2. **When noticed, wipe away if needed. Use glass cleaner if streaks persist.**
          2. **Ongoing Resistance Post Application: None**
3. **DISINFECTANT, CONCENTRATED, CONVENTIONAL:** 
   1. **SHOCKWAVE CONCENTRATE: [or equal]** 
      1. **Product ID: 8310. [or equal]**
         1. **Available in one-gallon/3.79 L container (8310-1-C4)**
         2. **Available in ten (10) ounce container (8310-10oz-C24)**
         3. **Available in five-gallon/18.79 L container (8310-5)**
         4. **Available in 55-gallon/208 L container (8310-55)**
         5. **Other production sizes include: 275-Gallon Tote**
   2. **Manufactured by FIBERLOCK TECHNOLOGIES, INC.**
      1. **a brand of the ICP BUILDING SOLUTIONS GROUP;** 
         1. **Administrative Offices: ICP, 150 Dascomb Rd., Andover, MA 01810 USA.**
         2. **Manufactured at ICP: 150 Dascomb Rd., Andover, MA 01810 USA**
         3. **800-342-3755 or 978-623-9987**
         4. [**www.fiberlock.com**](http://www.fiberlock.com)
   3. **Key Performance Attributes of Disinfectant**
      1. **Exposure: Interior/Exterior**
      2. **Active Ingredient: Advanced Generation Quaternary Ammonium Chloride (QUAT)**
      3. **Active Ingredient Content: 4.74%**
      4. **Environmental/Sustainability Criteria:**
         1. **Allergen-free fragrance**
         2. **Water-based**
      5. **Color: Pale Blue**
      6. **Odor: Fresh Laundry (mild-faint)**
      7. **USEPA Registration Number: 61178-1-73884  [[28]](#endnote-28)**
      8. **Hospital-Grade Disinfectant (CDC/EPA Pandemic Requirement): Yes**
      9. **EPA MicroOrganism kill Claims (Range, Type): 139 claims on EPA-registered label for pathogenic organisms, including:**
         1. **Bacteria: 90**
            1. **MRSA/VRSA/VISA: Yes.**
            2. **VRE: Yes**
         2. **Viruses: 40**
            1. **Influenza: Yes. All historic strains related to influenza pandemic**
            2. **Norovirus: Yes**
            3. **Adenovirus: Yes**
            4. **Rotavirus: Yes**
            5. **Poliovirus: Yes**
            6. **Measles Virus: Yes**
         3. **Fungi (Molds): 9** 
            1. **Aspergilles Niger: Yes**
            2. **Candida albicans: Yes**
            3. **Cryptococcus neoformans: Yes[[29]](#endnote-29)**
      10. **COVID Pandemic:**
          1. **EPA List N for SARS-CoV-2: Yes**
             1. **Qualified on List N for Healthcare: Yes**
             2. **Qualified on List N for Institutional: Yes**
             3. **Qualified on List N for Residential: Yes**
          2. **Health Canada’s COVID-19 interim measure List: Yes**
          3. **EPA Emerging Viral Pathogens program: No**
      11. **Health Canada: DIN not issued – Acceptable in Canada via Interim List for SARS-CoV-2 pandemic response**
      12. **EPA Toxicity Category: II**
      13. **EPA-Required Signal Word: DANGER[[30]](#endnote-30)**
      14. **FDA: Not rated.**
      15. **Polarity: Cationic (Positive, Non-ionic surfactant)**
      16. **Soil Load (Effective in the presence of): 98% organic soil for multiple organism claims[[31]](#endnote-31)**
          1. **Includes accepted EPA label claim for *human coronavirus* in a 98% soil load.**
      17. **Foaming: Foaming with Foaming Applicator Device Only**
      18. **Flash Point: Combustible**
      19. **pH: 11-12 Corrosive (Mixed Solution: 9.5-10; Not Corrosive)[[32]](#endnote-32)**
      20. **HAPS: Zero**
      21. **VOCs: Very Low**
      22. **Shelf Life: 24 months minimum**
      23. **Freeze Thaw: 3+ cycles**
      24. **Contact Time:** 
          1. **Most fungal, bactericidal and virucidal contact times per the USEPA registered label of > or equal 10 minutes for disinfection**
      25. **Hard Non-Porous Surfaces (Disinfection): Yes (EPA)**
      26. **Sanitizer for Carpet: Yes (EPA)**
      27. **Used on semi-porous and porous surfaces: Yes (EPA)**
      28. **Use Sites (Structure/Building Types & Purposes): 151**
          1. **Healthcare Use Sites: 30**
          2. **Food-Related Use Sites: 32**
      29. **Coverage: 600-1200 sq. ft./gallon (Porous up to Hard, Non-Porous)**
      30. **Delivery Methods:**
          1. **Airless Spray: Yes**
          2. **Electrostatic Spray: Yes[[33]](#endnote-33)**
          3. **Compression Spray (Pump-Up): Yes**
          4. **Manual Trigger Spray: Yes**
          5. **Cold Mister/Fogger (ULV): Yes**
          6. **Thermal Fogger: Not recommended**
          7. **Foamer: Yes**
          8. **Manual Methods (e.g., wipe, mop, rag, immersion): Yes**
      31. **Required Post-Disinfection Steps:** 
          1. **Rinse: No – except food contact**
             1. **Rinse is required for food contact surfaces**
          2. **Wipe: No**
          3. **Air Dry: Yes**
      32. **Specialized Uses Relevant to Microbial Mitigation (per EPA Label):**
          1. **Antimicrobial Laundry Additive: Yes (Bacteriostat)**
          2. **Personal Protective Equipment (Clean & Sanitize): Yes**
          3. **HVAC applications: No**
          4. **Cordon Sanitaire (Outbreak Control): Yes (Shoe Bath, Entry/Exitway, Tire Wash)**
          5. **Food Contact/Food Processing: Yes.** 
             1. **Rinse Food Contact Surfaces**
             2. **Do not use on utensils, glassware.**
      33. **Miscible/Dilution: Concentrate – Formulated for dilution**
          1. **For microbial mitigation/standard disinfection: 2 ounces per gallon (one gallon yields 64 gallons usable solution)**
          2. **For contamination by highly contaminated water and potential bloodborne pathogens: 4 ounces per gallon (one gallon yields 32 gallons usable solution)[[34]](#endnote-34)**
          3. **Use Stability (of mixed solution): 64 days**
          4. **Hard Water Tolerance: as much as 791 ppm CaCO3 water hardness**
      34. **Residual:**
          1. **Aesthetic/Tangible: Seldom**
             1. **Pale white residual of ordinary salt and leftover detergent from cleaning system. When noticed, usually only on high-gloss or glass (e.g. mirrors)**
             2. **When noticed, wipe away if needed. Use glass cleaner if streaks persist.**
          2. **Ongoing Resistance Post Application: None**

**D: WIPES, DISINFECTANT, BOTANICAL:**

* 1. **Benefect Botanical Disinfectant Wipes: [or equal]**
     1. **Product ID: (below).**
     2. **Pail (250 Wipes/pail) 6 x 7” (USA) Product ID: #20376**
     3. **Pail (250 Wipes/pail) 15.2 x 17.8 cm (CAD) Product ID: #50376**
  2. **Manufactured by BENEFECT**
     1. **a brand of the ICP BUILDING SOLUTIONS GROUP;** 
        1. **Administrative Offices: 555 Bay St. North, Hamilton, ON CANADA L8L 1H1.**
        2. **Manufactured at ICP, 405 N. Oakwood Ave., Waukegan, IL 60005 USA**
        3. **800-909-2813 or 905-528-7474**
        4. [**www.benefect.com**](http://www.benefect.com)
  3. **Key Performance Attributes of Disinfectant**
     1. **Exposure: Interior/Exterior**
     2. **Active Ingredient: Botanical Thymol present as a component of Thyme Oil.**
     3. **Active Ingredient Content: 0.05%**
     4. **Environmental/Sustainability Criteria:**
        1. **No synthetic fragrances, dyes, ammonia or chlorine or endocrine disruptors**
        2. **100% Bio-Based Content, no petrochemicals or petroleum derivatives**
        3. **Water-based liquid**
        4. **Hospital grade wood pulp fiber**
     5. **Color: white (towel)**
     6. **Odor: Lemon & Thyme**
     7. **USEPA Registration Number: 84683-4-74771 [[35]](#endnote-35)[[36]](#endnote-36)**
     8. **Hospital-Grade Disinfectant (CDC/EPA Pandemic Requirement): Yes**
     9. **EPA MicroOrganism kill Claims (Range, Type): 8 claims on EPA-registered label for pathogenic organisms, including:**
        1. **Bacteria: 5**
           1. **MRSA: Yes.**
        2. **Viruses: 3**
           1. **Influenza: Yes (H1N1)**
           2. **Rhinovirus: Yes**
     10. **COVID Pandemic:**
         1. **EPA List N for SARS-CoV-2: Yes**
            1. **Qualified on List N for Healthcare: Yes**
            2. **Qualified on List N for Institutional: Yes**
            3. **Qualified on List N for Residential: Yes**
         2. **Health Canada’s COVID-19 interim measure List: Yes**
         3. **EPA Emerging Viral Pathogens program: Yes**
     11. **Health Canada: DIN 02342111**
     12. **EPA Toxicity Category: IV (lowest available rating)**
     13. **EPA-Required Signal Word: None**
     14. **Foaming: N/A**
     15. **Flash Point: N/A**
     16. **pH: 4.0-5.0 (Not Corrosive)**
     17. **HAPS & Volatile Solvents: Zero**
     18. **Freeze Thaw: N/A**
     19. **Contact Time:** 
         1. **Most fungal, bactericidal and virucidal contact times per the USEPA registered label of >10 minutes for disinfection**
         2. **Multiple sanitizing label claims for bacteria: as rapid as 30 seconds.**
     20. **Hard Non-Porous Surfaces (Disinfection): Yes (EPA)**
     21. **Sanitizer for Carpet: N/A**
     22. **Used on semi-porous and porous surfaces: N/A**
     23. **Use Sites (Structure/Building Types & Purposes): 19**
     24. **Coverage: 1-2 sq. ft./wipe[[37]](#endnote-37) (Hard, Non-Porous)**
     25. **Delivery Methods:**
         1. **Manual Methods (e.g., wipe): Yes**
     26. **Required Post-Disinfection Steps:** 
         1. **Rinse: No – not even on food contact or processing surfaces**
         2. **Wipe: No**
         3. **Air Dry: Yes**
     27. **Specialized Uses Relevant to Microbial Mitigation (per EPA Label):**
         1. **Antimicrobial Laundry Additive: No**
         2. **Personal Protective Equipment (Clean & Sanitize): Yes**
         3. **HVAC applications: Yes – Cooling Coils and Drip Pans only**
         4. **Food Contact/Food Processing: Yes.** 
            1. **Rinse Food Contact Surfaces: No rinse required**
     28. **Miscible/Dilution: Ready-To-Use**
         1. **Use Stability (of mixed solution): N/A**
         2. **Hard Water Tolerance: N/A**
     29. **Residual:**
         1. **Aesthetic/Tangible: Virtually none**
         2. **Ongoing Resistance Post Application: None**
  4. *APPLICATION EQUIPMENT (Basis for Design)*

1. *When using liquid products recommended in this Section, as disinfectants and/or as cleaners, several types of equipment can/should be considered. Below several equipment makers, brands, and models are listed, whereas in Section 3 Execution, equipment will only be described in generic terms as related to a delivery methodology or a specific disinfectant delivery challenge.*
2. *Delivery methods in this section include commercial identification of application equipment. Based on collaboration with equipment manufacturers, and experienced application service providers (Contractors), ICP is sharing the specific commercial names of these tools because ICP has actual positive experience with these tools specifically for microbial mitigation.*
3. *Regardless of proof and experience with satisfactory past application using any of the delivery methods below, the success of disinfection is entirely dependent upon the competence of the applicator.*
4. *In alphabetical order, below are the following are types of application equipment that can be used to apply the disinfectants in this Section (Section 2 – Basis of Design):*
   1. *AIRLESS SPRAY*
   2. *BLAST, ABLATIVE*
   3. *BLAST, SODA*
   4. *COMPRESSION/PUMP-UP SPRAYER*
   5. *ELECTROSTATIC SPRAY*
   6. *GATEWAY/EXITWAY*
   7. *FOAM*
   8. *IMMERSION (SOAK)*
   9. *MISTER/FOGGER (ULV)*
   10. *MOP*
   11. *PRESSURE/POWER WASHER*
   12. *SHOE BATH*
   13. *TRIGGER SPRAY*
   14. *ULTRASONIC*
   15. *WIPE (includes RAG, CLOTH, MICROFIBER)*
5. *Application Equipment for the products listed in this section include:*
   * 1. *AIRLESS SPRAYER (Portable)[[38]](#endnote-38)[[39]](#endnote-39):* 
        1. *Electric airless sprayer- Large Surfaces and Public Areas*
           1. *Impact 840 or Elite 3500*

*For vertical, horizontal touchable surfaces of large indoor and outdoor spaces*

*May also be used for overhead surfaces*

*May be used for pre-cleaning pulldown applications to reduce respirable airborne droplets (aerosols), particulates (dust) that can carry infectious virus*

*Contact sprayer manufacturer for settings and technique for successful pulldown application.*

*Should support:*

*Hose Length: up to 300’*

*Intake: Siphon from 55-gallon drum*

*Spray with up to 4 guns off a single sprayer machine*

*Spray Tip proven in trials to provide[[40]](#endnote-40):*

*Large wet droplets to break surface tension and minimize hold out against wetting*

*Delivery of controlled volume of atomized droplets to coat entire target surface with disinfectant continuously, maximizing probability of contact time per EPA label (even in low humidity), minimizing bounce back from surfaces and runoff from inefficient application requiring cleanup of excess disinfectant.*

*Spray Machine Design & Performance:*

*Recommended spray machine should include packings and internal materials unlikely to deteriorate from repeated exposure to either mild acid or mild alkaline pH solutions*

*Example: Self-adjusting Quad+ Packings with UHMWPE (Ultra High Molecular Weight Polyethylene).*

*Recommended spray machine should include protection of aluminum components with clear anodized coating to resist potential damage from disinfectants.*

*TITAN TOOL*

*Minneapolis, MN USA*

*800-526-5362*

*Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate*

* + - 1. ***Electric airless sprayer- Large Surfaces and Public Areas***
         1. *[GRACO EQUIPMENT NEEDS TO BE INSERTED HERE]*

*For vertical, horizontal touchable surfaces of large indoor and outdoor spaces*

*May also be used for overhead surfaces*

*Should support:*

*Hose Length: up to \_\_\_\_\_\_\_\_\_\_’*

*Intake: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Spray with up to \_\_\_\_\_\_\_ guns off a single sprayer machine*

*Spray Tip [.209? ] proven in trials to provide*

*Large wet droplets to break surface tension and minimize hold out against wetting*

*[OPTIONAL FOR GRACO TO ADD INFO HERE].*

*Spray Machine Design & Performance*:

[OPTIONAL FOR GRACO TO ADD INFO HERE].

**GRACO**

**Minneapolis, MN USA**

**[TOLL FREE # OPTIONAL FOR GRACO TO ADD INFO HERE].**

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. **Electric airless sprayer- Medium-sized Surfaces and Spaces**
         1. **Impact 410, Impact 440, and Elite 3000**

**For vertical, horizontal touchable surfaces of medium-sized indoor and outdoor spaces**

**May also be used for overhead surfaces**

**May be used for pre-cleaning pulldown applications to reduce respirable airborne droplets (aerosols), particulates (dust) that can carry infectious virus**

**Contact sprayer manufacturer for settings and technique for successful pulldown application.**

**Should support:**

**Hose Length: up to 300’**

**Intake: Siphon from 5-gallon pail**

**Spray with one applicator per sprayer machine**

**Flow-Thru: 0.47 -1.0 GPM**

**Spray Tip proven in trials to provide[[41]](#endnote-41):**

**Large wet droplets to break surface tension and minimize hold out against wetting**

**Delivery of controlled volume of atomized droplets to coat entire target surface with disinfectant continuously, maximizing probability of contact time per EPA label (even in low humidity), minimizing bounce back from surfaces and runoff from inefficient application requiring cleanup of excess disinfectant.**

**Spray Machine Design & Performance:**

**Recommended spray machine should include packings and internal materials unlikely to deteriorate from repeated exposure to either mild acid or mild alkaline pH solutions.**

**Example: Self-adjusting Quad+ Packings with UHMWPE (Ultra High Molecular Weight Polyethylene).**

**Recommended spray machine should include protection of aluminum components with clear anodized coating to resist potential damage from disinfectants.**

TITAN TOOL

Minneapolis, MN USA

800-526-5362

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + - 1. **Electric airless sprayer- Medium Sized Surfaces and Public Areas**
         1. [GRACO EQUIPMENT NEEDS TO BE INSERTED HERE]

For vertical, horizontal touchable surfaces of large indoor and outdoor spaces

May also be used for overhead surfaces

Should support:

Hose Length: up to \_\_\_\_\_\_\_\_\_\_’

Intake: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spray with up to \_\_\_\_\_\_\_ guns off a single sprayer machine

Spray Tip [.209? ] proven in trials to provide

Large wet droplets to break surface tension and minimize hold out against wetting

[OPTIONAL FOR GRACO TO ADD INFO HERE].

Spray Machine Design & Performance:

[OPTIONAL FOR GRACO TO ADD INFO HERE].

**GRACO**

**Minneapolis, MN USA**

**[TOLL FREE # OPTIONAL FOR GRACO TO ADD INFO HERE].**

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. **HVLP Electric airless sprayer- Smaller-sized Surfaces and Objects**
         1. **FlexSpray Handheld**

**For small-sized indoor spaces**

**Combination speed and portability**

**Should support:**

**Intake: built in refillable reservoir**

**Spray with one applicator per sprayer machine**

**Flow-Thru: 0.20 GPM**

**Spray Tip proven in trials to provide[[42]](#endnote-42):**

**Large wet droplets to break surface tension and minimize hold out against wetting**

**Spray Machine Design & Performance:**

**Not for use with alcohol-based disinfectants.**

TITAN TOOL

Minneapolis, MN USA

800-526-5362

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + - 1. Electric airless sprayer- Small Sized Surfaces and Objects
         1. [GRACO EQUIPMENT NEEDS TO BE INSERTED HERE]

For vertical, horizontal touchable surfaces of large indoor and outdoor spaces

May also be used for overhead surfaces

Should support:

Hose Length: up to \_\_\_\_\_\_\_\_\_\_’

Intake: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spray with up to \_\_\_\_\_\_\_ guns off a single sprayer machine

Spray Tip [.209? ] proven in trials to provide

Large wet droplets to break surface tension and minimize hold out against wetting

[OPTIONAL FOR GRACO TO ADD INFO HERE].

Spray Machine Design & Performance:

[OPTIONAL FOR GRACO TO ADD INFO HERE].

GRACO

Minneapolis, MN USA

[TOLL FREE # OPTIONAL FOR GRACO TO ADD INFO HERE].

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + 1. BLAST, ABLATIVE
       1. Micro Air Abrasion – Small contents & surfaces, up thru Large Surfaces and Public Areas
          1. Exfoliates outermost layer of substrates, cleaning by removing even biofilms entrained in semi-porous surfaces, immediately followed by integrated application of the disinfectants in this section.
          2. IBIX Easy Blast EB-6 or EB-25

[SETTINGS AVAILABLE FROM MANUFACTURER]

IBIX USA

Largo, FL USA

(727) 322-4611

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + 1. BLAST, SODA
       1. High volume Slurry Soda Blast – Large Outdoor Surfaces and Public Areas[[43]](#endnote-43)
          1. Exfoliates outermost layer of substrates, cleaning by removing even biofilms entrained in semi-porous surfaces, immediately followed by integrated application of the disinfectants in this section.
          2. Wet abrasive technology incorporating water, compressed air and an aggregate. This reduces abrasive aggregate consumption by 70-80%. Summarized process description:

Mix abrasive and water in pressure vessel. Fill “rinse” tank with disinfectant

Hydraulically pressurize vessel with pneumatic water pump.

Aggregate travels through system under hydraulic pressure and into compressed air stream.

Air stream carries aggregate down the blast hose and out of the nozzle propelling it to impact a desired surface.

Integrated rinse tank delivers disinfectant.

* + - * 1. GBT 350

[SETTINGS AVAILABLE FROM MANUFACTURER]

GREENER BLAST TECHNOLOGIES

Tyngsboro, MA USA

(978) 649-5300

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + 1. COMPRESSION/PUMP-UP SPRAYER
       1. Most compression pump up sprayers are suitable for spraying the disinfectants in this section.
       2. Check for a standard or optional foaming nozzle, tip or setting.
       3. CONSULT WITH EACH MANUFACTURER FOR MODEL SPECIFIC INSTRUCTIONS.
          1. Backpack

Petra LTPRO 6.0 Battery Powered (4 Gal)[[44]](#endnote-44)

Milwaukee[[45]](#endnote-45)

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - * 1. Hand carried:

Chapin[[46]](#endnote-46)

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + 1. ELECTROSTATIC SPRAY
       1. [RESERVED FOR FUTURE RECOMMENDATION/REGULATORY DEVELOPMENT]
       2. All ICP disinfectants have been demonstrated can be applied with electrostatic technology. However, no equipment manufacturer has demonstrated efficacy in the collective context of all the surfaces and situations inherently associated with epidemic/pandemic surface hygiene.
       3. Consult manufacturer regarding electrostatic spray application as training is required, and many building materials cannot receive and hold an opposing electrical polarity such that electrostatic capabilities are applicable. In latter situation when attraction of opposing electrical polarity cannot be reliably achieved, then applicators cannot rely on “Wrapping” of “Dry fog” and electrostatic sprayer reverts to ordinary spray.
       4. **For more information, an article in MasterWorks FAQ DISINFECTION & SANITIZING: *Can ShockWave spray apply via electrostatic systems?*, on considerations when considering electrostatic spray. See** [**https://www.icpmasterworkscommunity.com/s/article/FAQ-DISINFECTION-SANITIZING-Can-ShockWave-spray-apply-via-electrostatic-systems**](https://www.icpmasterworkscommunity.com/s/article/FAQ-DISINFECTION-SANITIZING-Can-ShockWave-spray-apply-via-electrostatic-systems)
    2. FOAMING APPLICATORS:
       1. Foam, Non-powered (manual, compression)
          1. 0.4 Gallon Foam Unit F1.5L

For vertical general touchable and gloss/slick surfaces

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - * 1. 0.4 Gallon Foam Unit with 3.75 inch Drain Attachment F1.5LBK-DP3.75

For biofilm and contaminants in sink overflow cavity

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - * 1. 2.6 Gallon Foam Unit with Heavy Duty Trigger Gun F10.0L-PSG

For vertical general touchable and gloss/slick surfaces

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. Foam, Electric, Battery
         1. 15 Gallon Battery Foam Unit FI-JR

For vertical general touchable and gloss/slick surfaces

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + - 1. Foam, Air Compressor, Electric
         1. Pre-Mix Electric Foam Unit, 120 VAC electricity FI-BP-15N

For vertical general touchable and gloss/slick surfaces

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + 1. IMMERSION (SOAK)
    2. MISTER/FOGGER (includes Ultra-Low Volume (ULV) devices)
       1. Multi-purpose combination powered sprayer – Small to Medium Surfaces
          1. Multi-Range Compact Sprayer – Model 36320

For vertical, horizontal, and overhead touchable surfaces of complex spaces such as public transit (metro cars, buses), first responder vehicles, complex smaller spaces (mechanical rooms, toll booths, control rooms).

Should support:

Hose Length: up to 300’

Intake: Siphon from 1,5,55,275G

3 spray tips. Ranging from 0.017 GPM – 0.670 GPM. Other tips are available.

Adjustable Pressure: 40-200 psi.

Fine Mist of Disinfectant (use 033 Jet Wand attachment, 50° spray pattern)

0.17 GPM at 40 psi

0.38 GPM at 200 psi

KLEENRITE[[47]](#endnote-47)

Madera, CA USA

800-241-4865

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. ULV Tri-Jet Mister, Electric, Cold/Ambient Temps – Small thru Large Spaces, Ideal for Pulldown
         1. Hurricane Ultra II – Model 2794 (110V) or 2796 (220V)

For handheld targeted vertical, horizontal, and overhead touchable surfaces of complex spaces

For autonomous/unattended generation of pulldown mist to reduce airborne hazards in a contaminated space:

Prior to entry by cleanup workers

Bring airborne hazards “to ground” where easier to remove.

Flow Rate Adjustable: 0-4.5 gallons/hour (1 Gallon/3.8 L Reservoir Tank)

Particle Size: >5.5 microns

CURTIS DYNAFOG

Jackson, GA USA

800-544-8811

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. ULV Spray Fogger, Electric, Cold/Ambient Temps – Small thru Large Spaces, Ideal for Shoulder-carry application
         1. Ultra Low Volume Spray Fogger 860131

For handheld targeted vertical, horizontal, and overhead touchable surfaces of complex spaces

Flow Rate: Adjustable

Polyethylene Reservoir Tank

Particle Size:

Hose Length: 18”

NIKRO INDUSTRIES

VILLA PARK, IL USA

630-530-0558

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + 1. MOP (Wet)
       - 1. No manufacturer/make/model recommendation

RESERVED for specifier/future manufacturer recommendation

* + - * 1. [SWIFFER]

Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate

* + 1. OUTBREAK PERIMETER CONTROL (*CORDON SANITAIRE*)
       1. Shoe Bath/Footwear Sanitation
          1. Footwear Sanitizing Unit with Boot Scrubber – SS2 Footwear Sanitation System

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

Use: ShockWave Concentrate

* + - * 1. Gateway/Exitway Footwear Walk-Thru System SS2 Footwear Sanitation System

FOAM-IT

Grand Rapids, MI USA

616-656-9225 or 800-567-5420

**Use: ShockWave Concentrate**

* + 1. POWER/PRESSURE WASHER
       1. Multi-purpose combination powered sprayer - Medium to Large Surfaces and Public Areas
          1. Multi-Range Sprayer – 20 gallon unit – Model 36322

For vertical, horizontal touchable surfaces of large indoor and outdoor spaces

May also be used for overhead surfaces

Should support:

Hose Length: up to 300’

Intake: Integrated 20g solution tank

3 spray tips. Ranging from 0.017 GPM – 0.670 GPM. Other tips are available.

Typically one applicator, but could be 2-3

[SEE MANUFACTURER FOR ADAPTORS]

Adjustable Pressure: 40-200 psi.

Prime at 200 psi

For operation, decrease to 40 psi

Fine Mist of Disinfectant (use Small Jet Wand attachment)

0.17 GPM at 40 psi

0.38 GPM at 200 psi

Light Spray – Sanitizing Pattern (Textiles), Longer Dwell (use Medium Jet Wand attachment)

0.33 GPM at 40 psi

0.70 GPM at 200 psi

Heavy Spray – Irregular Profile Surfaces, Longer Dwell, Higher-Risk Areas ideal for bathrooms/toilets, excellent for outdoor surfaces (use Large Jet Wand attachment)

0.30 GPM at 40 psi

6.70 GPM at 200 psi

KLEENRITE

Madera, CA USA

800-241-4865

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. Electric pressure washer - Medium to Large Surfaces and Public Areas
         1. Mi-T-M Pressure Washer & Mister Combination

Pressure Washer:

Pressure: Up to 1400 psi

Droplet Characteristics: [INFO NEEDED FROM MANUFACTURER]

Mister:

Pressure: 350 psi

Droplet Characteristics: [INFO NEEDED FROM MANUFACTURER]

Spray Machine Design & Performance:

Cold-water

Can auto-mix concentrates with water

[INFO NEEDED FROM MANUFACTURER]

MITM MANUFACTURING[[48]](#endnote-48)

Peosta, IA USA

800-553-9053

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate (diluted, or mixed at equipment intake)**

* + 1. TRIGGER SPRAY: [RESERVED]
       1. **Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**
    2. ULTRASONIC: [RESERVED]
       1. **Use: Benefect A-44 Evergreen**
    3. WIPE
       1. **Benefect Botanical Disinfectant Wipe** 
          1. **Wipe, Ready-To-Use Pre-Saturated**

**EPA/HC Registered, and EPA List N**

**Benefect (a division of ICP Building Science Group)**

**Hamilton, ON CANADA**

**800-909-2813 or 905-528-7474**

**Use: Benefect Botanical Disinfectant Wipe**

* + - 1. **WiperBuckets**
         1. Wipe, Dry, Roll of 300 wipes pre-packed in plastic pail

For saturation by applicator with appropriate EPA/HC Registered, and EPA List N disinfectant

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

* + - 1. Microfiber cloth
         1. No manufacturer/make/model recommendation

RESERVED for specifier/future manufacturer recommendation

**Use: Benefect Decon30**

* + - 1. Rag
         1. No manufacturer/make/model recommendation

**Use: Benefect Decon30, ShockWave RTU, ShockWave Concentrate**

1. Regardless of application equipment, the goal of disinfection is a ten minute wet contact time, onto surfaces that were pre-cleaned when necessary, and all relevant instructions on the registered disinfectant label have been followed.

2.03 **MIXING**

1. **Mixing shall be done with a clean paddle, stir-stick, or mixing blade propelled by hand, or equivalent powered by a 13-mm (1/2”) variable speed drill capable of producing 500 RPM.**
2. **Refer to the EPA product label, as well as the manufacturer’s technical data sheet, and the Safety Data Sheet (SDS) for the information which altogether comprise mixing instructions.**
3. **Mixed concentrated product will be stable for [\_64\_\_] 1 ,7,64 days**
4. **Ready-to-use disinfectants require no mixing but will be stirred or shaken to provide continuity throughout the container.**

EXECUTION : ABM will perform the application and techniques demonstrated at Raiders stadium

* 1. EXAMINATION

1. **Installers should conduct an initial inspection before commencing work regardless of prior evaluations by other parties.**
2. **When preceding evaluations indicate that unacceptable conditions exist, a safety assessment should be performed prior to starting work.**
3. **Review the practicalilty of the space to be addressed versus the anticipated delivery method for the disinfectant. At a critical level any applicator of a disinfectant during microbial mitigation is engaged in key decision-making. The applicator using any equipment must be trained in its use, have and draw upon informed professional judgment, and be provided with maintained tools, necessary site engineering controls, and adequate PPE (Personal Protective Equipment). When these conditions are met, there is an expectation the applicator can provide consistent:**
   * 1. **Determination of surfaces suitable/not suitable for disinfection treatment[[49]](#endnote-49)** 
        1. **Discarding of certain items/surfaces**
           1. **Low value contents**
           2. **Surfaces/contents impossible to clean, such as (e.g.):**

**Porous floor or wall coverings saturated with bodily secretions or fluids**

**Ordinary Paper[[50]](#endnote-50)**

* + - 1. **Direction to Storage of certain removable items/contents** 
         1. **The removal to storage of items of value but unsuitable for disinfection**

**Such storage is intended to isolate microbes for a period of time such that, without a host, the microbe is no longer viable (infectious).[[51]](#endnote-51)**

**After such storage time has elapsed, the user of this specification must still develop and deploy an intensive cleaning protocol, such as ultrasonic cleaning to address the precautionary decontamination of these items of value before return to their owner[[52]](#endnote-52).**

**Other items not considered of high-value, but which are not needed in the near future by the owner, may be placed in extended isolation storage.**

**For contents to retain but which are intolerant of wetness/moisture, e.g., books, this storage solution can be helpful.**

* + 1. **Determination regarding whether Precleaning surfaces is required. E.g., when:**
       1. **Visibly soiled, dirty –** 
          1. **Contamination can interfere with efficacy of all disinfectants**
          2. **Indiscriminate use of chemical cleaners and disinfectants is not a substitute for precleaning in order to accomplish to the extent possible the source removal of the contaminant.**
       2. **Proximate to known or suspected contagion or infected persons whether**
          1. **Symptomatic**
          2. **Pre-symptomatic**
          3. **Asymptomatic**
       3. **Surfaces are inherently exposed by their purpose to bodily functions associated with transmission of a microbially-caused condition. Such as (E,g,):**
          1. **Restrooms, bathrooms, lavatories**
    2. **Completion of Proscribed Wet Contact Time per registered disinfectant product label.** 
       1. **Uninterrupted 10 minute wet contact (dwell) time**
    3. **Targeted delivery to surfaces that avoids/minimizes collateral impacts that may cause occupant frustration, or possibly damage finishes, contents, etc.**
  1. **PREPARATION**

1. **The first responsibility of the installer upon arrival to site of is to ensure the safety of workers and occupants.**
2. **Coordinate commencement of work with owner so as not to cause inconvenience to the facility.**
3. **Post notices in conspicuous areas in advance of beginning work on specified phase (as agreed to with Owner or Owner’s agent), noting any instructions to occupants and providing business phone number. Utilize signage as recommended or required by local ordinance and industry standard.[[53]](#endnote-53)**
4. **Manufacturers of chlorinated polyvinyl chloride (“CPVC”) pipe believe that it can be sensitive to or incompatible with chemicals found in many commonly used household and industrial cleaning products, coatings, adhesives and other compounds, and that those chemicals can cause stress cracks or pipe failure. It is recommended that users always check pipe for markings that indicate the type of material it is made of and that users contact the pipe manufacturer directly before applying any disinfectant or cleaning products to CPVC pipe.**
5. **When certain information about a surface is available (e.g., make, model, manufacturer, SKU, or another identifier), it is prudent to verify that the surface to be disinfected and cleaned is compatible with such chemical treatment. This specification aims to supply generic compatibility guidance whenever possible. Generic information is never as targeted and reliable as specifics from the material’s manufacturer.**
   1. **GENERAL PROCEDURES** 
      1. **(Surface and Site-specific recommendations appear in following section)**
      2. **Test and inspect all equipment before entry into work area. When needed ensure provided electrical power, illumination and ventilation is functioning properly.**
      3. **PPE All Personal Protective Equipment should be donned before entering the work area.** 
         1. For cleaning & disinfecting activity aimed toward maintaining a healthy facility, follow PPE recommendations on the Safety Data Sheet.
         2. Additional PPE is anticipated when mitigation activity is in response to a presence of SARS-CoV-2 in the structure/facility/occupant environment. The following should be considered:
            1. N-95 Disposable Respirator
            2. 6-mil nitrile long cuff glove
            3. 4-mil nitrile standard cuff outer glove
            4. Hooded/Booted Tyvek Suit
            5. Disposable safety glasses
      4. Verify that engineering controls and signage in place, for example when a positive case of a pathogenic microbe is suspect or verified, engineering controls are functional for their intended purposes (such as protection of occupants in adjacent areas, creation of negative pressure containment, securing the affected area).
         1. Isolate all interfaces with the HVAC system that are in the work area. The goal is to avoid incidental cross-contamination of air conveyance systems with any unwanted particulate, including ordinary dust or respirable aerosolized droplets. Neither is desirable in a clean HVAC system. There is much inconclusive discussion as to the probability that either are a disease vector for COVID-19[[54]](#endnote-54).
      5. Verify disposal receptacles are available, and that movement of removed materials to disposal will not cross-contaminate otherwise clean spaces
      6. Surfaces likely contaminated with pathogenic microbial activity, and which cannot be cleaned and treated with a disinfectant, shall be removed and disposed.
         1. Replacement of such surfaces may or may not be incorporated into the project scope of work
         2. Above “cannot be cleaned” may refer to physical impossibility, including extraordinary extent of contamination. It may refer to materials that cannot tolerate the moisture inherently associated with a wet contact time, however brief, e.g. paper[[55]](#endnote-55). It may also pertain to decisions made practically. E.g., some carpet may, for a combination of factors, be better replaced.
      7. Contents to be cleaned off-site, and/or put into storage to isolate microbes from potential hosts, should be removed at the beginning of work insofar as possible.
      8. Dirt, soils, that can form biofilm and otherwise harbor microorganisms must be removed prior to disinfection by cleaning
         1. Some disinfectants offer cleaning capability, and can be used to clean, and then used immediately thereafter to disinfect
            1. Following registered label directions
            2. Products that can provide both cleaning and disinfection are preferred because reducing the number of chemicals on site reduces potential of misuse, human error, and chemical incompatibility
            3. Neutral pH disinfectants often lack cleaning ability. Verify products that claim utility as cleaners have such capability by testing with a sample provided by the manufacturer

The products listed in Section 2 (Basis of Design) of this specification provide service as satisfactory cleaners, as well as disinfectants

* + - * 1. Cleaning of porous and semi-porous materials may involve vacuuming both before sanitizing, and again after sanitizing. This may be determined by product label language, and/or professional advice for decontaminating a specific space.
        2. Cleaning will always precede disinfecting:

Areas where microbes are shed/spread in higher relative amounts

Bathrooms, lavatories

Touchable surfaces proximate to illness

* + 1. After any necessary precleaning as described, to achieve and maintain positive SHEP conditions (Surface Hygiene: Epidemic & Pandemic - when the objective is minimization of viable microbes capable of causing infection)[[56]](#endnote-56):
       1. Touchable, hard, non-porous surfaces will be disinfected at least daily[[57]](#endnote-57)
          1. Minimum wet contact time: 10 minutes

to achieve a surface with the greatest possible probability of inactivation of the microbes likely present in a common indoor environment: includes viruses, bacteria and fungi (molds)

Includes SARS-CoV-2, as listed for EPA List N

Disinfection as commonly defined as a 5-Log reduction of microbial activity

Includes microbes (bacteria) measured by ATP examination methods

The products listed in Section 2 (Basis of Design) of this specification satisfy the immediately aforementioned requirements for use per the registered label as a disinfectant. The products listed in Section 2 (Basis of Design) are registered with bactericide, virucide, and fungicidal claims on the product labels

May not include microorganisms that often require more lengthy contact times, and sometimes immersion (e.g., C-DIFF, or Clostridium difficile)

* + - 1. Touchable semi-porous and porous materials will be sanitized at least daily
         1. Minimum wet contact time: 10 minutes

The products listed in Section 2 (Basis of Design) of this specification satisfy the immediately aforementioned requirements for use per the registered label as a sanitizing treatment for porous materials.

Note that textile wall coverings and finishes are common, and as are common in hospitals/healthcare, ask the manufacturers of the disinfectant and of the wallcovering about previous experience with sanitizing. [RESERVED FOR FUTURE ADDITIONS AS RESEARCH IS UNDERWAY]

* + - * 1. Note that there is more than one type of sanitizing claim on a registered label for an antimicrobial product. Sanitizing claims for hard, non-porous surfaces are different and independent of those that refer to porous surfaces. Contact times will also be prone to vary significantly.[[58]](#endnote-58)
        2. Regarding area rugs and other non-installed textiles: Never shake out dirty items before cleaning them (rugs, drapes, etc.). This could spread dirt and bacteria throughout the air. Also, if possible launder smaller textiles frequently
      1. Touchpoints are touchable surfaces that receive frequent contact by skin or droplet (e.g., respiratory/expectoration, perspiration), and the deposited droplet or particle can harbor the/a viable/infectious pathogenic microbe(s) of concern. The contaminated surfaces are subsequently probable to be touched by other persons, in turn creating a chance of infection. Touchpoints may be elements of a structural element (e.g. door handle), or a content item within the space/facility (e,g, keyboards & mice, children’s toys)[[59]](#endnote-59).
         1. Minimum wet contact time: 10 minutes
         2. Clean and disinfect (or sanitize for surfaces not HNP) at least daily, or:

More frequently in times of widespread illness

After each patron, showing, service or shift in scenarios where the human occupants change cyclically

As a culminating application by hand integral to an emergency response. A good practice after cleaning and disinfecting a certain space is to use small manual delivery devices to address touchpoints as the mitigation crew works in reverse from the highest and farthest point backward towards the exit/entrance.

Human manipulation of several touchpoints is not optimal. The Restoration Industries Association (RIA) restates: “Since people are not precise when touching objects, touchpoint cleaning should extend past the focused item 3-12 inches”[[60]](#endnote-60).

Spraying may not deliver sufficient disinfectant to leeward surfaces such as wall mounted handrails. Supplement spray application on these surfaces with manual method combinations such as trigger spray, rags and wipes.

* + - 1. Disinfectant Post-Application Contact Time
         1. Applicator must understand if there are any additional steps beyond application and contact time. Additional steps may increase labor costs, material costs, and/or time elapsed before the touchable surface is again usable. Such steps, are not limited to, but may include:

Air dry

Wipe excess

Rinse

Remove residue

Neutralize

The products listed in Section 2 (Basis of Design) of this specification do not add additional steps after application and contact time with the exception that food contact surfaces must be rinsed after use of ShockWave RTU or ShockWave Concentrate. The Decon 30 product never requires a rinse.

Disinfected surfaces should be withdrawn from use by all persons, including internal staff until dry to the touch.

**3.0X ELEVATORS/LIFTS TOUCH POINT / Check list frequency and documentation**

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|  |  |  |
| --- | --- | --- |
| **Surface cat. (hnp, ps)** | **hnp & PS. SURFACES ARE NOT SUITABLE FOR ONE-STEP CLEAN & DISINFECT[[61]](#endnote-61). ALWAYS CLEAN AND DISINFECT AS TWO DISTINCT STEPS UNLESS ELEVATOR IS SELDOM USED.** | **touchpointS INCLUDE BUTTONS AND AREA WITHIN 12” OF BUTTONS.[[62]](#endnote-62) POROUS BECAUSE SOME ELEVATORS HAVE CARPET FLOORS THAT SHOULD BE VACUUMED EVEN WHEN APPEARING CLEAN, THEN SANITIZED. STEAM CLEAN WEEKLY OR MONTHLY, AND LAUNDER PADS AND MATS FREQUENTLY.** |
| **frequency** | **SEVERAL TIMES PER DAY UNLESS BUILDING OPERATIONS HAVE CONCLUDED. daily minimum EVEN WHEN ONLY MINIMAL STAFF.** | **DIFFICULT when patrons/public are actively circulating. ELEVATORS INVOLVE FUNCTIONING MACHINERY THAT SHOULD NOT BE CARELESSLY WET CLEANED/DISINFECTED; INVOLVE FACILITY ENGINEERING IN PROTOCOL DEVELOPMENT** |
| **materials** | **generally made to withstand disinfection.** | **CONSULT MANUFACTURER REGARDING COMPATIBILITY OF DECORATIVE FINISHES ON DOORS, DOOR TRIM/FRAMES. GLOSS SURFACES MAY HAVE HAZE-LIKE RESIDUE REMOVABLE WITH A DRY TERRY TOWEL.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public IN BUILDING; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **IN SENSITIVE, BUSY, HIGH-PROFILE, AND WHEN SICK PERSONS ARE USING THE EQUIPMENT, THESE should be continuously disinfected throughout the day ON A SYSTEMATIC ROTATION.** |
| icp | all section 2 products |  |

3.0X **ESCALATORS**

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|  |  |  |
| --- | --- | --- |
| **Surface cat. (hnp, ps)** | **hnp. NOT SUITABLE FOR ONE-STEP CLEAN & DISINFECT. ALWAYS CLEAN AND DISINFECT AS TWO DISTINCT STEPS.** | **touchpoint EXCEPT VERTICAL PANEL AND SEMI-HORIZONTAL DECK BOARD AND SKIRT GUARD OF BALUSTRADE COMPONENTS** |
| **frequency** | **SEVERAL TIMES PER DAY UNLESS BUILDING OPERATIONS HAVE CONCLUDED. daily minimum EVEN WHEN ONLY MINIMAL STAFF.** | **DIFFICULT when patrons/public are actively circulating. TREADS/RISERS INVOLVE FUNCTIONING MACHINERY THAT SHOULD NOT BE CARELESSLY WET CLEANED/DISINFECTED; INVOLVE FACILITY ENGINEERING IN PROTOCOL DEVELOPMENT** |
| **materials** | **generally made to withstand disinfection.** | **CONSULT MANUFACTURER REGARDING COMPATIBILITY AS WELL AS TRACTION ISSUES BOTH RAILINGS AND FOOT SURFACES (tREADS/RISERS)** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **AS MENTIONED ABOVE: CONSULTATION REQUIRED. SPECIAL ATTENTION TO DOWNWARD FACING CONTOURS OF MOVING HANDRAIL WHERE HANDS CLUTCH, AND CLEANING REQUIRES INTENSIVE FOCUS. CLEANING MAY BE POSSIBLE WHILE HANDRAIL IS IN MOTION, BUT A WET 10 MINUTE CONTACT AND THEN DRY TO THE TOUCH CAN BE CHALLENGING.** |
| **icp** | **all section 2 products** |  |

3.0X **DOORS / HANDLES**

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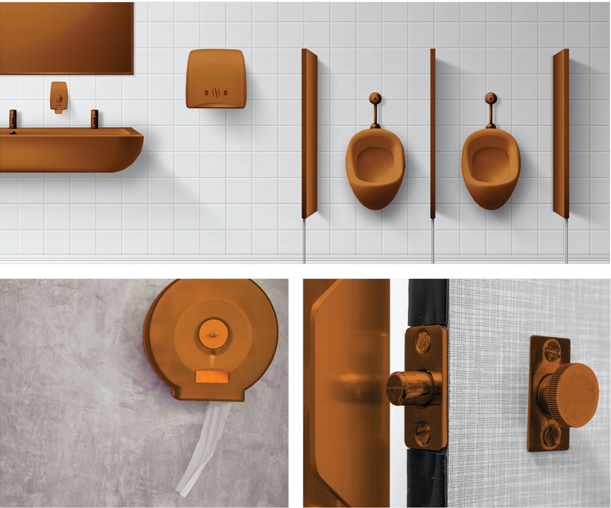
|  |  |  |
| --- | --- | --- |
| **Surface cat. (hnp, ps)** | **hnp** | **touchpoint. BEST PRACTICE IS TO EXTEND PAST THE KNOB 3-12” BECAUSE PEOPLE ARE IMPRECISE.** |
| **frequency** | **daily minimum** | **more often when patrons/public are actively circulating. for large public events, consider an attendant cycle to sanitize hard surfaces, and/or selectively withdraw from use to disinfect in rotation.** |
| **materials** | **generally made to withstand disinfection. note that disinfectants can leave very minor but visible white residue on glossy surfaces and on glass.** | **dry wipe with clean terry towel to remove residue, using a moistened terry towel if necessary. some streaking on glass will require a glass cleaner application. WHILE BRASS AND CHROME ARE COMPATIBLE GENERAlly, always test. clean bronze only with water.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **avoid exposure of all persons to inhaled spray/atomized disinfectants, especially when public is present that can include unusually sensitized persons. in off-hours/overnight disinfecting operations, more logistically advantageous methods can be used. WIPE SURFACES LEEWARD OF SPRAY PATTERNS.** |
| **icp** | **all section 2 products** | **wipes are ideal for touchpoints** |

3.0X **RAILINGS**

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|  |  |  |
| --- | --- | --- |
| **Surface cat. (hnp, ps)** | **hnp** | **touchpoint.** |
| **frequency** | **daily minimum** | **more often when patrons/public are actively circulating. for large public events, consider an attendant cycle to sanitize hard surfaces, and/or selectively withdraw from use to disinfect (10M, THEN DRY TO TOUCH) in rotation.** |
| **materials** | **generally made to withstand disinfection. OCCASIONAL MINOR residue on glossy surfaces.** | **dry wipe with clean terry towel to remove residue IF ANY. WHILE BRASS AND CHROME ARE COMPATIBLE GENERAlly, always test. clean bronze only with water.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **avoid exposure of all persons to spray/atomized disinfectants, especially when public is present. in off-hours/overnight disinfecting operations, more logistically advantageous methods can be used. RAILINGS REQUIRE FOCUS ON UNDERSIDE IR SIMILAR WHERE CLASPING FINGER TOUCH TAKES PLACE, BUT OFTEN GETS LESS ATTENTION WHEN CLEANING. ALSO WIPE SURFACES LEEWARD OF SPRAY PATTERNS.** |
| **icp** | **all section 2 products** | **wipes are ideal for touchpoints, BUT “RUNNING” A WIPE OR SIMILAR ALONG A LONG STRETCH OF RAIL CAN BE COUNTERPRODUCTIVE AS CONTAMINANTS CAN BE SPREAD WHILE INSUFFICIENT DISINFECTANT IS APPLIED FOR CONTACT TIME.** |

3.0X **RESTROOMS**

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| **Surface cat. (hnp, ps)** | **hnp. NOT SUITABLE FOR ONE-STEP CLEAN & DISINFECT. ALWAYS CLEAN AND DISINFECT AS TWO DISTINCT STEPS.** | **touchpoint ARE COMPLEX OFTEN WITH SURFACES FACING AWAY FROM PERSON CLEANING. SURFACES TO LEEWARD OF SPRAY NEED CAREFUL MANUAL ATTENTION TO CLEAN (EVEN IF ELECTROSTATIC CAN BE SUCCESSFULLY USED FOR DISINFECTANT)** |
| **frequency** | **SEVERAL TIMES PER DAY. daily minimum EVEN WHEN ONLY MINIMAL STAFF.** | **CYCLICAL CLOSURE AND DISINFECTION WHILE PATRONS/GUESTS ARE PRESENT IN PUBLIC AREAS. MULTIPLE TIMES PER DAY IN EMPLOYEE ONLY AREAS. EMPOWER EVERYONE TO DO THEIR PART WITH HANDWASHING, AS WELL AS WITH DISINFECTANT WIPES, AND (IN STAFF AREAS) PROVIDED DISINFECTANT TRIGGER BOTTLES PLUS ADEQUATE TOWELING.** |
| **materials** | **generally made to withstand disinfection.** | **HNP EXCEPT OCCASIONAL MATS THAT SHOULD BE LAUNDERED, AND SOMETIMES SEMI-POROUS WALLCOVERING NEAR WASHUP AREAS AND ENTRY THAT SHOULD BE TESTED BEFORE SANITIZING.** |
| **delivery method** | **ALL. FOAMING CAN BE EXTREMELY HELPFUL TO SATISFY CONTACT TIME** | **DEPENDENT ON PRESENCE AND DEMAND OF PUBLIC WHEN PRESENT; AS OPPOSED TO STAFF.** |
| **icp** | **all section 2 products** |  |

**3.0X STADIUM & ARENA SEATING (BOWLS)[[63]](#endnote-63)**

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| **Surface cat. (hnp, ps)** | **hnp, PS. AFTER EVENTS, NOT SUITABLE FOR ONE-STEP CLEAN & DISINFECT. ALWAYS CLEAN AND DISINFECT AS TWO DISTINCT STEPS BECAUSE SOIL LOAD IS HIGH.** | **touchpoint MUST BE ASSUMED ON ALL SURFACES DUE TO TIME GUESTS SPEND IN SEATS. SOME SEATING BOWLS WILL BE ALL HNP, BUT OTHER VENUES WILL HAVE SEATS WITH PADDING THAT MUST BE SANITIZED. BOTH INDOOR AND OUTDOOR SEATING BOWLS MUST BE CLEANED AND TREATED WITH AN ANTIMICROBIAL AFTER EACH EVENT.** |
| **frequency** | **AFTER EVENTS, 4 STEP PROCESS: GARBAGE REMOVAL, REMOVAL OF STUBBORN RESIDUES, OVERALL CLEANING, OVERALL DISINFECTING and SANITIZING** | **ESSENTIALLY IMPOSSIBLE when patrons/public are actively circulating. DURING NON-EVENT HOURS, DISINFECTION CAN BE LOCALIZED TO SURFACES EXPOSED TO LOW-INTENSITY ACTIVITY SUCH AS PRACTICES AND TOURS. TRACE WHERE THESE ACTIVITIES TOOK PLACE AND PERFORM ONE-STEP CLEAN/DISINFECT ACCORDINGLY.** |
| **materials** | **generally NO CONCERNS. TEST INCONSPICUOUS AREAS OF BOTH HNP AND UPHOLSTERED SURFACES DURING SCOPE DEVELOPMENT** | **OTHER THAN FERROUS METAL AND ALUMINUM GRANDSTANDS AND BENCHES, MOST SURFACES CANNOT BE POLARIZED WITH A NEGATIVE CHARGE WHICH PRECLUDES ELECTROSTATIC APPLICATION** |
| **delivery method** | **AIRLESS SPRAY SUPPLEMENTED BY PRESSURE/POWERWASHING AND OTHER METHODS** | **IDEALLY, LOGISTICS DICTATE SOURCING AN AIRLESS SYSTEM THAT CAN SUPPORT MULTIPLE APPLICATORS AND IS HIGHLY MOBILE.** |
| **icp** | **all section 2 products** |  |

**3.0X TURNSTILES & GATEWAY POINTS**

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| **Surface cat. (hnp, ps)** | **hnp** | **touchpoint.** |
| **frequency** | **daily minimum** | **more often when patrons/public are actively circulating. for large public events, consider an attendant cycle to sanitize hard surfaces, and/or selectively withdraw from use to disinfect in rotation (10M CONTACT TIME).** |
| **materials** | **generally made to withstand disinfection. note that disinfectants can leave very minor but visible white residue on glossy surfaces. AVOID BUILT IN DATA SCANNERS AND SCREENS** | **dry wipe with clean terry towel to remove residue, using a moistened terry towel if necessary. CLEAN INTEGRATED COMPONENTS LIKE SCREENS PER MANUFACTURERS INSTRUCTIONS OR PER CDC CLEANING WITH ALCOHOL RECOMMENDATION FOR ELECTRONICS.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **avoid exposure of all persons to inhaled spray/atomized disinfectants, especially when public is present that can include unusually sensitized persons. in off-hours/overnight disinfecting operations, more logistically advantageous methods can be used. WIPE SURFACES LEEWARD OF SPRAY PATTERNS.** |
| **icp** | **all section 2 products** | **ULV MIST CAN BE ideal for THESE touchpoints** |

**3.0X WATER FOUNTAINS & BUBBLERS**

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| --- | --- | --- |
| **Surface cat. (hnp, ps)** | **hnp** | **touchpoint.** |
| **frequency** | **daily minimum** | **more often when patrons/public are actively circulating. for large public events, consider an attendant cycle to sanitize hard surfaces, and/or selectively withdraw from use to disinfect in rotation.** |
| **materials** | **COMPATIBILITY ISSUES UNLIKELY** | **The entire fountain surface, including the mouthpiece, protective guard, basin and handles, should be scrubbed with cleaner, then apply disinfectant. then wipe down with a clean, damp cloth.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **consider signage and staff training that educates wisdom of letting water run for three seconds before drinking or filling water bottles. some of any bacteria present can be rinsed away** |
| **icp** | **all section 2 products** | **check label for rotavirus, influenza and coronavirus as all are known to be commonly present on these surfaces.** |

**3.0X DOORS / HANDLES**

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| **Surface cat. (hnp, ps)** | **hnp** | **touchpoint. BEST PRACTICE IS TO EXTEND PAST THE KNOB 3-12” BECAUSE PEOPLE ARE IMPRECISE.** |
| **frequency** | **daily minimum** | **more often when patrons/public are actively circulating. for large public events, consider an attendant cycle to sanitize hard surfaces, and/or selectively withdraw from use to disinfect in rotation.** |
| **materials** | **generally made to withstand disinfection. note that disinfectants can leave very minor but visible white residue on glossy surfaces and on glass.** | **dry wipe with clean terry towel to remove residue, using a moistened terry towel if necessary. some streaking on glass will require a glass cleaner application. WHILE BRASS AND CHROME ARE COMPATIBLE GENERAlly, always test. clean bronze only with water.** |
| **delivery method** | **manual methods, trigger spray and low yield compression spray when patrons/public present; higher volume when permitted. FOAMING CAN REDUCE RUNOFF AND MAXIMIZE CONTACT TIME** | **avoid exposure of all persons to inhaled spray/atomized disinfectants, especially when public is present that can include unusually sensitized persons. in off-hours/overnight disinfecting operations, more logistically advantageous methods can be used. WIPE SURFACES LEEWARD OF SPRAY PATTERNS.** |
| **icp** | **all section 2 products** | **wipes are ideal for touchpoints** |

**3.0X SCHOOLS[[64]](#endnote-64)**

1. **The first responsibility of the installer upon arrival to site of is to ensure the safety of workers and occupants.**

**3.0X ELECTRONICS**

1. **The first responsibility of the installer upon arrival to site of is to ensure the safety of workers and occupants.**
2. **KEYBOARDS & MICE**

**3.0X CURRENCY**

1. **The first responsibility of the installer upon arrival to site of is to ensure the safety of workers and occupants.**

**3.06 DEMOBILIZATION/POST-WORK CLEANING**

* + - 1. **Remove remaining debris promptly from work area and dispose of properly.** 
         1. **Removal and proper disposal of all contaminated items (cleaning towels, disposable PPE, etc.).**
         2. **All Biohazard material removed and disposed of according to local regulations.**
         3. **For emergency activity in response to a positive case/test indicating infection: Specialized technicians discard all P.P.E. and consumables used to clean contaminated areas in applicable biohazard disposable bags. Bags are transported off site by trained personnel.**

**B. Remove excess disinfection materials that may not air dry soon enough for imminent operations from all surfaces.**

**D. Do not mar surface finish of items being cleaned.**

**E. Cleanup tools and other equipment, and ensure any rinsate or other water is handled in accord with local regulation.**

**F. Review product’s EPA-registered labels for proper disposal of unused product and empty containers.**

**END OF SECTION**

HYPERGLOSSARY

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| --- | --- | --- |
|  |  |  |
| ABRA | American Bio-Recovery Association |  |
| CADPR | California Department of Pesticide Regulation | California agency responsible for the regulation of pesticides. Online database includes subregistered products, but does not offer .PDF of product labels |
| CDC | Centers for Disease Control | The Centers for Disease Control and Prevention is a national public health institute in the United States. It is a United States federal agency, under the Department of Health and Human Services, and defers to EPA regarding selection and regulation of disinfectants, although field personnel may have preferences for individual projects. CDC does not approve products. |
| CIDE | as in -cide (a suffix) | Often seen as a suffix such as virucide, bacteriocide (alt bactericide), fungicide indicating treatment has been registered with a disinfection level claim of antimicrobial performance. Virucide-level performance is only seen on hard, non-porous surfaces because on those surfaces there is a more inherent assurance that the disinfectant's active ingredient can come into contact the targeted microbes and reduce the amount of viable infectious organisms by 99.999 % |
| CSI | Construction Specifications Institute | The Construction Specifications Institute is a United States national association of more than 8,000 construction industry professionals who are experts in building construction and the materials used therein |
| DIN | Drug Identification Number | The regulatory identifier assigned by Health Canada to an approved product. |
| EOP | Emergency Operations Plan | Describes how people and property will be protected in emergencies and disasters. Identifies personnel, equipment, facilities, supplies, and other resources available--within the jurisdiction or by agreement with other jurisdictions--for use during response and recovery operations. |
| EPA | U.S. Environmental Protection Agency | Responsible for US regulation of pesticides,, including antimicrobial surface treatments. Registers antimicrobial product labels to avoid adverse impacts to human health and to the environment, as well as to verify efficacy. EPA produces List N of antimicrobial disinfectants prequalified for control activity for reduction of the new emergent coronavirus (SARS-CoV-2) which is responsible for COVID-19 disease. EPA does not issue approval for disinfection products. |
| FDA | U.S. Food & Drug Administration | Responsible for treatments for human bodies, as well as the Food Code. A division of US Department of Health & Human Services. Responsible for Hand Sanitizers/Skin Sanitizers. |
| GPM | Gallons per Minute | Measure of flow thru an airless sprayer |
| GRAS | Generally Regarded As Safe | A status a disinfectant may qualify for based on the percentage composition of ingredients from a consensus list including several substances both natural and relatively benign |
| HC | Health Canada | The agency of the federal government of Canada that evaluates, approves and regulates products affecting potentially the health of Canadians. This responsibility includes antimicrobial surface disinfectants. HC registers labels as acceptable statements of proper and safe use, as well as assigns a DIN number (Drug Identificatioin Number) |
| HVLP | High Volume Low Pressure | Type of atomizing sprayer, used commonly for fine painting |
| IAQA | Indoor Air Quality Association |  |
| ICRA | Infection Control Risk Assessment | Generally from Healthcare. A documented process after considering the facility's patient population and program: Focuses on reduction of risk from infection through phases of facility planning, design, construction, renovation, facility maintenance |
| IDER | Infectious Disease Emergency Response | A plan for response to infection in a group, and/or community spread. |
| IICRC | Institute of Inspection, Cleaning and Restoration Certification |  |
| ILT | Instructor Led Training | In-person instruction |
| ISSA | International Sanitary Supply Association |  |
| List N | List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19) | Disinfectant products on this list meet EPA's criteria for use against SARS-CoV-2, the virus that causes COVID-19. These products are for use on surfaces, NOT humans |
| MSW | Microsoft Word Document | Acceptable form of submittal for this specification |
| NADCA | The HVAC Inspection, Cleaning and Restoration Association |  |
| NDA | Nevada Department of Agriculture | Nevada Department of Agriculture maintains a public database where .PDF format labels of subregistered products are available. |
| NFL | National Football League | North American professional american football alliance which coordinates a season of spectacular indoor & outdoor competitions that involve public gatherings. |
| NRCA | National Roofing Contractors Association |  |
| NYSDEC | New York State Department of Environmental Conservation | State agency that maintains the NYSPAD (NYS Pesticide Authorization Database) where a searchable database of .PDF pesticide labels (including subregistered products) is available |
| PCA | Painting Contractors Association |  |
| PDF | Portable Document Format | Acceptable form of submittal for this specification |
| PPE | Personal Protective Equipment | Protective devices to prevent unwanted/unhealthy entrance into a human body via routes such as eyes, dermal (skin), respiratory (inhalation), and mucous membranes (e.g., mouth, nose). Includes but not limited to gown, gloves, goggles, filtering face pieces. While personal protective equipment (PPE) such as respirators can help protect an individual from a hazardous material, engineering controls protect all workers & occupants by reducing or eliminating the hazard. Safety Data Sheets (SDS) are generally the primary source of product health & safety information specifically for workers during material/product storage, transport, preparation and application. |
| PPLS | Pesticide Product Labeling System | The Pesticide Product Label System (PPLS) is a searchable database of EPA-registered pesticide product labels |
| RTU | Ready-To-Use | Supplied without need for dilution or mixing |
| SDS | Safety Data Sheet | Safety Data Sheets (SDS) are generally the primary source of product health & safety information specifically for workers during material/product storage, transport, preparation and application. When using EPA-registered disinfectants, it is emphasized that the Safety Data Sheet AND the EPA-registered product label must BOTH be considered to appreciate EH&S considerations. The documents both have such information, and frequently different information is available from each source. For example, the pH of a liquid disinfectant may be on an SDS, but is unlikely to be on an EPA-registered label. In addition, future interactions of a product residual are likely not described in an SDS, may not be described on an EPA-registered label for an antimicrobial product, and may be an unregulated attribute of a product. |
| SHEP | Surface Hygiene: Epidemic & Pandemic. | A type of training specific to disease outbreak, especially newly emergent pathogens. Can be used to label the subdiscipline of specialized surface decontamination associated with unwanted microbes and the arrest or prevention of community spread |
| SSPC | The Society for Protective Coatings |  |
| STAT | Stat | Often seen as a suffix such as bacteriostat, fungistat indicating treatment has a post-application performance, typically a certain resistance against resumption of unwanted microbial activity and/or microbial recolonization of the surface treated. At the time of this edition of this specification, there are no EPA-registered virustats, and there is no scientific consensus that any technology offers a surface treatment that deactivates viruses for any future period beyond the wet contact time during application. Some bacteriostats are EPA-registered products for preserving textiles and other semi-porous and porous surfaces against infestation by odor-causing bacteria. Performance life can be weeks, as many as three months (90 days), but typically this performance is limited to a disclaimer that user may also need to reapply whenever odors return. Similarly, there are disinfectants with EPA accepted claims on their label indicating extended resistance against new fungal growth. These claims are limited generally to mold control when the disinfectant is repeatedly applied (such as weekly) and this practice should not be conducted indefinitely. More extended fungal resistance can be found in Fungicidal and Mold-Resistant sealers and coatings that can resist mold growth for more than ten years {such as AfterShock Fungicidal Coating, the IAQ 6000 series of structural mold-resistant coatings, and the IAQ 7000/8000 series of mold-resistant coatings for the inside of ductwork of HVAC systems. |
| TDS | Technical Data Sheet | Product information supplied by a manfacturer in a form that is commercial in purpose, but is more oriented towards detail and guidance for proper use (as opposed to Marketing aimed at a pre-purchase audieince). Not a detailed specification |
| UHMWPE | Ultra High Molecular Weight Polyethylene). | Used in packings of airless sprayers to avoid deterioration common to standard internal materials when machine is used tos spray disinfectant |
| UL | Underwriter's Laboratories | The UL seal for a classified product indicates the product has undergone rigorous testing to prove a peroduct performance capability or attribute exists and results in the intended benefit. UL classification also involves periodic and random quality assurance testing and inspections of production. UL also maintains branded quality assurance programs such as EcoLogo. |
| ULV | Ultra Low Volume | Measure of flow thru a fogger mister |
| VILT | Virtual Instructor Led Training | Real-time (live) instructor led training when students are in a different physical location |
| WHMIS | Workplace Hazardous Materials Information System | WHMIS stands for the Workplace Hazardous Materials Information System. It is a comprehensive system for providing health and safety information on hazardous products intended for use, handling, or storage in Canadian workplaces |
|  |  |  |
| ABRA | American Bio-Recovery Association |  |
| CADPR | California Department of Pesticide Regulation | California agency responsible for the regulation of pesticides. Online database includes subregistered products, but does not offer .PDF of product labels |
| CDC | Centers for Disease Control | The Centers for Disease Control and Prevention is a national public health institute in the United States. It is a United States federal agency, under the Department of Health and Human Services, and defers to EPA regarding selection and regulation of disinfectants, although field personnel may have preferences for individual projects. CDC does not approve products. |

END NOTES

This section is provided as a courtesy to the specifier or project designer/manager.

This section may be included or excluded in the project specific specification at their discretion.

1. <https://www.csiresources.org/standards/masterformat> [↑](#endnote-ref-1)
2. “Does EPA regulate companies that require cleaning services claiming to disinfect for COVID-19?

   No, EPA does not license companies that provide cleaning services. Authorities at the state or local level may have more information on trends in this area.” <https://www.epa.gov/coronavirus/does-epa-regulate-companies-require-cleaning-services-claiming-disinfect-covid-19> [↑](#endnote-ref-2)
3. <https://www.cdc.gov/coronavirus/2019-ncov/community/clean-disinfect/index.html> [↑](#endnote-ref-3)
4. <https://www.epa.gov/coronavirus> [↑](#endnote-ref-4)
5. <https://cfpub.epa.gov/giwiz/disinfectants/index.cfm> [↑](#endnote-ref-5)
6. <https://www.fda.gov/media/110822/download> [↑](#endnote-ref-6)
7. <http://nv.certifyag.com/PestPublic/> [↑](#endnote-ref-7)
8. ICP Design Services is a multi-disciplinary, support-oriented resource for industry professionals looking to intelligently manage projects. Part of the ICP BUILDING SOLUTIONS GROUP (previously ICP CONSTRUCTION), DST provides assistance in project design, specification implementation, and the execution of structural construction projects involving any of the more than 14,000 products manufactured by [ICP Group](https://www.icpgroup.com/) (Innovative Chemical Products). The mission of the Design Services Team is to convey knowledge and solutions of unsurpassed accuracy and innovation to the professionals that conceive, construct, repair and maintain our built environment. The purpose of DST is to be an active partner with contractors, architects and builders to develop and deliver quality solutions from our extensive product line offerings that benefit their business & projects. In addition to provision and customization of specifications, DST resources include: compliance expertise, training/continuing education, standards development, institutional approval support and qualified applicator referrals. To access the ICP Design Services Team:

   Web: <https://www.icpmasterworkscommunity.com/>

   Email: [specifications@icpgroup.com](mailto:specifications@icpgroup.com)

   Phone: 800-342-3755 (Ask for *MasterWorks*) [↑](#endnote-ref-8)
9. The following are links to the EPA registered/subregistered disinfectant product labels (for the products listed in Section 2.00 PRODUCTS):

   For ShockWave RTU (English): <https://www.fiberlock.com/wp-content/uploads/8316-1.pdf> and <https://www.fiberlock.com/wp-content/uploads/8316-5.pdf>

   For ShockWave RTU (French): <https://www.fiberlock.com/wp-content/uploads/8316-Shockwave-RTU-Label-French.pdf>

   For Benefect Decon 30 (English EPA USA): <https://benefect.com/pdf/decon30-epa-product-label-usa.pdf>

   For Benefect Decon 30 (French EPA USA): <https://benefect.com/pdf/decon-30-epa-label-hc-fr.pdf>

   For ShockWave Concentrate (English): <https://www.fiberlock.com/wp-content/uploads/ShockWave-8310-1-Label.pdf>

   For ShockWave Concentrate (French): <https://www.fiberlock.com/wp-content/uploads/8310-Shockwave-Concentrate-Label-French.pdf>

   For EPA-registered Labels for other ICP Disinfectants not listed here, please send requests to [specifications@icpgroup.com](mailto:specifications@icpgroup.com), or call 800-342-3755. [↑](#endnote-ref-9)
10. The “Master Label” available from the EPA Pesticide Product Labeling System (PPLS) will not be accepted because the label in the hands of the user is the governing document that can communicate information directly that can avoid adverse impacts. And PPLS labels do not provide visibility to the labels of subregistered products being used in commerce. [↑](#endnote-ref-10)
11. The special emphasis on California in this regard in part is because for many years California has maintained different (sometimes more restrictive) regulated uses for surface disinfectants. Due to this state-specific complexity, manufacturers frequently either do not register in California, produce different labels for California, or produce different products for California. [↑](#endnote-ref-11)
12. Supply as PDF generated by the EPA List N Tool. Found at: <https://cfpub.epa.gov/giwiz/disinfectants/index.cfm> The following are examples of acceptable submittals:

    BENEFECT DECON 30

    A screenshot of a cell phone

    Description automatically generated

    BENEFECT WIPES

    A screenshot of a cell phone

    Description automatically generated

    FIBERLOCK SHOCKWAVE READY-TO-USE (RTU)

    A screenshot of a cell phone

    Description automatically generated

    FIBERLOCK SHOCKWAVE CONCENTRATE

    A screenshot of a cell phone

    Description automatically generated

    For more information regarding how EPA List N is intended to be used, review the ICP Technical Bulletin for EPA’s List N, as found at: <https://www.icpgroup.com/wp-content/uploads/Tech_Bulletin_List_N_4_20_20.pdf> ;or also at: <https://icpconstruction.force.com/masterworks/s/article/LIST-N-DISINFECTANTS-FOR-USE-AGAINST-COVID-19-SARS-COV-2>.

    EPA’s FAQ for Coronavirus, which feature several explaining List N for COVID-19, can be found at: <https://www.epa.gov/coronavirus/frequent-questions-related-coronavirus-covid-19> [↑](#endnote-ref-12)
13. Health Canada Label for Benefect Decon 30: <https://benefect.com/pdf/decon30-din-product-label-ca.pdf> [↑](#endnote-ref-13)
14. Health Canada *Drug Product Database online query:* <https://health-products.canada.ca/dpd-bdpp/index-eng.jsp> [↑](#endnote-ref-14)
15. For CANADA: No disinfectant will be accepted by HealthCanada (HC) for COVID-19 until standard laboratory testing can be done. At present, to aid Canadians with guidance on disinfectants, certain products already bearing a DIN # from HC have been preselected based on existing performance data and these include Benefect® Decon 30™ and the Benefect Wipes. Additionally, due to the unprecedented pandemic demand, HC issued an interim measure list permitting import and sale of disinfectants not previously issued a DIN #. As of 2020-04, multiple ICP disinfectants registered in the U.S., under the ShockWave® and IAQ® brands, were accepted into Canada.

    MORE INFORMATION can be found at: <https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/products-accepted-under-interim-measure.html>

    Regarding ICP disinfectants with current DIN numbers or Interim approval, a pandemic-focused Technical Bulletin can be found at either: <https://icpconstruction.force.com/masterworks/s/article/HEALTH-CANADA-PRODUCTS-ACCEPTED-FOR-COVID-19-SARS-COV-2> or <https://www.icpgroup.com/wp-content/uploads/Tech_Bulletin_Health_Canada.pdf> [↑](#endnote-ref-15)
16. Secondary Use Labels/Workplace Labels can be downloaded online.

    For ShockWave RTU: <https://www.fiberlock.com/wp-content/uploads/ShockWaveRTU-Use-Solution-Label-1.pdf>.

    For Benefect Decon 30: <https://benefect.com/pdf/decon-30-osha-3x4-labels-.pdf>.

    For ShockWave Concentrate: <https://www.fiberlock.com/wp-content/uploads/ShockWave-Use-Solution-Label-1218.pdf>

    All are formatted to print onto: AVERY CRACK AND PEEL STOCK: 5168. For Secondary Use Labels for other ICP Disinfectants not listed here, please send requests to [specifications@icpgroup.com](mailto:specifications@icpgroup.com), or call 800-342-3755. [↑](#endnote-ref-16)
17. SAFETY DATA SHEETS (SDS) for ICP Disinfectants:

    For Benefect DECON 30 SDS in English: <https://benefect.com/pdf/decon-30-sds-disinfectant.pdf>

    For Benefect DECON 30 SDS in Spanish: <https://benefect.com/pdf/decon-30-sds-us(es).pdf>

    For Benefect DECON 30 SDS in French: <https://benefect.com/pdf/decon-30-sds-disinfectant-ca(fr).pdf>

    For ShockWave RTU SDS in English: <https://www.fiberlock.com/wp-content/uploads/8316-SDS_Fiberlock-Shockwave-RTU.pdf>

    For ShockWave RTU SDS in Spanish: <https://www.fiberlock.com/wp-content/uploads/8136_Fiberlock-Shockwave-RTU-SDS_USA-SP.pdf>

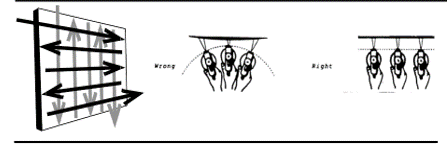
    For ShockWave Concentrate SDS in English: <https://www.fiberlock.com/wp-content/uploads/8310-ShockWave-SDS-3.20.pdf>

    For ShockWave Concentrate SDS in Spanish: <https://www.fiberlock.com/wp-content/uploads/8310_Fiberlock-ShockWave-USA-SP.pdf>

    For ShockWave Concentrate SDS in Use Solution: <https://www.fiberlock.com/wp-content/uploads/ShockWave-8310-Use-Solution-SDS.pdf>

    For other SDS for other ICP Disinfectants not listed here, please send requests to [specifications@icpgroup.com](mailto:specifications@icpgroup.com), or call 800-342-3755. [↑](#endnote-ref-17)
18. A service provider not directly related to the Operations, Housekeeping, EH&S, &/or Maintenance elements of the organization that operates a facility. This portion of the specification is intended to discuss and provoke thought as to the role of a third party service provider: both in executing preventative protocols to mitigate against infection transmission via surfaces; as well as to intensify cleaning and disinfection in response to the presence of a known or suspected individual in the facility that may have been shedding the virus onto touchable environmental surfaces. [↑](#endnote-ref-18)
19. [www.icpmasterworkscommunity.com](http://www.icpmasterworkscommunity.com) [↑](#endnote-ref-19)
20. Examples would/may include:

    i. Teacher/Educator treating certain surfaces between classes.

    ii. Customer service staff using disinfectants between each surface use by patrons. Such as restaurant table/countertops, payment transaction pads, surfaces in theaters between showings, etc.) [↑](#endnote-ref-20)
21. Peroxide cleaners can deteriorate in excessive heat resulting in decreased efficacy. Peroxide deterioration will generate gaseous oxygen and water vapor that can increase pressure inside container, and possibly result in container breach/rupture. [↑](#endnote-ref-21)
22. Moisture content in different types of structural materials are measured on different scales, and the measurement scales of moisture detection instruments (e.g., moisture meters meters can vary among manufacturers of these devices. Consult the manual from the moisture meter manufacturer for instructions concerning substrate type and scale of measurement for that material. [↑](#endnote-ref-22)
23. At the date of issue of this specification, the [DECON 30](https://benefect.com/pdf/decon-30-product-data-sheet-usa.pdf) (Ready-To-Use) listed in Section 2 has been registered for sale and use in all U.S. states, as well as the United States jurisdictions of Puerto Rico, the U.S. Virgin Islands, and Guam. [↑](#endnote-ref-23)
24. For MICROBIAL MITIGATION projects in other nations contact the ICP BSG ENVIRONMENTAL REMEDIATION GROUP. [↑](#endnote-ref-24)
25. EPA announced 7/7/20 that new guidance is available on how manufacturers can add directions for use of disinfectants with electrostatic sprayers. ICP has surveyed an extensive range of disinfectants included on EPA List N, and could not identify any with specific label directions for electrostatic use. ICP is participating in the development of detailed electrostatic instructions in accord with EPA’s new guidance. At present, applicators should follow label instructions for “spray” to precleaned surfaces, and assure the minimum wet contact time is achieved. For more information on this EPA announcement and program: EPA takes action to help Americans disinfect indoor spaces efficiently and effectively at <https://www.epa.gov/newsreleases/epa-takes-action-help-americans-disinfect-indoor-spaces-efficiently-and-effectively>; and Expedited Review for Adding Electrostatic Spray Application Directions for Use to Antimicrobial Product Registrations at <https://www.epa.gov/pesticide-registration/expedited-review-adding-electrostatic-spray-application-directions-use>. [↑](#endnote-ref-25)
26. At the date of issue of this specification, the [ShockWave](https://www.fiberlock.com/wp-content/uploads/8316-1.pdf) RTU (Ready-To-Use) listed in Section 2 has been registered for sale and use in all U.S. states, as well as the United States jurisdictions of Puerto Rico, the U.S. Virgin Islands, and Guam. [↑](#endnote-ref-26)
27. EPA announced 7/7/20 that new guidance is available on how manufacturers can add directions for use of disinfectants with electrostatic sprayers. See preceding note for analysis, and for more information go to <https://www.epa.gov/newsreleases/epa-takes-action-help-americans-disinfect-indoor-spaces-efficiently-and-effectively> [↑](#endnote-ref-27)
28. At the date of issue of this specification, the [ShockWave](https://www.fiberlock.com/wp-content/uploads/ShockWave-8310-1-Label.pdf) (Concentrate) listed in Section 2 has been registered for sale and use in all U.S. states, as well as the United States jurisdictions of Puerto Rico, the U.S. Virgin Islands, and Guam. [↑](#endnote-ref-28)
29. Cryptococcus neoformans is generally considered a requirement for disinfectants when contamination includes avian guano, including pigeons. [↑](#endnote-ref-29)
30. Standard categorization for disinfectant concentrates. [↑](#endnote-ref-30)
31. Includes human coronavirus in a 98% soil load. [↑](#endnote-ref-31)
32. Variation with acidity of tap water. 9.5-10 reflects filtered water provided in Metro Boston USA. [↑](#endnote-ref-32)
33. EPA announced 7/7/20 that new guidance is available on how manufacturers can add directions for use of disinfectants with electrostatic sprayers. See preceding note for analysis, and for more information go to <https://www.epa.gov/newsreleases/epa-takes-action-help-americans-disinfect-indoor-spaces-efficiently-and-effectively> [↑](#endnote-ref-33)
34. Often referred to by water & fire damage restoration professionals as “Black Water”, or “Category 3” water intrusion/damage [↑](#endnote-ref-34)
35. At the date of issue of this specification, the [BENEFECT](https://benefect.com/pdf/decon-30-product-data-sheet-usa.pdf) BOTANICAL DISINFECTANT WIPES listed in Section 2 has been registered for sale and use in all U.S. states, as well as the United States jurisdictions of Puerto Rico, the U.S. Virgin Islands, and Guam. [↑](#endnote-ref-35)
36. For MICROBIAL MITIGATION projects in other nations, contact the ICP BSG ENVIRONMENTAL REMEDIATION GROUP. [↑](#endnote-ref-36)
37. **Surface area wiped, product type, and target strain impact bactericidal efficacy of ready-to-use disinfectant Towelettes**. Alyssa M West1, Carine A Nkemngong1, Maxwell G Voorn1, Tongyu Wu1, Xiaobao Li2, Peter J Teska2 and Haley F Oliver: *“Towelettes were less effective as surface area increased, which may have implications for disinfection of large surfaces Overall, there was a higher log reduction achieved when wiping the one and two ft2 surface areas compared to the eight ft2 surface area. Although the extent to which bactericidal efficacy is impacted is product dependent, it indicates that wiping a larger surface will lead to reduced bactericidal efficacy.”* [↑](#endnote-ref-37)
38. Epidemic/Pandemic videos for more information are available from both of the leading airless spray machine manufacturers in North America. For more information, please review: <https://www.youtube.com/watch?v=cthEgyO2uwY> (TITAN); and, <https://www.youtube.com/watch?v=_nacakmO9cA> (GRACO). [↑](#endnote-ref-38)
39. When rapid drying conditions are present, a double cross hatch spray pattern may be useful in delivering a 10 minute wet contact time without increasing run off and collateral mess requiring additional time for post-work cleaning. The following illustration shows this spray pattern technique:  [↑](#endnote-ref-39)
40. From Titan Tool: “HEA® (High Efficiency Airless®) spray technology airless tips deliver the industry best wetting with large fan pattern and bigger drops set anywhere from 500 - 1200 PSI.” HEA TR-1 tip is commonly referred to as the ”Green Tip” from Titan. In error, it is on occasion referred to as a fine-finish tip; it is actually a high-efficiency tip ideal for delivery of disinfectant both in SHEP-related applications, as well as in cleanup after natural disasters such as water-intrusion from flood or hurricane. [↑](#endnote-ref-40)
41. From Titan Tool: “HEA® (High Efficiency Airless®) spray technology airless tips deliver the industry best wetting with large fan pattern and bigger drops set anywhere from 500 - 1200 PSI.” HEA TR-1 tip is commonly referred to as the ”Green Tip” from Titan. In error, it is on occasion referred to as a fine-finish tip; it is actually a high-efficiency tip ideal for delivery of disinfectant both in SHEP-related applications, as well as in cleanup after natural disasters such as water-intrusion from flood or hurricane. [↑](#endnote-ref-41)
42. From Titan Tool: “HEA® (High Efficiency Airless®) spray technology airless tips deliver the industry best wetting with large fan pattern and bigger drops set anywhere from 500 - 1200 PSI.” HEA TR-1 tip is commonly referred to as the ”Green Tip” from Titan. In error, it is on occasion referred to as a fine-finish tip; it is actually a high-efficiency tip ideal for delivery of disinfectant both in SHEP-related applications, as well as in cleanup after natural disasters such as water-intrusion from flood or hurricane. [↑](#endnote-ref-42)
43. *How to Address COVID-19 with Wet Abrasive Blasting*. By Bob Nash, Jr. **Restoration & Remediation Magazine**. <https://greenerblast.com/how-to-address-covid-19-with-wet-abrasive-blasting/> [↑](#endnote-ref-43)
44. <https://petratools.com/product/petra-battery-powered-backpack-sprayer-6-0ah-ultimate-battery-life-professional-4-gallon-lithium-sprayer-2-wands-included-wide-mouth-lid-multiple-nozzles-battery-and-charger-included/> [↑](#endnote-ref-44)
45. <https://www.milwaukeetool.com/Products/Outdoor-Power-Equipment/Sprayers> [↑](#endnote-ref-45)
46. <https://www.colonyhardware.com/category/sprayers> [↑](#endnote-ref-46)
47. KLEENRITE video focused on the Multi-Range Sprayer available here for more information: [https://youtu.be/Dmgh1PF95g8](https://protect-us.mimecast.com/s/5XdPCkRg7GCOZyVXfVbozv?domain=youtu.be). KLEENRITE video focused on disinfecting a school bus in context of control of epidemic pandemic available here: [https://youtu.be/uiVMk5NkFrY](https://protect-us.mimecast.com/s/JxhpCjRB8ECnk4LGiWB8_q?domain=youtu.be) [↑](#endnote-ref-47)
48. Mi-T-M manufacturing video focused on control of epidemic pandemic available here for more information: <https://www.youtube.com/watch?v=SbV6nkxs8Ec> [↑](#endnote-ref-48)
49. Determination of surfaces eligible for application of a disinfectant is often addressed in advance either as part of contingency planning for disease outbreak, or when creating a work plan in response to community spread. In both situations, the overall scope of work may be compiled by environmental health and safety, perhaps in conjunction internally with Maintenance and Operations; and/or, externally with independent engineering/consulting professionals, as well as specialized cleaning service providers. However, the language in this section is intended to convey the importance of education and professional judgment such that every worker (staff or contractor) cleaning and or disinfecting has independent functionality to adjust to conditions seen before him/her and progress toward the goal of SHEP (Surface Hygiene: Epidemic & Pandemic). [↑](#endnote-ref-49)
50. If paper includes data of unique value, or has a legal value, discussions between owner and mitigator should consider electronic capture of the valued information. Then the physical paper could be discarded/destroyed. [↑](#endnote-ref-50)
51. Sometimes termed *“Starvation Storage”*. [↑](#endnote-ref-51)
52. Due to experience with the A-44 Benefect Evergreen contents cleaning solution, the ICP ERG can either provide helpful guidance regarding the applicability of ultrasonic cleaning to stored contents, and/or provide referrals to ultrasonic cleaning specialists. See the ***Evergreen A-44 Ultrasonics Contents Cleaning Chart*** for more information at: <https://benefect.com/pdf/evergreen-a44-cleaning-chart.pdf> [↑](#endnote-ref-52)
53. Copyright © 2020 by ICP BUILDING SOLUTIONS GROUP (BSG), Inc.

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    MSW071420 [↑](#endnote-ref-53)
54. In epidemiology, a disease vector is any agent which carries and transmits an infectious pathogen into another living organism. Often vectors that are most front-of-mind are insects, parasites or microbes, However, inanimate materials such as dust can be a vector that delivers disease. [↑](#endnote-ref-54)
55. Considerations regarding paper are handled more fully elsewhere in this specification. [↑](#endnote-ref-55)
56. From CDC: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/disinfecting-your-home.html>

    *Clean surfaces using soap and water, then use disinfectant.*

    *Cleaning with soap and water reduces number of germs, dirt and impurities on the surface. Disinfecting kills germs on surfaces.*

    *Practice routine cleaning of frequently touched surfaces. High touch surfaces include:*

    *Tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks, etc.”* [↑](#endnote-ref-56)
57. General recommendation of the US Centers for Disease Control. <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html> [↑](#endnote-ref-57)
58. The EPA list N can be confusing in regards to porous surfaces. Of the 400 products on the list from EPA as of the writing of this specification, 8 are indicated by List N for use on porous materials. Six of those are for laundry only, mostly as a presoak. The other two products reference “consult manufacturer”. In short, the use of the term porous on regards to List N is unclear and seems to differ from other contexts on registered labels. It is speculation, but it would make sense that due to demand for laundry treatments, EPA used porous in their database queries to highlight these products. N.B., that both ShockWave RTU and ShockWave Concentrate registered labels feature use as a laundry additive, but in the rinse cycle and as a bacteriostat. [↑](#endnote-ref-58)
59. Other examples include: Bathrooms, doors, door jambs, windowsills, desks, chairs, counter tops, etc. [↑](#endnote-ref-59)
60. “Since people are not

    precise when touching objects, touchpoint cleaning should extend past the focused item 3-12

    inches. Common touchpoints include, but are not limited to, door knobs and locks, door push

    bars, door edges and jambs on the side opposite the hinges, stair and ramp hand railings,

    cupboard handles and drawer pulls, appliance handles, light switches, table and desktops,

    telephones, toilet seats and flush handles, faucet handles, soap pumps, keyboards and mouses,

    elevator buttons, credit card keypads, vending machine buttons, equipment controls, television

    remote controls, chair armrests, bedrails, countertops, and so on” Restoration Industries Association (RIA) from ***The COVID-19 Pandemic***: A Report for Professional Cleaning and Restoration Contractors, 3rd Edition, 5-28-20. <https://www.restorationindustry.org/sites/default/files/docs/COVID-19_Professional_Cleaning%203rd%20Edition.pdf> [↑](#endnote-ref-60)
61. Stanley Elevator blog: “It’s important to disinfect surfaces that may not be considered high-touch areas. Germs and bacteria can land anywhere in an elevator — doors, floors, wall panels, etc. To ensure that your elevator is as clean as possible, the entire elevator needs to be disinfected”. <https://www.stanleyelevator.com/blog/clean-disinfect-elevator/> [↑](#endnote-ref-61)
62. Stanley Elevator blog: “Did you know that the amount of bacteria on a commercial elevator button is nearly 40x higher than on a public toilet seat?” <https://www.stanleyelevator.com/blog/clean-disinfect-elevator/> [↑](#endnote-ref-62)
63. ICP IS WORKING CLOSELY WITH A LEADING MANFACTURER OF SPRAY EQUIPMENT TO CREATE A LOGISTICS-FRIENDLY SPRAY SYSTEM THAT CAN SUPPORT AS MANY AS 8 APPPLICATORS SIMULTANEOUSLY. DEMONSTRATIONS AND PROTOTYPES ALREADY EXIST, AND TRIALS ARE EXPECTED TO BEGIN WITH THE 2020 NFL FOOTBALL SEASON. [↑](#endnote-ref-63)
64. EDUCATION INSTITUTIONS/ENTITIES CURRENTLY USING/RECENTLY USED ICP DISINFECTANTS FOR PREVENTION/MITIGATION OF MICROBIAL CONCERNS (INCLUDING SARS-COV-2 – THE VIRUS THAT CAUSES COVID-19 DISEASE:

    CARTERET COUNTY SCHOOL DISTRICT, NC

    SALISBURY UNIVERSITY [↑](#endnote-ref-64)