AIR PURIFICATION PARTICULATE AIR FILTRATION MASTER SPECIFICATION

(United States)

This specification has been numbered, organized, and formatted in accordance with the Master Format, Section Format and Page Format documents published jointly by Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC). For convenience, all products are contained within Section 23 58 00 -- **ACTIVE AIR AND SURFACE DISINFECTION SYSTEMS** *but if desired it may be edited/adapted to suit any other Section(s) of Work in accordance with project requirements.*

It is offered as a guide to experienced and knowledgeable construction professionals who must assume full responsibility for its interpretation and use. Square brackets [ ] containing texts indicate an option to be considered/inserted by the specifier. Remove brackets and unused options before printing.

CASPR technology is designed to kill mold, viruses, bacteria and odors for building occupants.

SECTION 23 58 00
ACTIVE AIR AND SURFACE DISINFECTION SYSTEMS
PART 1 - GENERAL
1.1 SUMMARY

A. This section describes the design, performance and installation of an air purification system intended for use as part of another manufacturer's air handling unit mounted within the duct as shown on the plans, details, and equipment schedules.

1. This Section specifies an Active Air and Surface Disinfection Technology designed to kill mold, viruses, bacteria, and reduce odors. Units are intended for assembly within ductwork of building ventilation systems.

B. This section is written as a performance specification to define required outcomes.

1.2 DEFINITIONS

A. NELAP - National Environmental Laboratory Accreditation Program

B. ASD - Air and Surface Disinfection

1.3 SUBMITTALS

A. Product Data: For each type of product. Include dimensions; operating characteristics; required clearances and access; efficiency and test method; fire classification; furnished specialties; and accessories for each model indicated.

B. Shop Drawings: For each ASD System.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Show unit dimensions, materials, and methods of assembly of components.
3. Include setting drawings, templates, and requirements for installing anchor materials.
4. Include diagrams for power, signal, and control wiring.

C. Product Test Reports: For each ASD System, for tests performed by a qualified third-party testing agency and customer.

D. ASHRAE 241 Compliance: Submit third-party documentation verifying system conformance with safety requirements of ASHRAE Standard 241, including byproduct emission limits and exposure safety.

E. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of ASD System to include operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Any extra materials furnished that match products/sub-components installed shall be packaged with protective covering for storage and identified with labels describing contents.

1.6 QUALITY ASSURANCE

A. The ASD System shall be manufactured in an established manufacturer within the USA and shall meet the requirements of the "Buy America" program as outlined in 49CFR661.5.

B. A qualified representative from the manufacturer shall be available to inspect the installation of the ASD System to ensure installation in accordance with manufacturer's recommendation.

C. Technologies must demonstrate a capability to reduce common indoor Volatile Organic Compounds (VOCs).

D. Projects designed using ASHRAE Standard 62.1, Indoor Air Quality (IAQ) Procedure shall require the manufacturer to provide Indoor Air Quality calculations using the formulas within ASHRAE Standard 62.1, to validate acceptable indoor air quality at the quantity of outside air scheduled with the technology submitted. The manufacturer shall provide independent test data on previous installations of similar applications, performed within the past two years, that proves compliance with ASHRAE 62.1 and the accuracy of the calculations.

E. The maximum allowable ozone concentration per UL867 section 40 chamber test shall be 0.05 PPM. At minimum, the units shall be CARB certified so as to ensure compliance with this specification.

F. Ozone Emissions: The Air and Surface Disinfection (ASD) system shall be UL 2998 certified, demonstrating zero ozone emissions.

G. Product shall be accompanied by third-party documentation demonstrating compliance with safety limits defined in ASHRAE Standard 241, including acceptable exposure levels and emission thresholds.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Provide premanufactured Air Purification System of the size, arrangement and capacity indicated. Provide units as required to provide the required capability of killing mold, bacteria, and viruses in the air and on surfaces. Provide System units incorporated into/adjacent to the HVAC units furnished for the project.

B. Basis-of-Design Product: Subject to compliance with performance requirements, provide CASPR Technologies ASD Units or approved equal for duct mounted applications.

1. Any manufacturer meeting or exceeding the specified performance requirements will be considered.

C. Each designated air handling unit, as detailed in the equipment schedules and specifications, shall include an integrated ASD system. This system shall be capable of continuously reducing airborne and surface-bound microorganisms, including mold, bacteria, and viruses, within occupied spaces. The system shall demonstrate effectiveness in reducing these contaminants without producing harmful byproducts, such as ozone, exceeding established safety standards. The system shall be designed to integrate seamlessly with the air handling unit, providing continuous disinfection throughout the HVAC system's operational cycle.

1. Provide "no-touch" disinfection technology capable of disinfecting both air and surfaces.
2. Provide system that effectively kills microorganisms downstream of the ASD equipment in the air and on surfaces (mold, bacteria, viruses, etc.).
3. Provide documentation by an independent NELAC accredited laboratory that proves the product has minimum kill rates on surfaces for the following pathogens given the allotted time and in a space condition: a. MRSA > 99.98% in 6 hours b. Fungi > 95% in 6 hours c. Influenza (H1N1) > 99.93% in 6 hours d. MS2 > 99.993% in 6 hours
4. Provide documentation by an independent NELAC accredited laboratory in accordance with ASHRAE Standard 241 Testing protocols, that proves the product has minimum kill rates in the air for the following pathogens given the allotted time and in a space condition: a. MS2 > 70% in 4 minutes b. MS2 > 80% in 12 minutes c. MS2 > 90% in 20 minutes d. MS2 > 96% in 30 minutes e. MS2 > 99.9% in 1 hour
5. Production of ozone over 50 ppb as a byproduct or primary product of the catalytic reaction is not acceptable. Ozone can sometimes be called Activated Oxygen or Tri-Oxygen, for marketing purposes.
6. System is designed for mounting on the side of ductwork or within HVAC equipment after the supply plenum at least 24 inches from the heating element, as scheduled on the drawings or as indicated in the Manufacturer's manual.
7. System is capable of accepting 120-277 VAC.
8. System does not require airflow to operate properly but only operates when airflow is present.
9. Provide units capable of operation at -14° to 160°F temperature range, and 20-99% non-condensing humidity range.
10. Provide system units that do not require periodic maintenance more frequently than every 18 months.

PART 3 -- EXECUTION

3.1 EXAMINATION

A. Examine ASD units and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Position each ASD unit within existing duct work or within the ceiling, utilizing manufacturer's clearance for normal service and maintenance. Install per manufacturer's written recommended procedures.

3.3 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect control wiring between controlled devices.

C. Connect control wiring according to Section 260523 "Control-Voltage Electrical Power Cables."

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Perform any desired tests and inspections with the assistance of a factory-authorized service representative.

3.5 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling and air-distribution systems, ascertain that ASD units are clean and working per manufacturer's guidelines and instructions.

3.6 PROTECTION

A. Protect installed products and accessories from damage during construction.

END OF SECTION 23 58 00