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**ANSI/ASHRAE 62.1-2013**
**Ventilation Rate Procedure vs. IAQ Procedure**
**Aerisa Version 1.1.3**
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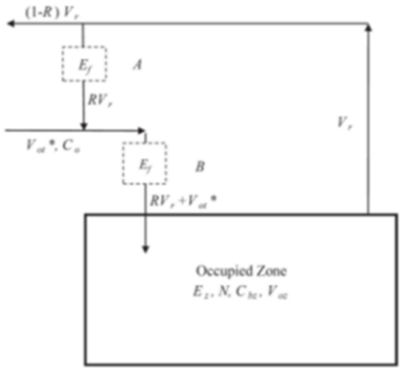
| PROJECT INFORMATION | |
|---|---|
| Date | 12/01/14 |
| Project Name | Facility |
| Project Location | Anyplace USA |
| Engineer | Engineering Inc. |
| Rep Firm | Representative Inc. |
| Rep Contact | Joe Smith |
| Contractor | Construction Inc. |



Ventilation System Schematic

| ZONE INFORMATION | |
|---|---|
| Name (ID) | Auditorium |
| Floor Area (Az), $ft^2$ | 3,830 |
| Height (ft) | 13 |
| Max Occupancy (Pz) | 438 |
| Supply Air (cfm) | 6,400 |
| Category | Public Assembly Spaces |
| Subcategory | Auditorium Seating Area |
| Activity Level | Filing, seated: Met = 1.2 |
| **CONFIGURATION INFORMATION** | |
| Filter Location | B |
| Flow | Constant |
| Outdoor Airflow | Constant |
| Design Flow Reduction Factor (Fr) | N/A |

$$C_{bz} = \frac{N + E_z V_{oz}(1 - E_f)C_o}{E_z(V_{oz} + RV_r E_f)}$$

Table D-1 Applicable Contaminant Concentration Formula

| VENTILATION RATE PROCEDURE | |
|---|---|
| OA/Person (Rp) [Table 6.2.2.1], cfm | 5.0 |
| OA/Floor Area (Ra) [Table 6.2.2.1], $cfm/ft^2$ | 0.06 |
| OA Breathing Zone (Vbz) | Rp * Pz + Ra * Az |
| Vbz, cfm | 2,420 |
| Zone Outdoor Airflow (Voz) | Vbz/Ez |
| Ez [Table 6.2.2.2] | 1.0 |
| Voz, cfm | 2,420 |
| Voz, L/min | 68,529 |
| Return Air (Vr), cfm | 3,980 |
| Vr, L/min | 112,719 |
| Voz/Person, cfm/person | 5.52 |
| Air Exchanges/Hour | 7.71 |

| IAQ PROCEDURE | |
|---|---|
| Recommended OA (Voz), cfm | 1,314 |
| Voz, L/min | 37,212 |
| Voz/Person, cfm/person | 3.00 |
| Return Air (Vr), cfm | 5,086 |
| Vr, L/min | 144,036 |

| OUTSIDE AIR SAVINGS, cfm | 1,106 |
|---|---|

**INDOOR CONTAMINANTS OF CONCERN**

| Contaminant Compound (CAS#) | Max Allowable Conc. Limit (ppm) | Max Allowable Conc. Limit ($\mu g/m^3$) | VRP - Steady State Without Ionization ($\mu g/m^3$) | IAQP - Steady State With Ionization ($\mu g/m^3$) | Conc. Change Using IAQP | IAQP Conc. As % of Max | Less Than Max with Reduced OA? |
|---|---|---|---|---|---|---|---|
| Acetaldehyde 75-07-0 | 7.7725E-02 | 1.4000E+02 | 7.1284E+00 | 3.6034E+00 | -49.45% | 2.574% | TRUE |
| Acetone 67-64-1 | 2.4837E+00 | 5.9000E+03 | 5.9199E+01 | 3.6055E+01 | -39.10% | 0.611% | TRUE |
| Ammonia 7664-41-7 | 2.5000E+00 | 1.7382E+03 | 1.6630E+03 | 1.2360E+03 | -25.68% | 71.106% | TRUE |
| Benzene 71-43-2 | 1.8781E-02 | 6.0000E+01 | 4.7044E+00 | 1.4211E+00 | -69.79% | 2.369% | TRUE |
| Carbon Dioxide 124-38-9 | 5.0000E+03 | 9.0000E+06 | 4.4010E+06 | 7.5744E+06 | 72.11% | 84.160% | TRUE |
| Carbon Monoxide 630-08-0 | 9.0000E+00 | 1.0310E+04 | 3.0652E+03 | 3.9617E+03 | 29.25% | 38.424% | TRUE |
| Chloroform 67-66-3 | 6.1437E-02 | 3.0000E+02 | 1.3196E+00 | 6.8631E-01 | -47.99% | 0.229% | TRUE |
| Dioxane (1,4-) 123-91-1 | 8.3248E-01 | 3.0000E+03 | 4.2610E-02 | 2.6162E-02 | -38.60% | 0.001% | TRUE |
| Hydrogen Sulfide 7783-06-4 | 2.8697E-02 | 4.0000E+01 | 2.0979E+00 | 1.4104E+00 | -32.77% | 3.526% | TRUE |
| Methane 74-82-8 | 1.0000E+02 | 6.5603E+04 | 1.2822E+03 | 8.9572E+02 | -30.14% | 1.365% | TRUE |
| Methanol 67-56-1 | 1.1447E+00 | 1.5000E+03 | 6.3915E-01 | 5.5854E-01 | -12.61% | 0.037% | TRUE |
| Methyl Chloroform (1,1,1-Trichloroethane) 71-55-6 | 1.8327E-01 | 1.0000E+03 | 5.3540E+00 | 4.5284E+00 | -15.42% | 0.453% | TRUE |
| Methyl Ethyl Ketone (2-Butanone) 78-93-3 | 1.0000E+01 | 2.9493E+04 | 1.0347E+03 | 6.8370E+02 | -33.92% | 2.318% | TRUE |
| Methylene chloride 75-09-2 | 1.1514E-01 | 4.0000E+02 | 1.1774E+01 | 1.0025E+01 | -14.86% | 2.506% | TRUE |
| Phenol 108-95-2 | 5.1960E-02 | 2.0000E+02 | 4.3766E+01 | 2.2530E+01 | -48.52% | 11.265% | TRUE |
| Propane 74-98-6 | 1.0000E+02 | 1.8037E+05 | 1.8138E+01 | 5.7571E+00 | -68.26% | 0.003% | TRUE |
| Tetrachloroethane 79-34-5 | 1.0197E-03 | 7.0000E+00 | 1.4913E-01 | 1.5260E-01 | 2.32% | 2.180% | TRUE |
| Tetrachloroethylene 127-18-4 | 5.1604E-03 | 3.5000E+01 | 2.6065E+00 | 3.9427E-01 | -84.87% | 1.126% | TRUE |
| Toluene 108-88-3 | 7.9607E-02 | 3.0000E+02 | 7.5501E+00 | 1.8478E+00 | -75.53% | 0.616% | TRUE |
| Vinyl Chloride Monomer (Chloroethene) 75-01-4 | 1.0000E+00 | 2.5562E+03 | 3.8770E+00 | 7.8632E-01 | -79.72% | 0.031% | TRUE |
| Xylenes 1330-20-7, 95-47-6 | 1.6120E-01 | 7.0000E+02 | 4.4003E+00 | 2.3961E-01 | -94.55% | 0.034% | TRUE |