

# Power-Flow® Tubular Silencers

## Suggested Specifications | High Temperature Applications 300° F - 1200° F

### General Information

Sound attenuators shall be Power-Flow silencers as manufactured by:

#### IAC Acoustics

40 Shuman Boulevard, Suite 201

Naperville, IL 60563

Telephone 630-270-1790

Any change in this specification must be submitted in writing to and approved by architect/engineer at least ten days prior to bid due date.

### Materials & Construction

Silencers shall be fabricated of all welded construction. All materials used in the silencer must be free of rust, weld splatter, mill scale, or other foreign matter.

### Outer Shell

Outer shell material shall be a minimum of 11 gauge (3mm) hot rolled steel. Shell shall be adequately stiffened to minimize vibration and to support the internal acoustical elements. Flanging shall be 3 x 3 x 1/4" (75 mm x 75 mm x 6 mm) structural angle or heavier. The outer shell shall be prepared for painting by removal of all foreign matter by means of wire brush or blast cleaning and shall be given a prime coat of paint to a thickness of not less than 5 mils (0.13 mm).

### Acoustical Elements

Silencer acoustical elements shall be constructed of 11 gauge (3mm) hot rolled steel. Perforated materials shall be not less than 23% open area.

Sound absorptive materials shall be of inorganic mineral or glass fiber of a density sufficient to obtain the specified acoustic performance and be packed under not less than 5% compression to eliminate voids due to vibration and settling. Materials shall be inert, vermin and moisture-proof, and protected with a glass fiber cloth and a stainless steel mesh screen.

Combustion ratings for the silencer acoustic fill shall be not less than the following when tested in accordance with ASTM E 84, NFPA Standard 255 or UL No. 723:

Flame Spread Classification 25

Smoke Developed Rating 50

### Acoustic Performance

Silencer rating shall be determined in a duct-to-reverberant room test facility which provides for airflow in both directions to the test silencer in accordance with ASTM specification E 477. Test setup and procedure shall be such that all effects due to end reflection, directivity, flanking transmission, standing

waves, and test chamber sound absorption are eliminated. Acoustic rating shall include dynamic insertion loss (OIL) and self-noise (SN) sound power levels for forward flow (air and noise in same direction) and reverse flow (air and noise in opposite direction) with airflow of at least 2000 FPM entering face velocity. Data for tubular type silencers shall be presented for test conducted using silencers no smaller than 12 inches in diameter (305 mm).

Dynamic insertion loss and self-noise of the silencer provided shall meet or exceed the values listed hereafter:

| Octave Band Center Frequency, Hz              | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
|---|----|-----|-----|-----|----|----|----|----|
| Dynamic Insertion Loss, dB                    | —  | —   | —   | —   | —  | —  | —  | —  |
| Self-Noise Power Level, dB<br>Re: 10-12 watts | —  | —   | —   | —   | —  | —  | —  | —  |
| Silencer Face Velocity, FPM                   | —  | —   | —   | —   | —  | —  | —  | —  |

For temperatures in excess of 300° F, insertion loss data shall be shifted on a wavelength basis to demonstrate compliance with specifications.

### Aerodynamic Performance

Pressure loss of silencers shall not exceed \_\_\_ " H<sub>2</sub>O when handling a flow of \_\_\_ ACFM at \_\_\_ degrees F. Airflow measurements shall be made in accordance with ASTM specification E 477 and the applicable portions of ASME, AMCA, and ADCF airflow test codes. Pressure drop for temperatures other than laboratory shall be calculated based upon laboratory test data at 68° F. Test shall be reported on the identical units for which the acoustic data is presented.

### Certification

With submittals, the manufacturer shall supply certified test data on dynamic insertion loss, self-noise power levels, and aerodynamic performance for reverse and forward flow test conditions. Test data shall be for a standard product which is identical to the silencer provided. All rating tests shall be conducted in the same facility, shall utilize the same silencer, and shall be open to inspection upon request from the architect/engineer.