

### What is ISO 15665?

ISO 15665 is an international standard that defines a test method for measuring the acoustical performance of installed and jacketed pipe insulation systems. ISO 15665 measures insertion loss for pipe systems only; it does not apply to rectangular ducts or equipment. The standard defines acoustical performance in three different classes: Class A (least robust), Class B, and Class C (most robust). A fourth, even more stringent class, Class D, was created and is used by a major petrochemical company to help ensure the insulation systems they install meet highly stringent acoustical control requirements. The standard includes 3 pipe sizes, 1 to 3, with 3 being the largest and most robust size. JM has designed solutions to meet the most difficult ISO standard, the D3 class, as well as other systems to meet alternative project requirements.

Each class is broken down into a range of pipe sizes and diameters.

- 1: Pipes < 12" (300 mm) IPS
- 2: Pipes ≤ 12" (300 mm) to < 26" (650 mm) IPS
- 3: Pipes ≤ 26" (650 mm) to < 40" (1000 mm) IPS



### ISO 15665 Requirements

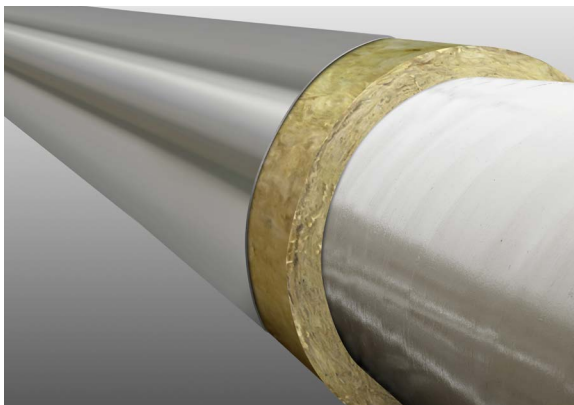
Class	Range of nominal diameter <i>D</i> (IPS)*	Octave band center frequency, Hz						
		125	250	500	1000	2000	4000	8000
		Minimum insertion loss, dB						
A1	$D < 12''$	-4	-4	2	9	16	22	29
A2	$12'' \leq D < 26''$	-4	-4	2	9	16	22	29
A3	$26'' \leq D < 40''$	-4	2	7	13	19	24	30
B1	$D < 12''$	-9	-3	3	11	19	27	35
B2	$12'' \leq D < 26''$	-9	-3	6	15	24	33	42
B3	$26'' \leq D < 40''$	-7	2	11	20	29	36	42
C1	$D < 12''$	-5	-1	11	23	34	38	42
C2	$12'' \leq D < 26''$	-7	4	14	24	34	38	42
C3	$26'' \leq D < 40''$	1	9	17	26	34	38	42
D2	$12'' \leq D < 26''$	-3	4	15	36	45	45	45
D3	$26'' \leq D < 40''$	3	9	26	36	45	40	40

\* Pipe sizes used are: Less than 12"IPS outside diameter; Greater than or equal to 12"IPS diameter but less than 26"IPS; Greater than or equal to 26"IPS diameter but less than 40"IPS

## Summary

Insulation	Mass Layer	Cladding	Class				
			A2	A3	B3	C3	D3
MinWool-1200: 1.5" (38 mm)	-	≥ 0.016" aluminum	+				
MinWool-1200: 4" (100 mm)	≥ 1 lb/ft <sup>2</sup> (4.9 kg/m <sup>2</sup> )	≥ 0.016" aluminum		+	+		
MinWool-1200: 4" (100 mm)	≥ 2 lb/ft <sup>2</sup> (9.8 kg/m <sup>2</sup> )	≥ 0.020" SS		+	+	+	
MinWool-1200: 4" (100 mm)	≥ 4 lb/ft <sup>2</sup> (19.6 kg/m <sup>2</sup> )	≥ 0.020" SS		+	+	+	+

Using Johns Manville's MinWool-1200 Pipe insulation can simplify the design of insulation systems engineered for acoustical control. MinWool-1200 pipe insulation has been tested in combination with mass loaded vinyl (MLV) and metal jacketing in various configurations (shown on page 2) to meet all four acoustical classes and pipe sizes of ISO 15665. Each configuration uses just three materials: MinWool-1200 insulation, 1-pound MLV, and stainless steel or aluminum jacketing. By using MinWool-1200, system designers can simplify the design and reduce the number of materials they need to meet the distinct ISO 15665 classes. JM is a supplier of all these materials which go into the ISO 15665 certified systems.



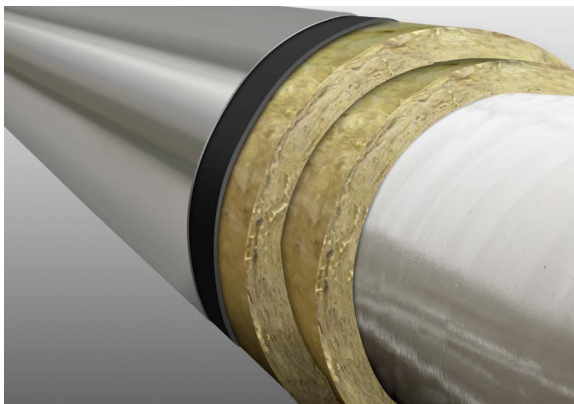
### ISO 15665 CLASS A2 CONFIGURATION

This configuration meets the Class A2 requirements.

**Configuration:**

- MinWool-1200 Insulation: 1 layer of 1.5"
- Aluminum jacket 0.016" thick

A2	Octave band center frequency, Hz						
	125	250	500	1000	2000	4000	8000
Minimum insertion loss, dB	-4	-4	2	9	16	22	29



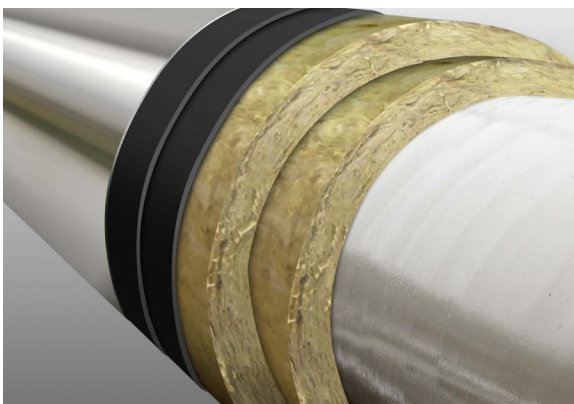
### ISO 15665 CLASS B3 CONFIGURATION

This configuration meets Class B3 and A3 requirements.

**Configuration:**

- MinWool-1200 Pipe Insulation: 2 layers of 2"
- 1 lb MLV: 1 layer under jacket
- Aluminum jacket 0.016" thick

B3	Octave band center frequency, Hz						
	125	250	500	1000	2000	4000	8000
Minimum insertion loss, dB	-7	2	11	20	29	36	42



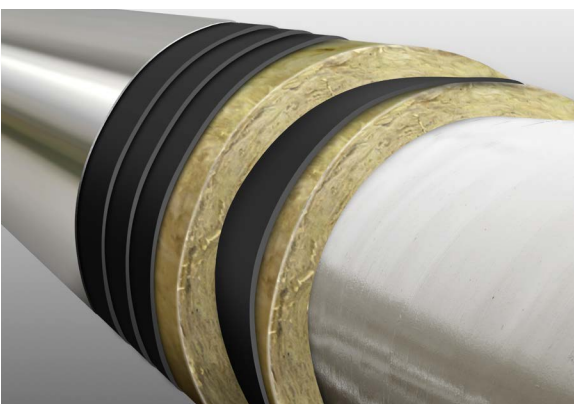
### ISO 15665 CLASS C3 CONFIGURATION

This configuration meets Class C3, A3, and B3 requirements.

**Configuration:**

- MinWool-1200 Pipe Insulation: 2 layers of 2"
- 1 lb MLV: 2 layers under jacket
- Stainless Steel jacket 0.020" thick

C3	Octave band center frequency, Hz						
	125	250	500	1000	2000	4000	8000
Minimum insertion loss, dB	1	9	17	26	34	38	42



### ISO 15665 CLASS D3 CONFIGURATION - NEW!

This configuration meets Class D3, A3, B3, and C3 requirements.

**Configuration:**

- MinWool-1200 Pipe Insulation: 2 layers of 2"
- 1 lb MLV: 4 layers
  - 1 layer between insulation, 3 layers under jacket
- Stainless Steel jacket 0.020" thick

D3	Octave band center frequency, Hz						
	125	250	500	1000	2000	4000	8000
Minimum insertion loss, dB	3	9	26	36	45	40	40

For more information, please contact the [Johns Manville Technical Team.](#)