

The International Standards for Compressed Air Quality

The most common ISO standards used for compressed air quality are:

ISO8573 Series: the most commonly used standard and in particular ISO8573-1:2010, which is used to specify the purity of air required at a particular point of use.

ISO12500 Series: used to verify performance of filters.

ISO7183 Series: used to verify performance of dryers.

ISO8573-1 is the primary document used from the **ISO8573 series**, as it is this document which specifies the amount of contamination allowed in each cubic meter of compressed air.

ISO8573-1 lists the main contaminants as solid particulate, water and oil. The purity levels for each contaminant are shown separately, however for ease of use, this document combines all three contaminants into one easy to use table.

ISO8573-1:2010 CLASS	Solid Particulate				Water		Oil
	Maximum number of particles per m³			Mass Concentration mg/ m³	Vapour Pressure Dewpoint	Liquid g/m³	Total Oil (aerosol liquid and vapour)
	0.1 – 0.5 µm	0.5 – 1 µm	1 – 5 µm				mg/ m³
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20,000	≤ 400	≤ 10	-	≤ - 70°C	-	0.01
2	≤ 400,000	≤ 8,000	≤ 100	-	≤ - 40°C	-	0.1
3	-	≤ 90,000	≤ 1,000	-	≤ - 20°C	-	1
4	-	-	≤ 10,000	-	≤ +3°C	-	5
5	-	-	≤ 100,000	-	≤ +7°C	-	-
6	-	-	-	≤ 5	≤ +10°C	-	-
7	-	-	-	5-10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

ISO8573-1:2010 Class zero

- Class 0 does not mean zero contamination
- Class 0 requires the user and the equipment manufacturer to agree on contamination levels as part of a written specification
- The agreed contamination levels for a Class 0 specification should be within the measurement capabilities of the test equipment and test methods shown in ISO8573 Pt 2 to Pt 9
- The agreed Class 0 specification must be written on all documentation to be in accordance with the standard
- Stating Class 0 without the agreed specification is meaningless and not in accordance with the standard
- A number of compressor manufacturers claim that the delivered air from their oil-free compressors is in compliance with Class 0
 - If the compressor was tested in clean room conditions, the contamination detected at the outlet will be minimal. Should the same compressor now be installed in typical urban environment, the level of contamination will be dependent upon what is drawn into the compressor intake, rendering the Class 0 claim invalid
 - A compressor delivering air to Class 0 will still require purification equipment in both the compressor room and at the point of use for the Class 0 purity to be maintained at the application
- Purification of air to meet a Class 0 specification is only cost effective if carried out at the point of use

Specifying air purity in accordance with ISO8573-1:2010

When specifying the purity of air required, the standard must always be referenced, followed by the purity class selected for each contaminant (a different purity class can be selected for each contaminant if required). An example of how to write an air quality specification is shown below:

ISO 8573-1:2010 Class 1.2.1

ISO 8573-1:2010 refers to the standard document and its revision, the three digits refer to the purity classifications selected for solid particulate, water and total oil. Selecting a air purity class of 1.2.1 would specify the following air quality when operating at the standard's reference conditions:

Class 1 Particulate

In each cubic metre of compressed air, the particulate count should not exceed 20,000 particles in the 0.1 - 0.5 micron size range, 400 particles in the 0.5 - 1 micron size range and 10 particles in the 1 - 5 micron size range.

Class 2 Water

A pressure dew point (PDP) of -40°C or better is required and no liquid water is allowed.

Class 1 Oil

In each cubic metre of compressed air, not more than 0.01mg of oil is allowed. This is a total level for liquid oil, oil aerosol and oil vapour.