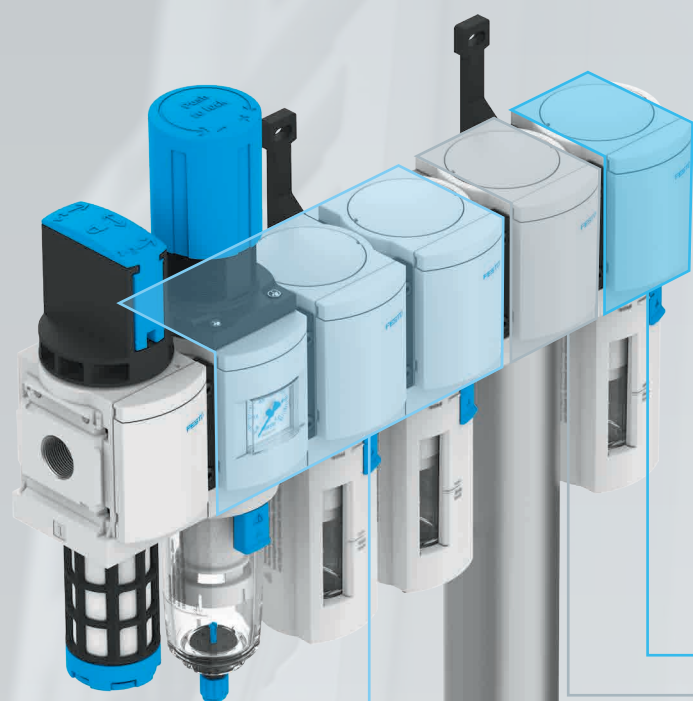








# Air preparation: the basics

Air preparation is the basis for the right compressed air quality at the start of every machine or application. This is what determines the safety and reliability of all pneumatic systems.



-  **Switching and regulating**  
On/off valves and pressure regulators
-  **Measuring**  
Pressure and flow sensors
-  **Safety**  
Soft-start and security valves. LOTO for operating functions.

-  **Condensate**  
Water separators, adsorption dryers and membrane air dryers
-  **Particles**  
Surface and cartridge filters
-  **Oil**  
Activated carbon filters

## The variables

The guidelines for compressed air purity are described in ISO 8573-1:2010. They divide the compressed air quality in 7 classes based on 3 variables.

Compressed air supply	Line	Compressed air preparation	Class	Application
Compressor	[*:7:*]	Water separator	[*:7:*]	All applications where only the water content of the compressed air is important (e.g. mining).
Filter Dryers	[7:4:4]	40 µm	[7:4:4]	Standard specification for pneumatic valves and cylinders.
		40 µm 5 µm	[6:4:4]	Necessary for servo-pneumatic positioning tasks.
		40 µm 5 µm 1 µm	[5:4:3]	Applications requiring higher values due to dust particles and oil residue, such as in the paper or textile industry.
		40 µm 5 µm 1 µm 0.01 µm	[1:4:2]	Applications in bearing technology and powder coating.
		40 µm 5 µm 1 µm 0.01 µm Act. carbon	[1:4:1]	Applications with optical components, such as lasers etc.
		40 µm 5 µm 1 µm 0.01 µm Membr. air dr. Act. carbon	[1:3:1]	Semicon and pharmaceutical industry.
	[7:4:4]	40 µm 5 µm 1 µm Adsorption dryer	[2:2:2]	Transport of powder, in the food zone it even is [1:2:1].

Air purity class	Particle size				Vapour		Oil
	≤ 0.1 µ	0.1µ-0.5µ	0.5µ-1.0µ	1.0µ-5.0µ	Pressure dew point	Vapour	Aerosols/vapour
	Particles/Nm3				°Cdp	g/Nm3	Mg/Nm3
0	As specified by the equipment user and more stringent than Class 1						
1	N.S.	≤ 20,000	≤ 400	≤ 10	≤ -70	≤ 0.003	≤ 0.01
2	N.S.	≤ 400,000	≤ 6,000	≤ 100	≤ -40	≤ 0.11	≤ 0.1
3	N.S.	N.S.	≤ 90,000	≤ 1,000	≤ -20	≤ 0.88	≤ 1
4	N.S.	N.S.	N.S.	≤ 10,000	≤ +3	≤ 6	≤ 5
5	N.S.	N.S.	N.S.	≤ 100,000	≤ +7	≤ 7.8	> 5
6	Cp: 0 mg/Nm3 < CP ≤ 5 mg/Nm3				≤ +10	≤ 9.4	-
7	Cp: 5 mg/Nm3 < CP ≤ 10 mg/Nm3						-
x	Cp: CP > 10 mg/Nm3						-

**Reference conditions:**  
 Temperature: 20 °C / Pressure: 1 bara / H<sub>2</sub>O pressure: 0 bar as per ISO-8573-1:2010 /  
 Class 4 Cp: Mass concentration; Cw: liquid water concentration; N.S.: Not specified.