

Semi F21-95 is the Standard for the classification of microelectronic clean environments according to their airborne molecular contaminant levels. The Standard is applicable in the specification of semiconductor clean environments which includes process environments as well as contamination control and measurement equipment. The Standard specifies four categories of material contaminants, being Acids, Bases, Condensables and Dopants. A description of the four main material contaminant categories provided in the table below.

Category	Description
Acids	A corrosive material whose chemical reaction characteristics is that of an electron acceptor.
Bases	A corrosive material whose chemical reaction characteristic is that of an electron donor
Condensables	A substance (other than water) typically having a boiling point above room temperature at atmospheric pressure, capable of condensation on a clean surface
Dopants	A chemical element which modifies the electrical properties of a semiconductor material

Classification is according to the maximum allowable total gas phase concentration of each category of material contaminant. A combination of a quantitative class for each of the four categories of contaminant results in a classification that describes the level of that environment. The maximum cumulative gas phase concentration of the four categories may be different.

The classification system can be best explained as follows: Each contaminant category is designated by the letter 'M' followed by the letter A, B, C, or D which signifies the material as follows: A = Acids, B = Bases, C = Condensables, D = Dopants. The number following the material category classification indicates the maximum total gas phase concentration in parts per trillion (ppt). For example, a category MB-10 has a maximum allowable total concentration of 10 parts per trillion for the category Bases.

Material Category	Classification 1 (ppt)	Classification 10 (ppt)	Classification 100 (ppt)	Classification 1,000 (ppt)	Classification 10,000 (ppt)
Acids	MA-1	MA-10	MA-100	MA-1,000	MA-10,000
Bases	MB-1	MB-10	MB-100	MB-1,000	MB-10,000
Condensables	MC-1	MC-10	MC-100	MC-1,000	MC-10,000
Dopants	MD-1	MD-10	MD-100	MD-1,000	MD-10,000