



Below are some suggestions for Food and Beverage Air Testing.

In general there are no "hard and fast" air quality standards except for breathing air requirements. One such requirement is OSHA 1910.134, CGA Grade D + Moisture, for breathing air in the workplace. The air used in manufacturing processes should be evaluated by a competent technical individual to determine the appropriate, current good manufacturing practices, cGMP, to protect the safety of the employees and the integrity of the products. For FDA regulated operations in the United States, HACCP compliance is regulated by 21 CFR part 120 & 123. TRI Air Testing suggests performing a baseline, no specification comparison, testing on new or untested systems to help determine the appropriate specification requirements. (Use TRI test item # BLI for indirect product contact or BLD for direct product contact air/gas tests)

General Guidelines for:	Employee	Indirect	Direct	Non-Contact
	<u>Breathing Air</u> <u>CGA Grade D + Moisture</u> <u>(OSHA 1910.134)</u>	<u>Product Contact</u> <u>Compressed Air</u> <small>(Nitrogen or CO₂ extra cost)</small>	<u>Product Contact</u> <u>Compressed Air</u> <small>(Nitrogen or CO₂ extra cost)</small>	<u>Product Contact</u> <u>Compressed Air</u> <small>(Nitrogen or CO₂ extra cost)</small>
Oil Mist & Particulate(matter)	5 mg/m ³ (Oil Mist)	1 mg/m ³	0.1 mg/m ³	5 mg/m ³
Moisture/Dew Point	10 ° F Lower than ambient temp.	1267ppmv/0 ° F	See Note 1	1267ppmv/0 ° F
Gaseous Hydrocarbons (minus methane)	N/A	5ppm	2ppm	25ppm
Halogenated Hydrocarbons	N/A	5ppm	1ppm	N/A
Oxygen %, CO ppm, CO ₂ ppm, NO, NO ₂ , SO ₂	O ₂ 19.5-23.5%, CO 10ppm, CO ₂ 1000ppm,	N/A	N/A	CO 10ppm CO ₂ 1000ppm
Order TRI test item #	A3	B1	A82 or C23	C65

Note 1: The user should select an appropriate value typically in the range of 0 ° F(1267ppmv) to -50 ° F (67ppmv) depending on sensitivity of the product to water vapor. A dew point of 0 ° F requires a refrigerated drier (Use TRI test item C23). A dew point of -50 ° F requires a desiccant drier be installed (Use TRI test item A82) in the compressed air system. Other gases such as nitrogen may have different system requirements.

TRI is ANSI/ISO/ASQ 9001-2008 and ISO 17025-2005 compliant, an AIHA accredited laboratory and participates in a compressed air quality proficiency program. These accreditations and proficiencies ensure that our lab meets the highest standards of quality and can deliver reliable, consistent laboratory test results. To better meet our customer's expectations, we have expanded our ISO 9001:2008 Quality Program to include applicable elements of cGMP associated with 21 CFR Part 210 and 211.

Analyte Analyzed	Typical Range Measured by GC
Oxygen	0.5% to 99+%(In H ₂ or He extra cost)
Nitrogen	0.5% to 99+%
Nitrous Oxide	99+% (special 0.5ppm extra cost)
Carbon Dioxide	25ppm to 99+% (1 to 25ppm extra cost)
Carbon Monoxide	1ppm to 1000ppm
Halogenated Hydrocarbons	1ppm and up in air and most gases
Total Gaseous Hydrocarbons	1ppm and up in Air, N ₂ or Ar (In O ₂ , N ₂ O, or CO ₂ extra cost)
Methane	1ppm and up
Analyte Analyzed	Typical Range Measured Gravimetrically
Oil Mist & Particulate	5.0 mg/m ³ Results reported combined
Oil Mist & Particulate	0.1 mg/m ³ Results reported combined
Oil Mist & Particulate	Results always reported separately (extra cost)
Analyte Analyzed	Typical Range Measured with Detection Tubes
Moisture	2ppm(-95 ° F) to >3900ppm(22 ° F)
Sulfur Dioxide	0.1ppm to 3ppm
Nitrogen Dioxide	0.5ppm to 2ppm
Nitric Oxide	0.5ppm to 2ppm
Halogenated Solvents	0.1ppm to 10ppm
Analyte Analyzed	Typical Range Measured by Culture
Mold & Bacteria, Viable	<50 CFU/m ³
TRI Test Equipment	
Champion 35 Test Kit	Champion 35 Test Equipment (one time purchase)