

What is “Specialty Gas”?

Gases or gas mixtures which are produced to rigid, application-dependent specifications, ensuring the supply of a consistent and reliable product appropriate of a specific need and/or requirement.

Presented by Richard Turner

517-861-1330

The Nines Mirage

Contaminant Specifications – PPM Supplier

	<u>A</u>	<u>B</u>	<u>C</u>
Oxygen	<2	<4	<1
Water	<1	<3.5	<2
CO2	N/A	<1	<1
CO	N/A	N/A	<1
THC	<0.5	<0.5	<0.5
Nitrogen	N/A	<5	<5
Hydrogen	N/A	N/A	<1
	99.999%	99.999%	99.999%

Total 99.999%

N/A = Not Analyzed

TPD Method = 100% Minus maximum level of measured impurities

Common Applications and Uses

Nitrogen

- GC Carrier Gas – GC/MS
- Inerting
- Liquid Nitrogen coolant for NMR
- Purge gas
- Food packaging
- Wide variety of analytical applications
- Biological storage freezers (liquid)

Common Applications and Uses

Air

- Oxidizer in flame detectors (FID, FPD, & AA)
- Purge gas
- Pneumatic Operation
- Zero gas

Common Applications and Uses

Argon

- ICP, AA, GC
- Ar/CH₄ mixtures for Nuclear Counters/ECD
(P-5 & P-10)
- Semiconductor Process
- Specialized lamps
- Wide variety of analytical applications
- Purge Gas

Common Applications and Uses

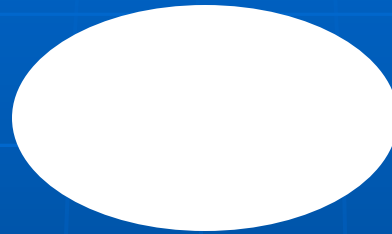
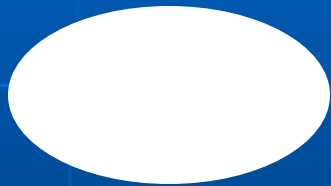
Helium

- GC Carrier Gas (MS, ECD, FID, TCD, FPD, PID, HID)
- Inert atmosphere
- Leak detection
- Liquid Helium in research - NMR
- Coolant in Nuclear reactions
- In mixtures for Neon lights
- Crystal Growth – Semiconductor Process

Market Segments

- Stationary Source Monitoring
 - Continuous Emissions monitoring (CEM)
 - EPA Protocol Grade Mixtures
- Mobile Source Emissions Monitoring
 - Trains, Planes and Automobiles
 - Primary Master Grade Mixtures

EPA Protocol Production Timing



EPA Protocol Gases

- Non-Reactive Gases:

Carbon Dioxide, Methane, Oxygen, Propane

- Reactive Gases:

Carbon monoxide, Hydrogen Sulfide, Nitric Oxide, Nitrogen Dioxide.

- Highly Reactive Gases: (Less than or = to 25 ppm)

Hydrogen Sulfide, Nitric Oxide, Nitrogen Dioxide

- Balance Gas: Air or Nitrogen

Except Nitric Oxide and Oxygen

Certification Periods

- EPA Protocols are assigned certification periods based upon the minor component, balance gas and/or concentration.
- Range from 56 months to 36 months.
- EPA mandates certification period.
- Complete listing of current certification periods available upon request.