

Analytical Products

**Process Gas Chromatographs
PGC2000 Series
Utility Consumptions**

BUASC1A-14-101



SUPPORT GAS QUALITY

PROCESS GAS CHROMATOGRAPHS

INSTRUMENT AIR

Instrument air is used for the purge of the electronics housings, the oven heater and to operate the chromatography valves. Normally instrument air should be oil free with a dew point of -40°C . However, if instrument air is used to supply FID Burner air (see below) via an Air Clean-up Unit, then the Total Hydrocarbons should be less than 100 ppm and Methane less than 10ppm.

BURNER AIR

Air to support FID's may be supplied either by an air clean-up unit or from cylinders. Cylinder air should be of ISA Hydrocarbon Free Grade (Breathing Quality) with hydrocarbon content $<1\text{ppm}$ and dew point less than -40°C . In addition, cylinder air may be used for FPD support. Air Clean-up Units are not suitable for use with FPD's since they convert the hydrocarbons in the air to carbon dioxide and water, which is detrimental to the FPD.

CARRIER GASES

The most commonly used carrier gases are Hydrogen, Nitrogen, Helium and for Flame Photometric Detectors only, Air. The required purity of these gases varies with the application; the lower the levels of components being measured — the higher the carrier gas purity necessary. Other factors affect the purity required (for example, Molecular Sieve columns are de-activated by Carbon Dioxide and Water.)

THERMAL CONDUCTIVITY DETECTORS (TCD)

For percent level measurements gases of 99.99% purity are generally suitable. The purity requirement increases to 99.995% for ppm measurement ranges.

FLAME IONIZATION DETECTORS (FID)

This detector should be 99.995% pure for most measurements down to around 5ppm. Below this range 99.9995% pure gases should be used. The measurement of Carbon Dioxide and Carbon Monoxide at levels less than 20ppm with a methanizer is a special case. For this application gases of 99.9995% purity are required but with reduced levels of Carbon Monoxide and Carbon Dioxide which should be less than 0.5 ppm and 0.1ppm respectively.

FLAME PHOTOMETRIC DETECTOR (FPD)

This detector is specific to Sulphur compounds, which are not normally present as impurities in cylinder gases. The most critical factor is the moisture content of the gases, so zero grade air cylinders should be used.

CAPILLARY COLUMNS

For capillary columns, regardless of the type of detector, 99.995% pure gases should normally be used.

SUPERCRITICAL FLUID CHROMATOGRAPH

The Carbon Dioxide used as carrier must be of special "Supercritical Grade".

PGC2000 SERIES - TYPICAL UTILITY CONSUMPTIONS

POWER

Voltage: 100 VAC (+15, -6 VAC), 120 VAC± 10%, 230 VAC ± 10%
 Frequency: 50/60 Hz ± 10%

POWER CONSUMPTION

PGC2000: 1,200 VA Startup, 900 VA Steady-State Operation
 PGC2002, PGC2005, PGC2007 1800 VA Maximum, 1725 VA Typical
 (Typical, varies with installed options)

INSTRUMENT AIR

SUPPLY PRESSURE:

PGC2000 414 kPa (60 psig) minimum
 PGC2002 or 2005 552-690 kPa (80-100 psig)
 PGC 2007 345 kPa (50 psig) minimum

FLOW RATES:

PGC2000, 2007
 Start-up Purge: 214-242 L/min (7.6-8.6 ft³/min) at 20° C, all purge types
 Steady State Purge: 127-147 L/min (4.5-5.2 ft³/min) at 20° C, all purge types

PGC2002, PGC2005
 Start-up Purge: 378 L/min (13.4 ft³/min)
 Steady State Purge: 310 L/min (11 ft³/min)
 628 L/min (22.25 ft³/min) During Vortex Cool-down (If required)
 A backup, instrument grade air cylinder, Size A1, is required to cool the Temperature Programmed Oven zone below the area T- Rating during a loss of the primary air purge source.

CARRIER AND DETECTOR GAS FLOW RATES TCD

	GAS VALVES	LIQUID INJECT VALVES
	Packed column	Packed column
ANALYTICAL	30-45 cc/min per valve	30-45 cc/min per valve
BACKFLUSH	45-60 cc/min per valve	45-60 cc/min per valve
REFERENCE	20-30 cc/min detector	20-30 cc/min detector
	Capillary column	Capillary column
ANALYTICAL	5-20 cc/min per valve	5-20 cc/min per valve
BACKFLUSH	10-30 cc/min per valve	10-30 cc/min per valve
REFERENCE	10-20 cc/min detector	10-20 cc/min detector
SPLITTER	50-150 cc/min each	50-150 cc/min each

CARRIER AND DETECTOR GAS FLOW RATES

FID

(Dilution gas and/or burner fuel is often the carrier gas for FID)

	GAS VALVES	LIQUID INJECT VALVES
	Packed column	Packed column
ANALYTICAL	30-45 cc/min per valve	30-45 cc/min per valve
BACKFLUSH	45-60 cc/min per valve	45-60 cc/min per valve
BURNER FUEL	30-45 cc/min detector	30-45 cc/min detector
DILUTION GAS	30-45 cc/min detector	30-45 cc/min detector
BURNER AIR	300-450 cc/min detector	300-450 cc/min detector
SPLITTER	50-300 cc/min each	50-300 cc/min each
	Capillary column	Capillary column
ANALYTICAL	5-20 cc/min per valve	5-20 cc/min per valve
BACKFLUSH	10-30 cc/min per valve	10-30 cc/min per valve
SPLITTER	50-300 cc/min each	50-300 cc/min each
BURNER FUEL	30-45 cc/min detector	30-45 cc/min detector
DILUTION GAS	30-45 cc/min detector	30-45 cc/min detector
BURNER AIR	300-450 cc/min detector	300-450 cc/min detector

FPD

(In most cases the carrier is the burner fuel for FPD)

	GAS VALVES	LIQUID INJECT VALVES
	Packed column	Packed column
ANALYTICAL	30-45 cc/min per valve	30-45 cc/min per valve
BACKFLUSH	45-60 cc/min per valve	45-60 cc/min per valve
BURNER FUEL	30-45 cc/min detector	30-45 cc/min detector
BURNER AIR	60-100 cc/min detector	60-100 cc/min detector
SPLITTER	50-300 cc/min each	50-300 cc/min each



Specifications subject to change without notice.

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