



**Flok al® specialty gases – low cost and high quality!**

Issue 1-December 2003

We are ISO 9001: 2000 certified



**Flok al® specialty gases**

- ✓ Gas products for Special application;
- ✓ Pure gases;
- ✓ Electronic gases;
- ✓ High purity chemicals for semiconductor.

**Gas handling equipment. We offer optimal and complete decision for your process improving! We invite you into the world of our services! E-newsletter free subscription**

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**ABOUT US**

**FLOKAL®** - the ultimate resource for:

- ✓ **MFC's** accessories - **Valves** & Accessories - **Gas-systems** & Accessories;
- ✓ **Thermo-elements** (spike and profile)
- ✓ Gas/Liquid Filtration and Purification & Accessories
- ✓ **Vacuum** measure and control devices

**Flok al® offers high quality specialty gases for demanding applications!**

**Gas products for special application**

Our goal is to be the low-cost supplier of choice to provide the market with the highest quality products while facing ever more stringent environmental and safety standards. We provide timely delivery service to minimize your need to store hazardous gases onsite. This wide range of products supported by local service has enabled Flokal to operate as a single source to meet the needs quickly and efficiently. Our business is dedicated to helping your business, whenever and wherever our products & services are needed.

Through attention to detail, state of the art technology, and customer support, Flokal delivers gas mixtures of uncompromising quality for each individual's application. As the possible combination of gases which can be mixed is endless, the following section details only the most commonly used gas mixtures. Our technical staff will be pleased to assist you with your specific requirements. Instead of listing the gas mixtures in alphabetical sequence according to their minor component, which has little meaning, we listed our gas mixture products based on various fields of applications and hoping to provide you with more comprehensive information in this way. Categories of special gas products with special applications that listed include:

- EPA Protocol Gas and CEM Standards;
- Certified and Primary Standards;
- Volatile Organic Compounds Mixtures;
- Vehicle Emission Testing Gases;

- Laser Gases;
- Hydrocarbon Mixtures;
- Supercritical Fluids;
- Lighting Gases;
- Gases for Special Instrumentation;
- Medical Gases.

**Special Application**

- Gases for continuous emission monitoring(CEM);
- Volatile organic compound mixtures (VOC);
- Laser gases;
- Liquid and vapor hydrocarbon mixtures;
- Supercritical fluids for SFC and SFE;
- Lighting gases;
- Gas mixtures for window insulation;
- Gas mixtures for plasma display panels;
- Leak detection mixtures;
- Flame resistance of cloth test mixture;
- Electron capture gas mixture;
- Spark chamber gas mixture;
- Flame ionization fuel mixture;
- Nuclear counter gas mixture;
- Clinical blood gas mixtures;
- Lung diffusion gas mixtures;
- Sterilizing gas mixtures;
- Biological atmosphere gas mixture;
- Stable isotopes;
- Calibration gases in non-refillable cylinders.

**Pure gases**

Flok al many years of experience is providing ultra high pure gases and gaseous chemicals assures you of a reliable supply of high quality products.

Our comprehensive line of pure gases assures the proper purity of your specific application. Pure gases from Flokal are classified by grade, since common purity designations such as Perpurified or High Purity vary among different suppliers and therefore have little meaning.

Grade	Purity	Total Impurities
7N	99.99999%	100ppb
6N	99.9999%	1ppm
5N5	99.9995%	5ppm
5N	99.999%	10ppm
4N5	99.995%	50ppm
4N	99.99%	100ppm
3N5	99.95%	500ppm
3N	99.9%	1000ppm

### Quality Control

Our stringent quality control procedures assure that you get the product as you ordered. Our technical staff will answer any questions you have about our Products and assist you with application questions. Typical analysis of all our Pure Gases are available on request.

### Equipment Recommendations

Each Pure Gas listing includes a recommendation for the proper regulator or manual control valve. The particular piece of equipment listed has been selected on the basis of compatibility with the physical and chemical properties of the gas and its level of purity.

### Electronic gases

The fast-paced semiconductor industry puts very specialized demands on electronic gases. When you consider that even the most minute impurities can cause defects in submicron geometries, the choice of gas, specification and gas supplier become of vital importance. Flokal is committed to become the world's leading supplier of electronic gases to the semiconductor industry. As the key part of the worldwide network of companies supplying electronic gases, Flokal can supply complete line of products of highest quality to meet customer's individual requirements. Our selected vendors must focus exclusively with expertise on electronic gases and mostly under ISO9002 certified quality system. To ensure the cleanliness of the cylinder to maintain the purity of its content, extraordinary procedures including, grit-blasting, metallic coating with proprietary process, visual inspection, vacuum-baking, additional chemical treatment, inert gas purging, rebaking must be employed and some may be repeated many times until the desired level of purity is achieved. The entire process is tightly controlled from start to finish so you are assured of a

consistent and reliable supply. With the use of world class latest analytical equipment, our ULSI grade gases are analyzed to part per billion purity level and the final analytical results are appeared on each certificate of analysis that accompanies every order. Our process of continuous improvement will help benefit our customers by supplying them with the best, safest and most reliable Products.

### High purity chemicals for semiconductor

Flokal now offers you extra simplicity of being one single convenient source for both gases and chemicals that used in semiconductor industry. Being the leading supplier of electronic gases, we also deliver the following categories of high purity chemicals with uncompromising quality:

#### ■ Wet process chemicals

Flokal offers the broadest line of semiconductor grade wet chemicals in the industry. With purities that extend to the parts-per-trillion level, these high-quality acids, etchants, solvents, cleaning formulations and other process chemicals are used by semiconductor and wafer fabs the world over. All of our suppliers are basic manufacturers, they go far beyond simply repackaging as other companies' chemicals. By vertically integrating sulfuric acid production, nitric acid distillation and hydrofluoric acid generation, for example, they control the entire production process from assuring raw material quality to final packaging. This allows us to evaluate and enhance all processes continuously, so our products can help minimize defects and improve yields. Our Process Capable Specification Program is a good example of how we improve quality. This program combines the basic manufacturing strengths with sophisticated statistical methods to enhance purity and narrow product variability. It allows us to set notification limits well below our customers' specifications, so they learn of even relatively minor shifts in product properties that could affect them.

#### ■ Liquid source chemicals

Flokal markets ultrahigh purity chemicals and their associated delivery hardware for the semiconductor and related industries. Chemical products include 7-9's+ % and 8-9's+ % purity liquid and solid source chemicals. These products are purified using our unique purification processes. Ultraclean container cleanliness is achieved using our exclusive cleaning process. The combination of these two processes yield the most consistent, highest purity chemicals in the industry at the point-of-connection. Additional process control exists in manufacturing with our comprehensive quality control system. This is used to monitor and control critical variables and processing at all levels of manufacturing, quality control and administration.

- Metalorganic precursor for CVD proceses

Over many years of experience in supplying ULSI grade arsine & phosphine for chemical vapour deposition (CVD) application has allowed Flokal to expand our product offering for metalorganic precursors. We are continually adding new Products for this dynamic & exciting field. Our supplier utilises unique process for the manufacture of Group III sources, such as, TMAI, TMG, TMI and DEZn. This process eliminates oxygen and associated impurities leading to improved device result. Our range of products include:

- Chemicals for III-V Technology
- Chemicals for II-VI Technology
- Dopant Sources / Dopant Mixtures

Flokal also offers all welded electropolished stainless steel bubblers with Nupro® bellows sealed valves. Standard connections are 1/4 inch VCR male. Unique pick up system with dip tube of 1/8 inch nominal bore ensures maximum product utilization. The supplied range of sizes are for the accomodation of 25g to 2kg of product.

### Gas handling equipment

This Gas Handling Equipment section contains a highly selective listing of components necessary for the proper handling and delivery of specialty gases. All items offered are of highest quality and state-of-the-art. The expanded use of specialty gases, and the ever higher levels of purity being demanded has created a need for increasing sophisticated delivery systems of the highest quality and integrity. Stringent quality control in our equipment line, just as in the production of gases and mixtures, is a vital part of our operation to insure that our customers receive product of uncompromising quality. Your efficiency is also improved as a result of our fast delivery and the convenience of dealing with a single source for both specialty gases and gas handling equipment.

#### ■ Regulators

Most gas companies limit your choice of regulators to a single style and configuration with the same source of manufacturing. We provide you with expanded flexibility choosing between the Labline© series, from Europe and the traditional U.S. style series to accommodate our specific requirement.

Selected regulator products in this section are all designed and manufactured to the highest standards concerning safety, reliability and quality. Each equipment arrived is closely examined throughout to insure conformance to specifications.

Our high purity and corrosion resistant regulators are helium leak tested using a mass spectrometer. Helium leak rate certificate is available on request for certain models.



#### ■ Mass Flow meters/controllers

We offer a variety of equipment from world leaders.



[Bronkhorst High-Tech B.V.](#)



[Brooks Instrument](#)



[Celery](#)



[Qualiflow](#)



[Mykrolis Corporation](#)



[Sensirion](#)



[Beijing Sevenstar Huachuang Electronic Co Ltd](#)



[Lintec Co., LTD](#)



[HoribaStec](#)

Why our offers are the best?

Our proposition is rooted:

- on the base of wide database of equipment from different brands, for different purposes;
- on the base of our knowledge and experience;
- on the base of unity of our products and services (we offer all necessary services and 'maintenance and repair' for our products);

Wide range of our clients trust us and we are happy to serve them.

**We invite you into the world of our services!**

We provide Products and services for the front end Semiconductor Market (Diffusion/ LPCVD / APCVD / PECVD / MOCVD and epitaxial processes), for Fiber Optical Manufacturing and for various processes in the petrochemical and chemical industry. We focus on product and service excellence. We offer:

**For the semiconductor industry**

- ✓ Diffusion-oxidation systems
- ✓ LPCVD-PECVD-systems
- ✓ RTP & RTA - Systems
- ✓ System Upgrades
- ✓ Wet-benches
- ✓ Spin-coater
- ✓ Hot-plates
- ✓ Temperature controller
- ✓ Clean room equipment
- ✓ Dry &Wet etch & clean
- ✓ Photochemical filtration and dispense systems
- ✓ Thermal control systems
- ✓ Gas systems
- ✓ MFC's & Valves
- ✓ Pressure and Vacuum measurement & control
- ✓ Gas flow standards
- ✓ Gas/Liquid purification and filtration
- ✓ Vacuum products
- ✓ Vacuum inlet and waste gas collision traps
- ✓ Chemical blending and delivery modules
- ✓ Power supply/readout
- ✓ Accredited calibrations (flow, temperature, pressure, geometry)
- ✓ Cleaning, repair and maintenance
- ✓ Automation and Software
- ✓ Humidity sensors
- ✓ Specialty gases, liquids, solids
- ✓ Heating elements
- ✓ Thermocouples
- ✓ Precursor delivery technology
- ✓ Process Analysis
- ✓ Quartz; Tungsten; Molybdenum; Tantalum; Graphite; Platinum; Others

**For the process industry**

- ✓ Gas / liquid flow measurement & display
- ✓ Temperature measurement & display
- ✓ Pressure measurement & display
- ✓ Valve positioners & control valves
- ✓ Level measurement & display
- ✓ Turbidity measurement & display
- ✓ Humidity measurement & display
- ✓ Accredited calibrations (flow, temperature, pressure, level)
- ✓ Process Analytical solutions
- ✓ Automation and Software
- ✓ Flow meters

**For the pharmaceutical industry**

- ✓ Cryotechnology
- ✓ Gas / liquid flow measurement & display
- ✓ Temperature measurement & display
- ✓ Pressure measurement & display
- ✓ Accredited calibrations (flow, temperature, pressure, level)
- ✓ in-line particle analyzers
- ✓ Fluid dispensers & metering pumps
- ✓ Filter and separation systems
- ✓ Process Analytical solutions
- ✓ Automation and Software

Visit our site [www.flokal.com](http://www.flokal.com)

**For any particular request please contact:** [info@flokal.com](mailto:info@flokal.com)

**Your request/Feedback**

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