FLAMAL™

High-performance cutting solution

Benefits and Features

- Faster cutting speed improves productivity
- Secondary flame burns two times hotter than acetylene
- Resistance to backfire and flashback improves safety
- Stable as gas and liquid for improved shock sensitivity
- Innovative 435 psig cylinder relief valve helps ensure safe use
- Fewer, lighter cylinders improves handling and portability, plus reduces on-site cylinder inventory

Air Liquide America Specialty Gases LLC

Cutting edge oxy/fuel technology for metal working applications—burns hotter, cuts faster, safer and easier to use than acetylene.

FLAMAL

Improves Worker Safety

FLAMAL is stable as both a liquid and a gas. It may be used at full cylinder pressure and has not been found to detonate should a cylinder be accidentally dropped or dented. In addition, FLAMAL cylinders weigh less, so they provide greater portability with easier maneuverability, and are less likely to cause back and muscle strain.

FLAMAL™ the high-performance cutting solution

FLAMAL is a clean fuel gas product whose performance, efficiency and cost-effectiveness is easily evaluated. It is based on propylene, which is increasingly being used as an alternative to acetylene in metal working shops for cutting, brazing, metalizing, flame hardening and heating applications. This is due to three major performance advantages over acetylene:

1. Propylene delivers more than twice the secondary cone heating
2. Propylene is not limited to a pressure of 15 psig
3. Propylene can be used with more efficient fine spline cutting or heating tips

Saves Time and Money

Speed on the job translates directly into money savings. FLAMAL increases speeds for flame cutting, gouging, flame hardening and metalizing thanks to high flame temperature reinforced by high BTU output in its secondary combustion cone. Metal workers and craftsmen alike report reduced production costs of 15% versus acetylene, and 30% versus propane. Contact your Air Liquide representative for an on-site demonstration that will validate these estimates.

FLAMAL's superior performance is simply a function of chemistry: a double-bond between two of its carbon atoms, when broken during the burning process, releases superior primary cone energy as a result of temperature reaching 94% of that of acetylene. (This far exceeds propane's single-bond output which measures just 82% of acetylene.)

Some companies have offered blended cutting fuels such as propane mixed with hexane, ethylether, pentane, and other additives. These blends however do not produce a primary cone flame temperature as high as FLAMAL because they do not contain the multiple carbon bonds necessary to produce the high flame temperature.

Compare the Leading Gases

	FLAMAL	Acetylene	Propane	Natural Gas
Safety Data				
Shock sensitivity	stable	unstable	stable	stable
Explosive limits in oxygen (%)	2.3–55	3–93	2.4–57	5–59
Explosive limits in air (%)	2–11	2.5–80	2.3–9.5	5.3–15
Maximum allowable pressure	cylinder	15 psig	cylinder	2–5 psig
Burning velocity in oxygen (ft./sec.)	15	22.7	12.2	13.6
Backfire tendency	low	high	low	low
Toxicity	low	low	low	low
Physical Properties				
Specific gravity of liquid	0.522	—	0.507	—
Liquid (lbs./gal.)	4.35	—	4.28	—
Gas (cu. ft./lb.)	9.1	14.6	8.66	23.6
Specific gravity of gas	1.49	0.906	1.52	0.62
Vapor pressure at 70°F (psig)	135	—	120	—
Boiling range (°F)	-54	-8.4	-50	-161
Heating Values				
Neutral flame temperature (°F)	5,342	5,700	4,700	4,460
Primary flame (heat emission BTU/cu. ft.)	433	507	255	11
Secondary flame (heat emission BTU/cu. ft.)	1,938	963	2,243	989
Total BTU/cu. ft.	2,371	1,470	2,498	989
Total heat value (BTU/lb.)	21,600	21,500	21,600	22,500

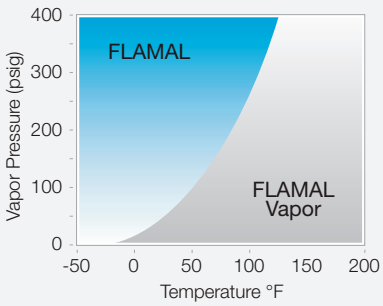
FLAMAL is also available in bulk from 1,000 gallons and up. Contact your Air Liquide representative for more information.

High Vaporization Rate

The highest vaporization rate of all available fuel gases makes FLAMAL™ the logical choice for most metal working shops.

Higher pressures and withdrawal rates keep production up during cold weather in that many shops no longer need vaporizers and manifolds. In addition, the problem of heavy hydrocarbon gases reliquifying in the lines can be almost eliminated with FLAMAL.

Vapor Pressure vs. Temperature



Flexible and Cost-Efficient Packaging

FLAMAL™ cylinders are more economical to use and easier to handle. FLAMAL cylinders do not need heavy filler and solvent materials. Therefore, they weigh appreciably less. Less weight and more volume per cylinder reduces cylinder handling requirements by 80% as compared to acetylene. This advantage reduces the number of cylinders required on the job site and often eliminates the need for manifolds. In addition, while FLAMAL cylinders may appear to be the same as propane cylinders, due to higher vapor pressure they are manufactured to comply with DOT specification 4BW260.

For even greater time and cost-efficiencies, Air Liquide offers FLAMAL bulk solutions. FLAMAL fuel gas packaged in bulk stations offers superior withdrawal rates and economy over low pressure natural gas and manifolded or trailered acetylene cylinders.

Gas Handling Equipment

Air Liquide offers a comprehensive line of industrial grade equipment for use with gases commonly used in welding, cutting and other industrial applications. This equipment is ideally suited for use with Air Liquide brands of industrial gases such as BLUESHIELD™, ALIGAL™, ARCAL™, FLAMAL and LASAL™.

Air Liquide brand industrial grade equipment delivers outstanding cost-effective value by delivering many years of reliable, trouble-free performance. Most equipment items are in stock and available for next day shipping. Be sure to ask your Air Liquide representative for a copy of our 24-page catalog that includes regulators, manifolds, and accessories such as hoses, valves, fittings and cylinder carts. Or download a copy at www.ALspecialtygases.com.

FLAMAL is offered in 24, 57, 95 and 400 pound cylinders and in 1,000 to 10,000 gallon bulk storage tanks.

AIR LIQUIDE™

Founded in 1902, Air Liquide is the world leader in gases for industry, health and the environment, providing innovative solutions for the manufacture of everyday products and for the protection of life.

MOLECULES that matter™

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