



## Control Your Laser Operating Expenses with a Cleaner, More Reliable Resonator Gas. LASERSTAR™ 5.5 optimizes CO<sub>2</sub> laser beam quality, consistency and performance.

### LASERSTAR™ 5.5 Resonator Gas

It is critical to your metfab shop's productivity and efficiency that your CO<sub>2</sub> lasers operate at their peak performance. Contaminants, such as moisture, hydrocarbons, halocarbons and other impurities can get into the resonator chamber and cause premature aging of parts that reduces laser power and decreases laser stability. These contaminants create serious problems that lead to inconsistent quality, poor manufacturing performance — and ultimately a loss in production.

Using Linde's LASERSTAR™ 5.5 resonator gas helps control laser operating expenses by keeping consumables such as mirrors and the output coupler cleaner, resulting in more consistent peak performance of your laser.

To ensure the best quality and optimum performance of LASERSTAR 5.5 patented (patents US6985507 B2 and US7058108) resonator gas, Linde begins with high-quality source gases (99.9995% pure), employs the use of proprietary purification technology and gravimetrically fills aluminum cylinders. The result is a blend that is nearly 10 times cleaner than minimum industry standards and consistent gravimetric blend accuracy.

- Patented mixture and technology — US6985507 B2 and US7058108
- Nearly 10 times cleaner than minimum industry standards
- Lowers laser maintenance costs
- Extends resonator operating life
- Helps ensure consistent peak performance
- Keeps optics and bend mirrors cleaner, longer
- Increases production throughput and your bottom line

### Better for Your Lasers and Your Bottom Line

The key to your laser's productivity is clean optics and mirrors. As contaminants are put through your laser resonator, these critical parts get dirty and require cleaning. The dirtier your gas blend, the quicker your consumables become contaminated, causing degradation in the performance of your laser.

For example, after using just two cylinders of a standard gas mix that meets the minimum purity specifications, you will have run 5 cubic inches of water and 1 cubic inch of oil as vapor through your laser resonator – prematurely aging your laser resonator and diminishing laser optic performance.

Linde's LASERSTAR 5.5 resonator gas is nearly 10 times cleaner than standard gas mixes. That means you need to use at least 20 cylinders of LASERSTAR 5.5 before the same 5 cubic inches of water and 1 cubic inch of oil as vapor would pass through your laser resonator. By reducing water and oil by ten fold, LASERSTAR 5.5 resonator gas extends the life of your laser resonator and helps ensure like-new performance for longer periods of time, preserving your shop's productivity and your bottom line.



Linde's LASERSTAR™ 5.5 Source Gases, Pure Gases and Pre-Mixed Gases

Source gases	Purity	Moisture	Total hydrocarbons	Oxygen	Total halocarbons
Helium	99.9995%	<0.5 ppm	<0.1 ppm	<1 ppm	<50 ppt
Nitrogen	99.9995%	<2 ppm	<0.1 ppm	<1 ppm	<50 ppt
Carbon dioxide	99.9995%	<0.5 ppm	<10 ppb	<2 ppm	<100 ppt

Pure gases	Cylinder style	Content	Part number
LASERSTAR™ 5.5 helium	Aluminum T Size	239 ft <sup>3</sup>	HE 5.5LS-AT
LASERSTAR 5.5 nitrogen		250 ft <sup>3</sup>	NI 5.5LS-AT
LASERSTAR 5.5 CO <sub>2</sub>		70 lb	CD 5.5LS-AT

Pre-Mixed Gases

Part number	Cylinder style	Carbon dioxide	Nitrogen	Helium	Carbon monoxide	CO range	Hydrogen	H2 range
LSHECDNIPB6-AT	Aluminum T Size	1.7%	23.4%	74.9%	-	-	-	-
LSHECDNIPB26-AT		3.14%	31.4%	65.46%	-	-	-	-
LSHECDNIPB14-AT		3.4%	15.6%	81.0%	-	-	-	-
LSHECDNIPB1-AT		4.5%	13.5%	82.0%	-	-	-	-
LSNICDHEPB2-AT		5.0%	55.0%	40.0%	-	-	-	-
LSHECD5NIPB3-AT		5.0%	35.0%	60.0%	-	-	-	-
LSHECD5NIPB4-AT		5.0%	25.0%	70.0%	-	-	-	-
LSHECD5.1N1Z-AT		5.1%	29.1%	65.8%	-	-	-	-
LSHEX4PB3-AT		5.38%	27.0%	67.6%	-	-	216 ppm	2.12-220 ppm
LSHECDNIPB7-AT		5.4%	27.0%	67.6%	-	-	-	-
LSNIX4PB1-AT		8.0%	60.0%	28.0%	4.0%	3.92-4.08%	-	-

Linde's STARSOLVER® Productivity Enhancement

Want to find out if Linde's LASERSTAR™ 5.5 is right for your operation? Call Linde to schedule a STARSOLVER® Productivity Enhancement Audit to determine the best resonator gas for your laser. Linde's expert team of Metfab Productivity Specialists will evaluate your processes and help you find opportunities to improve your productivity, reduce costs and grow your bottom line.



Each cylinder of Linde's LASERSTAR™ 5.5 gas blend is issued an actual Certificate of Analysis (COA) tied to the specific cylinder by the cylinder's serial number. Each cylinder's COA is provided to the customer upon delivery and displays the blend specification, the allowable OEM range, the test equipment used, the analytical result of the test, and the absolute analytical accuracy.

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