

Linde Manufacturing and Distributor Locations.



Linde Product Manufacturers Region	Plant/Location	Products
New Jersey, USA	Alpha	Lithography Products Manufacturer
North Carolina, USA	RTP	Other Linde Products
New Mexico, USA	Lovington, Los Alamos	Other Linde Products
Arizona, USA	Phoenix	Other Linde Products
Oregon, USA	Medford, Hillsboro	Other Linde Products
Germany	Unterschleissheim	Other Linde Products
South Africa	Pelindaba	Other Linde Products
China	Suzhou	Other Linde Products
Taiwan	Taoyuan	Other Linde Products

Linde Distributor Locations Region	Company Name	Phone/Fax
Japan	TOMOE SHOKAI Co.,LTD	Tel: +81-3-3734-1111 Fax: +81-3-3739-1049/1070
Korea	EO TECHNICS Co., LTD.	Tel: +82-31-422-2501 Fax: +82-31-422-2502
Singapore, SE Asia	TSG Pte Ltd	Tel: +65-6563-2083 Fax: +65-6563-1945
Taiwan	Titan Electro - Optics Co., Ltd.	Tel: +886-2-26552200 Fax: +886-2-26552233
Europe, Middle-East and Africa	Spectra Gases GmbH	Tel: +49-6073-7262-0 Fax: +49-6073-7262-200
China	Linde Electronics and Specialty Gases	Tel: +86-755-6135-6498 Fax: +86-755-6135-6496
North America	Linde Gas North America LLC.	Tel: XXX-XXX-XXXX Fax: XXX-XXX-XXXX

Linde Gas North America LLC.
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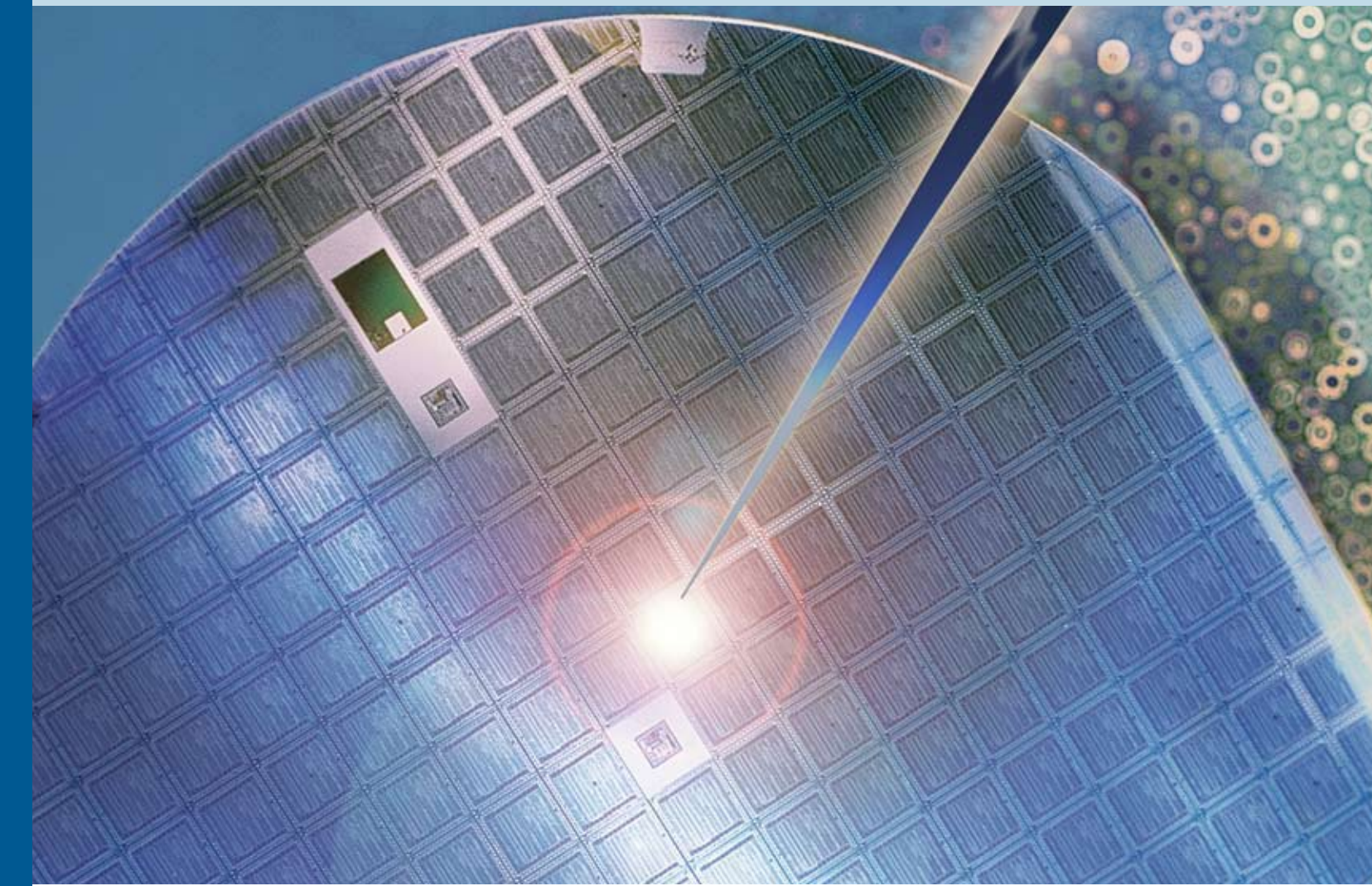
→ Lithography gas Innovations

THE LINDE GROUP

Linde

SPECTRA Lithography Gas Technology.

Global Solutions For Leading Edge Semiconductor Manufacturers



LINDEMAN/NEED CODE/XXXX/XXX/XXX

More of today's leading edge semiconductor products are manufactured using SPECTRA lithography gas technology from Linde than all other gas companies combined.

SPECTRA Lithography Gases from Linde

For over 20 years the excimer laser industry has relied on SPECTRA lithography gases. SPECTRA gases were used in the development of the earliest lasers for lithography and are now the most widely used excimer gases for DUV photolithography in the semiconductor industry.

State of the art SPECTRA gases and gas mixtures from Linde enable the operation of lasers in thousands of the world's wafer steppers and scanners. Our customers include all of the major global laser, stepper and scanner manufactures, as well as many of the world's largest semiconductor manufactures.

In fact, as the leader in laser gases, most of today's leading edge semiconductor products are manufactured using SPECTRA gas technology from Linde.



Linde – your committed partner

Current semiconductor industry road maps predict that laser based photolithography will be in use for the next 20+ years. While other gas companies' commitment to photolithography have come and gone, Linde is committed to its close relationship with the industry, working with manufactures to keep pace with the advancement of photolithography through the development of new gas technology.

Quality – the critical ingredient

The light from the DUV sources is generated by gas mixtures of either Krypton & Fluorine (KrF) - which provides a 248 nm wavelength, or Argon & Fluorine (ArF) - which provides a 193 nm wavelength inside a laser chamber. For the laser to operate most effectively these gases must be of the highest purity and mixed with extreme accuracy.

With new 300 mm fabs costing in excess of \$4.5 billion to build, down time can run as high as \$800,000/hour, so it's easy to understand the critical importance of using the best laser gas available in the world.

Linde's quality management systems are certified to ISO 9001:2008 and exceed industry expectations. Our world-class Global Quality Road map includes business continuity, process control systems, change horizon notification, and high performance improvement methodologies.



SPECTRA gas products

With such a high dependence on the quality of our laser gases, SPECTRA products rely on Linde's in-depth knowledge of critical gas technologies:

Raw material supplies: Linde is prime in the manufacture and purification of all of the raw materials necessary for the photolithography gas marketplace.

Cylinder preparation: Linde has developed proprietary technology for the handling and treatment of cylinder for both inert and halogen (F2) cylinders. These cylinder technologies were the key to supplying high quality gases, with the industry's longest warranties, to the global semiconductor community. These preparations have been adapted to any and all cylinders types used globally by the semi industry.

Mixing capabilities: Multi component mixtures require highly specific mixing technologies and accurate systems to guarantee that the gas mixes are homogenous.

Analytical: With proprietary analytical technologies that far surpass industry norms, all SPECTRA Lithography cylinders are tested individually and provided with their own Certificate of Analysis. With your fab investment at stake why rely on lower cost batch analysis provided by other suppliers?

Production and Distribution

Linde's facility in Alpha, NJ USA is our centre of excellence for SPECTRA lithography gases and is part of Linde's worldwide plant network serving the global electronics industry. Through its dedicated plants and well-established distributors, Linde provides a comprehensive stocking and distribution network offering customers fast local service.

