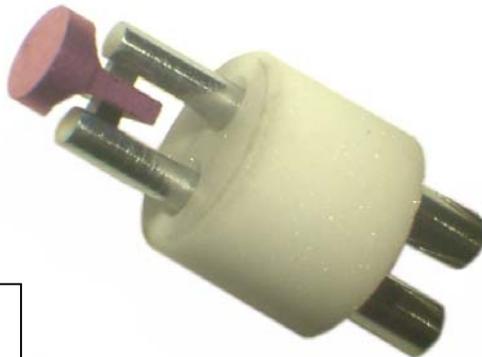


HeatWave Labs, Inc.

195 Aviation Way, Suite 100
Watsonville, CA 95076-2069
Ph: 831-722-9081 Fax: 831-722-5491
E-Mail: techsales@cathode.com

**TB-202 102248 LaB6 Cathode
Handling and operation**



102248-02 Ø2.8mm
Cathode Assembly

Handling and Operation Notes:

CAUTION

The LaB₆/CeB₆ crystal is very fragile and is precisely assembled and aligned.

THE CRYSTAL MUST NEVER BE TOUCHED OR BUMPED AGAINST THE WEHNELT OR OTHER EXTRACTOR APERTURES.

This can cause the crystal to become misaligned, resulting in non-operation of the device in which it is installed. In addition, no part of the cathode assembly should ever be touched with bare fingers.

ALWAYS WEAR CLASS 100 CLEAN ROOM GLOVES WHEN HANDLING THE CATHODE ASSEMBLY.

LaB₆/CeB₆ crystals (sources) should be operated at the lowest heat setting where the beam is stable. The vacuum level in the emission chamber should be 8 to 9 x 10⁻⁷ Torr before any power is applied to the LaB₆/CeB₆ crystals. Ultimately, pressures in the low 10⁻⁷ Torr range should be attainable.

Heat and cool the LaB₆/CeB₆ crystals very slowly. Care must be taken such that heating up the crystal to the normal crystal temperature setting required for saturation is of the order of 40 to 60 seconds.

The shelf life of a LaB₆/CeB₆ cathode is ~1 year. If the cathode is to be stored for a period of more than a few months before or after it is used, we recommend that it be stored in a clean, dry environment such as a vacuum desiccator or a nitrogen box.

Do not remove a cathode that has operated for more than 50 hours in a system with the intention of reinstalling it at later date. During use lanthanum rich zones are formed on the shank of the crystal adjacent to the carbon blocks. If the cathode is removed from the vacuum into air these zones can oxidize. LaO is an insulator, therefore the resistance across the emitter can become

high enough that it is no longer possible to adequately heat the cathode. In this case, the cathode must be replaced.

Typical heating data for 102248-01, Ø2.0mm Cathode (Actual data is supplied with each cathode)

	Temp. Deg.C, Pyro	True Temp. Deg.K	Voltage	Current	Watts	Resistance Ohms
1	1170	1470	3.79	1.64	6.22	2.31
2	1270	1575	3.91	1.91	7.47	2.05
3	1370	1680	4.02	2.29	9.21	1.76
4	1470	1780	4.10	2.74	11.23	1.50
5	1570	1900	4.18	3.49	14.59	1.20

Typical heating data for 102248-02, Ø2.8mm Cathode (Actual data is supplied with each cathode)

	Temp. Deg.C, Pyro	True Temp. Deg.K	Voltage	Current	Watts	Resistance Ohms
1	1170	1470	4.33	1.82	7.88	2.38
2	1270	1575	4.48	2.20	9.86	2.04
3	1370	1680	4.58	2.69	12.32	1.70
4	1470	1780	4.65	3.40	15.81	1.37
5	1570	1900	4.68	4.00	18.72	1.17



Ø2.8mm and Ø2.0mm Cathode Assembly
in #102070 mount/heat shield unit

Where to Get More Information

This information represents the most current information at the time it was published; for the latest information, please visit our website: www.cathode.com.

We may also be reached in the following ways:

HeatWave Labs, Inc.
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Watsonville, CA 95076-2069
Tel: 831-722-9081

Fax: 831-722-5491
Email: techsales@cathode.com