

3M Advanced Materials Division

3M™ Ion Laser Cathodes

Introduction

3M™ Ion Laser Cathodes are filaments for ion lasers. Ion lasers are most commonly used in the printing and entertainment industries. They are also used for research in molecular microscopy and spectroscopy.

3M ion laser cathodes are available in a variety of custom configurations and processing options, including aluminate impregnant mole ratios, various surface treatments for uniform thermal emissivity, value added assemblies and others. Cathode machining is accomplished using CNC machines producing tolerances of ± 0.001 " or better as required, while maintaining surface finishes of 32 microinches or better. Typical discharge currents range from 5 to 50 amps.

We are involved at each stage of the cathode manufacturing process, from basic raw materials through the manufacturing of critical components to final assembly. This includes chemical cleaning of the emitting surface to ensure open porosity. Porosity is verified using scanning electron microscopy. All cathode heater assemblies, if applicable, are tested for proper heater operation. Our quality systems can provide fully qualified cathode assemblies with all required backward and forward material and process traceability.

Typical Physical Properties

(Not for specification purposes)

Property	3M™ Ion Laser Cathodes
Machined Tolerances	± 0.001 " (± 0.0254 mm); or better as required
Surface Finishes	32 μ in
Discharge Currents	5 – 50 A

3M™ Remote Access Data Acquisition and Recovery System (RADAR)

The manufacture of quality components for Vacuum Electron Devices (VEDs) used in the communications, space and defense industries requires precisely-controlled and traceable process steps. Based on 60 years of industry experience, we offer customers a proven software solution that can help automate and simplify their data collection, training and documentation requirements through 3M™ Remote Access Data Acquisition and Recovery System (RADAR).

The 3M remote access data acquisition and recovery system is a suite of software communications tools. Its purpose is to establish best practices for controlling the manufacture of cathodes and cathode assemblies, and to provide customers with all required backward and forward material and process traceability. The system acts as a "bridge," allowing the exchange of data between multiple software platforms.



3M™ Ion Laser Cathodes

RADAR provides nearly instantaneous access to any combination of data, including:

- Employee Training and Task Qualification Records
- ISO Procedures and Revision Control System
- Engineering Drawings and Methods Sheets
- Materials Data Collection and Serialization
- Equipment Process Control and Monitoring System
- SCADA Notification System
- Plant Wide Environmental Controls System

Raw data can also be made available for manipulation in the Infinity QS SPC platform or can be delivered directly to the customer for analysis. This remote access system is fully integrated and provides the user with the power of information 24/7.

Product is manufactured and sold by 3M Technical Ceramics Inc.

Warranty, Limited Remedy, and Disclaimer: Many factors beyond 3M Technical Ceramics' control and uniquely within user's knowledge and control can affect the use and performance of a 3M Technical Ceramics product in a particular application. User is solely responsible for evaluating the 3M Technical Ceramics product and determining whether it is fit for a particular purpose and suitable for user's method of application. User is solely responsible for evaluating third party intellectual property rights and for ensuring that user's use of 3M Technical Ceramics product in user's product or process does not violate any third party intellectual property rights. Unless a different warranty is specifically stated in the applicable product literature or packaging insert, 3M Technical Ceramics warrants that each 3M Technical Ceramics product meets the applicable 3M Technical Ceramics product specification at the time 3M Technical Ceramics ships the product. 3M Technical Ceramics MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OF NON-INFRINGEMENT OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M Technical Ceramics product does not conform to this warranty, then the sole and exclusive remedy is, at 3M Technical Ceramics' option, replacement of the 3M Technical Ceramics product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M Technical Ceramics will not be liable for any loss or damages arising from the 3M Technical Ceramics product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

Technical Information: Technical information, recommendations, and other statements contained in this document or provided by 3M Technical Ceramics personnel are based on tests or experience that 3M Technical Ceramics believes are reliable, but the accuracy or completeness of such information is not guaranteed. Such information is intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M Technical Ceramics or third party intellectual property rights is granted or implied with this information.

Export Control: The 3M Technical Ceramics product(s) listed here may be controlled commodities under applicable U.S. export control laws and regulations, including, but not limited to, the U.S. International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR). These laws and regulations may, among other things, prohibit the export and/or reexport of controlled product(s) to any or all locations outside of the United States without prior U.S. Government export authorization, the sharing of export controlled technical data and services with those anywhere who are not U.S. citizens or U.S. permanent residents, dealings with U.S. Government, United Nations and other "Restricted Parties," and proliferation activities including those that further nuclear, chemical, or biological warfare, missile stockpiling/use, or the use of rockets or unmanned aerial vehicle systems. 3M Technical Ceramics and purchasers or prospective purchasers of the 3M Technical Ceramics product(s) shall comply with all applicable export control laws and regulations, which may require obtaining and maintaining applicable export control authorization or licenses, and understand that the ability of a party to obtain or maintain such authorization or license is not guaranteed. The exporter of record has the sole responsibility to determine whether the export or subsequent reexport of the 3M Technical Ceramics product(s) requires export authorization. An explicit condition to 3M Technical Ceramics selling or making available the 3M Technical Ceramics product(s) is the customer's agreement to comply with all applicable trade compliance laws and regulations.



3M Technical Ceramics, Inc.
695 Laco Drive
Lexington, Kentucky 40510
Phone 895-255-3664
Web www.3M.com/cathodes

3M is a trademark of 3M Company.
Used under license by 3M subsidiaries
and affiliates.

Please recycle. Printed in USA © 3M 2020.
All rights reserved. Issued: 12/20 16579HB
98-0050-0001-7 Rev. C