

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 $\pm 0.001''$ 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	$\pm 0.001''$ (± 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.



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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.

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