

3M Advanced Materials Division

# 3M™ Space Qualified Dispenser Cathodes

## Introduction

3M™ Space Qualified Dispenser Cathodes are used in a variety of demanding military and civilian applications, including high power/high bandwidth TWTs, ion neutralizers and ion electric propulsion systems. 3M is the only independent supplier qualified to manufacture space qualified dispenser cathodes.

These advanced dispenser cathodes are homogeneously processed to rigid specifications, and are certified with a full documentation package that includes:

- Full material and process traceability (forwards and backwards)
- Certified dimensional data
- Certified chemical and physical analysis of all involved materials
- 100% double inspection
- Destructive metallurgical analysis of potting and brazing samples

These protocols can also be applied to non-space applications requiring extraordinary reliability.

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.

## 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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