

## Emission Characteristics of "M Type" Dispenser Cathodes

The "Type M" is an improved version of the familiar impregnated cathode, employing a coating of an alloy of platinum group metals on the emissive surface to lower the work function of the activated cathode. As a result, this emitter may be operated at lower temperatures than the standard dispenser cathode for the same current density. Significantly longer operating lifetime can result.

A thin layer, typically 3000-5000 angstroms thick, is sputter coated onto the emitter surface resulting in a stable, lower work function. Typically, the "Type M" cathode is capable of a zero field emission of 16.5 A/cm<sup>2</sup> (532 M) minimum at 1050°C brightness. It may also be operated as high as 24.0 A/cm<sup>2</sup> (411M/612M) with some sacrifice of life. Emission characteristics of the "M" cathode family and the tungsten dispenser cathode family are shown below.

The lower operating temperature characteristics of the "M Type" cathode, up to 100°C cooler when compared to the dispenser cathode at the same current density, allows a reduction of up to 85% in barium evaporation rate as well as a 35% saving in heater power.

