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**CX1836 2-gap Metal/Ceramic Thyatron**

### Overview

This range of thyratrons is identifiable by the body ceramic (4.5 inch maximum outside diameter) and at least 2 rows of black cooling fins.

Metal/ceramic thyratrons are generally safe when handled and used according to the guidelines included in this data sheet, and require no special handling or processing for safe disposal or environmental protection. Information necessary to facilitate recycling is included.

### Inherent Hazards

Metal/ceramic thyratrons enclose a vacuum. Breach of the vacuum envelope, e.g. by impact to a ceramic, may cause slight hazard due to implosion.

### Transportation Hazards

No specific transportation hazards.

## Operational Hazards

**High Voltages** – Thyratrons operate at high voltages. Equipment should be designed with adequate creepage and clearance distances for the operating voltage and environmental conditions that will occur in use. Equipment should incorporate protective measures such as fail-safe interlocks, discharge circuits and warning markings as required by relevant equipment safety standards.

**High Pulse Currents** – Thyratrons are used to switch high currents. These can result in substantial electromagnetic pulses that could affect sensitive electronic equipment including life-monitoring or life-sustaining equipment. Equipment should incorporate adequate electromagnetic shielding to ensure no hazard for persons in the immediate vicinity during normal operation. Servicing procedures should include appropriate controls and/or warnings for any service personnel using body worn or implanted active medical devices.

**X-Rays** – In common with all vacuum electron tubes, thyratrons produce X-rays when operated at voltages in excess of 5 kV. The level of emissions depends on the operating conditions, voltages, and currents. Equipment designers and manufacturers should include shielding, typically steel and/or lead, to reduce emissions to a safe level in accordance with local radiological protection guidelines. Manufacturers and operators of equipment must perform radiation measurements on their equipment under maximum operating conditions to ensure continued safety. Servicing procedures should advise of the risk of operating equipment with radiation shielding removed and advise the appropriate mitigation measures.

**Hot Surfaces** – A tube that has just been in operation may still be hot, even once access panels or doors have been opened. Appropriate warnings should be placed in a prominent position for the protection of servicing personnel.

## Decommissioning

There are no additional hazards associated with decommissioning.

## Disposal

There are no hazardous materials in sufficient quantities to require special treatment from an environmental protection aspect. Processes for separation of the materials should be designed to avoid the risks arising from breakage as described above



Products that are compliant with the RoHS directive, 2005/95/EC, will be marked with the symbol shown on the left. This marking may appear on the product packaging.

## Material Data

The following table of material data provides information to enable disposal in accordance with environmental regulations.

Tube Type	Mass (kg)	Approximate Composition (%)									
		Copper	Molybdenum	Tungsten	Nickel	Aluminium	Alumina Ceramic	Other metals	Glass	Barium and Barium Compounds	Other non-hazardous materials
1 HV gap: CX1547, CX1549, CX1747, CX1749 Series	10.2	≤75	≤5	≤5	≤5	≤12	≤15	≤3	≤1	≤0.3	≤1
2 HV gaps: CX1536, CX1736, CX1836 Series	10.6 11.4										
3 HV gaps: CX1936, CX1937 Series	12.5										
4 HV gaps: CX2593 Series	14.4										
5 HV gaps: CX2594 Series	16										

In the event of encountering difficulties in disposing of these products, contact e2v technologies for advice.