CATHODE FAQ

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What is Cathode?

Cathode is composed of carbon fiber velvet on a substrate. It is designed to provide a means of generating powerful electron pulses. Substrates can be metallic or graphite.

In what applications can we use cathodes?

Typical applications include the generation of microwaves, x-rays, and laser radiation.

What is the functionality of cathodes?

When the cathode is subjected to an electrical pulse, free electrons are emitted from the fiber tips by field emission.

What is the minimum/maximum operating temperatures?

Cathodes can operate down to cryogenic temperatures [however, such a requirement has not been encountered or tested to date.] The maximum operating temperature would be 1000C with a graphite substrate in a non-oxidizing environment. Graphite cathodes also exhibit low outgassing at elevated temperature since they are 100% carbon. Metallic cathodes can function up to approximately 200C.

What are the minimum/maximum dimensions?

Minimum size: Cathodes have been fabricated down to 1/4” in diameter.
Maximum size: Fibers are attached to metallic substrates with adhesive, allowing versatility with respect to size (up to 12” diameter) and shape. Cathodes with graphite substrates are limited to approximately 4” diameter x 12” due to size limitations of the processing equipment. Larger metallic- or graphite-substrate cathodes can be assembled from separate tiles or segments.

Is there a way to customize cathodes to fit the needs of my product?

KULR has fabricated a wide variety of cathode configurations. In most cases, the customer furnishes substrates fabricated to their specifications, with KULR carrying out the fiber application process. If desired, KULR can provide mechanical design guidance and recommend a fiber coating according to customer requirements. Customization is upon request, please contact your KULR Sales Representative for more information.