

G10 Series - Gamma Beam Irradiator

Overview

The Model G10 Gamma Beam Irradiator provides a horizontal radiation beam for calibrating radiation detection instruments and irradiating personnel dosimetry. This irradiator is available with one or two radioactive sources in a wide range of activities. The system comes complete with radiation sources, source shield, beam collimator, safety interlocks, and control panel.

The G10 irradiator, when matched with our positioning system, attenuator set and instrument camera, provides a simple to use, fail safe, turn-key system for many radiation calibration applications.

Advantages

- Lowest cost option for radiation detection calibration.
- Highly reliable. Systems in the field have tens of thousands of hours of use without failure.
- Easy to use with an intuitive operator interface.
- Wide range of exposure rates available with source options and attenuators.
- Focused and uniform beam profile.

Source Shield

The shield is a steel-encased lead cylinder with a concentric center stainless steel tube used to manage the source rod. The shield contains the proper amount of lead to keep the exposure rates around the irradiator to less than 5 mR/h at 12 inches from the surface of the shield when sources are in the shielded position.

An integrated ISO4037 collimator is used to provide a low scatter beam of radiation. The collimator can be removed and replaced with a lead plug so that the shield can be used as a Type A shipping container if applicable.

A stainless steel and tungsten rod holds the sources in the irradiator. Tungsten, used above and below the sources, limits radiation along the axis of the source rod. When two sources are used, an additional section of tungsten separates the



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sources to minimize cross talk. The source is moved to shielded and exposed positions by a pneumatic air cylinder with sensors that indicate source position. In the shielded position, the source is shielded on all sides with lead and tungsten. Loss of air pressure, or any system errors will immediately put the source in the safe position.

Standard Models			
Model	Overall Dimensions	Weight	Max Cs-137 Activity
G10-1-12	30x24x65 inches	600 lbs	12 Ci
G10-2-12	30x24x70 inches	700 lbs	12 Ci
G10-1-360	30x24x66 inches	1200 lbs	200 Ci
G10-2-360	30x24x71 inches	1300 lbs	200 Ci
G10-1-2600	30x24x67 inches	1600 lbs	2200 Ci
G10-2-2600	30x24x72 inches	1800 lbs	2200 Ci

Radioactive Sources

All the sources are doubly encapsulated, hermetically sealed, special form sources.

- Up to 2200 Ci of Cs-137
- Up to 5 Ci of Co-60

Safety System

The irradiator system incorporates many safety features to create a fail-safe system. Safety constraints have been applied to all components that involve source exposure. The safety interlock system must be fully satisfied before an exposure can occur and will immediately halt any exposure in process if they are broken. Status panels show radiation conditions at a glance. The entire system has been designed to meet or exceed guidelines and regulations found in ANSI Standards N43.3 and NCRP 88.

Control Panel

The G10 is available with either a computer based controller or an electronic PLC based controller. Computer control offers exposure rate calculation, automated instrument setup with positioning system control, and automated irradiator calibration. The PLC based control panel has a display that allows the operator to set exposure time and shows elapsed time. On the control panel of both systems, the operator has switches for power and system enable, and has buttons for source expose and return operations. Indicator lights and emergency stop buttons are also available on the system control panel.

Ancillary Equipment and Options

Linear Positioning Systems

A linear positioning system for instrument placement is available with up to four axis of motion and 10 meters of displacement.

Collimators

Custom collimators are available if the standard beam does not fit your application.

Attenuators

The attenuator set allows for up to 16 different levels of attenuation factors from 1 up to 8000.

Video Monitors

Video monitors for instrument inspection and room security are available.

Jigs/Fixtures

Dozens of standard jigs are available for nearly every instrument.

Single and Dual Source Models

Single or dual source models are available to provide a full range of exposure rates.

Sources

A variety of sources can be used, including Cesium 137 up to 2200 Ci and Cobalt 60 up to 5 Ci.

Safety System

Last person out safety systems are used on irradiators with high exposure rates and are optional on other systems.