

Best Theratronics® products and services are used throughout the world to prevent, diagnose and treat disease. Our applied research and innovation play an integral part in improving global healthcare.



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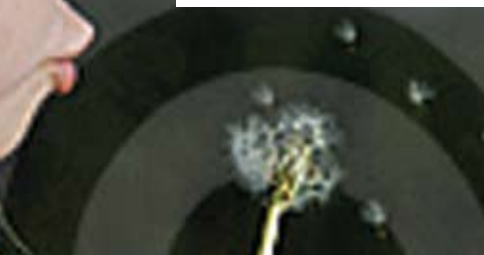
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## Gammacell® 40 Exactor

Low Dose-Rate Research Irradiator



With its accurate and reproducible performance, the Gammacell 40 has been relied upon by researchers worldwide to advance their cancer and stem cell scientific studies.

Unrivalled Precision and Versatility

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Theratronics

# Gammacell® 40 Exactor

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## Unrivalled Precision and Versatility

The Gammacell® 40 Exactor Low Dose-Rate Research Irradiator is used in labs throughout the world to explore elements of cell biology, and advance the scientific study of various areas of cancer and stem cell research.

The **Gammacell 40**, with its state-of-the-art control system, is engineered to give precise results. Timer settings can be chosen in increments of one second up to 100 hours and the control system allows manual or automatic operation. Dose uniformity is ensured through the use of two Caesium<sup>137</sup> sources and an electric drive mechanism which provides accurate results regardless of where specimens are placed in the large sample container.

### A Research Tool by Design

Research environments demand execution of protocols to exacting standards and replication of work with unfailing accuracy. The Gammacell 40 is designed and engineered to meet these research environment requirements.

The **Gammacell 40** has a wide range of applications in radioimmunology, radiosensitivity and cell biology. It is ideal for the irradiation of mitotically inactive cell culture media, mixed lymphocyte cultures and cellular blood components.

The **Gammacell 40** also has a large ventilated sample container which makes it an excellent research tool for the development of murine models for cancer therapy.

### Accessories

**Collimator** – Upper and lower lead shields reduce the central dose rate by approximately 95%. Six holes of 3 cm diameter each are arranged in each shield to allow unattenuated beams of radiation to coincide at six points.  
**Attenuator** – A set of 3 attenuators can reduce the central dose rate by approximately 33%, 60% or 80% respectively.

### Advanced Design

- Redundant systems monitor the essential irradiation parameters, time and position of sources.
- Modular design makes parts replacement easy and maintenance hassle-free.
- Continuous air flow through sample chamber during irradiation.
- Independent back-up timer.
- Large volume chamber swings out from the unit making it convenient to load and unload.

## Dose Rate and Radiation Specifications:

- Central dose rate of approximately 1.10 Gy/minute (110 rad/minute)
- Each of the two special form caesium sources has a nominal activity of 61.1 TBq (1650 Ci). Together they produce a central dose rate of 1.10 Gy/minute (110 rad/minute) ± 15% in the sample container
- Typical dose uniformity is ± 7% over a 260 mm (10.2 in.) diameter and a 100 mm (3.9 in.) height
- Best Theratronics® offers comprehensive dose mapping of the sample container upon request (see Figure 1)

## Features

### Superior Performance

- Excellent dose uniformity (typical maximum to minimum ratio is 1.14 in a container 260 mm (10.2 in.) in diameter and 100 mm (3.9 in.) in height). The central dose rate is 1.10 Gy/minute ± 15%.

### Accurate Results

- Achieved with state-of-the-art microprocessor control and dependable electric drive.

### Safe to Use

- Safe in any conventional laboratory environment. Characteristic Theratronics® measurements indicate 3 µSv/h (0.3 mrem/h) at 1 metre from the source and 50 µSv/h (5 mrem/h) at 5 cm from any surface of the unit.

### Easy to Operate

- Equipped with a multi-line display screen and user-friendly instructions. The control panel gives current status and guides initial set-up as well as offering varying levels of security based on operator identification and PIN access.

### Automatic Logging

- Can be connected to a printer to record irradiation data after completion of each cycle. This allows for automatic logging of irradiation cycles.

### Added Security

- Restricts access to the control system's programming function, with security passwords and a keypad controlled by a key lock.

### Battery Back-up

- Internal battery provides back-up in event of AC power failure.

Specifications	
Weight	2994 kg (6,600 lb.)
Floor Loading	2715 kg/m <sup>2</sup> (540 lb./sq. ft.)
Radiation Source	Caesium <sup>137</sup>
Unit Dimensions	Height 1496 mm (58.9 in.) Width 924 mm (36.4 in.) Depth 1229 mm (48.4 in.)
Initial Nominal Activity	3300 Ci
Central Dose Rate (± 15% empty)	1.1 Gy/min
Canister Dimensions (internal)	Height 105 mm (4.1 in.) Diameter 312 mm (12.3 in.) Volume 8.0 L (488 cu. in.)
Utility Requirements	110/120 60 Hz 100 or 230 V AC, 50/60 Hz with ground
Dose Uniformity (typical)	± 7% over a 260 mm (10.14 in.) diameter and a 100 mm (3.9 in.) height
Battery Back-up	Yes

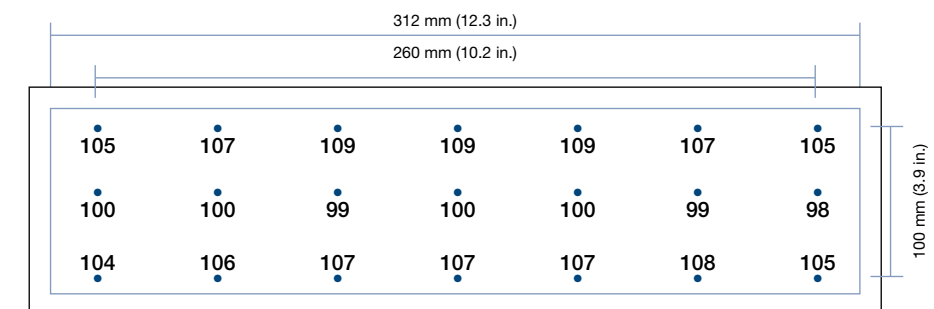


Figure 1: Typical Absorbed-Dose Distribution  
 (All values in percent are relative to the central dose)