



B3 Radiochromic Film Dosimeters

B3 3000 Series products B3WINdose and B3DoseStix

B3 3100 Series products B3 Film Dosimeters

B3 dosimeters are made of a proprietary thin radiochromic film. Upon irradiation B3 film undergoes a predictable and quantifiable color change directly related to the amount of dose of ionizing radiation energy it receives. B3 dosimeters provide consistent, accurate and precise dose measurements with a response function directly related to absorbed dose.

B3 dosimeter products are manufactured by GEX under strict quality-controlled conditions; our Quality Management System is ISO 9001 registered. All B3 dosimeters are manufactured in-house and distributed worldwide from our facility located in Centennial, Colorado, USA.

Applications

B3 dosimeters can be used to measure ionizing radiation doses from gamma, X-ray and electron beam sources, including low energy electron sources, with a dose range from <1.0 kGy to >150 kGy. B3 dosimeters are used for measuring the radiation dose used in industrial processes, such as medical device sterilization, surface sterilization, crosslinking and curing of inks and coatings, and food irradiation. B3 dosimeters are not used for personnel monitoring, radiation safety, or nuclear power industries.

Dose Range

B3 radiochromic film dosimeters offer a practical dose range from <1.0 kGy to >150 kGy.

Measurement

B3 film is ideally measured in a spectrophotometer, to determine the levels of absorbed dose after irradiation. The spectrophotometer measurement method is non-destructive so dosimeters can be re-measured. There is no need to measure the individual thickness of B3 dosimeters because of the consistent uniformity of the B3 film.

Dimensions

B3 film thickness – B3 film has a highly-uniform nominal 18 μ m thickness. Thickness variability is +/- 0.2 μ m at k=2.

B3 WINdose – B3 film is manufactured into dosimeters 10mm x 10mm. Package dimensions 2.75in x 1.767in.

B3 DoseStix – B3 film is manufactured into dosimeters 50mm x 15mm. Package dimensions 3.75in x 1.767in.

Packaging

After quality control inspections, the B3 dosimeters are packaged into hermetically sealed pouches. B3WINdose packaging is a polymer-lined aluminum foil, with a barcode on the outside. The B3DoseStix has one clear side that is a UV protective high barrier polymer through which the dosimeter's barcode is visible.

Shelf life

The shelf life for the B3 WINdose dosimeter is 5 years, and 3 years for the B3DoseStix dosimeter from the date of manufacture.



Measurement Reproducibility

Coefficient of variation of specific absorbance measurements on sets of dosimeters for the batch, simultaneously irradiated together, is 1.3% on average over the dose range.

Stability

B3 dosimeters are stable before and after irradiation. Pre-irradiation, B3 dosimeters are stable when stored as specified. Post-irradiation, B3 dosimeters can be rendered stable by using a validated heat treatment process.

Environmental Influences

B3 film is sensitive to temperature, humidity and UV radiation. Users should calibrate the dosimeters under the conditions of use to control the effect of environmental influence quantities.

Calibration

Calibrate B3 dosimeters under conditions approximating actual usage. This should include time and temperature conditions that approximate actual process conditions. For guidance, see: ISO/ASTM 51261 and NPL Report CIRM 29.

B3 Product Options

B3 dosimeters are available in several product options:



B3 Dosimeter – DoseStix

Each B3 DoseStix is uniquely numbered and barcoded and packaged within a hermetically-sealed foil pouch with a transparent window. The pouch protects the dosimeter from UV radiation and provides a long shelf-life, and the dosimeter's barcode can be scanned through the transparent window. The pouch has a peel-open design, and the dosimeter is placed directly into a spectrophotometer by hand.

B3 Dosimeter – WINdose

Each B3 WINdose dosimeter is uniquely numbered and packaged in a barcoded, hermetically sealed foil pouch. The pouch protects the dosimeter from UV radiation and provides a long shelf-life



B3 Dosimeter - Bulk packaging and special orders

B3 dosimeters can be packaged to suit the differing needs of our clients.

B3 Film

B3 film is sold in sheets and strips for various purposes. A variety of sizes are available as off the shelf and custom products.

B3 products for electron beam IQ/OQ dose mapping

Products using arrays of B3 WINdose dosimeters are available for electron beam energy and uniformity measurement.