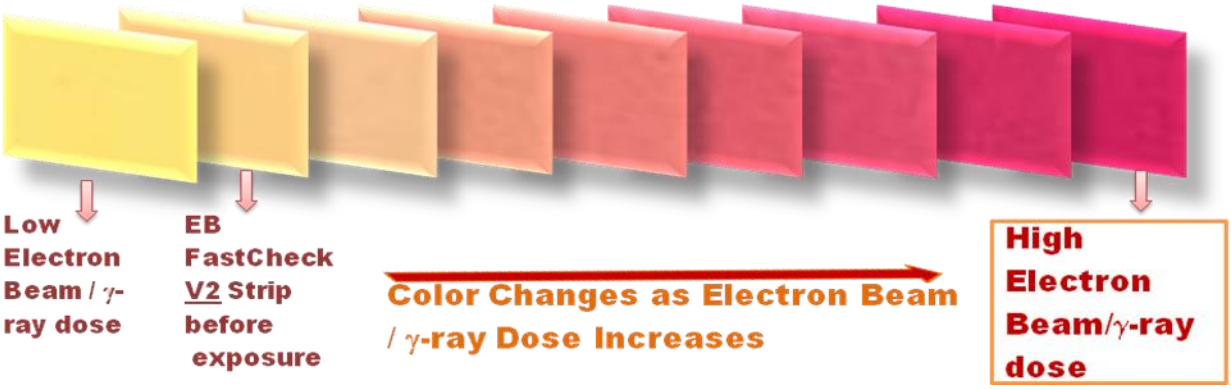
EB FASTCHECK V2 STRIPS

Your Guide And Quality Control Tool For Electron Beam And Gamma Ray Equipment

Spectra Photopolymers. has developed a simple, reliable, fast and easy to use indicator of the relative accumulated dose of EB and Gamma Ray Radiation. Based on Spectracolor, SGL's proprietary color-on-demand technology, ***EB FASTCHECK V2 STRIPS*** *let a user know when a certain accumulated EB dose has or has not been achieved.*



The strips are designed for a simple, visual inspection or for use with a color densitometer. (Spectra Photopolymers does not manufacture or sell densitometer devices, but can make a recommendation where to obtain one. A typical example of the device can be seen here: http://www.betascreen.com/Products/Color_Densitometers/color-densitometers.html)

To determine the dose the strips can be read in a short period of time (under 4 hrs) and do not require extra post-processing steps (such as heating).

Technology

EB FASTCHECK V2 STRIPS are available as ½ X ½ "removable die-cut stickers on pressure sensitive adhesive substrate.

EB FASTCHECK V2 STRIPS can be used to

- Determine the power of your EB energy source at any geometrical location, even in difficult to access curing environments
- Obtain a dose profile and determine the depth and profile of beam penetration into matter
- Determine the dose profile in curing chambers or across a wide web to ensure even cure

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- Monitor the dose of EB radiation on commercial lines, detect source degradation and equipment failures
- Cover a significant range of doses
- Provide the user with the periodic assurance of the EB energy emitting device being up to specification
- Evaluate and compare multiple EB energy sources
- Assist in defending against commercial claims

EB FASTCHECK V2 STRIPS are produced using a new ink matrix and coating technology which provided for significantly improved thermal stability and longer shelf life of the product.

Calibration

EB FASTCHECK V2 STRIPS have a broad response range allowing the measurement of a wide range of doses serving a number of industries. As EB exposure dose increases **EB FASTCHECK V2 STRIPS** undergo progressive color change. Accumulated dose can be discerned by the user comparing the tested strip against the previously established calibration chart using their exposure source. Spectra Group recommends two methods of calibration.

EB FASTCHECK V2 STRIPS Visual Appearance

(calibration chart example)

(150 kV accelerating voltage, 50 fpm, 1.5" air gap)

0 kGray (prior to exposure)	Magenta optical density (OD) – 0.075**
5 kGray	Magenta (OD) – 0.215
10 kGray	Magenta (OD) – 0.350
20 kGray	Magenta (OD) – 0.645
30 kGray	Magenta (OD) – 0.845
40 kGray	Magenta (OD) – 1.045
50 kGray	Magenta (OD) – 1.190
70 kGray	Magenta (OD) – 1.435
100 kGray	Magenta (OD) – 1.510

**** Magenta optical density is measured using a BetaScreen 2000 color densitometer zeroed against an Absolute White background**.

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In one, **EB FASTCHECK V2 STRIPS** need to be exposed side-by-side with the earlier established dose measuring methodology.* Magenta color optical density in the chart obtained for **EB FASTCHECK V2 STRIPS** vs. the established technique can be evaluated either visually or using a color densitometer as described above. For *more precise* results the use of a handheld color densitometer is recommended.

Further, Spectra Photopolymers is currently working with a leading equipment manufacturer to produce several calibration charts to cover a number of possible accelerating voltages and gun geometries so that the customer can determine the dose directly in the future by simply consulting this series of charts.

* A number of free stickers will be supplied for the customer to construct their own calibration chart

Measurement Repeatability/ Experimental Error

To produce **EB FASTCHECK V2 STRIPS** Spectra Photopolymers used a high precision coating process maintaining excellent control over the deposition process of the radiation sensitive ink. This process minimized variation in dosimeter film thickness, which, in turn, reduced variability and experimental error to a minimum. A measurement repeatability evaluation was conducted with a number of strips time after time exposed within the most commonly used dose region of 30 – 40 kGray. The resulting magenta color optical density was measured 24 hrs after exposure using a calibrated color densitometer zeroed against an Absolute White background. The experimental error for color change at the same exposure level does not exceed 5 percent from one strip to another.

Recommended Measurement Procedure

EB FASTCHECK V2 STRIPS are not of archival quality. The color change technology used for this product does not allow for color formation to remain stable infinitely. However, the color is within 95% of its saturation for every particular dose immediately after exposure, equilibrates completely within 3-4 hrs after exposure and is stable for weeks. This allows the user to determine the dose quickly and reliably, without the need to post-process the exposed strip, or repeat the measurement within several days of the exposure.

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