

Technical Specification Sheet: Alanine Tape-Tab Dosimeters

Introduction

A Tape-Tab is an alanine pellet dosimeter, placed into a film package (it's primary packaging), with a unique barcode applied. This approach ensures full and constant traceability of the dosimeter. Identification and measurement of the alanine dosimeter is completed using an EPR spectrometer.



A batch of Tape Tab is characterised by letters for example 'CW' and is defined as the manufactured quantity prior to being split into weight groups. Once each batch is weight sorted, these groups of pellets are known as lots. Lots are grouped in weights of +/- 0.6mg, and are characterised numerically, for example 'CW600'.

Dose Range

The functional dose range is dependent on the measuring equipment & conditions. When measured in a controlled environment 0.1kGy to 100kGy can be achieved, making it ideal for most irradiation processes.

Material

A white cylindrical pellet of alanine in a wax binder:

90.9% Amino acid L-alpha alanine

9.1% Paraffin wax

Alanine pellets are sealed between two layers of film. Each layer is composed of clear, glossy, PET GAG 340.

Alanine Pellet Dimensions

Diameter: 4.8mm +/- 0.1mm

Height: 2.8mm +/- 0.1mm

Batch Mass: Typically, 60mg +/- 2mg

Lot Mass: +/- 0.6mg within a lot

Tape Tab Dimensions

Width 8.85mm +/- 0.25mm

Tail Length: ≤ 7.5mm

Length 150.00mm +/- 5.0mm

Pellet Cup Diameter: ≤ 5.0mm

Body Thickness ≤0.425 (including the label)

Pellet Cup Depth: ≤3.5mm

Barcode Start 44.5mm +/- 2.5mm (from base of pellet)

Tape Tab Measurement Reproducibility

Irradiation response: CV ≤2.0%

Performance

- Each tape tab lot is verified via a third-party calibration
- Shelf life unirradiated is 8 years from date of release
- All measurements on this specification are given at a coverage factor of K=2 (providing a coverage probability of approximately 95%)

Handling Instructions

- For use with ionizing radiation only
- There is no significant influence of ambient light
- Handle dosimeters with care and do not use damaged dosimeters
- Recommend storage temperature between 15-30°C
- Do not mix dosimeter batches
- It's recommended to store the dosimeters at the same relative humidity (RH) as the ERP measurement equipment prior to use.