



## Detector Optical Filter Information and Cosmetic Guidelines

This document establishes general cosmetic guidelines for IR transmitting optical filters used in conjunction with Eltec detectors.

### Coated Filters

The coating shall show no evidence of flaking, peeling, cracking, fingerprints, out gassing, or blistering. Holes on or in the coating shall be considered as a dig.

#### 1. Digs

Digs are surface defects basically round in nature, such as surface pits or short fat scratches. The average diameter of an irregular shaped dig is the sum of its maximum length and width divided by 2. Typically surface digs shall not be in excess of a designation of 50 or (0.0197"). Digs are permissible on a surface provided the average diameter of the dig does not exceed the maximum dig and no more than (1) maximum size dig occurs in any 20 mm (0.80") diameter circle on the filter (See Note 1). All digs shall be accumulated such that the sum of the diameters does not exceed twice the diameter of the maximum allowed dig. All digs of designation 10 (0.0039") or smaller shall be separated by a minimum of 1 mm (0.0394").

#### 2. Scratches

A scratch is a long thin defect on the surface of the part. Typically scratches up to and including the maximum width of a designation of 80 or (0.00315") are permitted on the filter. The accumulated length of all maximum scratches shall not exceed 1/4 of the average diameter of the filter (See Note 1). The length of each scratch shall be multiplied by the scratch width. These products are to be added and the sum divided by the average diameter of the filter. If a maximum scratch is present, this resulting value shall not exceed 1/2 the maximum allowed scratch width. If no maximum scratch is present, this value shall not exceed the maximum allowed scratch width.

$$\text{Note 1: On a non-round filter, the average diameter} = \frac{\text{length} + \text{width}}{2}$$

### Uncoated Filters

The surface shall show no evidence of cracking, fingerprints, fractures, inclusions, smears, stains, blotchiness, or discoloration. See Note 2.

1. Digs - Treated same as coated filters.

2. Scratches - Treated same as coated filters.

Note 2: Some filter materials may have an inherent hazy appearance. This is acceptable as it does not affect the performance.

### Cosmetic

Blemishes on the filter which lie outside the focal plane in an optical system shall be acceptable when it can be shown that these blemishes do not impair the spectral performance and durability of the filter.

### Inspection Method

The filter is visually examined with the unaided eye. The examination shall be performed using two 15 watt cool white fluorescent light tubes as the light source. The viewing distance from the filter surface to the eye shall not exceed 18.0". The detector filter shall be viewed against a black matte background. The only illumination in the inspection area shall be from the light source used for examination. To measure scratch and dig dimensions the use of magnification is required and can be determined by use of microscopic measuring devices, calibrated precision comparators, or similar applicable precision measuring devices.

### Scratch/Dig Criteria

Eltec filters are guaranteed to an 80/50 scratch/dig criteria specification. A tighter specification can be considered if required. Contact [Sales@eltecinstruments.com](mailto:Sales@eltecinstruments.com) to request a quotation.

### Cleaning

Most of Eltec's filters can be cleaned using 99% isopropyl alcohol and a clean Q-tip. Exceptions are:

-9 filter - Material is Thallium Bromiodide (KRS-5) which scratches easily, do not touch.

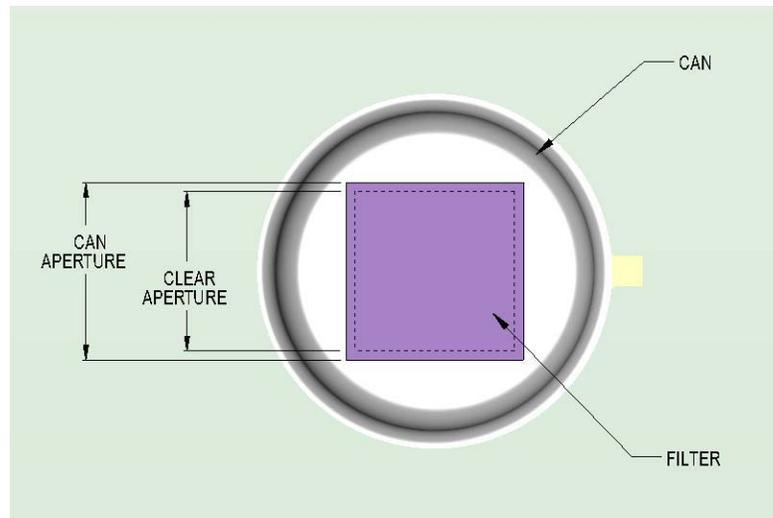
-49 filter - Material is Zinc Selenide which scratches easily, do not touch.

-61 and -340 filters - Material is Potassium Bromide which is hygroscopic (water soluble), do not touch.

Detectors with Potassium Bromide filters must be stored in a dry area preferably with desiccant.

### Clear Aperture

Clear aperture is defined as the area of the filter surface that must meet the specifications. Due to manufacturing constraints, it is virtually impossible to produce a clear aperture exactly equal to the diameter, or the length by width, of a can aperture. For small optics, the industry standard specification for a clear aperture area is typically 90% of the diameter. Unless otherwise specified on the individual detector Model documentation, Eltec adheres to this industry standard.



Graphic Indicating Clear Aperture Area of Filter

### Temperature Considerations

The operating and storage temperatures listed in the individual Eltec detector data sheets are independent of the optical filter. Verification of operating and storage temperature ratings for specific filters supplied by Eltec can be provided upon request.

**External Filter**

Eltec does not encourage the use of an external filter on the detector but will produce it if requested. This is provided only as a service and detector parameters can not be guaranteed due to the exposed delicate optical filter and the potential of epoxy wicking between the can/filter assembly.

**Two Internal Filters**

Occasionally, on detectors with two internal filters sandwiched together, a phenomenon may be observed that appears as fringes (rainbow affect). This is due to the close proximity of the two filters and can appear in various patterns. It does not affect the detector performance.

**NOTICE:** The information provided herein is believed to be reliable. However, ELTEC Instruments, Inc. assumes no responsibility for inaccuracies or omissions. Due to industry components being incorporate into ELTEC's devices and ELTEC continually striving for product improvement, specifications may change without notice.



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