

Far IR Filters



Our high performance Far IR filters use anti-reflective and powdered crystal coatings to reduce reflection losses normally found in materials used in far IR optics. Far IR filters includes far IR low pass, wide-band, and medium-band filters.

Description

The filters utilize the unique characteristics exhibited by crystalline materials when they are cooled to cryogenic temperatures. Even though the cut-on of a cooled crystal can be very sharp, reflection losses of 20%-50% are found for the materials commonly used in far-IR optics. These losses are reduced by applying a single or multi-layer, anti-reflection coatings of polyethylene that give transmissions of 90% or better over selected spectral regions. The useful life of hydroscopic windows is also extended by applying a protective coating of polyethylene.

Our Far IR filters use either a crystal or polyethylene base laminated with anti-reflection and powdered crystal coatings which reduce reflection losses. The problem of blocking near-IR leaks is solved by using powder scatter layers of transparent particles.

The transmission characteristics of a layer of dielectric powder is determined by the size, distribution, index of refraction, and thickness of the particles. Proper designs provide transmissions from < 0.1% to 80% over wavelength intervals as short as 1.5 - 2.0 octaves.

Crystal substrates are available uncoated or with anti-reflection coating, scatter layer coating, or both. Multiple filters are combined to achieve specific band-pass characteristics or other special features.

Features

- Wide selection of materials
- Pre-mounted in window flange
- Wedging, powder layers, and protective coatings options