

Which type of insert-type beam splitter is best



Summary of Content

For general lab use, a non-polarizing cube beam splitter is often the best choice, while plate beam splitters excel for high-power applications and pellicles minimize ghost reflections at low power.

Cube Beam Splitters

Cube beam splitters are made from two right-angle prisms cemented or optically contacted together, with a beam-splitting coating at the interface. They provide zero beam offset, no ghost reflections, and easy mounting, making them ideal for interferometry and general lab setups. Non-polarizing cubes are suitable for broadband applications, while polarizing cubes (PBS) are used when high polarization purity is required. Cemented cubes have a limited damage threshold ($\sim 0.3 \text{ J/cm}^2$), whereas optically contacted cubes can handle high-power lasers ($> 15 \text{ J/cm}^2$), though at a higher cost.

Plate Beam Splitters

Plate beam splitters consist of a flat glass substrate with a partial-reflection coating. They are low-cost, simple, and have a high damage threshold since there is no cement layer. They offer excellent wavefront quality and can be customized for specific reflection/transmission ratios. However, they introduce a small lateral beam displacement and may produce ghost reflections from the back surface, which can be mitigated with a wedge and anti-reflection coating.

Pellicle Beam Splitters

Article Content

Beam Splitter Types Compared

In-depth comparison of beam splitter types: cube, plate, pellicle, and dichroic. Understand ghost reflections, damage thresholds, and

Beam Splitters – optical power splitter, beamsplitter, thin-film ...

Beam splitters are devices for splitting a laser beam into two or more beams. There are different types, including polarizing and non

What are Beamsplitters?

Beamsplitters are optical components used to split incident light at a designated ratio into two separate beams. Additionally,

Beamsplitters: A Guide for Designers | Optics

With the large variety of beamsplitters available, the designer needs to take many factors into consideration. This article and its

Beam splitter

A beam splitter or beamsplitter is an optical device that splits a beam of light into a transmitted and a reflected beam. It is a crucial

Beamsplitters Selection Guide

This Beamsplitters Selection Guide outlines the core types of beamsplitters, explains how they work, and provides practical advice

Understanding Beamsplitters: Types, Principles, and Applications

This article explores the fundamental principles and diverse applications of beamsplitters, detailing their different types

Beam Splitters: Types and Applications

Explore different types of beam splitters and their applications. Learn how beam splitters work and find the right one for your needs.

Beam Splitters – Buyer's Guide & Supplier List | RP Photonics

This buyer's guide for beam splitters provides technical background, comparison of major types, selection criteria, and an overview of

Beam Splitters — Abridged Guide

Quick-reference for beam splitter types, Fresnel equations, polarizing designs, and selection workflow. See the Comprehensive

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