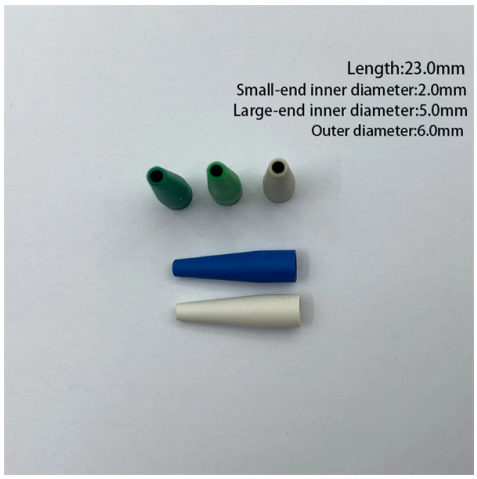
Equipment for manufacturing beam splitters



Overview

When working with lasers, it is often necessary to split a laser beam into two or more defined partial beams.

Key Takeaways

Beam splitters are fabricated using precision optical materials, coating systems, and alignment tools, with equipment varying by type—cube, plate, polarizing, or dichroic.

Types of Beam Splitters and Materials

Beam splitters can be cube, plate, polarizing, non-polarizing, or dichroic, each requiring specific materials and fabrication techniques. Cube splitters are made by bonding two triangular glass prisms with epoxy or urethane resins, while plate splitters use thin optical glass with reflective or dielectric coatings applied at precise angles. Materials may include standard optical glass, calcium fluoride (CaF2), or potassium bromide (KBr) for infrared applications.

Core Equipment for Fabrication

Optical Polishing and Grinding MachinesUsed to shape and polish glass prisms or plates to precise dimensions and surface quality. Ensures flatness and smoothness critical for minimizing optical distortion.

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Coating Systems

Vacuum deposition chambers for thin-film coatings (metallic or dielectric) to control reflection and transmission ratios. Sputtering or evaporation systems for applying polarizing or dichroic layers. Coating thickness and uniformity are controlled to achieve desired wavelength or polarization properties.

Bonding and Alignment Tools

Precision jigs and fixtures to align prisms for cube splitters. Epoxy or urethane resin dispensers with controlled thickness to regulate splitting ratios.

U

V curing or thermal curing ovens for resin hardening.

Laser Welding and Microfabrication Equipment

For high-damage-threshold splitters, laser welding can join structured components without introducing stress.

CN

C or micro-positioning stages for precise assembly.

Metrology and Testing Instruments

Interferometers to measure surface flatness and optical path differences. Spectrophotometers to verify wavelength-dependent transmission and reflection. Polarimeters for polarizing beam splitters to ensure correct S- and P-polarization separation.

Optional Variable Splitter Systems

Rotating disks with gradient coatings or half-wave plates combined with polarizing splitters for adjustable splitting ratios.

Summary

Creating beam splitters requires a combination of precision optical fabrication, coating technology, alignment and bonding equipment, and rigorous metrology. The exact setup depends on the type of splitter and its intended wavelength, polarization, and power-handling requirements. For prototyping or small-scale production, specialized optical labs with vacuum coating and polishing equipment are essential, while large-scale production may involve automated assembly and high-throughput metrology systems.

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Article Content

Beam Splitters

When working with lasers, it is often necessary to split a laser beam into two or more defined partial beams. There are a variety of beam splitters for these applications, with different advantages and

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 suppliers.

Beamplitters Made by Edmund Optics for OEM

Our beamsplitters are manufactured from a wide variety of SCHOTT, Ohara, and CDGM materials. Whether you require several beamsplitters for prototyping, a few dozen for pre-production, or large

Optical beam splitter, Optical beamsplitter

Find your optical beam splitter easily amongst the 41 products from the leading brands (COHERENT, EDMUND, MKS NEWPORT, ...) on DirectIndustry, the

Beam Splitters, Separators & Combiners | Other Items

In addition to standardized, stocked separators, we primarily develop and produce unusual beam splitters, which are created, for example, by joining structured

Beam Splitter Manufacturers: a Comprehensive Analysis of

This article will analyze in detail the basic principles, manufacturing processes, application fields and how to choose high-quality beam splitter manufacturers of beam splitters.

Optical Beamsplitters | Beamsplitter Selection | Edmund Optics

Edmund Optics offers plate, cube, pellicle, polka dot, or specialty prism Beamsplitters in a variety of anti-reflection coatings or substrates. Standard Beamsplitters, which split incident light by a specified ratio

Beam Splitter Production Technology

Manufacturers usually use high-precision CNC machine tools and polishing equipment to ensure that the geometry and optical performance of the prism meet the design requirements.

LBS-300HP-NIR Beam Splitter for High Power Laser

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The LBS-300HP-NIR is a patent pending technology beam splitter for high power lasers that allows measuring NIR (~1064 nm) focused or collimated laser beam

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This machine delivers ultimate splitting force, in a strong, well-balanced log splitter. Commercial -grade features in a retail value machine. Features: Industrial I-beam construction provides incredible

Ultra High Vacuum & Thin Film Deposition Systems

SVTA designs semiconductor manufacturing equipment including molecular beam epitaxy, atomic layer deposition, and ultra-high vacuum systems for advanced

Beam Splitters on GoPhotonics | GoPhotonics posted on the topic

Explore the Beam Splitters category on GoPhotonics, featuring products from leading manufacturers and a powerful parametric search tool to help you find the ideal solution for your application.

Thorlabs · Home

With our photonics engineering expertise and extensive manufacturing experience, Thorlabs is uniquely positioned to help you solve your engineering challenges, mitigate risks, shorten your time to market,

42 Beamsplitter Manufacturers in 2026

42 Beamsplitter Manufacturers in 2026 This section provides an overview for beamsplitters as well as their applications and principles. Also, please take a look at the list of 42 beamsplitter manufacturers

Optical Beamsplitters Explained | Cube & Polarizing Types

Optical beam splitters are widely used in laser systems, microscopy, interferometry, imaging, and photonics applications. Shanghai Optics manufactures a wide range of high-quality beam splitters,

G&H Products │ Beamsplitters | Plate and Cube

G&H manufacture plate and cube beamsplitters that have superior laser damage performance for each unique wavelength, split, and incident angle combination.

How Does a Beam Splitter Work? Types, Principles & Applications

Learn how beam splitters work, compare cube and plate designs, and explore applications in lasers, microscopy, and interferometry.

Exploring Beam Splitters: Types and Applications

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What Is a Beam Splitter? Working Principles, Types, and Applications Beam splitters play a critical role in modern optical technology, powering devices from teleprompters and holographic displays to fiber

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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