What metal is used for the beam splitter connector



Overview

Silver, known for its low absorption in the visible region, has traditionally been popular, although modern beam splitters often use chromium for greater durability.

Key Takeaways

Beam splitter connectors commonly use thin metallic coatings of aluminum, silver, or gold to achieve partial reflection and transmission of light.

Metallic Coatings

Beam splitters often rely on a thin layer of metal applied to an optical substrate, such as glass or plastic, to create a partially reflective surface. Aluminum is the most frequently used metal, deposited via physical vapor deposition to control the reflection/transmission ratio, typically around 50/50 for a half-silvered mirror. Silver and gold are also used in some applications, particularly when higher reflectivity or specific wavelength performance is required.

These metallic coatings provide moderate reflectivity across a broad range of wavelengths and are less sensitive to the angle of incidence compared to dielectric coatings, though they may introduce higher absorption losses.

Types of Beam Splitters

Cube beam splitters: Constructed from two right-angle prisms cemented together, with one hypotenuse surface coated with metal. Plate beam splitters: Thin glass plates coated on one surface with a metallic layer, often used at a 45° angle of incidence.

© 2026 METRA FIBER MARKET - All rights reserved

Considerations

Metallic coatings are chosen for their broadband reflectivity and durability, making them suitable for general-purpose optical systems, laser setups, and interferometers. For applications requiring minimal absorption and high efficiency at specific wavelengths, dielectric coatings may be preferred, but metals remain standard for many beam splitter connectors due to their simplicity and consistent performance. In summary, aluminum, silver, and gold are the primary metals used for beam splitter connectors, with aluminum being the most common choice for standard half-silvered mirrors.

Article Content

Beam splitter

OverviewDesignsPhase shiftClassical lossless beam splitterUse in experimentsQuantum mechanical descriptionReflection beam splitters

In its most common form, a cube, a beam splitter is made from two triangular glass prisms which are glued together at their base using polyester, epoxy, or urethane-based adhesives. (Before these synthetic resins, natural ones were used, e.g. Canada balsam.) The thickness of the resin layer is adjusted such that (for a certain wavelength) half of the light incident through one "port" (i.e., face of the cube) is reflected and th

Neutral Beam Splitters

Silver, known for its low absorption in the visible region, has traditionally been popular, although modern beam splitters often use chromium for greater durability.

What are Beamsplitters?

Standard Beamsplitters are commonly used with unpolarized light sources, such as natural or polychromatic, in applications where polarization state is not important.

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-polarizing versions.

Beam Splitter Coatings: Dielectric vs Metallic for Different Wavelengths

Metallic coatings, on the other hand, are made from thin layers of metals such as aluminum, silver, or gold. These coatings provide moderate reflectivity across a broad range of

Beam Splitter Selection Guide

© 2026 METRA FIBER MARKET - All rights reserved

Our beam splitters are made from high grade glass material with laser grade surface flatness & surface quality for tighter tolerance on the splitting ratio.

Thorlabs · Optical Beamsplitters

Our plate beamsplitters have a coated front surface that determines the beam splitting ratio while the back surface is wedged and AR coated in order to minimize ghosting and interference effects.

Beam Combiners / Splitters

Two back-to-back miter bends with a fused quartz insert instead of a mirror can perform as a power combiner or power splitter. When the power split is equal, this component is also called a 3 dB hybrid.

Metallic Cube Beamsplitters

Holmarc''s Metallic cube beamsplitters consists of two right angle prisms cemented together. The hypotenuse of the one prism has a combination of metallic-dielectric thin film coating.

Beam Splitter Coatings: Dielectric vs Metallic for Different Wavelengths

Beam splitters are indispensable components in optical systems, used to divide beams of light into two or more separate paths. The coatings applied to these beam splitters, whether dielectric

Beam Splitter

A beam splitter is defined as an optical device that effects a linear transformation of fields presented at two input ports, producing output beams that are related to the input fields in a characteristic manner

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.

Beamsplitters Guide: Principles, Types, and Applications

Beamsplitters play a central role in laser applications due to the low absorption and ability to separate a single laser beam into multiple individual beams. For example, beamsplitters are

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 part of many optical experimental

A Brief Guide to Beamsplitters

© 2026 METRA FIBER MARKET - All rights reserved

Beamsplitters—also referred to as beam splitters or power splitters—are optical devices designed to split incident light into two or more separate beams. They can also be used in reverse to combine

Exploring Beam Splitters: Types and Applications

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

How does a beam splitter work? Common types and use cases

Understanding Beam Splitters Beam splitters are essential optical components used to divide a beam of light into two or more separate beams. They play a crucial role in various scientific,

Beam Splitter Coatings

These beam splitters are typically designed for an incident angle around 45 degrees from normal. Partially transmitting metals also make very useful beam splitter coatings. Two common metals used

Contact Us

Continue your research online:

Website: https://metramarket.es
Technical inquiry: https://metramarket.es/contact.html

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

© 2026 METRA FIBER MARKET - All rights reserved