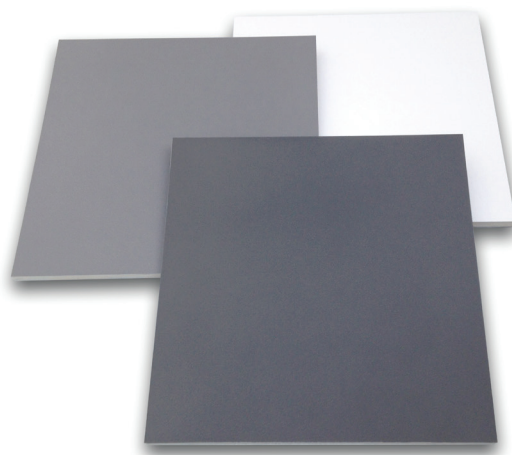


Lidar Targets

Permafect® Reference Reflectance Targets



Proven Performance in Range

Permafect Lidar Targets are a complete reference reflectance solution for accurately testing range sensitivity at lidar wavelengths and accelerating your lidar system production.

Uniform Spectral Response and Durable

Lidar sensing systems require greyscale reference reflectance targets to characterize range sensitivity. The reflectance targets you use to test your lidar system matter. Grey painted cards, fabrics, and paper leave you at a disadvantage.

There's a better solution, Permafect greyscale targets. Permafect diffuse reflectance coatings maintain their appearance under a wide variety of lighting environments and have uniform spectral response. They are thermally and physically durable, thermally color stable, and UV light stable. Permafect has no gloss, no polarization and no fluorescence.

Permafect Lidar Targets are scalable, reference reflectance targets, on rugged lightweight backing material. If you're an automotive OEM or supplier and require a durable absolute reflectance target for characterizing the range sensitivity of your lidar system, our Lidar Targets are right for you.

Lidar Targets are 18.5 mm thick and consist of an aluminum honeycomb network sandwiched between two sheets of aluminum. The material design provides a mechanically flat, rugged, and lightweight target backing solution available in four standard target sizes; 0.5 m x 0.5 m, 1.0 m x 1.0 m, 1.5 m x 1.5 m, and 1.2 m x 2.4 m, with or without mounting.

No Other Options Compare

- Lightweight
- Durable
- Tailorable
- Uniform
- Easy to Clean

Applications

- Lidar
- Time of Flight
- Sensitivity and Range

Results you can trust

All Permafect targets include reflectance data. Lidar targets are calibrated at the wavelengths that matter most for lidar testing.

Lidar Targets include a calibration report of the average spectral reflectance at 850 nm, 905 nm and 1550 nm.

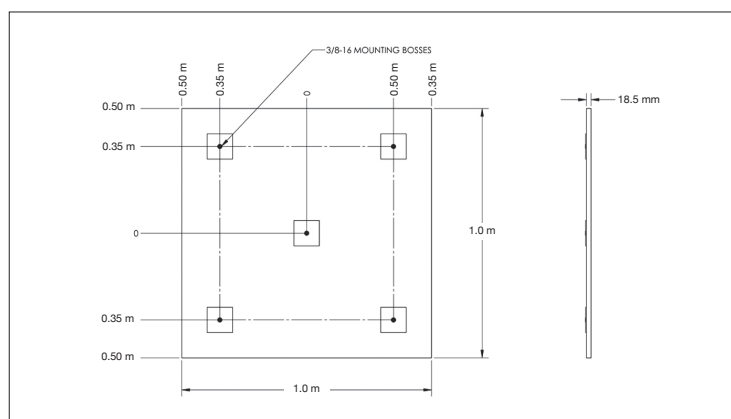
The average reflectance values are calculated from nine individual measurements collected in a grid across the target surface.

All Lidar Targets include 850 nm, 905 nm and 1550 nm reflectance uniformity maps. Your target will ship with a calibration certificate, uniformity map, and pdf files on USB.

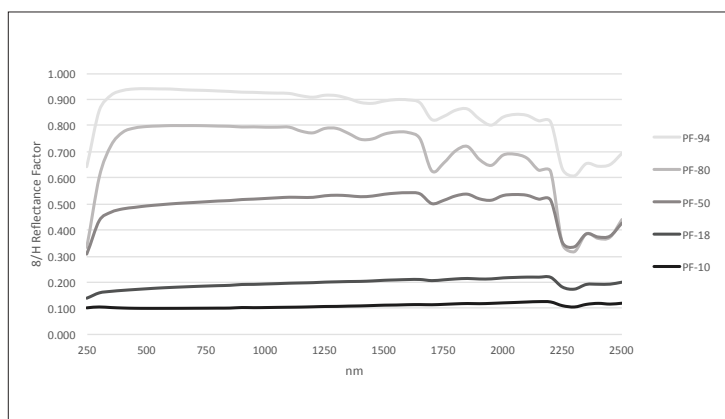
Performance Specifications for Permafect Targets

| Permafect-X (%) | 5% | 10% | 18% | 50% | 80% | 94% |
|---|-------------------------|--------------------------|---------------------------|---------------------------|---------------------------|------------------------------|
| Variance from average at 905 nm for targets 1 m ² or smaller | ±1.25% 3.75% - 6.25% | ±1.25% 8.75% - 11.25% | ±1.25% 16.75% - 19.25% | ±1.75% 48.25% - 51.75% | ±1.25% 78.75% - 81.25% | +3.0% / -0% 94.0% - 97.0% |
| Variance from average at 905 nm for targets greater than 1 m ² | ±1.5% 3.5% - 6.5% | ±1.5% 8.5% - 11.5% | ±1.5% 16.5% - 19.5% | ±2.0% 48.0% - 52.0% | ±1.5% 78.5% - 81.5% | +3.0% / -0% 94.0% - 97.0% |
| Uniformity: | | | | | | |
| 0.5 m x 0.5 m at 905 nm | ±1.0% | ±1.0% | ±1.0% | ±1.5% | ±1.0% | ±1.0% |
| 1.0 m x 1.0 m at 905 nm | ±1.0% | ±1.0% | ±1.0% | ±1.5% | ±1.0% | ±1.0% |
| 1.5 m x 1.5 m at 905 nm | ±1.5% | ±1.5% | ±1.5% | ±2.0% | ±1.5% | ±1.5% |
| 1.2 m x 1.2 m at 905 nm | ±1.5% | ±1.5% | ±1.5% | ±2.0% | ±1.5% | ±1.5% |

Example of Lidar Target with Mounting



Typical 8/H Reflectance Factors of Permafect



Approximate Target Weights

| Size | Weight |
|---------------|---------|
| 0.5 m x 0.5 m | 2.0 kg |
| 1.0 m x 1.0 m | 8.0 kg |
| 1.5 m x 1.5 m | 18.0 kg |
| 1.2 m x 2.4 m | 23.0 kg |

What's in the box?

- Permafect Lidar Target in one of six reflectance levels
- Signed calibration report with 850 nm, 905 nm and 1550 nm reflectance data and 850 nm, 905 nm and 1550 nm uniformity map.
- USB with PDF report

Lidar Targets Ordering Information

Lidar Targets with mounting

| MODEL | DESCRIPTION | ORDER NUMBER |
|--------------------------------|---|--------------|
| PFT-05-05M-LT-1550-850-TMCM | Permafect 5%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-005 |
| PFT-10-05M-LT-1550-850-TMCM | Permafect 10%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-010 |
| PFT-18-05M-LT-1550-850-TMCM | Permafect 18%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-018 |
| PFT-50-05M-LT-1550-850-TMCM | Permafect 50%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-050 |
| PFT-80-05M-LT-1550-850-TMCM | Permafect 80%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-080 |
| PFT-94-05M-LT-1550-850-TMCM | Permafect 94%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01954-095 |
| PFT-05-10M-LT-1550-850-TMCM | Permafect 5%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-005 |
| PFT-10-10M-LT-1550-850-TMCM | Permafect 10%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-010 |
| PFT-18-10M-LT-1550-850-TMCM | Permafect 18%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-018 |
| PFT-50-10M-LT-1550-850-TMCM | Permafect 50%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-050 |
| PFT-80-10M-LT-1550-850-TMCM | Permafect 80%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-080 |
| PFT-94-10M-LT-1550-850-TMCM | Permafect 94%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01955-095 |
| PFT-05-15M-LT-1550-850-TMCM | Permafect 5%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-005 |
| PFT-10-15M-LT-1550-850-TMCM | Permafect 10%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-010 |
| PFT-18-15M-LT-1550-850-TMCM | Permafect 18%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-018 |
| PFT-50-15M-LT-1550-850-TMCM | Permafect 50%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-050 |
| PFT-80-15M-LT-1550-850-TMCM | Permafect 80%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-080 |
| PFT-94-15M-LT-1550-850-TMCM | Permafect 94%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01956-095 |
| PFT-05-12M24M-LT-1550-850-TMCM | Permafect 5%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-005 |
| PFT-10-12M24M-LT-1550-850-TMCM | Permafect 10%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-010 |
| PFT-18-12M24M-LT-1550-850-TMCM | Permafect 18%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-018 |
| PFT-50-12M24M-LT-1550-850-TMCM | Permafect 50%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-050 |
| PFT-80-12M24M-LT-1550-850-TMCM | Permafect 80%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-080 |
| PFT-94-12M24M-LT-1550-850-TMCM | Permafect 94%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, with mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01957-095 |

Lidar Targets Ordering Information

Lidar Targets without mounting

| MODEL | DESCRIPTION | ORDER NUMBER |
|-------------------------------|--|--------------|
| PFT-05-05M-LT-1550-850-TCM | Permafect 5%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-005 |
| PFT-10-05M-LT-1550-850-TCM | Permafect 10%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-010 |
| PFT-18-05M-LT-1550-850-TCM | Permafect 18%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-018 |
| PFT-50-05M-LT-1550-850-TCM | Permafect 50%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-050 |
| PFT-80-05M-LT-1550-850-TCM | Permafect 80%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-080 |
| PFT-94-05M-LT-1550-850-TCM | Permafect 94%, Lidar Target, 0.5 m x 0.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01941-095 |
| PFT-05-10M-LT-1550-850-TCM | Permafect 5%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-005 |
| PFT-10-10M-LT-1550-850-TCM | Permafect 10%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-010 |
| PFT-18-10M-LT-1550-850-TCM | Permafect 18%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-018 |
| PFT-50-10M-LT-1550-850-TCM | Permafect 50%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-050 |
| PFT-80-10M-LT-1550-850-TCM | Permafect 80%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-080 |
| PFT-94-10M-LT-1550-850-TCM | Permafect 94%, Lidar Target, 1.0 m x 1.0 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01942-095 |
| PFT-05-15M-LT-1550-850-TCM | Permafect 5%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01943-005 |
| PFT-10-15M-LT-1550-850-TCM | Permafect 10%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01943-010 |
| PFT-18-15M-LT-1550-850-TCM | Permafect 18%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01943-018 |
| PFT-50-15M-LT-1550-850-TCM | Permafect 50%, Lidar Target, 1.5m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01943-050 |
| PFT-80-15M-LT-1550-850-TCM | Permafect 80%, Lidar Target, 1.5m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01943-080 |
| PFT-94-15M-LT-1550-850-TCM | Permafect 94%, Lidar Target, 1.5 m x 1.5 m, 18.5 mm thick, Honeycomb Al backing, without mounting, Calibration at 850, 905, and 1550 nm, 9 point mapping | AA-01943-095 |
| PFT-05-12M24M-LT-1550-850-TCM | Permafect 5%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-005 |
| PFT-10-12M24M-LT-1550-850-TCM | Permafect 10%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-010 |
| PFT-18-12M24M-LT-1550-850-TCM | Permafect 18%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-018 |
| PFT-50-12M24M-LT-1550-850-TCM | Permafect 50%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-050 |
| PFT-80-12M24M-LT-1550-850-TCM | Permafect 80%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-080 |
| PFT-94-12M24M-LT-1550-850-TCM | Permafect 94%, Lidar Target, 1.2 m x 2.4 m, 18.5 mm thick, Honeycomb Al backing, without mounting, nine point mappings and calibrations at 850, 905, and 1550 nm | AA-01944-095 |



Permafect Targets Carry and Stow Case Options

- Cases carry one to three targets
 - Protects surface and corners from being scratched and dinged
 - Hard sided case with reinforced corners
 - Foam lined fitted inserts
 - Can be used to stack targets in constrained spaces
- Grab and go
 - Recessed handles
- Grab and drag larger targets
 - EZ Haul wheels options
- Easy access
 - Hinged cases
- Secure
 - Recessed latched
- No additional packaging needed
 - Can be used for shipments, storage and transport

| MODEL | DESCRIPTION | ORDER NUMBER |
|-----------------------------------|---|--------------|
| PFT-05M-Carry Case | Carry case for Permafect 0.5 m x 0.5 m Targets Main unit size: (L x W x H) -> 0.61 m x 0.61 m x 0.20 m No castors or wheels. Weight: 9.5 kg | AA-01523-050 |
| PFT-1M-Carry Case Wheeled | Carry case for Permafect 1 m x 1 m Targets Main unit size: (L x W x H) -> 1.12 m x 1.12 m x 0.20 m With corner wheel installed. Weight: 25 kg | AA-01524-100 |
| PFT-15M-Carry Case Wheeled | Carry case for Permafect 1.5 m x 1.5 m Targets Main unit size: (L x W x H) -> 1.63 m x 1.63 m x 0.20 m With corner wheel installed. Weight: 30 kg | AA-01524-150 |
| PFT-15M-Target Mount and Carriage | Target mount for Permafect 1.5 m x 1.5 m Targets; connection straps and blocks for connecting two carriages together. All hardware and tools provided | AA-01525-150 |