

Optical Mirrors

YAG Series High-Power Laser Mirrors

The Robust Defense for kW-Class Lasers

- High Damage Threshold
- Quartz Substrate
- High Reflectivity
- Precision Surface



One Platform Many Possibilities

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Overview

Maximum Power Handling: The Ultimate Mirrors for YAG & Fiber Lasers

The VenusLab YAG High-Power Mirror Series addresses the "burnout" challenge in high-energy laser transmission. While standard glass mirrors risk thermal fracture or coating delamination under high energy densities, our YAG Series utilizes **UV Fused Silica** substrates coated with high-density dielectric layers.

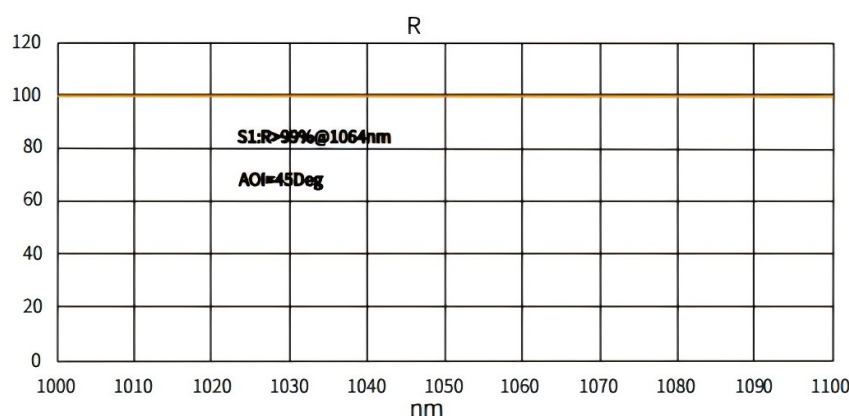
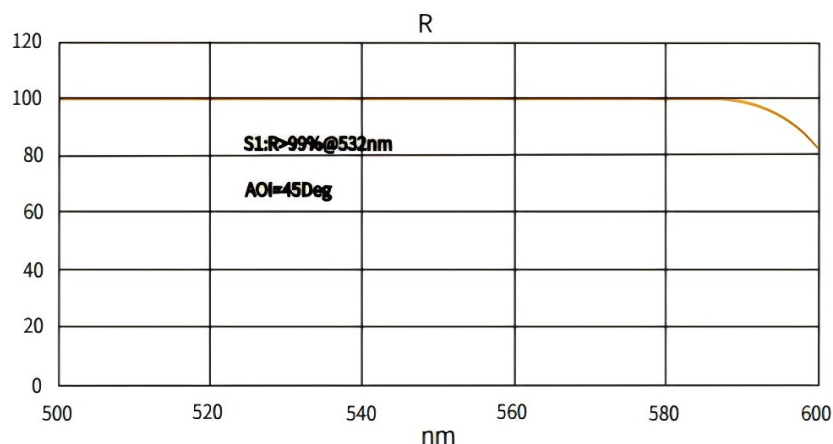
This combination not only achieves **99% high reflectivity** at 1064nm and 532nm but, more importantly, drastically reduces coating absorption. Tested to withstand damage thresholds up to **20 J/cm²** at 1064nm, these mirrors ensure virtually zero energy attenuation even after multiple reflections, making them perfect for laser marking, cutting machines, and medical laser beam guidance.

Key Applications

- **Industrial Laser Machining:** Beam steering for Laser Cutting, Welding, and Marking machines.
- **Nd:YAG Laser Cavities:** Rear mirrors or folding mirrors for high-power resonators.
- **Medical Laser Systems:** Precise delivery of high-energy pulses for dermatology or surgery.

Reference Curve Diagram

Reference Curve for YAG High-Power Mirror



Qualification

YAG High-Power Mirror Technical Specifications

| Technical Parameter | Specification Data |
|---------------------|--|
| Substrate Material | Fused Silica |
| Coating Type | High-Power Dielectric High Reflective Coating |
| Surface Flatness | /10 (Standard) @ 632.8nm |
| Clear Aperture | > 90% of Diameter |
| Reflectivity | R 99% |
| Incidence Angle | 0° (Normal) or 45° (Steering) |
| Damage Threshold | > 15 J/cm ² @ 532nm (10ns) > 20 J/cm ² @ 1064nm (10ns) |

Selection Chart

YAG Mirror Ordering Information & Model List

| Model | Angle (°) | Wavelength (nm) | Dia (mm) | Thk (mm) | Flatness | R (%) | Damage Threshold |
|----------------------|-----------|-----------------|----------|----------|----------|-------|----------------------|
| VLHR-YAG-20-532-45 | 45 | 532 | 20 | 4 | /10 | 99 | >15J/cm ² |
| VLHR-YAG-25A-532-45 | 45 | 532 | 25.4 | 5 | /10 | 99 | >15J/cm ² |
| VLHR-YAG-30-532-45 | 45 | 532 | 30 | 5 | /10 | 99 | >15J/cm ² |
| VLHR-YAG-50-532-45 | 45 | 532 | 50 | 5 | /10 | 99 | >15J/cm ² |
| VLHR-YAG-50A-532-45 | 45 | 532 | 50.8 | 6 | /10 | 99 | >15J/cm ² |
| VLHR-YAG-25A-1030-45 | 45 | 1030 | 25.4 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-40-1030-45 | 45 | 1030 | 40 | 6 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-50A-1030-45 | 45 | 1030 | 50.8 | 6 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-100-1030-45 | 45 | 1030 | 100 | 10 | /4 | 99 | >20J/cm ² |
| VLHR-YAG-20-1064-45 | 45 | 1064 | 20 | 4 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-25A-1064-45 | 45 | 1064 | 25.4 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-30-1064-45 | 45 | 1064 | 30 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-50-1064-45 | 45 | 1064 | 50 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-76-1064-45 | 45 | 1064 | 76.2 | 10 | /8 | 99 | >20J/cm ² |
| VLHR-YAG-20-1064-0 | 0 | 1064 | 20 | 3 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-25A-1064-0 | 0 | 1064 | 25.4 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-30-1064-0 | 0 | 1064 | 30 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-50-1064-0 | 0 | 1064 | 50 | 5 | /10 | 99 | >20J/cm ² |
| VLHR-YAG-76-1064-0 | 0 | 1064 | 76.2 | 10 | /8 | 99 | >20J/cm ² |

Service & Support

We are dedicated to delivering exceptional optoelectronic solutions to every client. From precision manufacturing and secure delivery to full-lifecycle technical support, we are here to ensure a seamless and reliable experience at every step.

1. Warranty Policy

Quality First, Worry-Free Operation

Warranty Period: We offer a **two-year** warranty service for all of our core optoelectronic products, effective from the date of shipment.

Coverage: We provide free repair or replacement services for malfunctions caused by material defects or workmanship errors under normal operating conditions.

Rapid Response: Upon receiving a warranty claim, we guarantee to initiate the assessment process within **24 hours** to minimize your equipment downtime.

2. Technical Support

Expert Team, Full-Process Guidance

Technical Consultation: Our team of senior optical engineers provides **24/7 online support** to assist with installation, commissioning, optical path alignment, and parameter optimization.

Scheduled Maintenance: We offer full-lifecycle maintenance recommendations, including firmware upgrades, optical component cleaning guidelines, and precision calibration services.

Training Services: We provide customized remote or on-site operational and safety training to ensure your team can operate the equipment efficiently and safely.

3. Logistics & Delivery

Precision Packaging, Global Reach

Professional Packaging: Given the fragile nature of optical instruments, we utilize industrial-grade shockproof, anti-static, and moisture-proof vacuum packaging to ensure zero damage during transit.

Logistics Partners: We partner with top-tier global logistics providers (**DHL / FedEx / UPS / SF Express**) to offer reliable shipping with real-time tracking.

Shipping Insurance: All shipments are fully insured to eliminate logistics risks.

4. Compliance & Certification


Strict Standards, Total Compliance

Quality Certification: Our manufacturing process is **ISO 9001 certified**, and our products comply with international standards such as **CE** and **RoHS**.

Export Compliance: "Committed to environmental responsibility, all our products comply with **RoHS 2.0** and **REACH** standards, ensuring safety and global compliance."

Explore Series

| Model | Thk (mm) | Damage Threshold | Angle (°) | R (%) | Dia (mm) | Wavelength (nm) |
|----------------------|----------|----------------------|-----------|-------|----------|-----------------|
| VLHR-YAG-25A-1064-45 | 5 | >20J/cm ² | 45 | 99 | 25.4 | 1064 |
| VL-HR-YAG-25A-532-45 | 5 | >15J/cm ² | 45 | 99 | 25.4 | 532 |
| VL-HR-YAG-25A-1064-0 | 5 | >20J/cm ² | 0 | 99 | 25.4 | 1064 |

 Get in touch with our team to explore configurations, request a quote, or learn more about customized solutions tailored to your needs.

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+658099 5547 (WhatsApp)



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