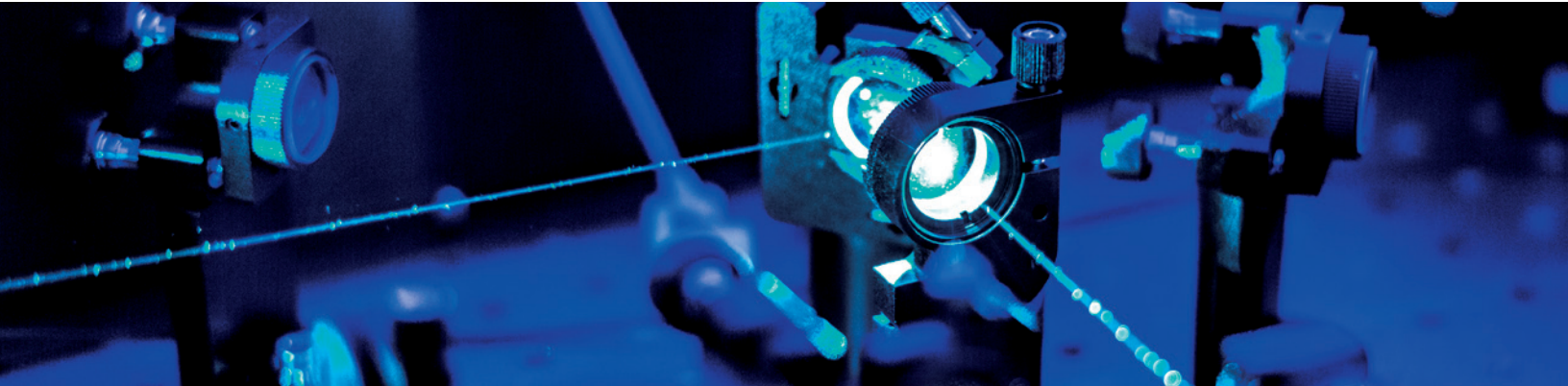


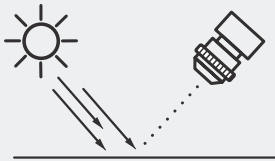
Optical Black

Uniquely Designed Anodizing when Accuracy Matters

Enhancing Stray Light Absorbance, Thermal Emissivity, and Corrosion Resistance

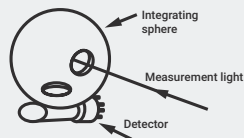


BRDF Reflectivity (5° AOI)



Optical Black	Conventional Anodize
0.82 2.19 Steradians	1.74 0.58 Steradians

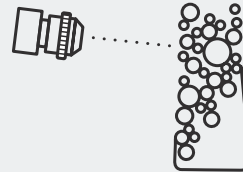
Anti-Reflective (ASTM E903)



Spectrum	Optical Black	Conventional Anodize
Ultraviolet 250-380nm	3.34%	5.70%
Visible 380-780nm	3.63%	9.30%
Infrared Near IR	7.37%	54.70%
Mid IR	7.90%	18.18%

Avg Reflectivity

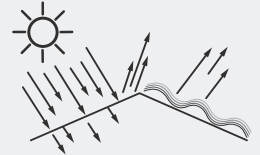
Anti-Outgassing (ASTM E595)



Optical Black	Conventional Anodize
0.09	0.25

Total Mass Loss (TML)

Thermal Emittance (ASTM E903)



Optical Black	Conventional Anodize
0.93	0.85

Where x = 1 is Max Efficiency

Core Purpose

Stray Light Absorbance Anti-Reflectance Thermal Management Corrosion Resistance Anti-Outgas (Inorganic Color Stability)

Core Applications

Opto-Electronic Sensors Vision Detection Photonics



About Pioneer Metal Finishing

Starting in 1945, Pioneer has focused on being a premier metal finisher partner for our customers. We exist to be an extension of our customers' business, providing value-added services that improve the performance of their products. This focus has led us to operate 11 facilities in the United States and Mexico, providing a full spectrum of finishing services.

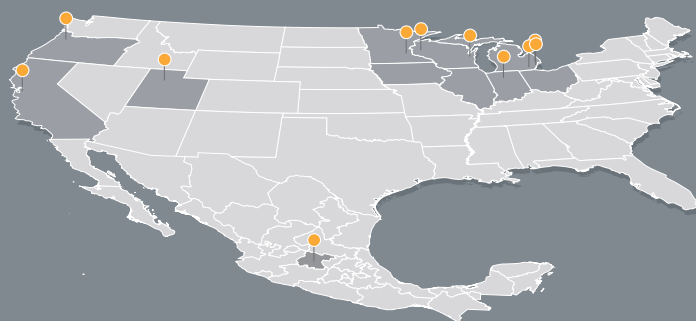
ISO 9001
Registered



U.S. Immigration
and Customs
Enforcement



FFL Accredited



11 NORTH AMERICAN LOCATIONS
4,000 INDUSTRY SPECIFICATIONS
800,000 SQ. FT. OF MANUFACTURING
600,000,000 PARTS PROCESSED ANNUALLY

All Pioneer Processes

Adhesives & Coatings

Dry Film Lubricant
Heat Reflective Coating
Paint
Powder Coating
Rubber to Metal
Adhesive Coating
Zinc Rich Coating

Aluminum Anodize

Type II Anodize
Type III Hardcoat
Type III with PTFE

Conversions & Pretreatments

Aluminum Conversion Coating
Aluminum Heat Treatment
Manganese Phosphate
Zinc Phosphate
Pickle & Oil
NDT: Non-Destructive Testing

Finishing

Blasting
Parts Washing
Electropolishing
Aluminum Passivation
Stainless Steel Passivation

Plating

Black Nickel
Copper
Electroless Nickel
Electrolytic Nickel
Functional Hard Chrome
Gold
Nickel Sulfamate
Silver
Tin
Zinc

Proprietary Finishing Services

ARP Acid Etch™
CastGuard™
EnduraGuard™
FrostKote™
Medi-Black™
NiCoTef™
NiTuff®
NorGuard™
NorKote™
NorLast™
NorLube™
Optical Black®
Steri-Safe™
Vortex Anodizing

Request a quote at: rfq@pioneermetal.com



YOUR
SPECS



YOUR
SCHEDULE



YOUR
SECURITY

Pioneer
METAL FINISHING

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