

# HYDROPHOBIC COATINGS FOR IR MARITIME & NAVAL SECURITY & SURVEILLANCE APPLICATIONS



**Understanding the unique challenges faced by maritime or naval security and surveillance operations in wet, humid, and salty coastal environments.**

Traditional coatings often struggle to withstand these extreme conditions, compromising the durability and performance of infrared (IR) imaging technology. To overcome this obstacle, we have developed AquaShieldIR™, an advanced hydrophobic coating specifically designed to provide long-lasting protection and enhance the capabilities of IR imaging lenses in maritime environments.

## Unmatched Durability and Performance

AquaShieldIR™ coatings have undergone rigorous testing, surpassing the requirements set by the MIL 810 standard for durability testing in salt fog and salt solution. By setting the highest standards, we ensure a long-lifetime expectancy, making our coatings ideal for extreme sea environments.

## Surpassing MIL Standard

Maritime and naval environments present challenges with high humidity and salt spray, significantly limiting the lifetime of traditional coatings. At Ophir, we rise above these challenges by exceeding the MIL 810 standard requirements. AquaShieldIR™ coatings have been extensively tested for 14 days in a salt fog chamber, showcasing exceptional durability and longevity.

## AquaShieldIR™ Key Benefits:

1. **Water Repellency:** AquaShieldIR™ creates a water-repellent surface on IR imaging lenses, preventing water droplets from adhering. This feature ensures clarity and visibility, even in rainy or foggy conditions, allowing naval and maritime personnel to effectively monitor and respond to security threats.
2. **Enhanced Visibility in Wet Conditions:** By repelling water droplets, AquaShieldIR™ enables IR imaging lenses to perform optimally in wet conditions. Whether it's rain, fog, or operating in a maritime environment, AquaShieldIR™ ensures clear imaging and reliable performance.
3. **Improved Image Quality:** AquaShieldIR™ prevents water droplets and contaminants from adhering to the lens surface, resulting in improved image quality. This helps reduce distortion or degradation and ensures accurate detection and identification of objects, vessels, or individuals, even in adverse weather conditions.

## Rely on Ophir for Unparalleled Quality

AquaShieldIR™ has been meticulously developed and rigorously tested to meet the demanding needs of maritime and naval security and surveillance applications. Our commitment to exceed industry standards and deliver exceptional performance ensures that our coatings provide unmatched protection, visibility, and image quality in the harshest environments. When it comes to safeguarding coastal areas and maritime operations, Ophir is the trusted partner you can rely on.

## AquaShieldIR Front Element Coating Specifications

Specifications	MWIR Si Coatings					
	Standard			AquaShieldIR		
	HD	LRHC	HC	HD.H	LRHC.H	HC.H
Durability Type	1178	1221	1039	1558	1564	1566
	High Durability	Low Reflectance Hard Carbon	Hard Carbon	High Durability Hydrophobic	Low Reflectance Hard Carbon Hydrophobic	Hard Carbon Hydrophobic
Abrasion	Severe	Severe	Severe	Severe	Severe	Severe
Adhesion	V	V	V	V	V	V
Humidity	1 day	1 day	1 day	1 day	1 day	1 day
Salt Fog	1+1 day	1+1 day	14 day	14 day	14 day	21 days
Salt Solution	1 day	1 day	1 day	1 day	1 day	1 day
Wiper	-	V	V	-	V	V
Acid Attack	-	V	V	-	V	V
Transmittance 3.4-5µm	97%	96%	93%	97%	96%	93%

Specifications	LWIR Ge Coatings (8-12µm)				MWIR+LWIR Chalcogenide Coatings			
	Standard		Hydrophobic		MWIR (3.4-5µm)		LWIR (8-12µm)	
	HD	HC	HD.H	HC.H	HD	HD.H	HD	HD.H
Durability Type	1006	1007	1557	1561	1455	1604	1405	1489
	High Durability	Hard Carbon	High Durability Hydrophobic	Hard Carbon Hydrophobic	High Durability	High Durability Hydrophobic	High Durability	High Durability Hydrophobic
Abrasion	Severe	Severe	Severe	Severe	Severe	Severe	Severe	Severe
Adhesion	V	V	V	V	V	V	V	V
Humidity	1 day	1 day	1 day	1 day	1 day	1 day	1 day	1 day
Salt Fog	1+1 day	7 day	14 day	14 day	1+1 day	14 day	1+1 day	14 day
Salt Solution	1 day	1 day	1 day	1 day	1 day	1 day	1 day	1 day
Wiper	-	V	-	V	-	-	-	-
Acid Attack	-	V	-	V	-	-	-	-
Transmittance	96%	88%	95%	88%	97%	96%	94%	93%

\*Wetting Angle > 110deg.

\*\* Standard compliance: MIL STD 675 & MIL STD 810

## Transmittance vs. Durability for Standard & AquaShieldIR Coatings

