

GENTEX[®]

Eye Protection

For the Ultimate in
Performance and Protection



GENTEX | NORBO

Advanced Eye Protection and Visual Acuity for the Ultimate in Performance

With a history in high performance optics dating back to the 1970's, Gentex is a global leader in the research, development, and manufacture of protective and performance lenses for aircrew helmet systems. Our light management technologies protect military, civil government, and emergency-responder personnel from the latest optical threats, while enhancing mission performance through distortion-free visual acuity. And, with Gentex's unique systems approach to design, all visor assemblies for our lenses seamlessly integrate with Gentex helmets and other essential helmet system components, such as Night Vision Goggles, helmet mounted displays, and Gentex oxygen masks for the ultimate in protection and performance.

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Comprehensive Protection

Gentex lenses and their visor assemblies are designed to provide facial protection from performance concerns and life threats such as windblast, high light intensity, spall resulting from canopy or screen failure, ballistic and fragmentation threats, laser threats, impact threats, rotary or jet wash, and inclement weather conditions. Plus, Gentex lenses (including clear) provide 99% protection from damaging UVA, UVB, and UVC sunlight.

Lenses Meet Stringent U.S. Mil Specs

All Gentex lenses are manufactured with polycarbonate material and in accordance with several U.S. military specifications:

- Ultraviolet transmittance in accordance with MIL-V-43511
- Impact resistance in accordance with MIL-V-43511 (when tested in accordance with MIL-STD-622 and using a .22 T37 fragment simulating projectile at a velocity of 550 feet per second)
- Optical characteristics in accordance with MIL-V-43511
- Abrasion resistance in accordance with MIL-C-83409 (front and rear surfaces coated with abrasion-resistant coating)

Comprehensive Product Portfolio

Gentex offers a wide array of eye protection products and technologies to meet the broad and unique needs of defense and security aircrew around the globe. Reference the Product Selection Charts in this brochure to determine the right eye protection solution for your helmet and mission needs.

Key Features / Benefits of Gentex Eye Protection

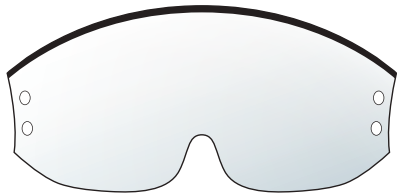
- Provides eye and facial protection from weather, ballistic/fragmentation, impact, debris/wash, and laser threats
- Excellent distortion-free visual acuity
- Provides 99% protection from damaging UV (A), UV (B) and UV (C) sunlight
- Uses Gentex's Filtron® technology — absorber dyes molded into the advanced polycarbonate lenses
- Meets U.S. Mil Specs for Ultraviolet Transmittance; Impact Resistance; Optical; Abrasion Resistance
- Seamless integration with other helmet system components
- Easily attaches to the helmet

Lenses

All Gentex lenses offer advanced protection while enhancing visual acuity. Explore our line of lenses to determine the best one for you specific mission needs.

Standard Lenses—Clear, Amber, and Neutral Gray

Basic ballistic and impact protection is provided with Gentex clear lenses. Using specially developed dyes and colors, Gentex also offers Amber and Neutral Gray lenses to enhance visual acuity in more demanding flight or terrain conditions. In addition to the protection offered by our clear lenses, our amber lenses are engineered with yellow hue to offer basic contrast to the field of view in hazy or foggy conditions, and our neutral gray lenses were developed to provide sun glare protection.



Clear Visor



Amber Visor



Neutral Gray Visor



Advanced Lenses—High-Contrast and Gradient

For more advanced mission needs, Gentex has developed high-contrast and gradient lenses.

High Contrast Lenses

Specially engineered for use in snow, haze, and fog conditions, Gentex high contrast lenses provides aircrew with a heightened and enhanced field of vision when flying in low-light conditions, such as foggy, overcast, hazy, or cloudy environments. Gentex's Filtron® technology-absorber dyes that are molded into the polycarbonate optic renders the lens a unique yellow color, and filters certain invisible and visible wavelengths for the wearer. This advanced lens creates a viewing field where all blue components appear black or very dark, and other color components are nearly normal.

Gradient Lenses

Engineered specifically for protection against sun glare, Gentex gradient lenses allow aircrew to see instrumentation clearly. The tinted and standard neutral gray color at the top of the lens transitions to clear at the bottom.



High Contrast Visor



Gradient Visor

Laser Protection Lenses

Gentex is a world leader in the design and manufacture of laser-eye protection lenses for emerging commercial and military-grade laser threats, offering a comprehensive line of lenses to cover today's mission needs.

Laser Lenses

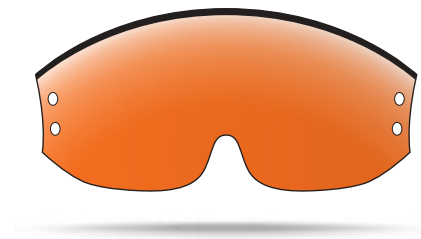
Gentex's laser lenses provide protection from highly specific laser threats including 1064nm or Neodymium: Yag, are available in Optical Densities (OD) ranging from OD 4 to our highest option for absorbing laser energy, OD 6. Other key features of the laser lenses include no compromise of laser protective capabilities after exposure to high and low operating temperatures scratches in its surface and options for multiple laser-line coverage to protect against a wide range of laser threats.

Advanced Laser Lenses

Gentex's advanced laser lenses offer industry-leading protection from visible and non-visible wavelengths to prevent eye damage from various laser equipped military systems. These lenses can be designed to protect against a wide range of threat profiles while maintaining high visible transmission and color perception.

Laser Glare Reduction Lenses

Laser glare reduction lenses are used in Gentex Dazzle Laser Defense Visors and Spectacles to combat the hazards of low-intensity lasers without compromising visual acuity. Available in day and day/night versions, both types are designed to maintain see through color perception while providing necessary protection from green and blue commercial lasers.



Dazzle Night Visor



Dazzle Day (Sunshade) Visor

Visor Assemblies

Gentex lenses may be fit into our many different visor assemblies that fit into our market-leading portfolio of aircrew helmet systems.

Tracked Visor Assembly

Tracked visors are used commonly with the Gentex HGU-56/P and SPH-5® rotary wing helmet systems and can be positioned at various positions along the arc of travel to optimize the visual field and interface to other head borne equipment, such as maxillofacial shields or oxygen masks.

Bungee Visor Assembly

Bungee visors are used commonly with the Gentex HGU-55/P and HGU-84/P helmet systems and offer reduced weight and bulk while maintaining required levels of protection. Bungee visors can be interchanged easily to satisfy all mission requirements and are available in MBU-20/P and MBU-12/P oxygen mask trims.

*Clear and Neutral Gray Bungee Visor Assemblies shown on a
HGU-55/P Helmet with MBU-20/P Oxygen Mask*



High Speed Bungee-Visor Assembly

Specially engineered for use with Gentex's HGU-55/P Fixed Wing Helmet System, the High-Speed Bungee Visor Assembly includes friction strips along the upper trim of the helmet to provide ejection safety up to 600 KEAS. The High-Speed Bungee Visor Assembly is fully approved for use by the U.S. Air Force for high-speed ejection use.

STEP-IN® Visor Assembly

Provides excellent eye protection from fragments and allows proper eye relief while using Night Vision Goggles and other headborne optical equipment. Its contoured shape and finished edge conform to the helmet-shell edge creating a fit that's closer (approximately 1") to the face than other visor assemblies. STEP-IN visor assemblies can be used with the Gentex HGU-55/P, HGU-68/P, and the HGU-84/P helmets.



*STEP-IN Visor Assembly
with Laser Visor*

*STEP-IN Visor Assembly on a 55/P Helmet
with Clear Visor*

Visor Assembly Housings

Gentex visor assembly housings are designed to seamlessly integrate into our comprehensive line of helmet systems and provide the means to adjust visor positions, protect visors from damage from scratches and flying debris, and provide a stable platform for the mounting of Night Vision Goggles.

HGU-56/P Dual Visor Housing

The Gentex HGU-56/P Helmet is available with a dual visor housing to hold clear and neutral tracked visor assemblies, both of which can be changed to hold advanced visor assemblies containing high-contrast, gradient, or laser protective lenses. HGU-56/P dual visor housings are available with quick-disconnect and standard Night Vision Goggle mounts.



HGU-56/P with Dual Visor Housing

SPH-5® Visor Housings

The Gentex SPH-5 Helmet is available with single and dual visor housings. Standard and advanced tracked visor assemblies can be used to configure the helmet system for various needs. SPH-5 visor housings are available with quick-disconnect and standard Night Vision Goggle mounts.



SPH-5 with Dual Visor Housing

HGU-55 Series Visor Housings

As alternatives to the standard HGU-55/P Bungee Visor Assembly, numerous configurations of the HGU-55 series helmets exist to include tracked, single, and dual visor housings; removable dual visor housings; and provisions for mounting advanced optical devices. Many of these configurations have been qualified by U.S. Allied Defense forces.



HGU-55/GTX with Dual Visor Housing

Air Combat System

The Gentex Air Combat System (ACS) is a truly integrated head and respiratory protection system designed specifically for Eurofighter Aircraft (EFA). It includes a locking dual visor housing certified for safe ejection at 600 KEAS.



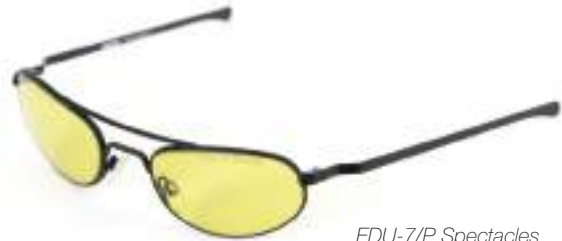
ACS with Locking Dual Visor Housing

Spectacles and Goggles

To meet unique aircrew needs, Gentex lenses are also available in spectacle and goggle formats.

EDU-7/P Spectacles

The Gentex EDU-7/P Laser Eye Protection (LEP) Spectacles were designed under a U.S. Navy contract and offer industry-leading protection from non-visible laser threats. The frame's functional fit and style easily protect, and seamlessly integrate with fixed wing and rotary wing aircrew helmets, display and tracking systems, and other components mounted close to the eye.



EDU-7/P Spectacles

Dazzle Spectacles

Gentex Dazzle Spectacles are designed for commercial pilots to combat the hazards of low-intensity lasers without compromising visual acuity. Spectacles are worn with or without a flight helmet and come in day and day/night versions, with all lenses designed to maintain see-through color perception. Low cost of ownership, comfort, equipment compatibility, and durability round out the benefits of these spectacles.



Dazzle Day Spectacles



Dazzle Night Spectacles

CAUTION: Gentex Dazzle Defense products are designed to provide protection against the wavelengths and low energy levels described herein. Use of Dazzle Defense products at other wavelengths or higher energy level than those described herein could result in serious injury.

Smoke Goggles

The Gentex Smoke Goggle Assembly is designed to protect the wearer's eyes from potential smoke in the cockpit or cargo areas. Available with Gentex clear lenses, Gentex goggles are made of a lightweight silicone rubber frame and strap, which makes for easy donning and doffing. This one size fits all goggle is available for aircrew-personnel use on transport U.S. Air Force aircraft, including C-5, C-9, KC-10, C-17, C-27, C-130, KC-135, and C-141. Individual replacement parts are available for purchase.



Gentex Smoke Goggles

Product Selection Charts

Use the charts below to determine the types of assemblies available for Gentex lenses and their compatible helmet and oxygen masks.

Tracked and Bungee Visor Assemblies*

Gentex Helmet System	Gentex Oxygen Mask	Gentex Lenses and Assembly-Type Order Numbers					
		Clear	Neutral	Gradient	High Contrast	Amber	Laser
HGU-55/P or HGU-68/P	MBU-20/P Series or MBU-23/P	Bungee, 91A8058-6	Bungee, 91A8058-7	Bungee, 91A8058-2	Bungee, 91A8058-1	Bungee, 91A8058-5	Call
	MBU-12/P	Bungee, 81D5189-3	Bungee, 81D5189-4	Bungee, 81D5189-11	Bungee, 81D5189-12	Bungee, 85D7139-6	Call
HGU-55/P with High Speed Visor Assembly**	MBU-20/P Series	Bungee, 04D11873-1	Bungee, 04D11873-3	Bungee, 04D11873-9	Bungee, 04D11873-5	Bungee, 04D11873-11	Call
HGU-56/P	N/A	Track Inner, 88D7618-1	Track Outer, 88D7619-1	Track Outer, 95A9302-1	Track Outer, 95A9302-3	Track Outer, 95A9302-4	Call
HGU-68/P with EEK-7/P Track Kit	MBU-20/P Series or MBU-23/P	Track, 90D7972-5	Track, 90D7972-4	Track, 97A10037-3	Track, 90D7972-6	Track, 97A10037-2	Call
	MBU-12/P	Track, 907972-2	Track, 907972-1	Track, 97A10037-3	Track, 90D7972-3	Track, 97A10037-1	Call
HGU-84/P	N/A	Bungee Inner, 90D7914-1	Bungee Inner, 90D7915-1	Bungee Outer, 95A9255-2	Bungee Outer, 95A9255-3	Bungee Outer, 95A9255-1	Call
SPH-5	N/A	Track Inner, 90D7933-1	Track Outer, 90D7932-1	Track Outer, 90D7932-1	Track Outer, 90D7943-4	Track Outer, 90D7932-3	Call

* All Tracked and Bungee Visor Assemblies are "one size fits all".

** High Speed Visor Assembly requires the use of a rubber edge roll cover (Gentex Part# 05C12022-2) in order to provide 600-knot capability.

STEP-IN Visor Assemblies*

Gentex Helmet System	Gentex Oxygen Mask	Helmet Size	Gentex Lenses and Assembly Order Number	
			Clear	Laser
HGU-55/P, HGU-68/P, HGU-84/P	MBU-20/P Series or MBU-23/P	Medium	00C11176-1	00C11176-5
		Large / X-Large	00C11176-3	00C11176-7
	MBU-12/P	Medium	01C11448-1	01C11448-9
		Large	01C11448-3	01C11448-19
		X-Large	01C11448-5	01C11448-13

* Must be ordered based upon helmet size.

Learn More. Contact Gentex Today.

Gentex is the leading supplier of high-performance flight equipment for military, law enforcement, and rescue aircrew worldwide. Their comprehensive line of durable and innovative products for fixed and rotary wing aircrew includes: modular, integrated helmet systems; protective visors and spectacles; high-altitude oxygen breathing equipment; communication and hearing protection systems; chemical/biological defense respirators for fixed wing aircraft; aircrew flight equipment test sets; and a full suite of accessories. Gentex also offers aircrew flight equipment servicing, fitting, and operations/maintenance training.

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