MSA Cairns® FIRE HELMET PRODUCT SPECIFICATION

PRODUCT TYPE:
Structural Firefighting Helmet(s) with Proximity Firefighting Option

PRODUCT MODEL(S):
MSA Cairns 660C Metro® and Invader 664® Fire Helmets

PURPOSE:
To supply a uniform, standard product specification for a fiberglass composite structural fire helmet.

SCOPE:
The scope of this product specification encompasses the performance criteria, design, construction and materials deemed necessary for helmets utilized for structural (and proximity as applicable) firefighting.

GENERAL:
Helmets manufactured in accordance with this specification are designed to mitigate adverse environmental effects to the firefighter's head while providing the specifying authority with what are, in their opinion, essential requirements.

PERFORMANCE CRITERIA/STANDARDS:
The 660C Metro & Invader 664 Fire Helmets shall meet the requirements of NFPA 1971:2018 (or the current edition) for structural firefighting and proximity firefighting when that option is selected; US-OSHA 1910.156, and CAL-OSHA

All eye/face protection sold as part of the original helmet assembly shall be compliant with the impact requirements of the current versions of ANSI/ISEA Z87.1 and NFPA 1971:2018.

PERFORMANCE VERIFICATION DATA REQUIREMENT:
Response to this specification shall include a complete and current NFPA 1971 test report from a recognized, accredited test facility detailing all performance data for the helmet(s) and compliant helmet components included in the original assembly. Certificates of conformance and/or letters of certification alone shall not be acceptable. Component testing is not acceptable. Certification testing is conducted every year to a random lot size, as per NFPA requirements.

MANUFACTURER'S WARRANTY:
MSA warrants MSA Cairns Fire Helmets manufactured on or after January 1, 2015, to be free from defects in materials and/or faulty workmanship for a period of ten (10) years from the date of manufacture by MSA. For warranty details, please see "10-Year Warranty and Terms of Sale" (ID 3600-72-MC / February 2015). For MSA Cairns Fire Helmets manufactured prior to January 1, 2015, please refer to ID 3600-09-MC / Jan 2005. All warranty documents can be found on the MSA website (MSAsafety.com).

PRODUCT VISUAL(S):

Cairns® 660C Metro™ Fire Helmet

Cairns® Invader 664 Fire Helmet

HELMET SHELL:

The 660C Metro & Invader 664 helmets shall be of the Modern Fire Helmet style. The shell shall have a down-sloping brim to enhance water shed. The radius of the juncture of the brim and crown shall be no less than 0.1875" to maximize deflection of debris and impact protection.

The shell material shall be a fiberglass composite, consisting of a high-temperature-, flame-, and chip-resistant "through-colored" thermoset resin, reinforced with 1" and 2" chopped fiberglass, compression-molded to form a one-piece shell.

660C Metro Helmet Colors

The exterior of the shell shall be completely coated with a color pigmented, high gloss, abrasion, high heat and chemical resistant paint finish. The shell color and matched paint finish shall be available in the standard colors of white, red, black, and yellow. Orange, blue, and green painted finishes shall be available over a white composite shell.

Invader 664 Helmet Colors

The shell shall be available in white, red, black, and yellow with an unpainted, matte finish.

The shell dimensions (w/ edge trim) shall be 14.00" (L), 11.13" (W) and have a crown depth of 5.9". The shell shall have a nominal wall thickness of 0.065".

The shell shall have black or white[1], high-temperature, flame-resistant, flexible edge trim composed of an aluminum core coated with thermoplastic rubber (TPR). The edge-trim is secured around the entire brim of the helmet by crimping the aluminum core, and secured at the mating ends with a high-temperature adhesive and clamped by the helmet hangar clip at the edge of the rear brim.

The shell shall have a helmet hanger comprised of a ¾" nickel-plated "D" ring and a stainless steel clip. The helmet hanger shall be attached to the center rear of the brim.

[1] *Available on white helmet shells only*

IMPACT CAP:
The impact cap is designed to help provide increased thermal and impact protection. The impact cap shall be comprised of a rigid cell, high-temperature urethane foam dome attached to a flame-resistant, thermoplastic Polyphenylene Oxide (PPO) inner liner that covers the entire inside crown of the helmet. The impact cap shall be modular and field-removable for periodic inspection of the foam's integrity.

HEAD SUSPENSION:
The 660C Metro & Invader 664 Fire Helmets shall consist of a six-way head suspension system, attached to the impact cap. The head suspension system comprises three (3) fixed 0.75" wide nylon straps mounted at six points on the impact liner and fastened at their intersection to form the 6-way overhead strap assembly. The straps are attached to the impact cap by means of a rigid plastic strap that locks the straps into a routed round groove in the impact cap.

SHELL RELEASE SYSTEM:
The impact liner, complete with suspension system and chinstrap assembly (retained as described under "

CHINSTRAP") shall be retained to the helmet shell by means of two (2) thermoplastic retention clips mounted under the eye/face protection hardware, and by four (4) pieces of hook-and-pile fastener sections between the impact liner and helmet shell in the crown area. This design will enable the shell to be released from the helmet when impacted from below the brim, reducing the chance of being injured by the chinstrap, and leaving the impact cap on the wearer's head for continued thermal and impact protection.

SIZING ADJUSTMENT:
The size of the headband may be adjusted to fit the wearer's head by means of a ratchet adjustment system. The headband is attached to the sides of the impact cap liner by four (4) flexible retention tabs. The rear ratchet arms shall have three (3) adjustable positions so that the angle of the ratchet may be set to accommodate the nape of the wearer's head. The headband height shall be adjustable at the front of the helmet via a hook and loop system to provide additional comfort to the wearer.

The headband shall have a head size range of 6-3/8 to 8-3/8, adjustable in 1/8" increments.

COMFORT LINER:
The 660C Metro & Invader 664 shall have a removable comfort liner, consisting of a headband cushion and a ratchet pad. Both components made of a foam-core laminate system, comprised of a soft black flame-resistant flannel material against the user's head backed by a soft loop material secured to the headband and ratchet with hook fastener. The comfort liner is machine-washable. It can easily be upgraded to a standard flannel or deluxe leather-lined version.

CHINSTRAP:
The chinstrap shall be constructed of three (3) pieces (or sections) of 3/4" wide, spun-Nomex webbing, which are connected by a high-temperature, durable thermoplastic quick-release buckle on the left side of the helmet, and by an optional cast zinc postman's slide buckle on the right side of the helmet.

The chinstrap is attached at either end of the impact cap by means of a plastic tube that travels the circumference of the impact cap assembly, locking the chinstrap into a groove in the impact cap.

The long middle section, with the female half of the quick-release buckle sewn to the left end, shall pass through the postman's slide buckle on the right. The middle section shall be a minimum of 23.0" in length and the total length of the chinstrap shall be 35.0" at full extension, end to end. The chinstrap includes a hook-and-loop fastener to secure extra material.

EAR/NECK PROTECTION:
The 660C Metro and Invader 664 Fire Helmets provide for ear and neck protection with a 6.5" wide, 19.0" long, full-cut earlap. The double-layer earlap consists of a 4.5 oz. / yd., yellow or black colored Nomex outer layer, and a flame resistant black flannel inner layer. The earlap shall be secured to the shell by pieces of hook and pile fastener in no fewer than five (5) locations.

The earlap is machine washable and can be easily upgraded to a PBI/Kevlar or a blood-borne pathogen-resistant earlap. The ear and neck protector shall be removable without interfering with the overhead strap assembly in any way and without removing any part of the helmet suspension.

Earlaps with under-chin extensions shall be available.

RETRO-REFLECTIVE TRIM:
The helmet shall have three bar shaped pieces of retro-reflective, fluorescent Reflexite trim around the exterior of the crown of the helmet shell. There shall be two additional pieces of bar-shaped Reflexite trim on the front of the top of the helmet for maximum daytime and nighttime visibility. Red-orange and lime-yellow retro-reflective, fluorescent Scotchlite bars is also available.

Blue or white Reflexite trim shall be available. (NOTE: Blue or white Reflexite trim is not compliant to NFPA 1971.)

EYE PROTECTION OPTIONS:

Name	*Description*
Defender® Visor	The 660C Metro & Invader 664 Fire Helmets shall have an integral visor that retracts between the helmet shell and impact cap. The visor shall be a wrap-around design, 4.5" high and 8.25" long and have a comfort nose pad. The lens shall be coated with a scratch resistant coating on both inner and outer surfaces to help protect it from abrasion. The lens shall be optically correct to eliminate distortion. The lens shall be available in clear or Tuffshield (yellow tinted). The lens material shall be high-performance, impact-resistant plastic. The lens shall be able to be replaced within 15 seconds and without the use of tools (e.g. Allen wrench, screwdriver). The lens must be retained without the use of spring-loaded mechanics or lever system.
Faceshield and Hardware	*Faceshield* The faceshield shall be a wrap-around, high pivot design, 4.5" wide, 19.0" long and 0.150" thick. The lens material shall be high performance, high-temperature, impact-resistant thermoplastic. The lens shall be coated with a scratch resistant coating on both inner and outer surfaces to protect the lens from abrasions.

Name	*Description*
	Hardware The faceshield shall be mounted to the helmet shell by means of two (2) glass-reinforced, high-temperature and flame-resistant thermoplastic bracket assemblies, with adjustable thermoplastic knobs one (1) on either side of the helmet shell. The brackets allow the faceshield to be raised above the helmet shell when not in use.
Goggle System	The goggle system shall be comprised of a high-temperature, flame- and impact-resistant goggle lens and frame, a flame-resistant, elastic goggle strap, and a goggle retention system. This retention system will lock the goggle onto the helmet at the back brim, preventing loss of the goggle when either stowed or donned. Both inner and outer surfaces of the goggle lens will have an anti-scratch and anti-fog coating. Both ends of the lens will be reinforced with a fiberglass insulating label for extra durability at elevated temperatures. The lens will be low profile, optically correct with a nominal thickness of 1/16". The goggle strap will require a one-time adjustment to facilitate donning if wearing gloves.

OPTIONS:

Proximity Fire Fighting Helmet

The 660C Metro and Invader 664 Fire Helmets shall be made available with optional components to enable the helmets to be used in proximity firefighting. The necessary components shall include a proximity bonnet, a proximity shroud, and faceshield. Use of these components shall enable these helmets to be compliant with the proximity firefighting helmet requirements of NFPA 1971: 2018.

- Proximity Bonnet
  The proximity bonnet shall be custom made to specifically fit over the 660C Metro and Invader 664 Fire Helmets. The proximity bonnet shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier with thermal liner. The proximity bonnet, when attached to the helmet, shall allow a faceshield to be attached to the helmet over the proximity bonnet.

- Proximity Shroud
  The proximity shroud shall be custom made to work specifically with the proximity bonnet. The proximity shroud shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier and thermal liner. The proximity shroud, when used in conjunction with the proximity bonnet, shall provide continuous radiant reflective protection for the head, face, and neck areas that do not receive primary protection from the helmet or faceshield.

- Faceshield
  The faceshield used in the proximity system shall be a gold-coated 6" faceshield. The faceshield shall provide radiant reflective protection to the head, face, and neck areas that do not receive primary protection from the helmet or proximity bonnet or proximity shroud.

Accessories

A full range of fire helmet accessories, such as customizable front pieces and front holders, is available. Please see the MSA Cairns Fire Helmet catalog and/or contact an MSA representative.

MAINTENANCE, REPAIR and RETIREMENT:
Proper maintenance, repair, and retirement of the helmet can be found in the MSA Cairns Fire Helmet Owner's Guide and on our web site (MSASafety.com). Users should also refer to NFPA-1851 (current edition) regarding proper inspection, maintenance, repair schedules, and retirement requirements for structural and proximity firefighting helmets. Upon the customer's request, an MSA representative will conduct training explaining the proper maintenance, repair and retirement of MSA Cairns Fire Helmets.

CONTACT INFORMATION:
For additional information on MSA Cairns products, please contact MSA Customer Service at 1-877-MSA-FIRE or visit us on MSAfire.com.