

CARBON

X

ALUMINIZED SOLUTIONS

THERE IS A COMMON PERCEPTION AMONG PROFESSIONALS WORKING IN MOLTEN-METAL AND HIGH-HEAT ENVIRONMENTS THAT ALUMINIZED PROTECTIVE APPAREL MUST BE HEAVY AND RIGID IN ORDER TO ADEQUATELY PROTECT AGAINST BOTH RADIANT HEAT AND MOLTEN METAL SPLASH. LIGHTER-WEIGHT ALTERNATIVES ARE REGARDED FOR RADIANT HEAT PROTECTION ALONE AND PROVIDE LITTLE RESISTANCE TO MOLTEN SPLASH HAZARDS.

CONSIDERING ALUMINIZED GARMENTS ARE USUALLY WORN IN ENVIRONMENTS WHERE AMBIENT TEMPERATURES CAN EXCEED 200°F, THE USE OF HEAVY, RIGID APPAREL MAY POSE SERIOUS RISKS TO THE WEARER'S SAFETY AND PRODUCTIVITY. ADDED WEIGHT COMBINED WITH RESTRICTED MOVEMENT CAN CAUSE THE WEARER TO EXPEND MORE ENERGY IN DOING HIS OR HER JOB, THEREBY INCREASING THE POTENTIAL FOR HEAT-STRESS RELATED INJURIES WHILE REDUCING PRODUCTIVITY.

CARBONX ALUMINIZED SOLUTIONS DEFY THESE PERCEPTIONS AND REALITIES.

Applications for CarbonX Aluminized Solutions: coats, jackets, hoods, full-body suits, pants, leggings, and overshoes/spats.

CARBONX® ALUMINIZED SOLUTIONS ARE LIGHTWEIGHT, YET OFFER MAXIMUM PROTECTION AND ENHANCED COMFORT

CarbonX Aluminized Solutions enhance both protection and comfort for professionals working in molten-metal and high-heat environments. Our aluminized products are flexible and lightweight yet still provide maximum temperature resistance and extraordinary protection against molten metal splash.

CarbonX aluminized fabrics incorporate the Gentex® proprietary Dual Mirror® system, a proven five-layer structure that ensures a high level of abrasion resistance so the fabric remains highly reflective.

Upon contact with certain molten substances, the aluminized coating will melt away; however, the high-performance CarbonX base fabric will continue to protect and provide a persistent barrier. CarbonX aluminized fabrics are among the lightest materials on the market able to pass the ASTM F955 pour test for molten iron and aluminum. They remarkably shed splatter, sparks, and other hot liquids and molten metal and withstand extremely high temperatures.

Constructed to be truly non-flammable, CarbonX Aluminized Solutions deliver:

Unmatched Protection: The base fabric will not burn, melt, or ignite, and significantly outperforms competing fabrics when subjected to extreme heat and molten metal splash. Even after intense exposure, the fabric maintains its strength and integrity and continues to protect. It also limits heat transfer much more effectively than other aluminized products of similar weight. In addition, results of an NFPA 1971 Radiant Reflective test show Gentex Dual Mirror aluminized fabrics provide six times better protection at higher heats than similar weight non-aluminized fabrics.

Comfortable Protection: The base fabric maintains its flexibility even after it is aluminized and is soft to the touch, enhancing the wearer's comfort and productivity. Its lighter weight also significantly reduces a wearer's potential for fatigue and heat stress.

Permanent Protection: Because the base fabric is inherently flame resistant, its thermal protective properties will not wear away. Proper care and cleaning will extend the life of garments made from the fabric. (Apparel that is torn or damaged should be removed from service.)



SETTING A NEW STANDARD IN FR PROTECTIVE APPAREL

CARBON



While competitors work to ensure their products *meet* industry standards, **our goal is to exceed those standards** and go above the norm in providing a persistent thermal barrier with minimal heat conductivity. CarbonX fabrics and apparel offer protection far beyond the industry's No Melt, No Drip requirements, which typically only require that protective fabrics not contribute to burns in a thermal exposure as opposed to actually protecting the wearer from a thermal event.

TECHNICAL PERFORMANCE—ASTM F955 POUR TEST RESULTS

Maximum calorimeter temperature rise during the first 30 seconds and time to second-degree burn after impact with molten iron

	Baselayer	Max Temp. Rise (°C) After 30 Seconds		Time to Second-Degree Burn According to Stoll Curve (Seconds)
		Top Cal.	Bottom Cal.	
CarbonX Fleece with Dual Mirror Aluminization	Cotton T-Shirt	15.4	13.2	None
CarbonX Fleece with Dual Mirror Aluminization	CarbonX Ultimate™ Fabric	11.7	8.6	None
CarbonX CR-80 with Dual Mirror Aluminization	Cotton T-Shirt	15.8	13.2	None

ASTM F955 Pour Test: The standard test method for evaluating heat transfer through materials for protective clothing upon contact with molten substances.

Average visual rating of outer layer fabric exposed to molten aluminum and iron

	Baselayer	Charring	Shrinkage	Adherence	Perforation
CarbonX Fleece with Dual Mirror Aluminization	Cotton T-Shirt	3 Moderate charring*	1 No shrinkage	1 None	1 None
CarbonX Fleece with Dual Mirror Aluminization	CarbonX Ultimate™ Fabric	3 Moderate charring	1 No shrinkage	1 None	1 None
CarbonX CR-80 with Dual Mirror Aluminization	Cotton T-Shirt	3 Moderate charring*	1.5 No shrinkage	1 None	1 None

*Fabric was mostly black in impacted area. Evaluated visually on a scale of 1-5, with 1=none and 5=significant charring, shrinkage, adherence, or perforation.

CarbonX Fleece with Dual Mirror Aluminization passes all requirements of EN ISO 11612

ISO 17493@180° C Heat Resistance	-2.5%	ISO 9151 Convective Heat	B1
ISO 17493@260 C Heat Resistance	-2.5%	ISO 6942 Radiant Heat	C4
ISO 15025-A Flame Spread Face	A1	ISO 9185 Molten Aluminum	D3
ISO 15025-B Flame Spread Edge	A2	ISO 9185 Molten Iron	E3
ISO 13937-2 Tear Strength	23N/26N	ISO 12127 Contact Heat	F1
ISO 13938-1 Burst Strength kPa	1040		

EN ISO 11612 (2015): European standard for protective clothing designed to defend against heat and flame. European standard testing is not currently available for CarbonX CR-80 with Dual Mirror Aluminization.

FOR MORE INFORMATION ABOUT CARBONX FABRICS AND APPAREL, CALL 801.415.0025 OR VISIT WWW.CARBONX.COM.



BUILDING A BETTER PROTECTIVE MARKET



CARBONX FLEECE WITH DUAL MIRROR ALUMINIZATION

TOTAL WEIGHT (OZ/YD²) 12.0 OZ
TOTAL WEIGHT (G/M²) 410 G/M²

CARBONX CR-80 WITH DUAL MIRROR ALUMINIZATION

TOTAL WEIGHT (OZ/YD²) 9.5 OZ

Multilayer Dual Mirror Aluminization

MULTIPLE LAYERS OF ALUMINUM, PROTECTIVE FILMS, AND HEAT-STABLE ADHESIVES SO IF ONE LAYER BREAKS DOWN, ANOTHER LAYER IS THERE TO PROTECT.

