CARBON X by TEXTECH

CR-80 REPEL

CARBONX CR-80 REPEL DELIVERS MULTIFUNCTIONAL PROTECTION UNLIKE ANY OTHER PROTECTIVE FABRIC. CONSTRUCTED TO BE TRULY NON-FLAMMABLE AND LIGHTWEIGHT, CR-80 REPEL PROVIDES MAXIMUM COMFORT WHILE DELIVERING SUPERIOR PROTECTION AGAINST EXTREME HEAT, DIRECT FLAME, MOLTEN METAL, FLAMMABLE LIQUIDS, AND CERTAIN CHEMICALS—ALL IN ONE SINGLE GARMENT.

Sparks and spatter simply roll off CR-80 Repel, making it ideal for use in jackets, sleeves, coveralls, aprons, and bibs.

CARBONX CR-80 REPEL—MULTIFUNCTIONAL PROTECTION IN ONE SINGLE FABRIC

CarbonX® CR-80™ Repel is designed to protect against numerous hazards in one single garment, including dangers unique to the welding, molten metal, pulp and paper, and oil and gas industries. The multiple garments typically required in these harsh environments may be replaced with a single piece of protective clothing constructed of the CR-80 Repel fabric because of its superior protective capabilities.

CR-80 Repel is made of the patented CarbonX blend of high-performance fibers and a proprietary compound that enables the fabric to remarkably shed molten metal, flammable liquids, certain chemicals, and other molten substances while providing ultimate protection against extreme heat and direct flame. Sparks, spatter, and splash simply roll off the woven material. CR-80 Repel is one of the few non-aluminized, flame-resistant (FR) fabrics on the market able to pass the ASTM F955 test for molten iron. Its flammability performance, as measured by the thermal mannequin test, is also extraordinary, with only 15–20% of the mannequin surface reaching criteria for a second- and third-degree burn.

With an encapsulated barrier of silicone, CR-80 Repel also shields against harsh weather conditions, reducing wind penetration and repelling water.

CR-80 Repel is significantly lighter than other similar application protective options. Its lighter weight increases a wearer's comfort and productivity as it decreases the amount of muscle exertion and heat stress that builds up over the course of a work shift. Although CR-80 Repel is water resistant, micropores in the fabric make it breathable, further enhancing comfort.

Constructed to be truly non-flammable, CR-80 Repel delivers:

Unmatched Protection: It will not burn, melt, or ignite, and outperforms competing products when subjected to direct flame, extreme heat, molten metal, flammable liquids, and certain chemicals. Even after intense heat and flame exposure, CR-80 Repel maintains its strength and integrity and continues to protect. It also limits heat transfer much more effectively than FR fabrics of similar weight.

Comfortable Protection: CR-80 Repel is lightweight, flexible, and odor resistant, and it dries quickly. A variety of Repel fabric options are available, depending on the hazard risk.

Permanent Protection: Because CR-80 Repel is inherently flame resistant, its thermal protective properties will not wash out or wear away. Apparel made from CR-80 Repel can be worn again and again, even under conditions of daily exposure, providing significant value. As opposed to leather, CR-80 Repel is chromium-free, making it easy to dispose of apparel at the end of its wear life. (Apparel that is torn or damaged should be removed from service.)

SETTING A NEW STANDARD IN FR PROTECTIVE APPAREL

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While competitors work to ensure their products *meet* industry standards, **our goal is to exceed these 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

MOLTEN IRON IMPACT AT 2800°F (ASTM F955)

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

	Hazard	Max Temp. Rise (°C) After 30 Seconds Top Cal.	Bottom Cal.	Time to Second-Degree Burn According to Stoll Curve (Seconds)
CR-80 REPEL	Iron	13.4	10.3	None

Average visual rating of outer layer fabric exposed to molten iron*

	Hazard	Charring	Shrinkage	Adherence	Perforation
CR-80 REPEL	Iron	3	1	1	1

* Evaluated visually on a scale of 1–5, with 1=none and 5=significant charring, shrinkage, adherence, or perforation.

THERMAL MANNEQUIN TEST (ASTM F1930–13)

Garment System	% of mannequin surface reaching criteria for a second- and third-degree burn	% of mannequin surface under garment reaching criteria for a second- and third-degree burn
CR-80 REPEL	20.8	15.0
ASTM F1930–13	50	50

ANTI-STAT (EN ISO 1149–2, Electrical Resistance)

Pass (Class 1 and 2)

WELDING SPATTER (EN ISO 11611, Clause 6.8, Impact of Spatter)

Pass (Class 1 and 2)

HEAT AND FLAME RESISTANCE (EN ISO 11612 for Heat Resistance, Flame Spread, Tear Strength, Burst Strength, Convective Heat, Radiant Heat, and Molten Aluminum and Iron)

Pass A1, B1, C1, E2,F1

CHEMICAL RESISTANCE (ASTM F739–12 for Permeation of Liquids and Gases, Time to Permeation)

ASTM F739–12	15 minutes
Hydrogen Peroxide 30%	21.6 minutes
Black Liquor	>480 minutes
Green Liquor	242 minutes

Sodium Chlorate	>480 minutes
Sodium Hydroxide 50%	>480 minutes
Sulfuric Acid 93%	36.3 minutes
White Liquor	60.7 minutes

FOR MORE INFORMATION ABOUT CARBONX FABRICS AND APPAREL, CALL 801.415.0023 OR VISIT WWW.CARBONX.COM.

TEXTECH INDUSTRIES

CARBONX CR-80 REPEL PROPERTIES

TOTAL WEIGHT (OZ/YD²)	9.5 OZ
NFPA 70E HAZARD RISK CATEGORY	2

AFTER FLAME

CR-80 REPEL	0.2 seconds
ASTM F1506	2 seconds or less
NFPA 1971 (2007)	2 seconds or less
NFPA 1975 (2009)	2 seconds or less
NFPA 1977 (2005)	2 seconds or less
NFPA 2112 (2007)	2 seconds or less

CHAR LENGTH

CR-80 REPEL	**31.75 mm (1.25")**
ASTM F1506	6" or less
NFPA 1975 (2009)	6" or less
NFPA 1977 (2005)	4" or less
NFPA 2112 (2007)	4" or less

THERMAL PROTECTIVE PERFORMANCE (TPP)

CR-80 REPEL	**12.0**
ASTM F1506	3.0 (spaced TPP of 6.0)

ATPV

CR-80 REPEL	**8.6**
NFPA 70E HRC 2	8.0

ASTM F1506: Standard performance specification for FR textiles in apparel worn by electrical workers exposed to momentary electric arc and related thermal hazards.
NFPA 1971 (2007): Standard on protective ensembles for structural firefighting and proximity firefighting.
NFPA 1975 (2009): Standard on station/work uniforms for emergency services.
NFPA 1977 (2005): Standard on protective clothing and equipment for wildland firefighting.
NFPA 2112 (2007): Standard on FR garments for protection of industrial personnel against flash fire.
Thermal Protective Performance (TPP): The TPP score is simply two times the number of seconds it takes for a second-degree burn to occur when exposed to a 2.0 cal/cm² flame. The higher the TPP rating, the higher the level of protection.
ATPV: ATPV is defined in the ASTM F1959-99 standard arc test method for FR fabrics as the incident energy that would cause the onset of a second-degree burn (1.2 cal/cm²).