CARHARTT FR LAYERED TESTING

Many people ask about arc ratings when flame-resistant clothing is layered. The total arc rating cannot be determined by adding the ratings of the two items. In most cases the total arc rating is higher than the number calculated by simply adding the arc ratings from the two items. Layered testing is the only way to determine the total arc rating for layered FR garments.

Carhartt has conducted layered testing for a variety of combinations, using some of our most popular FR clothing styles. The resulting layered arc rating of the various combinations are listed on the table below for your reference.

THIS STYLE	LAYERED OVER THIS STYLE	EQUALS THIS ARC RATING
FRS159 (5.8 cal/cm²)	FRK008 FRK009 (4.7 cal/cm²)	ATPV = 12.4 cal/cm²
FRS159 (5.8 cal/cm²)	FRK087 FRK293 FRK294 (9.8 cal/cm²)	EBT = 28.0 cal/cm²
FRS160 FRS006 WFRS160 (8.6 cal/cm²)	FRK008 FRK009 (4.7 cal/cm²)	ATPV = 12.6 cal/cm²
FRS160 FRS006 WFRS160 (8.6 cal/cm²)	FRK087 FRK293 FRK294 (9.8 cal/cm²)	ATPV = 34.2 cal/cm²
FRS160 FRS006 WFRS160 (8.6 cal/cm²)	100234 100235 100236 100237 100238 100549 (8.9 cal/cm²)	ATPV = 30 cal/cm²
FRS003 (8.7 cal/cm²)	100234 100235 100236 100237 100238 100549 (8.9 cal/cm²)	ATPV = 28 cal/cm²
101017 101218 (11.2 cal/cm²)	100234 100235 100236 100237 100238 100549 (8.9 cal/cm²)	ATPV = 33 cal/cm²

Testing Conducted for Carhartt Inc. by Kinectrics High Current Laboratory, Toronto, Ontario, Canada

OUTFIT YOUR CREW WITH THE FR BRAND THAT OUTWORKS THEM ALL. CARHARTT HAS THE GEAR THAT MEETS INDUSTRY STANDARDS TO KEEP THEM SAFE AND COMFORTABLE ON THE JOB

OSHA 1910.269

- Prohibits clothing that, when exposed to flames or arcs, could increase the extent of wearer injury. Employers must determine appropriate clothing based on an evaluation of potential hazards in the work environment. Clothing made from flame-resistant materials is acceptable under the Rule; *i.e.*, clothing that meets the requirements of ASTM F 1506.
- Flame resistant ARC rated clothing are required for upper and lower body. In some instances, face shields are required. HRC/ARC must be 2 or better. Long sleeves are required. No materials that can melt, drip or ignite shall be worn.
- Employees must wear FR clothing that conforms to the requirements of ASTM F-1506, and must have an appropriate arc rating (Arc Thermal Performance Value (ATPV), or Breakopen Threshold Energy (EBT).

NFPA 70E for General Industry

- Mandates that employers conduct a *hazard risk assessment* to determine the potential arc exposure for employees who work on or near energized parts or equipment. The level of arc exposure is referred to as the Arc Thermal Performance Value (ATPV) and is measured in calories/cm² (often called a cal rating).
- Requires employees to wear flame-resistant clothing with an ATPV, or cal rating, equal to or greater than the determined arc hazard.

NESC® For Electric Utilities

- Specifies that employers conduct a hazard risk assessment to determine the potential arc exposure for employees who work on or near energized parts or equipment.
- Requires employees to wear flame-resistant clothing with an ATPV, or cal rating, equal to or greater than the determined arc hazard.

NFPA 2112 For Oil & Petrochemical Industries

- Mandates that employers conduct a flash-fire hazard assessment to determine the risk of a flash fire.
- Requires employees to wear flame-resistant clothing if the potential for a flash fire exists.