

# DUPONT ELECTRONICS & COMMUNICATIONS COLLABORATES WITH NORTH AMERICAN RESCUE ON MATERIALS TECHNOLOGY

DuPont™ Kapton® RS polyimide film and DuPont conductor pastes provide critical heating capability even in the most challenging field environments.

## BACKGROUND INFORMATION

Located in Greer, South Carolina, North American Rescue (NAR) develops and markets mission critical medical products for Emergency Medical Services (EMS), military, federal agencies, civilian law enforcement and pre-hospital life savers. The company's technology consists of a broad portfolio of solutions that have a direct correlation to decreasing preventable death in Tactical Medicine and Rescue.

According to NAR, there is a high association between hypothermia and mortality in trauma victims. As a result, NAR set out to develop a suite of highly portable solutions that provide heat loss prevention as soon as possible after an injury occurs, while addressing the limitations of current hypothermia prevention devices on the market. These solutions were developed in response to requests from tactical medical communities and the military for forward thinking medical technology that address the demands of early hypothermia prevention.

## BUILDING ON A COLLABORATIVE PROTOTYPING EXPERIENCE

When NAR began development on the ARC<sup>°</sup>tc™ Thermal Wrap BA, they required unique materials to solve multiple technology needs. These requirements included even heating to avoid hot spots, self limiting temperature control capabilities to reduce risk of burns, low power consumption and fast heat up time. The wrap also had to be durable, rugged and lightweight.

“Our customers needed a solution to be light weight, portable, efficient, resistant to fluids, and fully functional in spite of any puncture or damage to the materials,” said Samuel D. Wyman, III, President, North American Rescue, LLC. “And that’s when we turned to DuPont. They provided facilities, knowledge and deep expertise for a collaborative prototyping experience.”

## SEEKING A BETTER SOLUTION

After evaluating alternative options, including resistive wire



The ARC<sup>°</sup>tc™ Thermal Wrap BA from North American Rescue is the newest innovative hypothermia management gear enabled by advanced electronic materials from DuPont. Photo courtesy of North American Rescue, LLC.

and carbon fibre heating solutions from other materials suppliers, NAR chose materials from DuPont Electronics & Communications as the technology backbone for the ARC<sup>°</sup>tc™ Thermal Wrap BA. It is enabled by DuPont™ Kapton® RS polyimide film and multiple DuPont conductor pastes that provide critical heating capability even in the most challenging field environments.

Vacuum packaged in a pouch until ready for use, the lightweight, compact and portable wrap quickly delivers 104° F ±2° (40° C) of constant uniform radiant heat directly to a victim's back and chest simultaneously through heating surfaces built into the device that lasts a minimum of five hours from a fully charged battery. The wrap overcomes the limitations of chemical, self-heating devices because it is resilient operating even when wet (including bodily fluids), at high altitudes (low oxygen) and/or in spite of punctures to the heating surfaces.

“Our patented design utilizing DuPont materials has met the challenge to overcome the environmental and material limita-



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tions that have crippled previously available solutions, and make portable hypothermia prevention a significantly more reliable life-saving measure,” said Wyman.

### DUPONT MATERIALS ENABLES ADVANCED TECHNOLOGY IN HYPOTHERMIA PREVENTION

The resistive tolerance of DuPont™ Kapton® RS polyimide film, along with DuPont silver and other specialty conductor pastes, allows for better thermal control, protecting the device from overheating while enabling fast heat up time, delivering radiant heat quickly to the patient.

Kapton® also enables the device to operate for a longer duration on a limited battery supply and perform more reliably, even in harsh environments. Kapton® is hydrophobic and highly resistant to solvents and chemicals and can be used in -200°C to +200°C environments. Kapton® film is thin (0.002 inch thick) and light (less than 0.15 oz per square foot), enabling the device to be ultra light, flexible and foldable. And because of the superior electrical properties of Kapton®, smaller electrical conductors could be utilized, thereby further reducing the weight and cost of the device.

The resistive property of Kapton® also adds to the durability and ruggedness of the device since Kapton® cannot be easily cracked, rubbed off or otherwise damaged. It allows for continuous heater operation even if the heater is punctured, cut or saturated with fluids.

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Samuel D. Wyman, III  
President, North American Rescue, LLC

### FOR MORE INFORMATION

For more information about DuPont electronic materials, please visit <http://electronics.dupont.com>  
For more information on North American Rescue products, please visit <http://www.narescue.com/arctc>

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