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REVOLUTIONARY CARC TECHNOLOGY IS FIELDDED

SEATTLE, WA, August, 2007 - Isotron's next-generation Chemical Agent Resistant Coating (IsoCARC™) has been applied and is being evaluated in a field environment. The IsoCARC technology was developed under a Navy-sponsored Small Business Innovative Research (SBIR) contract. Today, this advanced technology has been applied and evaluated on an advanced amphibious assault vehicle. This application and evaluation phase represents a major step towards full deployment of IsoCARC technology.



EFV following application of IsoCARC

IsoCARC provides advanced protection from chemical warfare agents over the current CARC, and is easier to apply, with reduced hazards to application personnel. These coatings are essential in protecting and concealing military equipment, weapons, and tactical vehicles.

The motivation for the next-generation CARC technology came following Desert Storm. During that operation, the United States military sent thousands of vehicles and equipment to theater which needed repainting to change the woodland green to the desert camouflage colors. Painting operation sites were limited in personal protection equipment, and it is reported that there was a failure to adhere to applicable safety and occupational health policies and procedures¹. Further, some infantry units were required to re-paint their own vehicles forward of these sites with virtually no personal protection equipment at all. The CARC used during that time was hazardous to those involved in the painting process, as the current CARC is toxic before it fully dries.

In existing CARC systems, such as MIL-C-53039 and MIL-DTL-64159, chemicals known as isocyanates are used in order to achieve the chemical resistance feature as well as toughness and durability service requirements. However, isocyanates are known to cause problems in the respiratory system of humans and are harsh skin and mucous membrane sensitizers². There is a cause for alarm in the adverse health effects relating to exposure to hexamethylene diisocyanate (HDI) and other volatile organic chemicals (VOCs) associated with the traditional CARC coatings. The primary health concerns associated with the CARC involves the inhalation of airborne droplets containing HDI, released during spray application. Systemic effect studies have

¹ Environmental Exposure Report: Chemical Agent Resistant Coating, July 27, 2000
(http://www.gulflink.osd.mil/carc_paint_ii/)

² United States Naval Flight Surgeon's Manual: Third Edition 1991: Chapter 21: Toxicology: Isocyanate

determined that inhalation exposure can cause asthma, shortness of breath and other respiratory distress effects³. It is for this reason that the safe handling of isocyanate materials requires that the persons exposed to these vapors be protected with air supplied respirators, and protective suits that assure that the uncured coating cannot be inhaled or contact the skin. However, this is hardly practical in an expeditionary role where the theater of operation could change in the course of a few days.

The Marine Corps, through the Office of Naval Research, sponsored an aggressive technology development agenda in 2003, which would all together eliminate the use of VOC's in CARC coatings. Also, this advanced coating development agenda required a design approach that would eliminate the need for isocyanates in the coating composition, yet would meet or exceed field requirements for durability and resistance to chemical warfare agents. Finally, unlike the standard CARC coating materials which required mixing of two components, this new generation of materials would be easier to handle in the field since these new features were to be provided in the form of a single package of material. Isotron responded to this requirement with its proposal to develop the IsoCARC. This requirement has now become a reality. In addition to the evaluation effort for the amphibious military vehicle, Isotron has also sold IsoCARC coatings for use on other vehicle platforms, including the HMMWV. IsoCARC is currently available in Desert Tan, Green, Field Drab and Black. Efforts are underway to develop Gloss White and Aircraft Grey variations.

Coatings are a critical element of the military's arsenal of chemical and biological warfare protective technologies. While IsoCARC represents a major step forward in coatings technology, Isotron and its military sponsors do not intend to stop here. Currently, the key feature of CARC topcoats, which are used to protect vehicles and equipment, is that they do not imbibe chemical agents. However, these coatings still must be decontaminated extensively following any exposure event. Isotron is currently working closely with the Joint Services programs for chemical and biological agent defense to develop advanced coatings systems that are designed to render a coating "Self-Decontaminating". These coatings will provide a reactive feature to neutralize any chemical agent which comes in contact with the coating surface. This would create a much safer operating environment for the warfighter and would allow the mission to continue even after a contamination event.

The objectives of these research efforts are coatings that increase safety, flexibility, and lethality in an expeditionary environment. The IsoCARC and next-generation coatings require minimal time and equipment to apply, will be safe to both the warfighter and the environment, and stand to revolutionize those operations associated with decontamination.

About Isotron:

Isotron Corporation is a woman-owned and operated small business specializing in technology-based environmental protection and CBRN defense. The company is directly involved in large scale radionuclide and spill event response as well as chemical and biological agent decontamination and protective equipment development. Isotron is located in Seattle, Washington. For more information, please visit <http://www.isotron.net>.

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³ International Consensus Report on: Isocyanates – Risk assessment and management (<http://www.arbeidstilsynet.no/publikasjoner/rapporter/pdf/rapport1c.pdf>)