US Army Corps of Engineers®
Engineer Research and Development Center

GEL-COR™

Technology

GEL-COR™ is a new fireproof bullet-trapping medium, developed by researchers from the ERDC Geotechnical and Structures Laboratory and Super Trap, Inc., of Corona, CA, that accepts bullets fired from any angle, producing little or no lead dust and reducing both fire risk and range noise.

It uses an engineered mixture of chunk rubber and hydrated potassium or sodium polyacrylate-polyamide gels consisting of approximately 60% rubber and 40% hydrated polyacrylate (by volume). The medium will resist ignition even when fired on with tracer rounds or when deliberately exposed to ignition sources that set fire to conventional rubber media. The addition of a phosphate-rich buffer material reduces the solubility of lead in any drainage water that might be produced in the trap. By combining a stable gel and a solid buffering material, it is possible to create a mixture that will maintain water-absorbing characteristics of the gel for years.

Sacks of GEL-COR™ form a modular cover over the medium

GEL-COR™ is the only bullet-trapping medium of its kind that has demonstrated fire resistance by passing the ASTM E 108-00, Section 9, Burning Brand Test using Class A, Class B, and Class C burning brand ignition constructions.

By combining GEL-COR™ with another GSL-developed product (SACON®), GSL researchers developed a new environmentally friendly bullet-trapping system. GEL-COR™ is used as the interior bullet-trapping medium, and SACON® creates the frame around the outside of the trap. A separate fact sheet on SACON® is available.

Problem

Military and law enforcement training ranges and recreational shooting ranges face a number of serious safety, environmental, and cost issues. Bullet traps are finding increasing use on ranges as a method of preventing the loss of potentially toxic metals (especially lead) into the range soil and local groundwater. The chunk rubber-type media have been well accepted because they can capture many types of bullets intact, producing little or no lead dust. The resilient and porous surface reduces the amount of noise of the range and will accept bullets fired from any angle. GEL-COR™ improves the performance of these traps by removing the problem of fire in the medium and significantly reducing any chance of lead from spent bullets leaving the range in drainage from the trap or as dust.

Expected Cost To Implement

The implementation cost of the GEL-COR™ firing range backstop depends on a number of factors, including square footage, foundation, location/access, SACON® perimeter, and whether the facility is to be indoors or outdoors. The bullet trap costs can range from as little as $450 to $2,200 per linear foot of trap width. In certain cases, existing dirt berm,

steel, and other rubber trap systems can be retrofitted with the GEL-COR™ bullet-trapping system to improve the range owner's training capabilities, safety, and environmental stewardship.

Benefits/Savings

The combination of fireproofing, dust control, and immobilization of the lead in the trap solves many of the problems seen in earlier bullet-trapping media. The ERDC-developed bullet-trapping system provides both military and commercial shooting ranges the safest, most environmentally friendly and cost-effective system available. Furthermore, because of its design and heat-suppression capabilities, the GEL-COR™ range backstop can accommodate automatic small arms and calibers up through .50 BMG, unlike other traditional rubber trap systems.

Status

GEL-COR™ is a patented technology (US Patent 6,837,496) and is licensed through Super Trap, Inc., of Corona, CA.

Traps using GEL-COR™ are currently in use at the National Park Service firing ranges at Grand Canyon National Park; Coxsackie Correctional Facility Firing Range near Albany, NY; Corpus Christi Police Department Range, TX; and the Ohio Department of Natural Resources Range at Spring Valley, OH.

ERDC POC

Geotechnical and Structures Laboratory, ATTN: CEERD-GM-C
3909 Halls Ferry Road, Vicksburg, MS 39180-6199
Joe G. Tom, phone (601) 634-3278 or DSN 446-3278, fax (601) 634-3242
Dr. Charles A. Weiss, Jr., phone (601) 634-3928 or DSN 446-3928, fax (601) 634-3242

Distribution Sources

Information (mailto:GSL-Info@erdc.usace.army.mil) can be reached at commercial phone 601-634-3278 or 601-634-3928.