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SUBJECT

NEW ANTI THEFT AUTOMOTIVE GLASS

The Transport Emergency Rescue Committee (TERC) of the International Association of Fire Chiefs is the US equivalent of ANRARA. One of their committee members, Mark Uttley, is a Canadian Fire Fighter. He has forwarded the following article about a new innovation in vehicle design.

TERC Visits New Technology

By Mark Uttley, TERC Vice Chairman

EXATEC Automotive Window Systems

EXATEC (tm) Automotive Window Systems is an innovative automotive glazing joint venture with Bayer and GE Plastics. Presently this company is marketing an interesting polycarbonate window product that will play a major role in today's Motor Vehicle Collision rescues. This window product is virtually indestructible and works to solve some of the key needs that have been discovered in the global automotive field.

Safety of the passengers in the vehicle was the prime concern, considering that according to Exatec, the U.S. Congress had issued a directive to DOT/NHTSA to investigate a means to reduce the 9000 fatalities or the large number of severely injured passengers in roll over and side impact ejections from a vehicle involved in a collision. The 1988-1993 figures used for glazing related injuries include 3,956 fatalities and 4,265 severe injuries to partial ejection. 3,536 fatalities and 3,717 severe injuries related to complete ejection and all other fatalities hitting 22,506. These are astonishing figures considering that these numbers are only for a five year period.

With the advent of the car jacking phenomenon and the smash and grab society of thieves, these unbreakable windows will provide tremendous security benefits.

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Not only will these products affect us as rescuers but personally, they will also create fuel savings providing the industry with a light weight product that will likely allow the auto manufacturers to increase the glass surface area.

Presently, the windshield is not a target of this company as the standards are fairly stringent to the break out by the occupant of the vehicle that has been thrust forward in a collision. Some of the areas you can expect to find these windows in are common to most vehicles. The rear window and fixed side windows is probably the location that we would find them first. They are presently used in mass transit vehicles as well as Targa tops for the 1995 Corvette.

The technology is always fast paced and we must utilize all our resources to keep up to provide the safest, quickest and best means possible of rescuing our customers. However Exatec is one step ahead of the other manufacturers of automotive products in realizing the problem their product might create for rescuers and alerting the International Association of Fire Chiefs' Transportation Emergency Rescue Committee (TERC) to this situation. We must commend Exatec for taking the initiative to let us know and ask for our input. They personally traveled to the IAFC convention in Louisville, Kentucky and then to the International Extrication Competition and Learning Symposium held in Rockford, Illinois in September.

Mr. Chris Skotzke, Program Engineer of Exatec came with product sample in hand and asked that the vast knowledge of experts from around the world put their heads together to come up with a solution. Resulting from that contact, Exatec has invited several TERC members and others to meet in January at the Exatec plant located in Wixom, Michigan to research and practice rescue techniques on crash tested vehicles. On January 14, 1999 the research group arrived at the Exatec plant where we began our mission in a conference room where Chris Skotzke and Mike Sykes, Engineering Leader for Exatec, conducted a seminar to educate us on the specifics of the windows and the processes used to create them. A few hours later after everyone's curiosity was satisfied, the research team was taken into the plant where we inspected several crash tested vehicles that employed the poly carbonate windows and others that did not. Obvious to the team when looking at the vehicles was the fact that the standard factory glassed vehicles did not have the windows intact since they shattered during the crash testing. The crash tests were conducted by a company specializing in that field to gain all the research data possible and were performed to the government automotive industry standards. The test vehicles were several Ford Taurus and Chrysler Mini vans.

Exatec's poly carbonate windows are about the same thickness as regular vehicle windows but are approximately half the weight. A thin hard coat and UV absorbers are applied to the surfaces to prevent scratching and ultra violet break down of the product. This coating did not seem to have any effect on the tools we using for the tests.

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Test Goals

The tests that were conducted were done in such a way as to accomplish several goals. One goal was to see how to effect rapid access to a patient to attend to the ABCs.

Test #2 was to see how the intact poly carbonate window responded to spreading the doors with hydraulic spreaders.

Test #3 was to see which tools and methods would work best if a total roof removal had to be done and what method would be the tool of choice.

Sample tests

Flat square samples were slid into a pre-fabricated window holder that was secured to a workbench where several tools were laid out for the evaluators to choose for the testing. Prior discussions on what could be done to the product were shared the night before and methods that some thought would work did and some techniques did not. The research team worked with many tools as listed below until the team was satisfied which tools and techniques were found effective.

<u>TOOL</u>	<u>ACCESSORY</u>	<u>EFFECTIVE / INEFFECTIVE</u>
7/8 hp Dewalt trim router	single straight fluted cutter	effective - best performance
7/8 hp Dewalt trim router	double straight fluted cutter	effective -
7/8 hp Dewalt trim router	spiral carbide cutter	effective
Rotozip tool	small spiral cutter	effective but not efficient
18v Dewalt 5 3/8" Circular saw	several tooth carbide blades	ineffective
18v Dewalt Jigsaw	several tooth configurations	ineffective
18v Dewalt Reciprocating saw	many different blades	somewhat effective
5" angle grinder	4 1/2" dry diamond blade	ineffective
1 1/2" straight die grinder	3" abrasive blade	ineffective

The trim router used a 1/4" bit and was found that the single flute bit caused the least amount of debris and the least amount of wandering. The reciprocating saw was effective if the blade could be started from a hole or an edge. Blades that were available did not have the capability of starting the hole in the material however further tests indicate that there are some blades that will do this. In the removal of a roof when using a recip saw then you can continue the cuts through the metal into the poly carbonate window.

**SOURCE
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