

November 12, 2003

Toyobo Co., Ltd. ("Toyobo") is pleased to submit its testing data on Zylon® fiber to the National Institute of Standards and Technology, which is overseeing the efforts to maintain the National Institute of Justice's (NIJ) body armor standards. Toyobo will also be supplying the Institute of Standards and Technology with additional technical data that was requested last week after Toyobo contacted the government to offer assistance to the government's ongoing research and testing effort.

Toyobo is a Japanese corporation which manufactures, among other products, Zylon, a component part of at least fifty different end-products, including bullet-resistant vests. Like other fibers used for ballistic applications, over time and under certain conditions, the tensile strength of Zylon may experience degradation. It is well understood that such degradation must be taken into account in developing a vest's design, including weave pattern, the amount of Zylon used, and the vest's covering material.

Recently Second Chance Body Armor, Inc. reported that it believed that the Zylon in its own ballistic vests degraded more rapidly than it originally expected. To the best of our knowledge, other body armor manufacturers not only continue to use Zylon in their manufacture of vests, but have not reported that they are experiencing similar problems; these companies include, Armor Holdings, Point Blank, First Choice, Gator Hawk, Protective Products International, PSP and PT Armor. As part of its investigation into Second Chance's claims concerning the efficacy of Zylon for ballistic applications, NIJ is encouraged to seek the input of these other manufacturers to determine whether there are any differences in the composition and design of vests among these various manufacturers which might explain Second Chance's findings with respect to its own vests. Presumably, all of these companies took into account the known phenomenon of fiber degradation in the construction of their vests, including, for example, such things as the number of plies used, the use, sequence and construction of various hybrid materials, the amount and location of stitching, the particular weave, the composition and design of the ballistic panel covering, and so on.

Second Chance has been characterizing the failure of its products as a Zylon problem. Toyobo believes that it is important to understand how Second Chance and others have specifically engineered their products over the years to address the known characteristics of Zylon in building each vest. This is important because, as far as we know, it is only Second Chance that has concluded that its vests present an "officer safety issue" requiring that company to initiate a vest-replacement program.

Since 2001, Toyobo has conducted tests on Zylon fiber to estimate the aging performance of Zylon fiber itself. While those tests were never intended to assess the actual ballistic performance of any individual manufacturer's final product, Toyobo made a practice of providing the results of its Zylon testing to the body armor industry. Individual body armor manufacturers determined whether Zylon fiber was suitable for particular ballistic applications, and determined how best to incorporate Zylon into its overall ballistic system,

taking into account such factors as tensile strength, degradation, among other things. They would also test the performance of their individual final products.

Soon after Toyobo completed the first round of its acceleration testing on Zylon, it shared the results of those tests with the body armor industry. On July 5, 2001, Toyobo reported -- in letters sent to manufacturers of body armor -- that “the strength of Zylon fiber decreases under high temperature and humidity conditions.” Toyobo also included information containing the methodology behind the testing and provided illustrative graphs. See Tab 1 [July 5, 2001 Letter]. These results were also reviewed and discussed in meetings Toyobo conducted with various body armor manufacturers in July 2001. Toyobo reminded body armor manufacturers to bear these characteristics in mind when designing and testing their end products. See Tab 2 [July 19, 2001 Letter].

In August 2001, Toyobo updated Second Chance on the progress of its acceleration testing. In that letter, Toyobo wrote that in humidity studies, Zylon had experienced a “bigger strength drop” than expected. Moreover, in that same letter, Toyobo specifically counseled Second Chance that it should “please share this information with your customers.” See Tab 3 [August 28, 2001 Letter].

In fact, as long ago as 1998, Toyobo informed Second Chance that Zylon can be damaged by exposure to light. See Tab 4 [December 18, 1998 Letter].

In light of the degradation issue, and because of its ongoing desire to understand the tensile strength of Zylon and to share that information with the body armor industry, Toyobo has continued to prepare and furnish the results of its Zylon testing to the industry on a quarterly, then semi-annual, basis since January 1, 2002. See Tab 5, [January 1, 2002 Release]. See also Tab 6 [April 3, 2002; July 15, 2002; October 16, 2002, January 6, 2003, July 14, 2003, October 10, 2003 Releases].

We hope that the information we are providing is useful in your investigation. Toyobo is making this submission without conditions. The information can be used and shared in whatever manner the government feels is appropriate. Toyobo is committed to full and open communication about Zylon, and we have encouraged all responsible body armor manufacturers to share their data and test results with the public as well.

First and foremost, Toyobo is committed to the safety of the police officers who rely on a daily basis on their bullet-resistant vests. Toyobo looks forward to the results of the government’s research and testing effort. Toyobo would be glad to furnish any additional information that you think might be helpful to your analysis. Of course, we would be happy to meet with you to answer any technical questions that you may have.

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