

Newsletter

April 22, 2010

EXCEL TRIBOMETERS, LLC wishes to thank all of you who expressed your caring thoughts on the passing of our mentor Bill English. It is our honor to build upon the strong foundation that Bill created, to continuously improve the quality, accuracy and significance of Bill's devices, and to continue his mission to affect reduction in injury to persons by helping to make walkways safer.

NATIONAL FLOOR SAFETY INSTITUTE ACTION ON THE XL VIT

As we indicated in our March 2010 newsletter, we submitted a **formal application** to the National Floor Safety Institute to have them remove their negative declaration concerning the English XL VIT that they published in the NFSI B101.1 Letter of Interpretation. Our submission to the NFSI was founded on a spirit of cooperation for the advancement of floor safety, and presented a detailed package of scientific principles and well-documented precision performance for the English XL VIT.

Our submission clearly and scientifically demonstrated that **the English XL VIT conforms**, step-by-step, to the relevant definitions contained in the NFSI B101.1 standard to achieve an accurate, scientific measure of "wet static coefficient of friction" as defined in the NFSI B101.1 standard (notwithstanding the definitive lack of scientific or other accepted representations that "wet static coefficient of friction" as defined in the NFSI B101.1 standard has any significance relative to human ambulation, and notwithstanding there is no relationship between "wet static coefficient of friction" as defined in the NFSI B101.1 standard, and slip resistance measurement, according to the existing accepted tribometric definitions of slip resistance, including the NFSI's own definition of slip resistance in the NFSI B101.1 standard). Further, we proved that the English XL VIT substantially conforms to all significant aspects of the criteria set by the NFSI to approve a tribometer as set forth in the NFSI B101.1 standard and Letter of Interpretation.

We went to the NFSI meeting in Southlake, Texas on April 20, 2010, and were disappointed when we were told that the **NFSI did not act** on our application because they felt they were not sufficiently technically competent to do so at this time. This representation by the NFSI begs the question of how did they originally decide to approve the BOT3000 and deny all other tribometers. Nonetheless, the NFSI stated they would be **redrafting** the B101.1 Letter of Interpretation to remove the statements

regarding which tribometers they have approved or recommended until they are capable of making competent determinations. In any event, there is no dispute, even in the discussions at the NFSI meeting, that the NFSI B101.1 standard is simply a method to measure “wet static coefficient of friction,” with no representations relative to human ambulation.

AMERICAN ACADEMY OF FORENSIC SCIENCES ARTICLE

The Journal of Forensic Sciences Volume 55 Number 2 March 2010 published a paper titled “Validation of Walkway Tribometers: Establishing a Reference Standard,” by Powers, et al. This paper is the second published by the same group whose objective is to use **human subject slip risk** to create a reference standard against which tribometer measurements could be validated. Their study used 80 harnessed and tethered subjects who were healthy and capable of independent ambulation, with the mean age 26.3 ± 4.8 years. Each subject walked across either a polished black granite, porcelain, ceramic tile, or vinyl composite tile walkway insert wetted with distilled water (one slip per subject). All wore the same oxford style shoe with smooth styrene butadiene rubber bottoms, Shore A hardness 75. The number of slips on each surface was used to establish the relative slipperiness of the surfaces. A slip was defined as a minimum of 4 cm anterior heel displacement after the initial contact phase of gait, measured using 120-Hz high-speed camera motion analysis. The validity of a tribometer was based on its ability to “rank the COF of the different surfaces in the order of slip risk as determined by the human subject walking trials. Second, the COF of the surfaces of varying slipperiness had to be statistically different from each other.”

Notwithstanding the commendable considerable effort by this group, the overwhelming criticism since the inception of this project has been that cross-referencing and comparing four separate surfaces with four different groups of 20 youthful, agile, harnessed, tethered college students in a laboratory does not represent a valid **real-world slip risk assessment**. Slip risk must involve the at-risk population: the unfit, the hurried, the distracted, and the elderly, among others. It would seem obvious that a better method to perform a valid slip risk assessment would be to meter the slip resistance of real-world slip locations then rank those surfaces by correlating the slip resistance of the measured walkway surface materials and conditions with actual slip occurrence experience rates on the respective surfaces.

PRACTICAL TRIBOMETRY

As related specifically to the English XL VIT, as mentioned in the AAFS paper, sometimes their criteria is satisfied, sometimes not. Let’s not get so blinded by the tedium of statistics that we lose sight of **the objective of a tribometer**. The XL VIT clearly showed the very dangerously slippery surface to be very dangerously slippery, it clearly showed the two moderately dangerously slippery surfaces to be moderately dangerously slippery, and it showed the acceptable walkway surface to be acceptable.

Actually, if the practical allowable tolerance in readings for the XL VIT (± 0.05) is considered, the XL VIT satisfied the criteria in both studies by the Powers group.

Even more disconcerting is what was mentioned at a recent meeting where some of the same statistically dependent people may want at least 16 readings on a surface to feel confident in their measurement. As trained and experienced tribometrists assessing slip resistance in real-world conditions, on-site, you know after four readings on a particular surface how many tests are required, and when enough is enough.

In deference to the laboratories, researchers, statisticians, and those who must publish, we have recently and extensively addressed the issue of improved accuracy and reliability of the XL VIT in our newsletters. [EXCEL TRIBOMETERS, LLC](#) has performed in-depth investigations and exhaustive research into possible causes for variations in results using the XL VIT. Two areas of potential improvement were identified.

First, more extensive **test foot preparation** is critical because of the varying properties of the Neolite®. Calibrating the test foot by following the simple, clear, step-by-step procedures in the current XL VIT User Guide before each series of slip resistance metering is essential to achieving more reliable and accurate slip resistance metering results. Be sure your test foot certification tile is calibrated. All tiles are not created equal. As an example, in a batch of 10 tiles we recently received directly from the TCNA, many did not test at 0.20 ± 0.02 wet when cross-tested against a certified calibration tile that is preserved at our location, using a slip meter and test foot prepared precisely according to the XL VIT User Guide. If you suspect your TCNA tile does not calibrate at 0.20 ± 0.02 wet, you may send your tile to us and we will provide a certified value for your tile for \$50.00. Otherwise, you may purchase a TCNA tile with a certified value from us for \$80.00.

Second, assuring **operator consistency** is a must. If you have not yet done so, every XL VIT user is strongly encouraged to please go to the [EXCEL TRIBOMETERS, LLC](#) web site and download the current **XL VIT User Guide**, which might explain things more thoroughly than what you have learned so far about operation of the XL VIT. The User Guide is an added tool to assure we are all using the XL VIT consistently and exactly the same way. The CXLT Certification Program has also been expanded to assure you are well trained in proper operating technique.

We are certain that if proper test foot preparation and operating techniques are followed, the English XL VIT will continue to demonstrate its validity as the superior portable tribometer for measuring slip resistance representative of human ambulation.

In addition to improving the operator-controlled aspects of the consistency and accuracy of the XL VIT, [EXCEL TRIBOMETERS, LLC](#) has refined manufacturing materials and techniques to tighten tolerances and **improve quality and reliability**. Significant structural elements are now manufactured using computer measurement controlled methods. Instrument calibration procedures and equipment have also been expanded and upgraded.

INSTRUMENT CALIBRATION IS DIFFERENT THAN TEST FOOT CALIBRATION

As a reminder, if your XL VIT is in sound condition, if the slip meter instrument is properly calibrated, if the test foot is properly calibrated, and if you use your slipmeter according to the XL VIT User Guide, then you will be assured of accurate and reliable testing results with the XL VIT.

Use extra care when you calibrate your test foot. First, make sure your XL VIT is current with its annual *instrument* calibration and refurbishing. Annual *instrument* calibration and refurbishing is **not the same** as *test foot* calibration. Extensive recent testing and research has shown test foot calibration must be performed before each metering episode, not only for the XL VIT, but for any tribometer that uses Neolite ® as the test foot material.

SANDPAPER IS CRITICAL

Stay alert to how critical the cleanliness of the sandpaper is to preparing a *Neolite* ® -surfaced test foot for slip resistance metering. The presence of **sanding dust** on the test foot may significantly affect results. The sandpaper should always be sharp and clean. We are recommending a new quarter sheet of 180 grit Silicon Carbide sandpaper for each metering episode. As a general rule, the sandpaper is no longer clean enough if there is any visible *Neolite* ® sanding dust after vigorous brushing with the filings brush provided with your XL VIT.

The sanding block provided with the English XL VIT slipmeter should be reserved for limited, select field testing. If the field testing is more than one surface at one location, you should have fresh sandpaper available.

EXCEL TRIBOMETERS, LLC now provides with each new XL VIT slipmeter a 6 inches square coated backing board with an initial supply of five (5) 5 inches diameter self-adhesive 180 grit Silicon Carbide sanding discs for convenient use and easy field replacement. If you would like to order from us separately, we offer the backing board plus ten (10) sanding discs for \$35.00, plus \$7.00 shipping and handling. Additional 10-packs of sanding discs are available from **EXCEL TRIBOMETERS, LLC** for \$25.00 plus \$7.00 shipping and handling. The shipping and handling charges are waived when combined with other shipments.

When the test foot is prepared off the slip meter, a quarter sheet of fresh, clean 180 grit Silicon Carbide sandpaper, held flat on a hard smooth surface, such as a countertop or smooth hard floor, is ideal.

Always use hard-backed sandpaper. Round-edged test feet give biased results.

NEXT CXLT CERTIFICATION PROGRAM

When ASTM pulled their recent double-reverse pump-fake switch on the meeting dates in June, we were caught in the middle, and ended up changing the June 6, 2010, **CXLT Certification Program** in Philadelphia to **June 22, 2010 in Los Angeles**, California.

Make sure you review the **updated and expanded** CXLT Certification Program described on the [EXCEL TRIBOMETERS, LLC](#) website. Also please keep in mind on-site programs are available if you are one of the many organizations that have a large staff who are interested in tribometry and walkway safety.

Holding the CXLT certification assures your **recognition and respect** as an expert who is knowledgeable, competent, and proficient in walkway safety and in the use of the XL VIT. Anyone who wants to perform a competent risk assessment of a walkway, or flooring and footwear products, needs to establish a strong foundation in the principles of safety engineering, the sciences of walkway safety, the scientific and mechanical aspects of the available slipmeters, and the effects of reasonably foreseeable variables on the performance of slipmeters. The certification also shows the CXLT had extensive hands-on instruction in the proper use of the XL Variable Incidence Tribometer and proved his or her proficiency with the most respected slip meter.

The **next CXLT class** will be conducted by [EXCEL TRIBOMETERS, LLC](#) on June 22, 2010, at the Crowne Plaza Hotel, at the Las Angeles, California airport. Rooms have been reserved at \$89.00 for the night before. The hotel has a free shuttle from the terminals. Space is limited to 22 classmates, so reserve early. Go to the [EXCEL TRIBOMETERS, LLC](#) website for the fees and applications.

INSTRUMENT CALIBRATION AND REFURBISHING SERVICE

Your XL VIT is a scientific instrument and requires regular instrument calibration and refurbishing, as with any similar credible metering device. From now until October, 2010, for those of you who are not current and your slipmeter is more than 1 year overdue, we are offering an **amnesty** option of \$300 plus parts. Even if your slipmeter needs major repair, the charges will be limited to a maximum of the standard rate of \$200 plus the surcharge of \$100 per year overdue, which may save money for our customers who have neglected to have their slipmeter refurbished for an extended period of time.

Please keep in mind that if you maintain your tribometer by sending it for service at the proper intervals, **we will repair anything** within 6 months following service, for shipping costs only, unless there is clear evidence of physical abuse or extraordinarily extensive use. Some machines are shared by many and used constantly. Those slipmeters need servicing more often.

Please contact us if you require **spare test feet**. Also, if you have a shoe bottom material that you would like to have us mount for you, we would appreciate that opportunity as well.

We **value your input** and questions, and look forward to hearing from you. All of your comments and concerns are welcome and will be thoroughly addressed. Your communications are treated with respect, and kept in the strictest of confidence. You may contact Peter directly at 757-897-2853, or by email at pwidas@EXCELTRIBOMETERS.com.

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