



UNC CHARLOTTE

Department of Engineering Technology

# LABORATORY SAFETY ANALYSIS

## OPERATING A MARSHALL TESTER


Location: Smith 134

Required Training: Marshall Testers are designed and intended for use by properly trained and experienced operators. If you are not familiar with the proper and safe operation of this apparatus, do not use until proper training and knowledge have been obtained.

Required Personal

Protective Equipment (PPE): Safety glasses, closed toed shoes, leather gloves needed for handling hot asphalt materials, face shield in addition to safety glasses for additional protection from splattering of hot asphalt.

Reference Materials: Manufacturer’s safety rules and operating instructions. LSA CIET001 “Operating a Conventional Oven” and LSA CIET008 “Operating a Hot Water Bath”

PHOTOS	TASK	HAZARDS	CONTROLS
	Wear clear safety glasses with side shields.	Flying debris	<ul style="list-style-type: none"> <li>Students are required to provide their own safety glasses.</li> <li>See laboratory instructor or laboratory manager if you do not have safety glasses before proceeding to use equipment.</li> </ul>
	Inspect safety glasses for cracks, scratches or other damage. Ensure the ANSI standard Z87.1 is stamped into the side of glasses. If necessary inspect dust mask or face mask.	Flying debris	<ul style="list-style-type: none"> <li>If defects are found report this to your lab instructor before using.</li> </ul>
	Put on PPE	Flying debris and heavy objects	<ul style="list-style-type: none"> <li>Always wear safety glasses.</li> <li>Always wear closed toed shoes when handling jaws or other heavy attachments.</li> </ul>
	Inspect work area, walk around Instron looking for debris and ensure proper lighting.	Slips, trips & falls	<ul style="list-style-type: none"> <li>Keep the work area around the Marshall tester free from scraps, dust, oil and grease.</li> </ul>
	Visually inspect the electrical connection.	Electrical shock	<ul style="list-style-type: none"> <li>If the electrical connection is damaged or worn the main power cut-off should be switched off and tagged “Out of Service-Do Not Use”.</li> <li>This should be reported to the laboratory manager immediately.</li> </ul>

	Check manual controls	Injury, pinch points	<ul style="list-style-type: none"> <li>Check for proper functioning of manual controls used to position crosshead.</li> <li>Always keep hands/fingers away from jaws or platens when adjusting crosshead</li> </ul>
	Prepare specimen for testing	Burn injury, splatter	<ul style="list-style-type: none"> <li>Use care when removing test specimens from hot water baths or ovens.</li> <li>Always wear PPE when working with hot materials.</li> <li>Follow LSA CIET001 "Operating a Conventional Oven" and CIET008 "Operating a Hot water Bath."</li> </ul>
	Insert sample specimen	Injury, pinch points, burns	<ul style="list-style-type: none"> <li>Use care in placing hot asphalt test specimen in test fixture. (Remember test specimen and fixtures will be hot.)</li> <li>Keep fingers away from any pinch points when positioning test specimen and fixture in to the load frame.</li> <li>Ensure good contact between loading platens and test fixture before beginning test.</li> <li>Keep fingers from being in between specimen and platen</li> </ul>
	Run automated test	Flying debris, splatter	<ul style="list-style-type: none"> <li>Always wear safety glasses throughout the test.</li> <li>Test specimens may splatter or fragment, wear an additional face shield if needed.</li> </ul>
	Remove specimen	Cuts, burns	<ul style="list-style-type: none"> <li>Return crosshead to starting position to insure adequate workspace.</li> <li>Broken specimens can have sharp edges, sharp points, or splinters; handle with caution when removing test materials may still be hot.</li> </ul>
	Turn machine off	Injury	<ul style="list-style-type: none"> <li>When all testing is completed, turn the machine off, as crosshead may be activated whenever power is on.</li> </ul>
	Turn off all water baths and ovens, clean all tools	Burn injury, splatter	<ul style="list-style-type: none"> <li>Follow LSA CIET001 and CIET008 for proper shut down of ovens and water baths.</li> </ul>
	Clean work area and return all PPE to a clean, dry storage area.	Injury	<ul style="list-style-type: none"> <li>Ensure adequate housekeeping measures to prevent accidents.</li> <li>Properly clean all tools of asphalt residue.</li> <li>Remove broken/used specimens to a safe storage area.</li> </ul>

For more information about this LSA, contact the *Department of Engineering Technology* at UNC Charlotte (704) 687-2305  
 Please visit our website at: <http://www.et.uncc.edu>

***The development of Laboratory Safety Analyses is a very effective means of helping reduce incidents, accidents, and injuries in the workplace. It is an excellent tool to use for training purposes and can also be used to investigate "near misses" and accidents.***