

Standard Operating Procedure: SOP-Ball-17 Oil Absorption

## Oil Absorption Procedure A for Bowling Balls

<u>Rev</u>	<u>Date</u>	<u>Staff Member</u>	<u>Purpose</u>
12	9/22/23	Ally Stanton	Oil location clarification, take procedure B out to its own SOP, & update header logo
11	10/16/19	Tom Frenzel	Update SOP for new recording system and surface preparation SOP
10	1/30/19	Jason Milligan	Clarify sanding order for ball preparation. Adjust temperature to match spec manual
9	6/5/18	Dan Speranza	Add detailed ball sanding procedure for ball surface preparation.
8	4/13/18	Jason Milligan	Add USBC Ball and Syringe Stand to materials and conditions.
7	3/26/18	Dan Speranza	Change test time to between 2 hours and 3 days after sanding.
6	8/24/17	Dan Speranza	(1) Added definition of oil absorption end time. (2) Added sanding within 24 hours of testing (3) changed to fastest color determines oil absorption time
5	5/26/2017	Dan Speranza	Added additional ball test parameters
4	5/18/2017	J. Milligan	Add photos and parts
3	4/4/2017	A. Stanton	Procedure clarification
2	2/20/2017	A. Stanton	New equipment and procedures
1	1/23/2017	T. Frenzel	Minor edits and pictures
Origination date: 1/9/2017		Originator: D Speranza	



**Purpose:** Measure the time for a drop of oil to soak into a bowling ball shell.

**Materials and test conditions:**

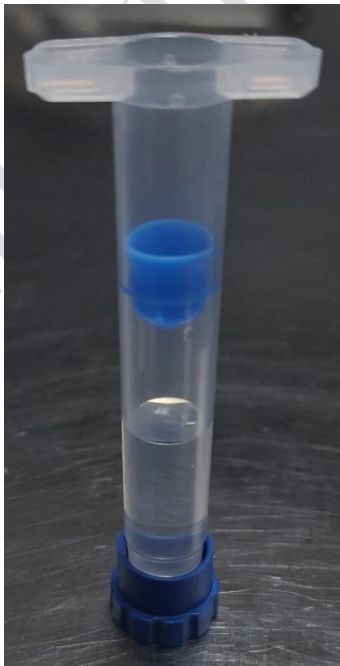
- Bowling Ball
  - Ball is to be at least 7 days old to ensure fully cured and at ambient temperature.
  - Ball surface preparation – Ball Surface is to be prepared as described in Ball-SOP-18 Surface Preparation.
  - Wait a minimum of two hours after sanding, but a maximum of three days (72 hours) after sanding, to test for oil absorption.
- Test at 70-77 degrees Fahrenheit
- 12 - 25X - 400X Photo Capture 8 LED AV Digital Microscope Endoscope Magnifier Loupe Camera TV-Out
- GeoVision GV-VS21600 Video server with compatible PC.
- GeoVision multi-cam surveillance system 8.8.0.0 software
- Geo Vision video log software
- EFD Ultimius liquid dispenser
- Air compressor.
- Test Oil supplied by USBC
- Syringe Kit O BRL/PIST 3CC CL/WH 50
- Syringe Tip 27GA GP .008X.5 Clear 50P
- Syringe Adapter ASM O 3CC BL
- USBC Approved Ball and Syringe Stand
- Ball cups
- 12-Camera Stand
- 3 camera oil drop stencil
- Grease pencil

**Set-up:**

1. Place cap on syringe and fill 1/3 full of supplied oil (see image below).

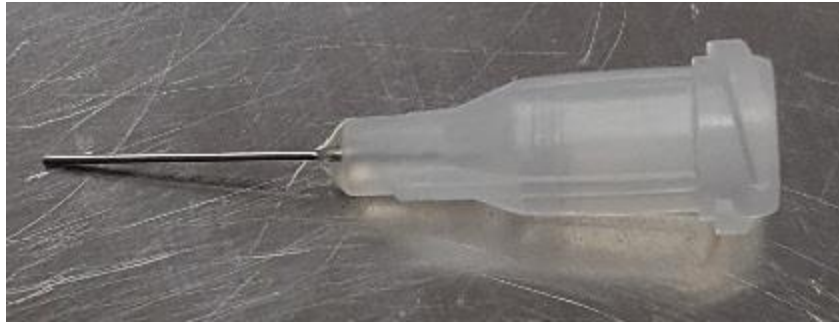


2. Place blue plunger in syringe, **making sure to leave an air gap between the oil and the plunger (see below).**

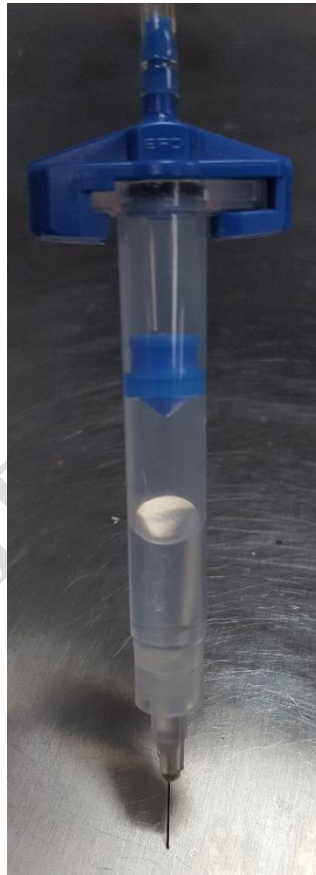


3. Hold syringe horizontally, and place needle tip on syringe. Use “clear plastic” tip for oil dropper test (TIP 27GA GP .008X.25 below).

 **EQUIPMENT  
SPECIFICATIONS**

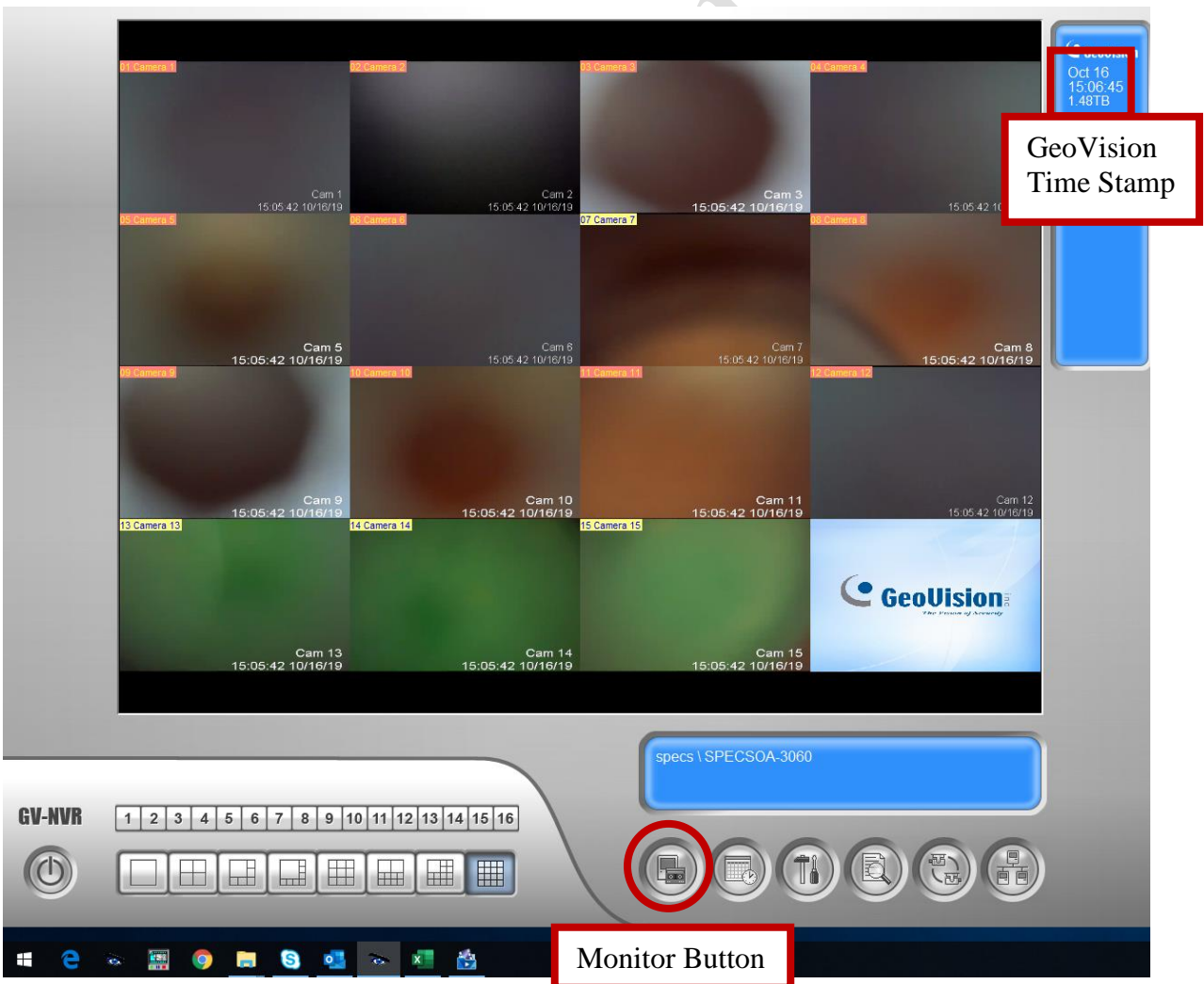


4. Connect adapter with air hose to the syringe. (Completed Syringe below)



**Procedure A: (Current DVR System)**

1. Open the multi-cam surveillance system 8.8.0.0 software.
2. Select the monitor button
3. Select “start all monitoring”
4. Ensure all cameras have a check mark signifying that they are active.
5. Buttons at the bottom the window control how many cameras are visible, our default mode is all 16, the far-right button.
6. Base all start times off the blue window with the Geovision logo. Warning: Time stamps on live multi-video feed are not always accurate.



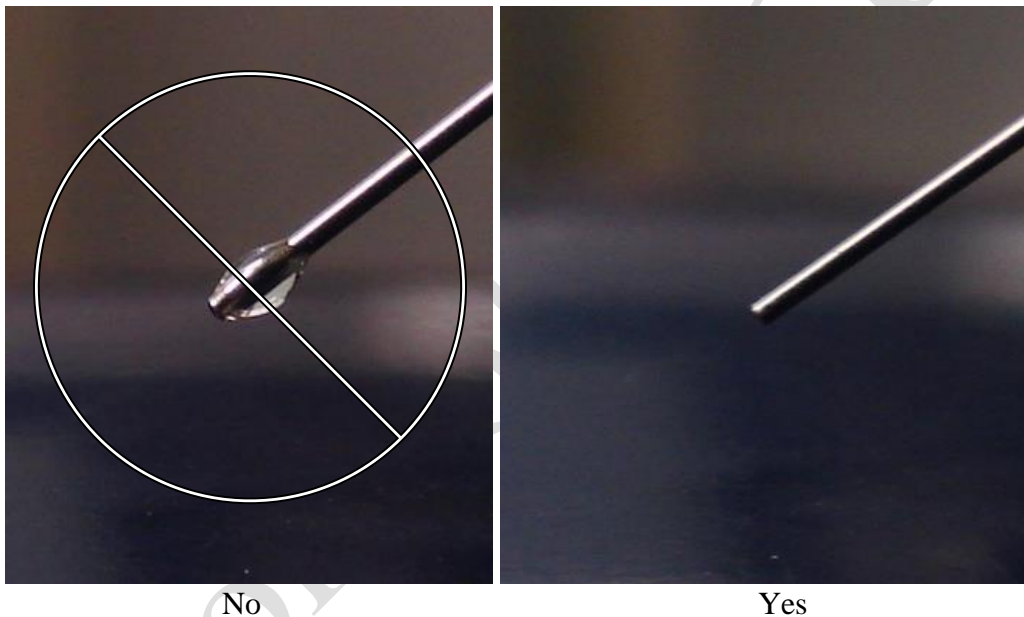
7. Turn on the Ultimius liquid dispenser. Locate and open the valve that supplies compressed air to the regulator going to the dropper (shown below).



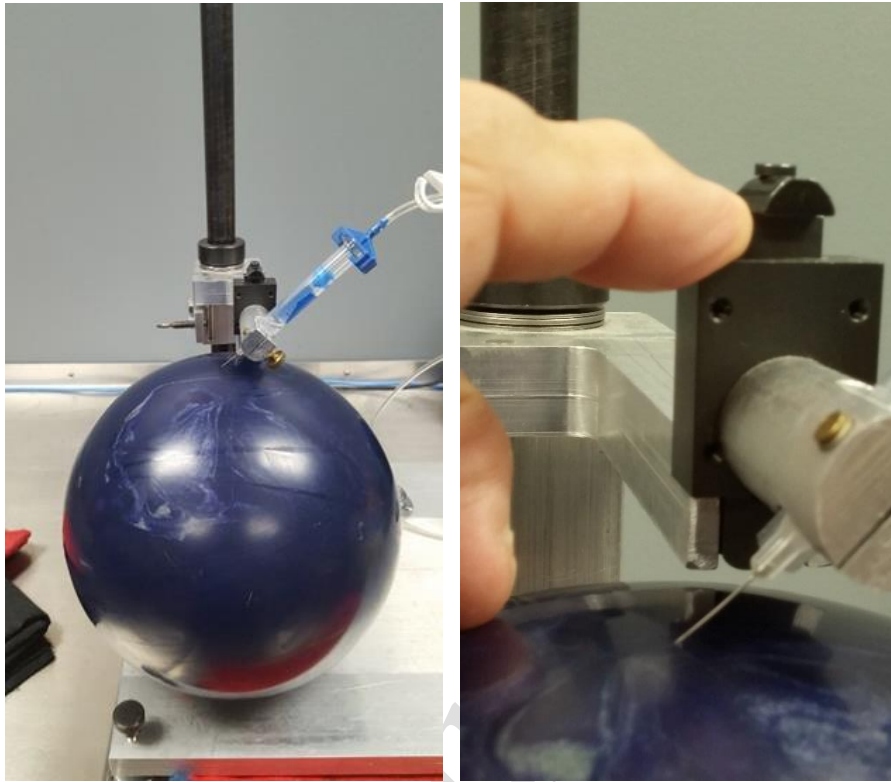
8. Locate and turn on the air compressor. Then, open the valve to supply compressed air to the air line.
9. Open “Oil Absorption Worksheet” and go to the Oil Absorption Worksheet tab.
10. Fill out ball brand, ball name, serial number, and color being tested.
11. Using the 3-camera oil drop stencil (shown below) and a grease pencil, look for a location on the ball that will fit 3 drops in 1 color and mark half circles where you will drop oil so that the oil does not contact the pencil markings. Make sure to avoid the pin, the spru and logos. If it is not possible to mark 3 drops of one color at a time, you can include a second color as long as a total of 3 drops in each color are tested for each ball.



12. Place bowling ball (prepared with SOP-BALL-18) on the USBC Approved Ball and Syringe Stand under the oil dropper needle with desired test location positioned straight up.
13. Step on the dispenser pedal to confirm the pressures. Adjust dispenser to the correct settings of 9.0 psi for output (timer should be set to .0500 sec.) and 0.8 psi for vacuum pressure immediately after pedal is released.
14. Remove any oil from the needle tip with a microfiber towel just prior to moving the needle into its final application position. Needle should not have any visible oil (or other contaminants) on the tip. (shown below).



15. Swing the applicator over the ball moving the needle to the application site, ensure the applicator arm is steady, and lower needle until it just touches the ball surface (shown below).



16. Press down on dispenser pedal to apply one drop of oil to the ball coverstock and release needle to allow spring to raise assembly straight up off the ball surface.
17. Repeat for the other 2 drop locations from the stencil.
18. Swing the oil applicator arm away from the ball.
19. Record the times shown on the GeoVision Time Stamp when the drops were applied as the start times in the worksheet under “Start Time”.
20. Place ball in ball cup and slide under camera so all 3 oil drops are visible in their respective cameras. You may need to focus the image using the dial on the front of the camera.
21. Wait for oil drops to disappear from the camera image before analyzing data.  
Note: Make sure you know which camera image corresponds to each camera on the line.



**Data Analysis: (Current DVR System)**

1. Open video log software
2. Select date from date window in the upper-righthand side.
3. Select the Camera from drop-down above the date window
4. Based on drop start time find the first video in the video events window that the drop appears in.
5. Select videos in order, until the video window shows no oil drop. Select the video immediately before this occurred.
6. Slide the timing bar to isolate the exact time the drop disappeared.
7. If the time the is at the end of the video confirm there is no oil in the next video.
8. Record the time that the drop disappeared into the Oil Absorption Worksheet.
9. **The oil absorption time for a ball will be the average time for the 3 drops in the fastest color.** Therefore, a single-color ball requires only 3 drops. A two-color ball requires 3 drops in each color or 6 drops total.

