

Required Procedures for Respiratory Protection Program

Chapter 296-842 WAC

Rule

Table 12
Isoamyl Acetate (Banana Oil) Vapor Test Procedure

Important:

- This is a qualitative fit-test (QLFT) procedure.
- The success of this test depends on preserving the employee's odor sensitivity to isoamyl acetate (IAA) vapor.
 - Vapor accumulations in ambient air can decrease odor sensitivity. To prevent this:
 - Prepare **all** solutions in a location separate from screening and test areas.
 - Conduct screening and tests in separate well-ventilated rooms. For example, use an exhaust fan or laboratory hood to prevent IAA vapor from accumulating in the room air.
 - Always use odor-free water, for example, distilled or spring water that is 25°C (77°F).
- Isoamyl acetate is also known as isopentyl acetate.

Screening Preparations

Important:

Odor threshold screening determines if the employee can detect weak concentrations of IAA vapor.

1. Choose an appropriate location to conduct screening.
 - Conduct screening and tests in separate well-ventilated rooms.
2. Prepare a stock solution **at least** weekly as follows:
 - Add one milliliter (ml) of pure IAA to 800 ml of odor free water in a one-liter glass jar with a metal lid using a measuring dropper or pipette.
 - Seal the jar with the lid and shake it for 30 seconds.
 - Clean the dropper or pipette
3. Prepare the odor test solution daily as follows:
 - Add 0.4 ml from the stock solution to 500 ml of water in a one liter glass jar with a metal lid using a clean pipette or dropper
 - Seal the jar with the lid and shake it for 30 seconds.
 - Let this solution stand for 2-3 minutes so the IAA concentration above the liquid reaches equilibrium.
 - Label this jar so you know the contents but the employee cannot know its contents, for example, "1."

Note:

To maintain the integrity of the test, use labels that peel off easily **and** periodically switch the labels.

Required
Procedures



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Table 12 (Continued) Isoamyl Acetate (Banana Oil) Vapor Test Procedure	
Screening Preparations (Continued)	
4.	<p>Prepare a "test blank" solution as follows:</p> <ul style="list-style-type: none"> • Add 500 ml of odor-free water to a one liter glass jar with a metal lid • Seal the jar • Label the jar so you know the contents but the employee can't know its contents <p>5. Type or neatly print the following instructions on a card and place it on the table in front of the 2 test jars:</p> <p><i>"The purpose of this test is to find out if you can smell banana oil at a low concentration. While both jars contain water, one also contains a small amount of banana oil.</i></p> <p><i>Make sure the lid is secure then pick up a jar and shake it for 2 seconds. Open the jar and sniff at the opening. Repeat this for the second jar.</i></p> <p><i>Tell the individual conducting the fit test which jar contains banana oil. "</i></p>
Test Preparations	
6.	<p>Choose an appropriate location to conduct fit testing.</p> <ul style="list-style-type: none"> • Conduct screening and tests in separate well-ventilated rooms.
7.	<p>Assemble the fit test enclosure in the room.</p> <ul style="list-style-type: none"> • Invert a clear 55-gallon drum liner over a circular 2-foot diameter frame made of plywood or other lightweight rigid material or construct a similar enclosure using plastic sheeting. • Hang the frame with the plastic covering so the top of the enclosure is about 6 inches above the employee's head. • Attach a small hook inside top center of the enclosure. • Tape a copy of the test exercises (see Table 19) to the inside of the test enclosure where the employee can read it.
8.	<p>Have organic vapor cartridges or equivalent on hand for each employee's chosen respirator.</p>
9.	<p>Have ready a 6 x 5-inch piece of paper towel or other porous absorbent single-ply material and 0.75 ml of pure IAA. Do not apply IAA yet.</p> <p>Note: As an alternative to using the paper towel, you may use an IAA test swab or ampoule if it has been demonstrated to generate an equivalent test concentration.</p>

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Table 12 (Continued) Isoamyl Acetate (Banana Oil) Vapor Test Procedure	
Screening	
10.	<p>Have the employee, while not wearing a respirator, follow the instructions on the card provided.</p> <ul style="list-style-type: none"> If the employee correctly identifies the jar containing IAA, proceed to conduct testing (Step 11). If the employee is not able to correctly identify the jar containing IAA, you must stop and use a different fit test protocol.
Test	
11.	<p>Before entering the fit test room, have the employee attach cartridges, put on, properly adjust, and seal check the respirator. Have the employee enter the test enclosure.</p>
12.	<p>Wet the paper towel with 0.75 ml of pure IAA and fold it in half.</p>
13.	<p>Pass the paper towel to the employee inside the enclosure and instruct the employee to hang it on the hook at the top of the enclosure.</p>
14.	<p>Wait 2 minutes for the IAA vapor to fill the enclosure.</p> <ul style="list-style-type: none"> While waiting, explain the fit test, including the purpose of the test exercises, the importance of cooperation, and that you must be informed if a banana-like odor is detected during the test. You may also demonstrate the test exercises.
15.	<p>Have the employee perform the appropriate fit test exercises in Table 19.</p> <ul style="list-style-type: none"> If the employee does not detect IAA while performing test exercises, the fit test has been passed. Proceed as follows: <ul style="list-style-type: none"> Before leaving the enclosure, have the employee break the respirator seal and inhale. If they detect IAA, the test is valid. When exiting the employee must remove the paper towel and give it to the individual conducting the fit test. This prevents IAA vapor from building up in the enclosure during subsequent tests. The individual conducting the fit test must keep used paper towels in a self-sealing plastic bag to prevent area contamination. If the employee detects IAA during any test exercise, the fit test has failed. Stop and have the employee do the following: <ul style="list-style-type: none"> Quickly return to the selection room to remove the respirator. This avoids decreasing the employee's odor sensitivity. Select another respirator Repeat screening and testing. <ul style="list-style-type: none"> At this stage, if the employee fails the screening part of this procedure, the employee can repeat it after waiting at least 5 minutes for odor sensitivity to return.

