

# Using Ehrlich Reagent for Drug Checking

Ensure that the standard operating procedure for [Using LSD Test Strips for Drug Checking](#) is read and understood before reading or using this guidance. This document is not to be read independently of the aforementioned guidance.

## Purpose and Scope

The purpose of this document is to provide information on how to use Ehrlich colorimetric reagent to test expected drug samples of LSD. This document is intended to compliment the manufacturer's instructions and safety information and support drug checking services to utilize Ehrlich reagents effectively.

## How Ehrlich Reagent works

- Ehrlich colorimetric reagent provides binary information (i.e. yes/no) to determine presence of indoles in a sample. The reagent can be used in place of LSD immunoassay strips with considerations for testing limitations.
- Ehrlich reagent reacts with molecules containing an indole group (i.e. "Indoles"). The reagent turns purple in the presence of tryptamines (e.g., DMT, substituted tryptamines, psilocybin, psilocin), and lysergamides (e.g., LSD and analogs, see figure 1)

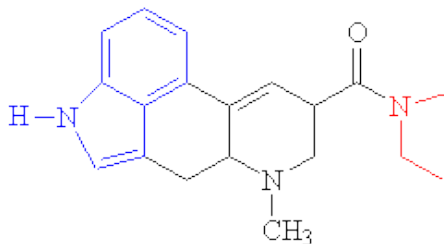


Figure 1: LSD Molecule with Indole group highlighted in blue

- Ehrlich reagent does not react with some drugs that may be sold in place of LSD such as psychedelic phenethylamines (e.g. DOI, DOB, 2C-I-NBOMe, 25i-NBOMe). This means

that the Ehrlich reagent will not turn purple and thus can be useful when checking suspected “fake LSD”.

- Ehrlich reagent cannot specifically confirm the presence of LSD, though in specific cases a useful level of confidence can be reached for harm reduction purposes.

## Safety

Ehrlich reagent is toxic and corrosive. When used in accordance to procedure, risk is minimized. However, spills or careless use can be hazardous:

- Eye contact can cause blindness.
- Skin contact can result in burns.
- Ingestion can cause serious injury or death.
- Contact with clothing will cause permanent damage.

In the event of an exposure, the manufacturer’s [MSDS \(Material Data Safety Sheet\)](#) should be consulted for specific first aid instructions.

To mitigate the risk of exposure when using Ehrlich reagent to mitigate risk of exposure:

- Ensure an eyewash station or bottle is available and regularly inspected
- Prepare neutralizing baking soda and water solution in case of skin contact
- Wear nitrile gloves
- Dispose of nitrile gloves after handling reagent and substance.

In the event of exposure to skin, spray the affected area with the neutralizing solution and wash with plenty of water. In the event of exposure to eyes, wash the affected area with plenty of water and contact a physician for immediate examination.

**In the event of accidental ingestion, call the Poison Control Center (B.C. +1-604-682-5050 or +1-800-567-8911) or 9-1-1 and follow emergency protocols at your organization.**

In the event of a spill, follow spill protocols at your organization to ensure no further contamination or exposure.

## Preparation

1. Ensure the Ehrlich reagent is stored in a cool dark place. Do not use improperly stored or expired reagent. Always check the expiry date before use.
2. Ensure a clear work area that will not be disturbed.
3. Ensure lighting in the area is plain white light or use a white light task lamp.

4. Other tools required include tweezers, small scissors, toothpicks and paper towels.
5. Keep the manufacturer-provided colour change card available for reference. Consider that computer screens or printers can be inaccurate when colour matching.
6. Prepare a solution of baking soda and water in a spray bottle to neutralize the reagent. Add baking soda at a ratio of 1:10 to plain tap water (e.g. 100mg baking soda to 1L tap water). Shake well to dissolve the baking soda.
7. Procure a white porcelain plate with small wells. Ehrlich reagent often is packaged with a plate.

## Procedure

1. Ensure gloves are worn prior to opening the reagent bottle and handling the sample.
2. Set up the white porcelain plate with small wells.
3. Prepare sample plate according to the presentation listed below. Avoid handling substance directly, use tweezers, scissors, scoops, as necessary. Place the sample in one of the small wells on the porcelain plate.

Presentation	Preparation and notes
Paper blotter	Cut and place a small piece (1/10 <sup>th</sup> ). Place white-side up or cut a lighter section for testing.
Liquid solution	Place one drop. Avoid contacting the dropper to the well.
Dry powder or tablet	Place one grain. Reagent testing should only be used if active substance cannot be detected by FTIR first.
Gelatin tab	Cut and place a small piece (1/10 <sup>th</sup> ). May be very slow or unreactive due to substance encapsulation.
Edible (e.g. cookies, sugar cubes, brownies)	Unsuitable for this testing procedure due to unpredictable ingredients and low concentration of indoles.

4. Open the reagent and dispense one drop on the sample taking care not to touch the dropper to the well or sample. Do not allow the drop to contact the sample and the dropper at the same time, the drop should free-fall onto the sample to avoid contamination. Take care to avoid splashing.

5. Replace the reagent cap immediately after dispensing to avoid oxidation and spills. Ensure the cap is firmly closed.
6. If necessary, use a toothpick to swirl the sample and reagent together. Dispose of the toothpick immediately.
7. The test is complete when the reagent begins to turn purple. Most tests will develop within 5 minutes, though some cases can take much longer. If the test does not turn purple, the test is to be considered inconclusive.
8. Carefully spray the plate with the neutralizing solution inside of a sink or bin. Avoid splashing by adjusting the spray nozzle to a gentle spray before use. Rinse thoroughly and dry with a paper towel before reuse.
9. Dispose of gloves in a standard waste bin after each test. Do not use the same gloves for multiple tests.

## Results

### If the reagent turns purple:

- A test that turns purple confirms the **likely presence of an indole**.
  - The drug may not be the expected indole, thus differing in dosage and effects.
- **Ehrlich reagent cannot confirm the safety or purity of a sample**.
  - A blue or purple coloured blotter or gelatin tab may leach colouring into the reagent, mimicking or hiding a reaction.
  - False positives (e.g. non-indoles that cause a purple reaction) are possible and can never be completely ruled out with reagents.
  - The sample may be contaminated or mixed with other substances.
- For paper blotter presentations only, Ehrlich reagent can confirm the likely presence of a lysergamide as few other indoles can fit on blotter paper.
  - This cannot differentiate between LSD and LSD analogs (1P-LSD, AL-LAD, ETH-LAD, etc.) which have different effects and dosages.
  - New potent substances sold on blotter paper may invalidate this logic at any time.
- **Potency cannot be determined** with colorimetric reagents; no correlation can be drawn between the speed of a reaction and concentration of indoles.
  - Impurities, adulterants, and bulking agents can cause unpredictable effects that can speed up or slow down the reagent reaction.

## If the reagent does not turn purple:

- A test that does not show a reaction is **inconclusive**. There are many possible reasons for this, some include:
  - There may not be any active substance at all
  - The LSD present may not be of sufficient concentration to render a visible colour (e.g. LSD in water, tincture, etc.)
  - The LSD present may be encapsulated and inaccessible to the reagent (e.g. gelatin tabs that don't dissolve in the reagent)
  - It may be that not enough time was given to complete the reaction (e.g. analogs of LSD can take an hour or more to render a visible colour)
  - The reagent may be expired, contaminated, or otherwise spoiled.

## Definitions

<b>LSD Analog</b>	An active substance with a similar chemical structure and/or mimics the effects of LSD but may have a different potency or adverse effects.
<b>Colorimetric analysis</b>	A method of determining the concentration of a substance in a solution with the aid of a colorimetric reagent. Binary results (yes/no) are only possible with this procedure.
<b>Colorimetric reagent</b>	Generates a colour change when mixed with a target substance. The resulting colour can be compared to a colour change chart to determine the likely presence of certain compounds.

## Additional Resources

BCCSU Standard Operating Procedure: [Using LSD Test Strips for Drug Checking](#)

Example of Ehrlich Reagent supplier: <https://testkitplus.com/product/ehrich-reagent>

Example of Ehrlich Reagent supplier: <https://dancesafe.org/product/lsd-testing-kit/>

Reagent testing instructions: <https://dancesafe.org/testing-kit-instructions/>

[Example of Ehrlich Reagent Material Data Safety Sheet \(MSDS\)](#)

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