DNPH Analytical Standards and Testing

CHEM SERVICE NEWS AND EVENTS

WHAT IS 2,4 DINITROPHENYLHYDRAZINE (DNPH)?

JUNE 22, 2021 BOOMTOWN DEVS

2,4-Dinitrophenylhydrazine or DNPH is a reagent used in organic analysis and detection of ketones and aldehydes. This compound contains a benzene ring, two nitro groups, and a hydrazine functional group that is dissolved in a solution of methanol and some concentrated sulfuric acid. It is a successful test when determining the presence of aldehydes and ketones as well as the existence of a drug or demonstrating its absence. DNPH does not react with amides, esters, carboxylic acids, or alcohols.

What tests are associated with 2, 4-dinitrophenylhydrazine?

Like every chemical and compound, DNPH has unique characteristics and molecular makeup.
CAS Registry Number: 119-26-6

- Density: 1.654g/cm3
- Boiling point: 378.6 °C at 760 mmHG
- Molar Mass: 98.14 g/mol

What tests are associated with dinitrophenylhydrazine?

2,4-dinitrophenylhydrazine is known as Brady's reagent and is a convenient test that separates a mixture's components between aldehydes and ketones. This results in a condensation reaction with two molecules joining together with the loss of water. If an aldehyde or ketone is present a yellow, the orange or reddish-orange precipitate of the DNPH appears. A positive test is signaled by a yellow precipitate, for aliphatic carbonyls, or red to orange precipitate, for aromatic carbonyls.

How do you prepare dinitrophenylhydrazine from chlorobenzene?

2,4-Dinitrophenylhydrazine can be prepared by the reaction of hydrazine with 2,4-dinitrochlorobenzene. The electron-accepting effect of the two nitro groups makes the chloride easy to displace.

What will a 2,4-Dinitrophenylhydrazine test determine and how?

2,4-Dinitrophenylhydrazine used for separating and identifying the carbonyl functional group of ketone or aldehyde from a mixture of unknown organic compounds. The positive test result includes the formation of orange, or red precipitate which is called dinitrophenylhydrazone.

What is the Reaction of Aldehydes and ketones with 2, 4-dinitrophenylhydrazine?

When testing for aldehydes or ketones, one can use DNPH as a reagent. During this simple test, if an aldehyde or ketone is present a yellow, the orange or reddish-orange precipitate of the dinitrophenylhydrazine appears. A positive result is signaled by a yellow precipitate, for aliphatic carbonyls, and red to orange precipitate, for aromatic carbonyls. When these compounds are brought to their melting point, this confirms the carbonyl compound.

What safety precautions (handling, storage, and disposal) should be taken with DNPH?

DNPH is considered highly sensitive and risks explosion if not handled properly. It is normally supplied and stored in small quantities and in damp conditions to prevent dust forming in the air thus stabilizing the compound.

Like fireworks, civil use explosives (demolition), and even fertilizer, it must be stored in accordance with Explosive Regulations. If kept in a less than airtight container, evaporation may take place over a period and erosion or an explosion can occur due to friction from opening the container. Like food, chemicals also have an expiration date.

Chem Service offers DNPH analytical standards in Neat, Solutions, and Mixtures.

Chem Services offers a wide range of DNPH neat and within solutions and mixtures that have high analytical standards. With years of experience and over 75 different options, you can trust that the Chem Service team will provide the highest-quality tests for ketones and aldehydes. DNPH is on sale for the entire month of June 2021. For more information on all of Chem Services, testing options give our seasoned staff a call at 1-800-422-9994.

Sources:

- Admin. "2,4 DNP Test (2,4-Dinitrophenylhydrazine)." BYJUS, BYJU'S, 26 Mar. 2021, byjus.com/chemistry/2-4-dinitrophenylhydrazine/.
- Clark, Jim. Addition-Elimination Reactions of Aldehydes and Ketones, Nov. 2015, www.chemguide.co.uk/organicprops/carbonyls/addelim.html.
- Power, Dr. Nicholas. "Brady's Rogue Reagent?" OpenLearn, The Open University, 7 Nov. 2016, www.open.edu/openlearn/science-maths-technology/science/chemistry/bradys-rogue-reagent.
- "119-26-6 2,4-Dinitrophenylhydrazine." Cas.chemnet.com, www.chemnet.com/cas/en/119-26-6/2,4-Dinitrophenylhydrazine.html.
- 2,4-Dinitrophenylhydrazine, www.chemeurope.com/en/encyclopedia/2%2C4-Dinitrophenylhydrazine.html.

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