

## Aldehydes Quiz Answer Key PDF

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**Which reactions can aldehydes undergo? (Select all that apply)**

**A. Nucleophilic addition** ✓

B. Electrophilic substitution

**C. Aldol condensation** ✓

D. Esterification

**What is the boiling point trend for aldehydes compared to alkanes and alcohols?**

A. Higher than both

B. Lower than both

**C. Higher than alkanes, lower than alcohols** ✓

D. Lower than alkanes, higher than alcohols

**Which of the following are common methods to synthesize aldehydes? (Select all that apply)**

**A. Oxidation of primary alcohols** ✓

B. Reduction of carboxylic acids

**C. Ozonolysis of alkenes** ✓

D. Hydrolysis of esters

**Which of the following is the IUPAC name for formaldehyde?**

A. Ethanal

**B. Methanal** ✓

C. Propanal

D. Butanal

**Describe the role of aldehydes in the fragrance industry and provide examples of commonly used aldehydes in perfumes.**

Aldehydes are important in the fragrance industry for their ability to enhance and modify scents, with examples including Aldehyde C-12 and Aldehyde C-10.

**How can aldehydes be differentiated from ketones using chemical tests? Provide examples.**

Aldehydes can be identified using Tollens' test (producing a silver mirror) and Fehling's test (yield a red precipitate), while ketones do not react in these tests.

**What is the significance of the carbonyl group in the reactivity of aldehydes?**

The carbonyl group significantly enhances the reactivity of aldehydes by making the carbon atom electrophilic, allowing it to readily undergo nucleophilic attacks.

**Which aldehyde is commonly used as a preservative?**

- A. Acetaldehyde
- B. Formaldehyde ✓**
- C. Benzaldehyde
- D. Propionaldehyde

**What is the main product when an aldehyde is oxidized?**

- A. Alcohol
- B. Ketone
- C. Carboxylic acid ✓**
- D. Ether

**Which aldehyde is used in the production of resins and plastics?**

- A. Formaldehyde ✓**
- B. Acetaldehyde
- C. Benzaldehyde
- D. Propionaldehyde

Which of the following are common uses of aldehydes? (Select all that apply)

- A. As preservatives ✓
- B. In the production of dyes ✓
- C. As a primary fuel source
- D. In the manufacture of perfumes ✓

Which test is commonly used to distinguish aldehydes from ketones?

- A. Benedict's test
- B. Tollens' test ✓
- C. Iodine test
- D. Bromine water test

What is the general formula for an aldehyde?

- A. R-COOH
- B. R-CHO ✓
- C. R-OH
- D. R-CO-R'

Which of the following aldehydes are naturally occurring? (Select all that apply)

- A. Benzaldehyde ✓
- B. Formaldehyde
- C. Vanillin ✓
- D. Acetaldehyde

Which reagent is used to reduce aldehydes to primary alcohols?

- A. Potassium permanganate
- B. Sodium borohydride ✓
- C. Sulfuric acid
- D. Bromine

Discuss the environmental and health concerns associated with formaldehyde exposure.

Formaldehyde is associated with various health concerns such as asthma, allergic reactions, and increased cancer risk, while its environmental impact includes air and water pollution.

Explain why aldehydes generally have higher boiling points than alkanes but lower than alcohols.

Aldehydes generally have higher boiling points than alkanes due to the presence of a polar carbonyl group that enables dipole-dipole interactions, but they have lower boiling points than alcohols because alcohols can form hydrogen bonds.

Which of the following properties are true for aldehydes? (Select all that apply)

- A. They are generally more reactive than ketones. ✓
- B. They have a carbonyl group. ✓
- C. They can form hydrogen bonds with water. ✓
- D. They are always insoluble in water.

Describe the process of oxidizing a primary alcohol to form an aldehyde, including the reagents used.

To oxidize a primary alcohol to an aldehyde, reagents such as pyridinium chlorochromate (PCC) or chromic acid ( $\text{H}_2\text{CrO}_4$ ) can be used. The reaction typically involves the alcohol being treated with the oxidizing agent, resulting in the formation of the aldehyde.

What safety precautions should be taken when handling aldehydes? (Select all that apply)

- A. Use in a well-ventilated area ✓
- B. Wear personal protective equipment ✓
- C. Avoid all contact with water
- D. Store in a cool, dry place ✓