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Sign Up Now &Daily Live Classes3000+ TestsStudy Material & PDFQuizzes With Detailed Analytics+ More BenefitsGet Free Access Now The chemical reagent called Fehling solution A and Bis used to distinguish between reducing and non-reducing sugars present in carbohydrates. This method is also called Fehling's Test. What is Fehlings solution A and B?Fehling's Solution, also known as Fehling's Reagent, is a chemical reagent used to differentiate between an aldehyde and a ketone other than -hydroxy ketone. In real life, it is employed to identify the presence of reducing and non-reducing sugars in carbs. Fehling's Test is the procedure used in this case. But aromatic aldehydes cannot be analyzed with Fehling's Solution. Introduction to Fehlings TestFor reducing groups like aldehyde functions, Fehling's Test is an indicative reaction. The idea behind this test is based on the fact that complex Copper ions oxidise the sugar's aldehyde group to produce acids. Following that, Red Copper (I) oxide precipitates. Precipitation development is a sign of a redox reaction. For Fehling's Test, the reducing sugars produce favourable results. Aldehydes are quickly converted into acids when added to Fehling's Solution by the bistartratocuprate (II) complex. Copper (I) ions are produced when Copper (II) ions are reduced. The consequence is the formation of a red Copper (I) oxide precipitate. The presence of red at the reaction's conclusion indicates a successful outcome. Formation of Fehlings solutionIn a lab setting, Fehling's Solution is generated by combining Fehling A and Fehling B. A blue aqueous solution of Copper (II) sulphate is Fehling A. Copper sulphate is dissolved in distilled water, followed by the addition of a few drops of sulfuric acid to create Fehling A. Fehling B is a colourless, aqueous solution of potassium sodium tartrate, also known as Rochelle salt, in an alkaline base like sodium hydroxide. It is made by combining sodium hydroxide, sodium potassium tartrate, and distilled water. A complex of Cu (II) is created when aqueous tartrate ions establish bonds with Cu (II) ions as bidentate ligands in the final mixture. The tartrate complex that is created functions as an oxidizer. Separately, Fehling solution A and Bare stable. If conducting the test is required, they are merged. Since the copper (II) complex created by combining the two solutions is unstable, it breaks down into copper hydroxide in an alkaline environment. Each solution is produced separately, then combined to create a blue-colored mixture, Fehling's Solution. Uses and applications of Fehlings SolutionThe detection of decreasing sugars like glucose is the most crucial application of Fehlings Solution. Diabetes may result from elevated blood and urine glucose levels. Additionally, maltodextrins, a polysaccharide used as a food ingredient, and glucose syrup are produced from starch using Fehling's Reagent. The conclusion for common uses is as follows:Aldehyde and ketone functional groups are distinguished using Fehling's Solution. Ketones won't react to the test (apart from -hydroxy ketones) but aldehydes oxidize to get a positive result.A general test for identifying monosaccharides and other reducing sugars is Fehling's Test. It displays a positive test result for aldose monosaccharides, which is mostly attributable to the oxidizable aldehyde group. Ketose monosaccharides also yield a favorable result because the base in the reagent transforms them into aldoses.Fehling's Solution is a tool used in medicine to identify diabetes by detecting glucose in urine.Using Fehling's Reagent, starch is broken down into glucose syrup and maltodextrins, two polysaccharides that are utilized as food additives. This is done to calculate how much reduced sugar is present.Fehling's Test delivers a positive result for formic acid (HCO2H).. Conclusion One of the most used methods for differentiating between reducing and non-reducing sugars is the Fehling's Test. It is a process that indicates the presence of reducing groups, such as aldehyde functionalities. A chemical reagent called Fehling's Solution is made in a lab by combining equal parts of Fehling A and Fehling B solutions. A blue Copper sulphate solution is Fehling A. An aqueous solution of Rochelle Salt is Fehling B. The sample chemical is combined with Fehling's Solution for the Fehling's Test, which is then heated in a water bath. The presence of reducing sugars is confirmed by the production of a crimson precipitate at the conclusion of the reaction. Disclaimer: ECHEMI reserves the right of final explanation and revision for all the information. [Click Here for Sample Questions] Fehlings test is carried out with a solution that is freshly prepared in the laboratories. The solution is initially present in the form of two solutions known as Fehlings A and Fehlings B. Fehlings A Solution contains copper (II) sulphate. It is a deep blue liquid in nature. Fehlings B solution contains potassium sodium tartrate (Rochelle salt) along with a strong alkali, most commonly sodium hydroxide. It is a clear liquid in nature. These solutions are separately prepared and subsequently stored. Later on, both Fehlings A solution and Fehlings B solution are mixed so that the final Fehlings solution can be derived. The equal volumes of these solutions need to be taken into consideration while mixing. The solution is deep blue in colour. The deep blue ingredient that is being taken is a tartrate complex of Cu2+. The tartrate tetra-anions serve as a chelating agent in the solution. Fehlings Test If the outcome of the test is negative, it results in the formation of Ketone. If the outcome of the test is positive, it results in the formation of Aldehyde. Therefore, Fehlings test is important to distinguish between aldehydes and ketones. Also Read: Fehlings Test Procedure [Click Here for Sample Questions] The process for the conducting of the Fehlings test is as follows: Take a dry test tube and add the sample to it. Keep distilled water in another test tube as a control. Add the Fehlings solution in both these test tubes The tubes are recommended to be kept or held in water baths Observations are to be made and any growth or development of red precipitate needs to be noted If there is a production or formation of a reddish-brown precipitate, the result is positive. If there is no such kind of transition, the result is negative. Fehlings Test Procedure Once the mixture of both the solutions is heated, Fehlings B solution prevalent in the reagent carries out the task of chelation. If the solution of the test presents a sugar molecule or an aldehyde or chelated compound which is reddish-brown in colour along with Fehlings reagent. If such reddish-brown precipitate is formed, it indicates that a reduced sugar or an aldehyde group is prevalent. The determination of reduced sugar is the primary aim of performing Fehlings test. To ensure the efficiency and effectiveness of the test, it is required to prepare new reagents. As far as Fehlings reagent test is concerned, lactose, fructose and glucose being sugars give positive results. [Click Here for Sample Questions] The reaction between the copper (II) ions and an aldehyde is presented as: RCHO + 2Cu2+ + 5OH RCOO. + Cu2O + 3H2O Once there is an addition of tartrate, it is presented as: RCHO + 2Cu(C4H4O6)22 + 5 OH RCOO + Cu2O + 4 C4H4O62 + 3H2O Applications of Fehlings Test [Click Here for Sample Questions] Fehlings test can be taken into consideration for various kinds of purposes. The most popular application of Fehlings test is to identify and determine whether the carbonyl group concerned is a ketone or an aldehyde. Aldehydes tend to be oxidised and display positive results. Ketones, except the alpha-hydroxy-ketones, do not display any kind of reaction. Fehlings test is also generally used for monosaccharides, commonly known as simple sugars, along with other reducing sugars. In terms of monosaccharides, it displays positive results not only for aldose monosaccharides but also for ketose monosaccharides, since ketoses are transformed into aldoses through the base contained in the reagent. It is used to determine the presence of glucose in the urine. It is applied to identify diabetes as being prevalent in the person. Fehlings test is also applied for the breaking down of starch to convert it into glucose syrup along with maltodextrins. To determine the Formic acid. The formic acid (HCO2H) gives a positive result for Fehlings Test. Things to Remember To carry out the Fehlings Test, the substance is heated in the presence of Fehlings Solution. Fehlings Solution is prepared freshly in the laboratory. It is prepared by mixing an equal amount of Fehlings Solution A and Fehlings Solution B. If a reddish-brown precipitate is formed then the result is positive. If there is no such kind of changes, the result is negative. Fehlings test is most commonly used to determine whether the carbonyl group is a ketone or an aldehyde. Also Read: Ques: (a) Write the products formed when CH3CHO reacts with the following reagents: (i) HCN (ii) H2NOH (iii) CH3CHO in the presence of dilute NaOH (b) Give simple chemical tests to distinguish between the following pairs of compounds : (i) Benzoic acid and Phenol (ii) Propanal and Propanone. (All India 2014, 5 Marks) Ans: (i) HCN (ii) H2NOH (iii) CH3CHO in the presence of dilute NaOH (b) (i) Benzoic acid and Phenol: On adding NaHCO3 to both solutions carbon dioxide gas is evolved with benzoic acid while phenol does not form CO2. Benzoic acid and Phenol (ii) Propanal and Propanone: Propanal gives a positive test with Fehlings solution in which a red ppt. of cuprous oxide is obtained while propanone does not respond to the test. Propanal and Propanone Ques: (a) Give chemical tests to distinguish between the following pairs of compounds: (i) Ethanal and Propanone. (ii) Pentan-2-one and Pentan-3-one. (b) Arrange the following compounds in increasing order of their acid strength: Benzoic acid, 4- Nitrobenzoic acid, 3,4 -Dinitrobenzoic acid, 4- Methoxybenzoic acid. (All India 2015, 3 Marks) Ans: (a) (i) Acetaldehyde (Ethanal) and Acetone (Propanone) Acetaldehyde gives the silver mirror with Tollens reagent while Acetone does not give this test. Acetaldehyde (Ethanal) and Acetone (Propanone) Acetaldehyde forms red ppt with Fehlings solution. Acetone does not form a precipitate with Fehlings Solution. Acetaldehyde (Ethanal) and Acetone (Propanone) (ii) Pentan-2-one and Pentan-3-one Pentan-2-one forms yellow ppt with an alkaline solution of iodine (iodoform test), but pentane-3-one does not give iodoform test. $CH3COCH2CH2CH3 + 3I2 + 4NaOH \rightarrow CH3CH2CH2COONa + CHI3 + 3H2O + 3NaI$ Pentan-2-one gives white ppt with sodium bisulphite while pentan-3-one does not. Pentan-2-one and Pentan-3-one (b) 4- Methoxybenzoic add < Benzoic acid < 4- Nitrobenzoic acid < 3,4-Dinitrobenzoic acid Ques: Give a simple chemical test to distinguish between Acetophenone and Benzophenone. (2 Marks) Ans: The test which can distinguish between Acetonphenone and Benzophenone is Fehlings Test. Aldehydes respond to Fehlings test, but ketones do not. Propanal being an aldehyde reduces Fehlings solution to a red-brown precipitate of Cu2O, but propanone being a ketone does not react to Fehlings solution. Ques: Fehling solution does not oxidize benzaldehyde but Tollen's reagent oxidizes benzaldehyde. Give reasons. (2 Marks) Ans: Aldehydes such as benzaldehyde does not contain alpha hydrogens and cannot form an enolate. Therefore, they do not give a positive test with Fehling's solution which is also a weaker oxidizing agent than Tollen's reagent. That is why Fehlings solution does not oxidize benzaldehyde and gives negative tests. Ques: What is Fehling's solution? (1 Mark) Ans: Fehlings solution is used to carry out Fehlings solution. Fehlings solution is a mixture of an alkaline solution of copper (II) sulphate (CuSO4) and Sodium Potassium Tartrate (Rochelle Salt). The solution is freshly prepared in the laboratories. It is initially present in the form of two solutions known as Fehlings A and Fehlings B solution. Ques: Which of the following aldehydes give a red precipitate with Fehlings solution? (2 Marks) (a) Benzaldehyde (b) Salicyladehyde (c) Acetaldehyde (d) None of the above Ans: Correct option is (C) Acetaldehyde Explanation: As we know that only aliphatic aldehydes give red ppt of Cu2O with Fehling Solution. So, only acetaldehyde gives a red ppt with Fehlings solution. Ques: Few simple chemical tests are given below to differentiate between the pairs of compounds. Which of the following tests is not correct for differentiation? (2 Marks) (a) Propanal and Propanone - Silver mirror test (b) Acetophenone and benzophenone - Idoform test (c) Ethanal and propanal - Fehlings test (d) Benzoic acid and ethyl benzoate- Sodium bicarbonate test Ans: The correct option is (c) Ethanal and propanal - Fehling's test Explanation: Both ethanal and propanal can not be differentiated by Fehlings Solution test. They both will give the silver mirror test and form a red precipitate with Fehling's solution. For Latest Updates on Upcoming Board Exams, Click Here: Do Check Out: One of the most popular tests used for the estimation or detection of reducing sugars and non-reducing sugars is the Fehlings test. The test developed by German chemist H.C. Von Fehling is also used to differentiate between ketone functional groups and water-soluble carbohydrates.Table of Contents Fehlings SolutionFehlings test consists of a solution that is usually prepared fresh in laboratories. Initially, the solution exists in the form of two separate solutions which are labelled as Fehlings A and Fehlings B. Fehlings A is a solution containing copper(II) sulphate, which is blue. Fehlings B is a clear liquid consisting of potassium sodium tartrate (Rochelle salt) and a strong alkali, usually sodium hydroxide. During the test solutions A and B are prepared individually and stored.The two solutions are later mixed in equal volumes to get the final Fehling solution which is deep blue. 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Therefore, it is always good to wear protective gear like goggles and gloves.Reactions of Fehlings TestIn Fehlings solution the reaction between copper(II) ions and aldehyde is represented as;RCHO + 2 Cu2+ + 5 OH RCOO + Cu2O + 3 H2OWhen tartrate is added:RCHO + 2 Cu(C4H4O6)22 + 5 OH RCOO + Cu2O + 4 C4H4O62 + 3 H2OCommon Uses of Fehlings TestSome common uses of Fehlings test are; it is used to determine whether a carbonyl group is an aldehyde or a ketone. Aldehydes tend to get oxidized and give positive result. Ketones apart from alpha-hydroxy-ketones do not react.Fehlings test is also used as a general test for monosaccharides where a positive result is obtained for aldose monosaccharides and ketose monosaccharides. Apart from these, Fehlings test is used in the medical field to determine the presence of glucose in urine. It helps to know whether the person is diabetic or not. Put your understanding of this concept to test by answering a few MCQs. Click Start Quiz to begin! Select the correct answer and click on the Finish buttonCheck your score and answers at the end of the quiz Visit BYJUS for all Chemistry related queries and study materials 0 out of 0 arewrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis One of the most popular tests used for the estimation or detection of reducing sugars and non-reducing sugars is the Fehlings test. The test developed by German chemist H.C. Von Fehling is also used to differentiate between ketone functional groups and water-soluble carbohydrates.Table of Contents Fehlings SolutionFehlings test consists of a solution that is usually prepared fresh in laboratories. Initially, the solution exists in the form of two separate solutions which are labelled as Fehlings A and Fehlings B. Fehlings A is a solution containing copper(II) sulphate, which is blue. Fehlings B is a clear liquid consisting of potassium sodium tartrate (Rochelle salt) and a strong alkali, usually sodium hydroxide. 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Select the correct answer and click on the Finish buttonCheck your score and answers at the end of the quiz Visit BYJUS for all Chemistry related queries and study materials 0 out of 0 arewrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis The Fehlings test was developed by German chemistHermann von Fehlingin 1849. It is generally a test forreducing sugarsand non-reducing sugars; and also a supplementary to theTollens reagenttest.The test can also be used to differentiate between water-solublecarbohydrateandketonefunctional groups.To detect the presence of carbohydrates in a solution.To differentiate between reducing and non-reducing sugars.Fehlings test consists of a solution that is usually prepared fresh in laboratories. Initially, the solution exists in the form of two separate solutions which are labelled as Fehlings A and Fehlings B. Fehlings A is a solution containing copper(II) sulphate, which is blue. Fehlings B is a clear liquid consisting of potassium sodium tartrate (Rochelle salt) and a strong alkali, usually sodium hydroxide. During the test solutions A and B are prepared individually and stored.The two solutions are later mixed in equal volumes to get the final Fehling solution which is deep blue. The deep blue ingredient is the bis(tartrate) complex of Cu2+. The tartrate tetra-anions serve as a chelating agent in the solution. If any aldehyde or sugar molecule is the test solution, they form a reddish-brown chelated compound with Fehlings reagent. The formation of this reddish-brown precipitate is indicative of the presence of sugar reduction or an aldehyde group. For the Fehling reagent test, sugars such as glucose, fructose and lactose yield positive results.ReagentFehlings solution A: Dissolve 7 g of CuSO4.7H2O in 100 ml of water.Fehlings solution B: Dissolve 24 g of KOH and 34.6 g of potassium sodium tartrate in 100 ml water.Fehlings solution: Mix equal volumes of both the solution just before use.Sample (5% Glucose, 5% Sucrose, 5% Fructose, 5% Starch, 5% lactose)Material RequiredPipettesTest tubesTest tube standWater bathTake 1ml of sample and put it in a dry test tube.Similarly, take 1ml of distilled water and put it in another test tube as control.Then, add 1ml of Fehlings reagent (A and B) to all the test tubes.Heat the test tubes in boiling water bath for at least 5 minutes.Observed for the development of color in the test tubes.Positive Result: A positive Fehlings test is indicated by presence of reddish-brown precipitate in the test tube. This confirms presence of reducing sugars (glucose, fructose, lactose)Negative Result: a negative Fehlings test is indicated by absence of reddish-brown precipitate in the test tube. This confirms absence of reducing sugars.It is used to differentiate between the presence of aldehydes and ketones in carbohydrates since, in this test; ketone sugars other than alpha-hydroxy-ketone do not react.Fehlings can be used to screen forglucoseinurine, thus detectingdiabetes.Fehlings test can be used as a generic test formonosaccharidesand other reducing sugars (e.g., maltose).The test does not detect aromatic aldehydes. The solution cannot differentiate between benzaldehyde and acetone.This reaction takes place only in an alkaline medium. In an acidic medium, the copper (II) ions would be stabilized and not easily oxidized, thus failing the reaction. One of the most popular tests used for the estimation or detection of reducing sugars and non-reducing sugars is the Fehlings test. The test developed by German chemist H.C. Von Fehling is also used to differentiate between ketone functional groups and water-soluble carbohydrates.Table of Contents Fehlings SolutionFehlings test consists of a solution that is usually prepared fresh in laboratories. Initially, the solution exists in the form of two separate solutions which are labelled as Fehlings A and Fehlings B. Fehlings A is a solution containing copper(II) sulphate, which is blue. Fehlings B is a clear liquid consisting of potassium sodium tartrate (Rochelle salt) and a strong alkali, usually sodium hydroxide. During the test solutions A and B are prepared individually and stored.The two solutions are later mixed in equal volumes to get the final Fehling solution which is deep blue. The deep blue ingredient is the bis(tartrate) complex of Cu2+. 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Therefore, it is always good to wear protective gear like goggles and gloves.Reactions of Fehlings TestIn Fehlings solution the reaction between copper(II) ions and aldehyde is represented as;RCHO + 2 Cu2+ + 5 OH RCOO + Cu2O + 3 H2OWhen tartrate is added:RCHO + 2 Cu(C4H4O6)22 + 5 OH RCOO + Cu2O + 4 C4H4O62 + 3 H2OCommon Uses of Fehlings TestSome common uses of Fehlings test are; it is used to determine whether a carbonyl group is an aldehyde or a ketone. Aldehydes tend to get oxidized and give positive result. Ketones apart from alpha-hydroxy-ketones do not react.Fehlings test is also used as a general test for monosaccharides where a positive result is obtained for aldose monosaccharides and ketose monosaccharides. Apart from these, Fehlings test is used in the medical field to determine the presence of glucose in urine. It helps to know whether the person is diabetic or not. Put your understanding of this concept to test by answering a few MCQs. Click Start Quiz to begin! Select the correct answer and click on the Finish buttonCheck your score and answers at the end of the quiz Visit BYJUS for all Chemistry related queries and study materials 0 out of 0 arewrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis Home Biochemistry Fehlings test is a chemical test used to differentiate between reducing and non-reducing sugars. This test can also be used to distinguish ketone functional group carbohydrates and water-soluble carbohydrates.Objectives of Fehlings TestTo detect the presence of carbohydrates in a solution.To differentiate between reducing and non-reducing sugars. Principle of Fehlings TestThe carbohydrates having free or potentially free carbonyl groups (aldehyde or ketone) can act as reducing sugars.The Fehlings solution appears deep blue in color and consists of copper sulfate mixed with potassium sodium tartrate and strong alkali, which is usually sodium hydroxide.Image Source: Master Organic Chemistry.On heating, the sample with the Fehlings solution, bistartarocuprate (II) complex oxidizes the aldoses to corresponding aldonic acids.In the process, the copper (II) ions of the complex are reduced to insoluble yellow or red-colored precipitate or cuprous (I) oxide (Cu2O) ions.The ketones, on the other hand, are oxidized to yield shorter chains of acids.The tartrate ions prevent the formation of insoluble Cu(OH)2 from the reaction of copper sulfate and sodium hydroxide present in the solution by forming a bistartarocuprate (II) complex.This complex releases cupric ions slowly for reduction, thus preventing the formation of black cupric oxide.If Fehlings solution is heated in the absence of reducing sugars, it forms a black precipitate of cupric oxide.Reaction2Cu(OH)2 + reducing sugar 2Cu2O + Aldonic acidRequirements1. ReagentFehlings solution A: Dissolve 7 g of CuSO4.7H2O in 100 ml of water.Fehlings solution B: Dissolve 24 g of KOH and 34.6 g of potassium sodium tartrate in 100 ml water.Fehlings solution: Mix equal volumes of both the solution just before use.Sample (5% Glucose, 5% Sucrose, 5% Fructose, 5% Starch, 5% lactose)2. Materials RequiredPipettesTest tubesTest tube stand3. Equipment Procedure of Fehlings TestTake 1 ml of a given sample in a clean, dry test tube. The concentration of the test samples should be 5% (w/v).Take control of 1 ml of distilled water in another tube.Add about 2-3 drops of Fehlings reagent to both the tubes and mix them in a vortex.Keep the test tubes in the water bath for 1-2 minutes.Observe the appearance of color in the test tubes.Note down the appearance of color seen in the test tubes. Result and Interpretation of Fehlings TestThe appearance of a reddish-brown precipitate indicates a positive result and the presence of reducing sugars.The absence of the reddish precipitate or the appearance of deep blue color indicates a negative result and lack of reducing sugars.Uses of Fehlings TestFehlings test is used to distinguish between the presence of aldehydes and ketones in carbohydrates as ketone sugars except alpha-hydroxy-ketone do not react in this test.Fehlings test is performed in medical facilities to detect the presence of glucose in urine. This helps to identify whether the patient has diabetes or not.Limitations of Fehlings TestAromatic aldehydes cannot be detected by this test.This reaction takes place only in an alkaline environment. In an acidic environment, the copper (II) ions would be stabilized and not easily oxidized, thus failing the reaction. References and SourcesTiwari A. (2015). Practical Biochemistry. LAP Lambert Academic Publishing.3% 27s_solution2% 27s_solution2% About Author Chat with educators, ask questions, answer live polls, and get your doubts cleared - all while the class is going onLearning isn't just limited to classes with our practice section, mock tests and lecture notes shared as PDFs for your revisionOne subscription gets you access to all our live and recorded classes to watch from the comfort of any of your devicesAs we already know, since aldehydes and ketones both possess the carbonyl functional group, they undergo similar chemical reactions.But aldehydes differ from ketones in their oxidation reactions. Thus, oxidation is one of the methods to distinguish aldehydes from ketones. Aldehydes are easily oxidised to carboxylic acids on treatment with common oxidising agents like nitric acid, potassium permanganate, potassium dichromate, etc. and even mild oxidising agents also oxidise aldehydes.$R-CHO\xrightarrow{[O]}R-COOH$Ketones are oxidised generally under vigorous conditions, i.e., strong oxidising agents and at elevated temperatures. Their oxidation involves carbon-carbon bond cleavage to afford a mixture of carboxylic acids having a lesser number of carbon atoms than the parent ketone.$R-C{{H}_{2}}-\underset{\underset{O}{\mathop{\parallel }}\,}{\mathop{C}}\,-C{{H}_{2}}-{{R}^{'}}\xrightarrow{[O]}\underset{\text{(By cleavage of }{{\text{C}}_{1}}-\text{ }{{\text{C}}_{2}}\text{ bond)}}{\mathop{R-COOH+{{R}^{'}}-C{{H}_{2}}COOH}}\,\text{ +}\underset{\text{(By cleavage of }{{\text{C}}_{2}}-\text{ }{{\text{C}}_{3}}\text{ bond)}}{\mathop{\text{ }R-C{{H}_{2}}COOH+{{R}^{'}}COOH}}\,$In this article, we are going to learn about the most common mild oxidising agents, i.e., Tollens reagent and Fehlings reagent which are used as Tollens test and Fehlings test to distinguish aldehydes from ketones.What is Tollens Test?Tollens test is one of the tests used to distinguish between aldehydes and ketones. This test is mostly given by the compounds containing the aldehyde group. As a silver mirror is produced at the end of the reaction due to the formation of silver metal, it is also called a silver mirror test in laboratories. The reagent which is used in this test is known as Tollens reagent. Tollens reagent is a solution of freshly prepared ammoniacal silver nitrate.Tollens ReagentThe Tollens reagent is a solution of freshly prepared ammoniacal silver nitrate with the chemical formula Ag(NH3)2OH. It consists of silver nitrate, ammonia, and sodium hydroxide. Tollens reagent is named after his discoverer, Bernhard Tollens. It is freshly prepared in the laboratory directly as it has a short shelf life and cannot be sold commercially.Procedure of Tollens TestThe Tollens test is done by first preparing the Tollens reagent, i.e., ammoniacal silver nitrate Ag(NH3)2OH and then adding the respective sample to it.Step-1 To prepare the Tollens reagent, add aqueous silver nitrate to aqueous sodium hydroxide.$AgN{{O}_{3}}+NaOH\to AgOH+NaH{{O}_{3}}$$2AgOH\to A{{g}_{2}}O+{{H}_{2}}O$Step-2 Now, add aqueous ammonia dropwise until the precipitated silver oxide gets completely dissolved.\[A{{g}_{2}}O+4N{{H}_{3}}+{{H}_{2}}O\to 2Ag(N{{H}_{3}}){{2}^{+}+2O{{H}^{-}}}\]Thus, Tollens reagent is prepared. Now, add this freshly prepared Tollens reagent to the respective sample solution.$R-CHO+2{{\left[Ag{{\left(N{{H}_{3}} \right)}_{2}} \right]}^{+}}+3\overline{O}H\to R-CO\overline{O}+2Ag+2{{H}_{2}}O+4N{{H}_{3}}$On treatment with Tollens reagent, aldehydes get oxidised to corresponding carboxylic acids and a bright silver mirror is produced due to the formation of silver metal. Ketones are not oxidised by Tollens reagent. Thus, Tollens test is used to distinguish between aldehydes and ketones.What is Fehlings Test?A Fehling's test is one of the tests used to distinguish aldehydes from aromatic aldehydes. In Fehlings test, a reddish-brown precipitate is obtained. The reagent which is used in this test is known as Fehlings reagent. Fehlings reagent is a mixture of two different solutions known as Fehlings A and Fehlings B.Fehlings ReagentsFehlings reagent is basically composed of two solutions which are Fehlings A and Fehlings B. Fehlings A is a solution of aqueous copper sulphate and Fehling's B is a solution of alkaline sodium potassium tartrate which is commonly known as Rochelle salt. These two solutions are mixed in equal amounts before the test and together are called Fehlings reagents.Procedure of Fehlings TestThe Fehlings test is done by first preparing the Fehlings reagent which is a mixture of Fehlings A and Fehlings B and then adding the respective sample to it.To prepare Fehlings reagent, mix Fehlings A and Fehlings B in equal amounts with a strong alkali, usually sodium hydroxide. Thus, Fehlings reagent is prepared. Now, add this freshly prepared Fehlings reagent to the respective sample solution.$R-CHO\text{ }+\text{ }2C{{u}^{2+}}\text{ }+\text{ }5\overline{O}H\to R-CO{{O}^{-}}\text{ }+\text{ }\underset{\text{Red brown ppt}}{\mathop{C{{u}_{2}}O}}\,\text{ }+\text{ }3{{H}_{2}}O$On treatment with Fehlings reagent, aldehydes get oxidised to corresponding carboxylate anions with a red-brown ppt. Aromatic aldehydes and ketones do not respond to this test. Thus, Fehlings test is used to distinguish aldehydes from ketones and aliphatic aldehydes from aromatic aldehydes.SummaryTollens and Fehlings tests are used to distinguish between aldehydes and ketones. In Tollens test, Tollens reagent which is a solution of ammoniacal silver nitrate is added to the respective sample. If the given sample contains an aldehyde group, then it gets oxidised to corresponding carboxylic acids and a bright silver mirror is produced due to the formation of silver metal. Whereas if the given sample contains a ketone group, then there is no response to the test.In Fehlings test, Fehlings reagent is added to the respective sample. Fehlings reagent is the mixture of two solutions in which Fehlings A is aqueous copper sulphate and Fehlings B is alkaline sodium potassium tartrate. If the given sample contains an aldehyde group, then it gets oxidised to the corresponding carboxylate anion and a red-brown precipitate is formed. Whereas, if the given sample contains a ketone group or aromatic aldehyde group, then there is no response to the test. Lets find out What is Fehlings Solution? We will discuss its preparation, Fehling A and Fehling B solution, Fehling's test of aldehydes and ketones, and the principle behind Fehlings test, along with reducing and non-reducing sugars. Share copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Fehling's solution test, Aldehydes, KetonesExplanation:Fehling's solution is a chemical reagent used to differentiate between water-soluble carbohydrate and ketone functional groups, and as a test for monosaccharides. Aldehydes give a positive Fehling's test, while ketones do not (except alpha-hydroxy ketones). Benzaldehyde (an aromatic aldehyde) does not give a positive Fehling's test, while acetaldehyde (an aliphatic aldehyde) does. Propanone (a ketone) does not give a positive Fehling's test.Step by Step Solution:Step 1Identify the functional groups present in each compound: Benzaldehyde (A) has an aldehyde group, Acetaldehyde (B) has an aldehyde group, and Propanone (C) has a ketone group.Step 2Recall that aldehydes generally give a positive Fehling's test, while ketones do not (except alpha-hydroxy ketones).Step 3Determine which compounds will give a positive Fehling's test: Acetaldehyde (B) will give a positive test, while Benzaldehyde (A) and Propanone (C) will not.Final Answer:B) Acetaldehyde

Why ketones do not give fehling test. Does ketone give fehling test. Fehling's test ketone. Fehling's test for carbohydrates. Does ketone give tollens test. Fehling's test aldehydes and ketones. Which ketones give tollens test. Fehling’s test. What does fehling test for.