

Continue



Ever wondered why so many lab technicians, teachers, and chemistry nerds strongly advise against using water as a solvent in paper chromatography? You might think, Hey, water is cheap, safe, and everywhere! but thats exactly where the trouble starts. While water works wonders in some contexts, when it comes to separating pigments or chemicals on paper, its more foe than friend. Im about to unpack exactly why water can ruin your chromatogram, waste your time, and even sabotage your experiments accuracy. So grab a coffee, stay with me, and lets dive deep into this overlooked yet crucial detail in chromatography! Water Is Too Polar To Be Helpful!When we talk about solvents in paper chromatography, we want something that can grab different compounds with varying strength. Water is highly polar, meaning it clings too much to polar analytes but ignores nonpolar ones. This imbalance means your pigments dont separatethey just hang out in a big blurry mess. A 2023 case study from a high school lab found that 85% of their plant pigment separations failed when using water compared to alcohol-based solvents. So, picking a solvent with balanced polarity is a smart move for clean, crisp bands. Same Phase Equals No Separation!Did you know the paper itself already holds water within its cellulose fibers? This natural water acts as the stationary phase, and adding more water as the mobile phase cancels the whole process. Without contrasting phases, theres no driving force to pull your compounds apart. Think of it as trying to dry off with a wet towel! just doesnt work! Effective chromatography relies on a polarity difference to move the analyte.Swelling And Smearing Nightmare!Youve ever seen chromatography paper bubble or wrinkle, water is probably to blame. Too much moisture makes the cellulose fibers swell unevenly, causing spots to smear rather than spread neatly. This ruins both resolution and measurement accuracy, wasting your precious samples. A quick experiment showed water increases swelling by up to 40% compared to acetone. So, controlling moisture is critical for reproducible results.Slow Flow Means Wasted Time!Lets be honesto one likes waiting hours for a chromatogram to develop. Waters high surface tension makes it creep along the paper painfully slow. This drags out your experiment and can lead to uneven fronts, complicating your analysis. Studies show organic solvents flow up to 60% faster than water. So, for speedy and neat separations, water is just not your friend.Limited Solubility For Many CompoundsMost interesting compounds in chromatographylike plant oils, food dyes, or ink pigmentssare only slightly soluble in water. This poor solubility means they barely move when water is used, clustering at the base line. On the other hand, organic solvents break down these molecules better, spreading them along the paper beautifully. A university comparison found acetone carried 95% of ink pigments, while water managed only 35%. So, solvent choice massively affects your results.Chemical Reactions Can Ruin Everything!Its easy to forget, but water isnt just a passive carrierits a reactive medium. Some analytes, especially esters and salts, can react or hydrolyze in water, changing their identity. Imagine trying to separate something thats transforming mid-run! This not only misleads your results but can contaminate your paper for future tests. Using inert organic solvents sidesteps this chemistry chaos.Slow Evaporation Slows Visualization!After running your paper chromatography, you often want the paper dry for clear detectionespecially under UV light. Water evaporates sluggishly compared to volatile organic solvents like ethanol. This means longer drying times and possible smearing as water redistributes compounds. Studies show using ethanol cuts drying time by half. For labs processing dozens of samples daily, this time saving is a big deal.Residue Interferes With Detection!Heres a hidden problem: water can leave invisible residues on the papers surface, which affects UV or chemical staining. These residues can scatter light, dull your pigment spots, and lower contrast. Lab tests show a 10% drop in spot intensity when water is used versus acetone. Cleaner solvents leave cleaner results. So, your final readings are sharper and more trustworthy. No Partition Gradient Kills Separation!Successful paper chromatography depends on a clear difference between stationary and mobile phases. With water in both places, theres no gradientso compounds have no reason to move differently. Its like trying to swim in water while wearing a water suittheres no push or pull. Using a solvent like butanol or a mix gives that needed push. This makes your chromatography effective and reproducible.Better Solvent Choices Make Life Easier!Given all these headaches, most labs use alcohols, ketones, or mixed organic solvents for paper chromatography. These solvents flow faster, evaporate cleanly, dissolve a wider range of compounds, and respect the cellulose structure. A practical example: food dye separation works 3x better with a butanol-acetic acid mix than with plain water. So, a little planning on solvent choice saves a lot of trouble later. Experiment with different solvent systems to find your perfect match! Top Reasons To Skip WaterHigh polarity limits compound rangefoldential phases cancel separation!Swelling destroys paper shape!Slow flow wastes time!Poor solubility for most pigments!Reactive with certain compounds!Residues interfere with detection!Tell The World: Post Your Blog!Submit Post
Best Alternatives To Use InsteadEthanolAcetoneButanolPropanolHexane mixToluene (with caution)Custom mixed solventsPro Tip: Always test your solvent system on a small sample first!This way youll see how well your pigments separate without risking your whole batch.SolventFlow SpeedBest ForWaterVery SlowHighly Polar Compounds OnlyEthanolFastInks, Dyes, Plant PigmentsButanol MixModerateFood Colors, Complex MixturesThe right solvent doesnt just separate compoundsit separates amateurs from professionals. In summary, choosing water as a solvent for paper chromatography might sound harmless but comes with a suitcase of problems you can easily avoid. By understanding why it falls!high polarity, poor flow, chemical reactivityyoure already ahead of the game. Better alternatives like ethanol and butanol mixes make your results cleaner, faster, and more reliable. So next time you plan an experiment, remember this breakdown and choose wisely. Bookmark this guide, share it with your lab partners, and never let water ruin your chromatogram again! Chromatography technique that uses paper sheets or strips as the adsorbent being the stationary phase through which a solution is made to pass is called paper chromatography. It is an inexpensive method of separating dissolved chemical substances by their different migration rates across the sheets of paper. It is a powerful analytical tool that uses very small quantities of material. Paper chromatography was discovered by Synge and Martin in the year 1943.Table of Contents Paper Chromatography PrincipleThe principle involved can be partition chromatography or adsorption chromatography. Partition chromatography because the substances are partitioned or distributed between liquid phases. The two phases are water held in pores of the filter paper and the other phase is a mobile phase which passes through the paper. When the mobile phase moves, the separation of the mixture takes place. The compounds in the mixture separate themselves based on the differences in their affinity towards stationary and mobile phase solvents under the capillary action of pores in the paper. Adsorption chromatography between solid and liquid phases, wherein the solid surface of the paper is the stationary phase and the liquid phase is the mobile phase.Paper Chromatography DiagramPaper Chromatography ProcedureBelow we have explained a procedure to conduct Paper Chromatography Experiment for easy understanding of students.Selecting a suitable type of development: It is decided based on the complexity of the solvent, paper, mixture, etc. Usually ascending type or radial paper chromatography is used as they are easy to perform. Also, it is easy to handle, the chromatogram obtained is faster and the process is less time-consuming.Selecting a suitable filter paper: Selection of filter paper is done based on the size of the pores and the sample quality.Prepare the sample: Sample preparation includes the dissolution of the sample in a suitable solvent (inert with the sample under analysis) used in making the mobile phase.Spot the sample on the paper: Samples should be spotted at a proper position on the paper by using a capillary tube.Chromatogram development: Chromatogram development is spotted by immersing the paper in the mobile phase. Due to the capillary action of paper, the mobile phase moves over the sample on the paper.Paper drying and compound detection: Once the chromatogram is developed, the paper is dried using an air drier. Also, detecting solution can be sprayed on the chromatogram developed paper and dried to identify the sample chromatogram spots. Paper Chromatography ApplicationsThere are various applications of paper chromatography. Some of the uses of Paper Chromatography in different fields are discussed below:To study the process of fermentation and ripening.To check the purity of pharmaceuticals.To inspect cosmetics.To detect the adulterants.To detect the contaminants in drinks and foods.To examine the reaction mixtures in biochemical laboratories.To determine dopes and drugs in humans and animals. Types of paper chromatography:Ascending Paper Chromatography The techniques goes with its name as the solvent moves in an upward direction.Descending Paper Chromatography The movement of the flow of solvent due to gravitational pull and capillary action is downwards, hence the name descending paper chromatography.Ascending Descending Paper Chromatography In this version of paper chromatography, movement of solvent occurs in two directions after a particular point. Initially, the solvent travels upwards on the paper which is folded over a rod and after crossing the rod it continues with its travel in the downward direction.Radial or Circular Paper Chromatography The sample is deposited at the centre of the circular filter paper, the filter paper is tied horizontally on a Petri dish which contains the solvent.Two Dimensional Paper Chromatography Substances which have the same Rf values can be resolved with the help of two-dimensional paper chromatography.Paper Chromatography Has Many BenefitsSimple and rapidPaper chromatography necessitates a minimal amount of quantitative material.Paper chromatography is less expensive than other chromatography methods.The paper chromatography method can identify both unknown inorganic and organic compounds.Paper chromatography takes up little space when compared to other analytical methods or equipment.Outstanding resolving powerIt is preferable to use a less polar solvent, such as ethanol, so that the non-polar compounds will travel up the paper while the polar compounds will stick to the paper, separating them.Limitations of Paper Chromatography are as follows-Paper chromatography cannot handle large amounts of sample.Paper chromatography is ineffective in quantitative analysis.Paper chromatography cannot separate complex mixtures.Less Accurate than HPLC or HPTLCPaper chromatography has traditionally been used to analyse food colours in ice creams, sweets, drinks and beverages, jams and jellies. Only edible colours are permitted for use to ensure that no non-permitted colouring agents are added to the foods. This is where quantification and identification come into play.A type of partition chromatography is paper chromatography.To learn more about the different types of paper chromatography from the experts, register with BYJU'S now!Other important links: 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 button!Check your score and answers at the end of the quiz Visit BYJU'S for all Chemistry related queries and study materials 0 out of 0 are wrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis Enjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever.See What's New!Explore how consumers want to see climate stories told today, and what that means for yourbusiness. Download Our Latest Visual!GPS Report!Data-backed trends. Generative AI demos. Answers to your usage rights questions. Our original video podcast covers it all!now ondemand!Watch Now!Enjoy sharper detail, more accurate color, lifelike lighting, believable backgrounds, and more with our new model update. Your generated images will be more polished thanever.See What's New!Explore how consumers want to see climate stories told today, and what that means for yourbusiness. Answers to your usage rights questions. Our original video podcast covers it all!now ondemand!Watch Now!The water doesnt have to reach all the way to the top, but you will get better separation of your molecules that way. The closer you can get the water to the top of the paper, the better, as you can see your bands better. Todays Wonder of the Day was inspired by Jishnu. Jishnu Wonders, What is chromatography? Thanks for WONDERing with us, Jishnu! Do you ever imagine yourself as a scientist? Maybe youll discover a new element or even win a Nobel Prize. You could be the worlds next great chemist, like Marie Curie! If so, todays Wonder of the Day might come in handywere learning about a process called chromatography. What is chromatography? Its a way to divide a mixture into its separate components. There are a few different types of chromatographies, liquid, thin-layer, and paper, to name a few. The word chromatography comes from the Greek words chroma and graphe. Together, they mean color writing. This is fitting, as it started as an art technique. It reaches back to the late 19th century, when people used it to separate pigments in dyes and paint. Have you ever spilled water on a piece of paper after writing on it with a marker? If so, you may have seen chromatography in action! As water soaked through the paper, it smudged the ink. When the paper dried, you may have seen bands of many colors where there was once just one color of ink. What happened to the ink? First, some of it dissolved into the water. The water is called the mobile phase, meaning it helped the ink move across the paper. The paper itself is called the stationary phase,like the ink, it didnt move. As the ink spread, carried by water, its chemicals separated. These were caught by the solid paper through a process called adsorption. Some of these chemicals are caught faster than others, meaning some move much farther across the page. That's how the colored bands ended up on the page. What weve described is an example of paper chromatography. That means the mobile phase was a liquid (in this case, water). The stationary phase was a solid (paper). The separation itself was caused by polarity. That means the chemicals in the ink separated due to how attracted their molecules were to either the water or the paper. In a lab, chemists are more likely to use a method called thin-layer chromatography (TLC). This technique is a lot like the paper method. The difference is that, instead of paper, TLC uses a glass slide as the stationary phase. How do scientists use chromatography? It can help them study the individual substances in a mixture. It can also help them purify a material by taking out extra chemicals. Its common in forensics, pollution monitoring, pharmaceuticals, and other fields. Can you think of any other uses for chromatography? Would you like to try it out in a lab of your own one day? Maybe youll even find a new way to carry out the process! Standards: NGSS.PS1.A, NGSS.PS1.B, CCRA.R.1, CCRA.R.2, CCRA.R.4, CCRA.R.10, CCRA.W.2, CCRA.W.4, CCRA.W.9, CCRA.W.10, CCRA.L.1, CCRA.L.2, CCRA.L.3, CCRA.L.6, CCRA.SL.1 Page 2 Todays Wonder of the Day was inspired by Madison from New York City, NY. Madison Wonders, What was George Orwells purpose of writing 1984? Thanks for WONDERing with us, Madison! Do you notice doublespeak everywhere you look? Maybe youre a bit wary of artificial intelligence (AI). If so, you may have read a certain literary classic that seems to get more popular with age. What are we talking about? The dystopian novel 1984, of course! 1984 was written by author George Orwell and first printed in 1949. Orwell often included current events and political movements in his books. The lasting legacy of 1984 is very powerful. Many people today see connections between the fictional tale and the modern world. The novel is a technique used to separate the components of a mixture. Different solvents will dissolve different substances. A polar solvent (water) will dissolve polar substances (water soluble ink in the video below). Additionally, what is the main purpose of chromatography? The purpose of chromatography in general is to separate molecules based on differences in size, charge or polarity, and solubility. Paper chromatography is no different; it uses paper as the stationary phase and a solvent as the mobile phase. Similarly, you may ask, why is ink not used in chromatography? The resins and colouring agents are miscible with other polar organic solvents that we use in the chromatography. So the ink also travels along with the mobile phase. Hence, a paper or sketch pen should never be used to draw a line either on Paper chromatography or a TLC sheet. In water always a good solvent in ink separation?Diverse solvents can be used in ink chromatography. For inks that are water soluble, water is the solvent of choice. For inks that are not soluble in water, methanol, ammonium hydroxide, ethanol, acetone, or hydrochloric acid can be used as solvents. By Smore Science StaffJune 20, 2022 Monthly Newsletter Home Instrumentation Paper chromatography (PC) is a type of planar chromatography whereby chromatography procedures are run on a specialized paper. PC is considered to be the simplest and most widely used of the chromatographic techniques because of its applicability to isolation, identification, and quantitative determination of organic and inorganic compounds. It was first introduced by German scientist Christian Friedrich Schonbin (1865). Paper impregnated with silica or alumina acts as adsorbent (stationary phase) and solvent as mobile phase. Moisture / Water present in the pores of cellulose fibers present in filter paper acts as stationary phase & another mobile phase is used as solvent. In general paper chromatography mostly refers to paper partition chromatography. The principle of separation is mainly partition rather than adsorption. Substances are distributed between a stationary phase and a mobile phase. Cellulose layers in filter paper contain moisture which acts as a stationary phase. Organic solvents/buffers are used as mobile phase. The developing solution travels up the stationary phase carrying the sample with it. Components of the sample will separate readily according to how strongly they adsorb onto the stationary phase versus how readily they dissolve in the mobile phase. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity, high resolution, negligible diffusion of the sample, and favoring good rate of movement of solvent. Different combinations of organic and inorganic solvents may be used depending on the analyte. Example: Butanol : Acetic acid : water (12.3:5) is a suitable solvent for separating amino acids. The inner wall of the tank is wrapped with filter paper before the solvent is placed in the tank to achieve better resolution. If the solid sample is used, it is dissolved in a suitable solvent. Sample (2-20ul) is adsorb onto the baseline as a spot using a micropipette and air dried to prevent the diffusion. Stationary phase & papers usedMobile phaseDetecting or Visualizing agents 1. STATIONARY PHASE AND PAPERS Whatman filter papers of different grades like No.1, No.2, No.3, No.4, No.20, No.40, No.42 etc. actn general the paper contains 98-99% of -cellulose, 0.3 1% -cellulose. Other modified papers Acid or base washed filter paperGlass fiber type paper.Hydrophilic Papers Papers modified with methanol, formamide, glycol, glycerol etc.Hydrophobic papers acetylation of OH groups leads to hydrophobic nature, hence can be used for reverse phase chromatography.Impregnation of silica, alumna, or ion exchange resins can also be made. 2. PAPER CHROMATOGRAPHY MOBILE PHASE Pure solvents, buffer solutions or mixture of solvents can be used. Examples- Hydrophilic mobile phase Isopropanol: ammonia:water 9:1:2Methanol : water 4:1N-butanol : glacial acetic acid : water 4:1:5 Hydrophobic mobile phases dimethyl ether: cyclohexane ketone : 70% isopropanol!The commonly employed solvents are the polar solvents, but the choice depends on the nature of the substance to be separated.If pure solvents do not give satisfactory separation, a mixture of solvents of suitable polarity may be applied. 3. CHROMATOGRAPHIC CHAMBER The chromatographic chambers are made up of many materials like glass, plastic or stainless steel. Glass tanks are preferred most.They are available invarious dimensional size depending upon paper length and development type.The chamber atmosphere should be saturated with solvent vapor. In paper chromatography, the sample mixture is applied to a piece of filter paper, the edge of the paper is immersed in a solvent, and the solvent moves up the paper by capillary action. The basic steps include: Fine quality cellulose paper with defined porosity