



BrewTimes™

DECEMBER 2023



BALAJI ENZYME & CHEMICAL PVT LTD

Akshay Mittal Industrial Estate
A-113, 1st Floor, Building No 5, Sir M V Road, Andheri (East),
Mumbai - 400059 | +91-22-460 31 666
E-mail : info@becpl.in | Web. : www.becpl.in

Introducing BrewTimes :

We **M/s Balaji Enzyme & Chemical Pvt Ltd**, are pleased to bring to you our December 2023 month edition of BrewTimes.

We would like to use this platform to introduce our association with BetaTec, UK for their natural solutions for ethanol recovery in grain and molasses distilleries. The product is revolutionary and unlike any in the market is 100% natural and antibiotics free. Vitahop series of products helps in ensuring optimum yield and keeps the yeast healthy all naturally.

We are extremely proud of announcing our association with IIT Bombay Research Park. We have begun a journey together to work on sustainable, reliable and innovative solutions for the Food and Beverage Industry.

About Our Company :

We **M/s Balaji Enzyme & Chemical Pvt Ltd** are a leading supplier of Enzymes, Filter aid, Yeast, Hops, Processing aids, Clarifiers and food fortification products to breweries, distilleries, malt extract industry, starch industry, juice and beverage industry, and other food industry.





HopHaze™

Great haze stability and
flexibility from 100% hops.

CASE STUDY ANHEUSER-BUSCH BREWERS COLLECTIVE



HAAS®

| **BarthHaas®**



FEATURED COLLABORATORS



**Joe Casey | Anheuser-Busch
Brewers Collective**

Joe Casey is a brewmaster with over 25 years experience in small- and large-scale brewing operations. Currently, he oversees North American technical brewing support for craft and hop quality at Anheuser-Busch. His expertise spans from brewing raw materials and process aids, yeast and fermentation, finishing, quality, sensory, packaging, food safety, hard cider, hard seltzer, innovation, and procurement.



Dr. Phil Chou | John I. Haas

Phil Chou is Director of Brewing Solutions at John I. Haas. He has extensive experience as a R&D chemist and fermentation scientist, using applied chemical principles to help improve the brewing process and ensure technical success of innovative hop products for HAAS® customers.



Haze stability that's clearly better.

HopHaze™ is a new brewing solution from John I. Haas (HAAS®) and BarthHaas® designed to create remarkably stable haze in beer. It's an all-natural, 100% hop-derived product that's added to beer after filtration before the bright tank/pre-packaging. It's flavor-neutral and will not impact the flavor or aroma of finished beer. Year-long trials have shown that HopHaze™ will last the entire shelf-life of the beer, without settling out of solution.



HopHaze™

THE STABILITY CHALLENGE

In recent years, hazy style beers New England IPAs, Hazy IPAs, Juicy IPAs, and more have exploded in popularity, helping propel the craft industry to new heights of success and winning over a generation of new beer drinkers along the way. While there are many ways to achieve haze in beers, maintaining the stability of that haze during packaging, distribution and storage can be daunting to say the least.

One of the challenges of hazy IPAs, or any hazy beer style, is to make a stable haze that doesn't settle out across time, said Joe Casey, a brewmaster with Anheuser-Busch Brewers Collective. Nobody wants their beer to look like a snow globe, and nobody wants to experience a bunch of sediment either. Haze stability has been an ongoing technical challenge for brewers for quite some time.

Casey got his start in the brewing business at Widmer Brothers, known for their flagship beer, Hefe, the original beer that defines American Hefeweizen. I have a lot of history with haze, he laughed. For Hefeweizen, we had a process down to where we were able to manage the haze really well, and it was a pretty stable haze for a timeframe that we found acceptable.

Over time, as Widmer became part of the Craft Brew Alliance (CBA) and then part of Anheuser-Busch Brewers Collective, Casey was involved with many different kinds of hazy products, across many different breweries and brands. He began to look more seriously at haze solutions.

We had our eyes out for something to help with haze for a while now, Casey noted. Other products we've tried, they don't work very well in hazy IPAs, so we were looking for an alternative.

In one of the many and regular technical conversations about hops and beer that Joe has with Phil Chou, Director of Brewing Solutions at HAAS®, Phil suggested a new product that would ultimately become known as HopHaze™.

THE HOP-BASED SOLUTION

One of the things I really liked about it was, it's 100% hop based, said Casey. There are other products out there that are natural, but they're not made from hops; something already in beer. So you have to think about that when you talk to consumers and when you think about how you're labeling your beer. Some methods that brewers consider might break away from the traditional ingredients used in beer, but HopHaze™ is hop based, so that really attracts me.

"One of the challenges of hazy IPAs, or any hazy beer style, is to make a stable haze that doesn't settle out across time. Haze stability has been an ongoing technical challenge for brewers for quite some time."

The other consideration was long-term stability. Anheuser-Busch Brewers Collective ships hundreds of thousands of barrels of beer each year, to distributors throughout North America. So any solution they found needed to be able to scale and stand the test of time.

As part of our initial trial, we collected an Imperial IPA into clear bottles to test in different storage conditions so that we could easily, visually, monitor beer haze over time. And that's really when we started to be sold on the effectiveness of the product. Casey explained. We let those clear bottles sit in cold, room temperature, and warm forced conditions for nine months. Across

that time the haze remained homogenous, didn't flake out, and didn't sediment. There were also no unwanted flavor impacts. There literally was virtually nothing on the bottom of the bottle indicating that nothing had settled out.

Casey was excited. With haze...let's just say gravity usually wins. So if you can have something that doesn't drop out over time, you're in a pretty good position if you want to make something hazy.



SENSORY TRIALS

Having a long history in hazy beers, Casey was not easily convinced. Anheuser-Busch Brewers Collective needed to see what would happen when things scaled production levels across different types of beers and different brands.

We took time to find an optimal dose rate, Casey said. We asked, What happens if you don't use enough? What happens if you use five times more than you're supposed to? What's the normal process and product variation? We wanted to understand those effects and impacts to negative brainstorm the process until we felt we had it all sorted out.

A GREAT BREWING SOLUTION

The ultimate test of any new product is, would you recommend it to a fellow brewer?

Yes, absolutely, said Casey. I fully realize, if you're at a smaller-scale operation and you're doing draft only, serving beer in your own pub, not distributing around town or in your region, you are dealing with different haze realities that live in a shorter timeframe. But I think your perspective changes when you get towards the other end of the spectrum and have requirements for many months of haze stability in many different conditions and package types.

**"With HopHaze™,
I think we've found
another reason to love
hops. I think HopHaze™
is something that has
the potential to move
the industry forward."**

The bigger a brewery gets and the bigger their geographical distribution footprint is, the different types of containers they're using bottles, cans, kegs the shelf life they're looking for, pasteurization, everything kind of changes. Having different kinds of tools is really helpful.

Casey continued, "You can make a stable haze in a draft-only beer, and it looks great for three weeks at your pub. But when it takes you three weeks to get the

beer from your place to distributor, and then another couple weeks to get from the distributor to the account, and then they don't tap it for another week on top of that, most hazy beer is going to settle out and you're going to have some separation issues.

With HopHaze™, says Casey, "I think we've found another reason to love hops. I think HopHaze™ is something that has the potential to move the industry forward."

**To learn more about HopHaze™, visit our website,
contact your local HAAS® sales representative,
or your favorite HAAS® Distribution Partner.**

johnihaas.com/hop-haze

ABOUT ANHEUSER-BUSCH BREWERS COLLECTIVE

Brewers Collective is the craft business unit of Anheuser-Busch, which is advancing the beer category by bringing together a shared commitment to quality, communities and innovation with a mission to energize how people view, consume and experience beer.



ABOUT HAAS® & BARTHHAAS®

John I. Haas is a proud member of BarthHaas®.

With branches in Germany, the USA, the UK, Australia and China, BarthHaas® conducts business on every continent. It is a world leader in breeding, growing, processing, and marketing hops and hops products. The group's portfolio also includes storage and logistics services, hop research and development, and application technologies for the brewing industry.





BIJAY BAHADUR

**B.Sc. (Hons.); B.Tech. (Gold Medallist); PGDEE; MBA (IIM Raipur)
FIE; Chartered Engineer (India); LMIChE; LMAFST (I)**

Introduction

Beer production starts with barley malt or starch-rich adjuncts like rice, corn, or wheat mixed with water (mash) and heated to around 60°C. Enzymes in barley malt, mainly amylases and proteases, break down starch and proteins into sugars and peptides. Controlled germination of barley creates these enzymes. Heating stops starch-to-sugar conversion, resulting in pale, amber, or dark malts based on temperature and time. The beer's color and taste are derived from these malts (Scheme 1).

- Mashing of barley malt and starch-rich adjuncts with brewing water
- Degradation of starch and proteins by malt enzymes
 - Filtration -> WORT
- Wort boiling - addition of whole hops
 - Filtration -> HOPPED WORT
- Fermentation
 - Yeast removal -> "GREEN BEER" or "YOUNG BEER"
- Maturation - Lagering
 - Filtration -> BEER
- Packaging

Scheme 1. Overview of the brewing process

The filtered sugar solution, called 'wort,' is boiled with a small number of hops in the brewing kettle for at least an hour. Hops form insoluble complexes with proteins, ensuring beer's colloidal stability and sterilizing the wort, maintaining its bacteriological stability. Hops also impart bitterness, stabilize beer foam, and prevent lightstruck flavor. After cooling and removing spent hops, the resulting 'hopped wort' is transferred to fermentation vessels. Yeast is added, converting sugars into ethanol and carbon dioxide. Depending on the yeast and fermentation temperature, beers are categorized as 'bottom fermentation' or 'top fermentation'. Bottom-fermenting yeasts settle at the bottom after reaching about 5% ethanol, while topfermenting yeasts collect at the top, forming a dense foam.

Fermentation lasts about a week, yielding 'green beer' with undesirable compounds. Maturation at about 0°C for several weeks decomposes these components. Lager beers, like 'pilsner-type', require careful monitoring to ensure diacetyl and pentane-2,3-dione concentrations decrease. Once these reach critical values (ppb-ranges), beer can be packaged. Beers may be pasteurized for extended preservation. Unique beers may undergo a slow second fermentation in oak kegs for months to develop unique sour flavors.

Complex Hop Flavour Chemistry

The distinct flavors of different beer types stem from the careful selection of raw materials, with hops playing a significant role by imparting a delicate hoppy flavor alongside bitterness. Despite its importance, the precise nature of this hoppy aroma has remained elusive. This unique characteristic in beer arises from a complex blend of volatile compounds at low concentrations, often acting synergistically. These compounds originate from both volatile substances in hop oil (0.5-3% in hops) and non-volatile components in the hop polyphenolic fraction (3-6%), enhancing the full mouthfeel experienced during beer tasting. However, due to the intricate and varying composition of these fractions, detailed insights have been hard to attain.

When hops are boiled in the wort, many constituents are volatilized or oxidized, transforming the original molecules into different compounds in the resulting beer. Tracking the fate of individual volatile hop constituents, including terpenes like myrcene, caryophyllene, humulene, and farnesene, during wort boiling presents a challenge due to the variability caused by different conditions and beer types. This complexity intensifies during the boiling process, making it difficult to make general statements about the composition of hop oils.

To preserve some of the original composition, brewers often use precious hop varieties, referred to as 'aroma hops,' near the end of the boiling period, a technique known as 'late hopping.' Additionally, 'dry hopping,' involving the addition of hops just before packaging, allows certain hop constituents to influence the beer directly, enhancing its hoppy character. This approach has gained popularity among small brewers, indicating a growing awareness of the diverse hop aromas and flavors that can be developed.

Hop polyphenols, constituting up to one-third of the total polyphenols in beer, significantly impact its colloidal stability. Boiling leads to a significant transformation in the polyphenol composition of wort, with the exact fate of these polyphenolic compounds remaining elusive. These polyphenols exist in various forms, from monomers and dimers to more complex structures associated with nitrogenous components. Depending on the beer's shelf-life and storage conditions, stabilization may be necessary to prevent haze formation caused by the interaction of polyphenols with proteins. Considering the natural antioxidant properties of specific polyphenols, it is clear that future research will delve deeper into the multifaceted roles of polyphenols in brewing, illuminating their impact on taste and taste stability in beers.

The Chemistry of the Bitter Beer Taste

The bitter taste of beer is due to the presence of iso-alpha acids, which are formed from the isomerization of alpha acids during wort boiling. The three significant alpha acids are humulone,

cohumulone, and adhumulone. Humulone is the most abundant alpha acid and gives rise to two epimeric isohumulones, cis-isohumulone and trans-isohumulone. Cohumulone and adhumulone also give rise to two epimeric isohumulones each.

The ratio of cis-isohumulones to trans-isohumulones depends on the reaction conditions but is typically 68:32 in favor of the cis-compounds in wort. However, the cis-compounds are much more stable than the trans-isomers, so the cis: trans ratio will decrease over time.

Iso-alpha acids are intensely bitter and account for the typical bitter beer taste. Their concentrations vary widely in beer, depending on the style of beer. The bitterness of beer is also affected by residual sugars, which form complexes with the iso-alpha acids.

Iso-alpha acids also have other exciting features, such as tensioactive properties that stabilize the beer foam and the ability to inhibit the growth of Gram-positive bacteria.

Key concepts:

- Iso-alpha acids are the primary source of bitterness in beer.
- Iso-alpha acids are formed from the isomerization of alpha acids during wort boiling.
- The three significant alpha acids are humulone, cohumulone, and adhumulone.
- Humulone gives rise to the two most abundant isohumulones, cis-isohumulone and trans-isohumulone.
- Cis-isohumulones are more stable than trans-isohumulones over time.
- The concentration of iso-alpha acids in beer varies depending on the style of beer.
- Iso-alpha acids also have tensioactive properties and the ability to inhibit the growth of Gram-positive bacteria.

The Lightstruck Flavour of Beer

Iso-alpha acids and phenolic compounds are critical components of beer stability. Iso-alphaacids are partly responsible for producing aging off-flavors, such as stale and cardboard flavors. Volatile aldehydes, such as trans-non-2-enal, are formed during the storage of bottled beer from various precursors, including hop lipids.

Light exposure can cause the beer to decompose, generating an offending "skunky" flavor. This is due to the vulnerability of iso-alpha acids to light. When iso-alpha acids are exposed to light, they undergo a Norrish Type I reaction, which leads to the formation of a ketylacyl radical pair. The subsequent loss of carbon monoxide from the acyl radical and recombination of the resulting fragment with a thiol radical furnish 3-methylbut-2-ene-1-thiol, also known as "skunky thiol", together with dehydrohumulinic acid.

The formation of the lightstruck flavor has been confirmed by the unambiguous identification of 3-methylbut-2-ene-1-thiol in illuminated beers. The flavor threshold of this thiol is so low that even concentrations of a few ppb can irreversibly spoil the beer quality. The thiol can also be formed on exposure to visible light or sunlight. Since iso-alpha acids are not absorbed in the visible region, the reaction is photosensitized by riboflavin (vitamin B2).

To prevent the development of a lightstruck flavor, beer must be stored in opaque cans or green or brown bottles.

Novel Hop Technology to Control Bitterness, Foam, and Light-Stability of Beers

New hop processing technologies are being developed to exploit the full potential of hops and optimize their utilization in brewing. These technologies can be used to produce a variety of hop products, including hop extracts, hop oils, and hop acids concentrates.

Isomerized hop acids (iso-alpha acids) can be produced offline (i.e., not by brewers, but by hop processors) and added to the beer at any stage during the brewing process to adjust bitterness levels. For best organoleptic results, isohumulones should be added near the end of wort boiling.

Iso-alpha-acids can be further manipulated to produce reduced iso-alpha acids, which have interesting properties like light-stability and foam-enhancing effects.

Dihydro-iso-alpha-acids are produced by reducing the carbonyl group in the side chain at C(4) of the isohumulones. This converts the light-sensitive acyloin group to a diol, making the resulting dihydro-iso-alpha acids light-stable. Dihydro-iso-alpha acids can be used to brew light-stable beers that can be bottled in clear glass.

Tetrahydro-iso-alpha acids are produced by hydrogenating the double bonds in the side chains of the iso-alpha acids. This leads to diminished reactivity and enhanced hydrophobicity, which has a pronounced foam-positive effect. Tetrahydro-iso-alpha acids are very popular with brewers because they can create a creamy head on a glass of beer (Scheme 2).

COMPOUNDS	RELATIVE BITTERNESS	FOAM ENHANCEMENT
Isohumulones	1.0	xx
Dihydro-isohumulones (rho)	0.6-0.7	xx
Tetrahydro-isohumulones	1.5-1.9	xxx
Hexahydro-isohumulones	1.0-1.2	xxxx

Scheme 2. Comparison of isohumulones and reduced isohumulones regarding bitterness and foam.

Hexahydro-iso-alpha acids are produced by combining the processes mentioned above, i.e., reduction of the sidechain carbonyl group and hydrogenation of the double bonds in the isoalpha acids. Hexahydro-iso-alpha acids are also light-stable and foam-enhancing, and they can be used to produce beers with a unique flavor profile.

Conclusions

Beer is a complex drink with hundreds of identified constituents. Hops are essential for beer's organoleptic qualities, but the relationship between specific hop compounds and sensory characteristics must still be fully understood.

Alpha acids are converted to iso-alpha acids during wort boiling, which gives beer its characteristic bitterness. Modern hop technology has unlocked the full potential of hops by providing new hop products that allow brewers to adjust desired beer properties.

Advanced hop products based on reduced iso-alpha acids can be used for bitter beers without producing off-flavors, such as the lightstruck flavor. This makes beers light-stable.

Both bottom- and top-fermented beers made with advanced hop products in our pilot brewing facilities have been shown to be superior in quality to more traditional brews.

Advanced analytical methods, such as high-performance reversed-phase HPLC and capillary zone electrophoresis (CZE), are essential for successfully penetrating new hop technologies into the beer world. These methods have superseded classical unspecific protocols for beer quality control.

References

1. *Handbook of Brewing*, Edited by William A. Hardwick
2. *Brewing – A Practical Approach*, Bijay Bahadur, 2016
3. *Handbook of Brewing*, Edited by Fergus G. Priest & Graham G. Stewart
4. *Handbook of Brewing*, Edited by Hans Michael Eblinger



SAURABH N. PERKAR

BREWER

ALCHEMY MICROBREWERY, BANGALORE

Carbonation plays a crucial role in defining the taste, mouthfeel, and overall experience of beers, particularly in lagers and ales. Achieving the perfect carbonation level involves a careful balance of factors, including the style of beer, desired taste profile, and the volume of CO₂ to be infused into the beer before dispensing through tap.

In determining the appropriate carbonation level for a specific beer style like a light lager or a witbier, brewers focus on achieving a balance between the effervescence that enhances the drinking experience and the preservation of the beer's unique flavors.

Let's have look with 2 different style of beer.

Light Lager Style:

A light lager typically calls for a crisp and refreshing carbonation level. This style is characterized by its subtle flavors and a clean, dry finish. To achieve this, brewers often aim for a CO₂ volume ranging between 2.5 to 2.8 volumes of CO₂. When considering the volume of beer in a Bright Beer Tank (BBT), brewers calculate the required amount of CO₂ based on the desired volumes and temperature of the beer.

For instance, if a brewer has a 1000-liter batch of light lager at 0°C and aims for 2.7 volumes of CO₂, they would need to introduce approximately 67.5 kilograms of CO₂ into the BBT to achieve the desired carbonation level.

Witbier Style:

On the other hand, a witbier, known for its cloudy appearance and zesty, citrusy flavors, often benefits from a slightly higher carbonation level. Brewers target around 2.8 to 3.2 volumes of CO₂ to enhance the beer's refreshing and lively characteristics.

For a 500-liter batch of witbier at 5°C seeking a carbonation level of 3 volumes of CO₂, brewers would calculate the need for approximately 45 kilograms of CO₂ in the BBT to attain the desired effervescence.

This above mentioned calculation are done considering initial co₂ pressure in beer as zero. If known dissolved co₂ volume in beer initially then can get exact kg of co₂ to use.

Precision and Control:

Balancing the CO₂ volumes for different beer styles demands precision and control during the carbonation process. Brewers utilize carbonation charts, temperature adjustments, and pressure gauges to ensure the accurate infusion of CO₂ into the BBT, respecting the beer's characteristics while meeting consumer expectations.

Understanding the nuances of carbonation levels for lagers and ales allows brewers to craft beers that not only align with the style guidelines but also provide consumers with an enjoyable drinking experience. By mastering this aspect of brewing, artisans continue to elevate the diverse world of beer, satisfying palates with a range of flavors and mouthfeel sensations.

BIOFUEL EXPO 2024

International Exhibition on Biofuel Manufacturing Process & Technology, Plant Machinery & Equipment's and Allied Industries



05-07 JUNE 2024 | India Expo Centre
Greater Noida, U.P., India



FOCUS INDUSTRIES

- Biofuel (Biodiesel, Ethanol, Biogas, Biomass, Green Hydrogen) Manufacturers
- Biofuel Plant's Equipment's & Machine Manufacturers
- Biomass Briquettes, Pallets and Machinery Manufacturers
- Biofuel Manufacturing Technologies
- Bio Refinery (Ethanol/Biofuel) Units
- Boiler, Steam Turbine & Air Compressor Manufacturers
- Presser Vessels, Heat Exchanges & Parts Manufacturers
- Heavy Material Handling & Movement Equipments Manufacturers
- Fabricators & Consultants
- Research & Development Organization
- Government Institutions
- EPC Solution Company for Bio Ethanol Industries.
- EPC Machinery for Bio Ethanol Plant Manufacturers
- Beer, Malt, Wine, Carbonated Drink, Starch, Alcohol Grain and Molasses, Malt Sprits Whiskey process, Distillery and Liquor Plant Machinery.
- EPC solution for Grain Unloading and Milling Section & Grain Processing Machinery
- Pre Cleaner, Vibro Classifier, Destoners, Material Handling, Aspiration System, Hammer Mill.

CONCURRENT EVENTS

- ❖ World Environment Expo (WEE 2024)
- ❖ Green India Awards 2024
- ❖ India Biofuel Meet 2024

MEDIA PARTNER



BrewTimes

ORGANIZERS



ASSOCIATIONS SUPPORT



HOW BREWING INGREDIENT AFFECT THE BEER COLOR



Sachin Mogal

Technical Manager (Alcohol),
Balaji Enzyme and Chemical Pvt Ltd

Introduction

Beer is not only a refreshing beverage but also a visual delight. From light golden ales to deep, dark stouts, the color of beer can vary dramatically. Have you ever wondered what factors contribute to the beautiful hues of your favorite brews? In this article, we will delve into the science behind beer color and explore how different brewing ingredients influence the final appearance of your beer. So grab a pint, sit back, and let's dive into the fascinating world of beer color.

The Role of Malts in Beer Coloration

Malts: The Primary Color Influencer

When it comes to beer color, malts play a crucial role. The level of roasting the malts undergo determines the darkness of the wort, the sugar solution produced during the brewing process. Just like other foods, malts develop color through a process called the Maillard Reactions. These reactions occur when sugars and proteins react with heat. The more the malts are roasted, the darker the wort becomes, resulting in a deeper beer color.

Mashing: A Technique that Impacts Color

Another factor that influences beer color is mashing, a technique that involves bringing the temperature of the mixture to a certain level and allowing it to sit or fluctuating the temperature throughout the steeping process. The pH levels of the water used during mashing also come into play. Higher pH levels lead to a darker beer color, adding to the visual variety brewers can achieve.

The Impact of Boiling and Fermentation on Beer Color

Boiling: Shaping the Color Profile

Boiling is the second most important factor influencing beer color. During the boiling process, proteins break apart and come out of the wort, forming what is known as the hot break. If these proteins do not settle to the bottom of the kettle, they can contribute to haze in the beer. Additionally, as the sugars in the wort caramelize during the boil, the longer the boil, the more color is picked up, allowing

Cold Break and Fermentation: Clarifying the Beer

After the boil, the wort is rapidly cooled, leading to the cold break. This process causes more proteins to come out of solution and settle to the bottom of the fermentation tank. During fermentation, protein and hop particles further settle, and when fermentation is complete, the yeast flocculates, forming clumps that settle at the bottom. These clarifying processes contribute to the beer's clarity and play a role in its final color.

Filtering and Other Factors Affecting Beer Clarity and Color

The Role of Filtering

After fermentation, filtration is often employed to remove any remaining hazy particles, resulting in a clearer beer. Unfiltered beers, on the other hand, retain their particles, which can contribute to a hazy and opaque appearance, affecting the perceived color of the beer.

Additional Ingredients: Adding Flavor and Visual Appeal

While malts are the primary factor in determining beer color, brewers can also use additional ingredients to influence the final product. Fruits, teas, coffees, and more not only provide unique flavors but also contribute to the overall visual appeal of the beer, enhancing its appearance and making it a picture-worthy pint.

The Science Behind Beer Coloration

Understanding the Nature of Light

To comprehend beer coloration, we must first understand the nature of light. Light is a type of radiant energy that follows a wave model of behavior. The color we perceive is the result of certain wavelengths of light being absorbed by a substance, while the remaining wavelengths are reflected. In the case of beer, it absorbs light in the violet to blue spectrum, and to a lesser extent, in the green spectrum, resulting in the perception of yellow to red colors.



Chemical Reactions Responsible for Beer Color

The color compounds in beer are generated by two main chemical reactions: the Maillard reactions and caramelization reactions. The Maillard reactions occur when sugars react with amino acids, resulting in the formation of color pigments and flavor compounds. Caramelization, on the other hand, happens when sugar is heated and breaks apart, creating caramel-like flavors and contributing to the beer's color.

Factors Affecting Maillard and Caramelization Reactions

Several factors influence the Maillard and caramelization reactions in beer. Time and temperature are significant variables, with different combinations yielding different end products. Water content, pH levels, and the presence of oxygen also impact these reactions. The specific composition of the solution and the quantities and concentrations of compounds present determine the wavelengths of light absorbed, ultimately influencing the beer's color.

The Chemistry of Beer Color

Maillard Reactions: The Key to Color Formation

Maillard reactions are the primary source of color in beer, occurring during malting and beer production. These reactions involve the interaction of sugars and amino acids, resulting in the formation of nitrogen-containing polymers called melanoidins. Melanoidins contribute to the wide variety of flavors found in beer, ranging from toasty and caramel to fruity and chocolatey. The exact products formed depend on variables such as time, temperature, water content, and pH levels.

Caramelization: The Art of Heating Sugar

Caramelization, a form of pyrolysis, is another process that affects beer color. By heating sugar until it decomposes, a range of aroma compounds is produced. The temperature and duration of the heating process influence the creation of compounds with flavors like buttery, raisiny, or toffee-like.

Oxidation: A Color-Modifying Factor

Oxidation, the interaction of beer with oxygen, also affects beer color. Polyphenols, derived from malt husks and hops, can react with oxygen, contributing to red-brown colors in beer. The degree of oxidation can darken the color of beer, emphasizing the importance of reducing polyphenol levels and minimizing wort oxidation for brewers aiming to produce lighter-colored beers.

The Role of Malts in Beer Coloration

The Impact of Roasting Malts

The process of kilning or roasting malts significantly influences the color and flavor of beer. Different levels of roasting result in varying degrees of darkness and impart distinct characteristics to the malt. Special B, chocolate malt, and black patent malt are examples of darker malts that contribute to the deep color and rich flavors found in stouts and other dark beers.

The Maillard Reaction in Malts

During the kilning process, the Maillard reaction is initiated, leading to the production of darker malts. This reaction between amino acids and reducing sugars generates a wide range of aroma compounds, adding complexity and depth to the flavor profile of the malt.

Caramelization: A Toasty Transformation

In addition to the Maillard reaction, caramelization occurs in roasted malts. This process involves the heating of sugars until they decompose, creating a variety of aroma compounds. The temperature and duration of the roast determine the resulting flavors, which can range from toasty and nutty to caramel-like.

Understanding Beer Color Measurement

SRM: Standard Reference Method

Beer color is measured using the Standard Reference Method (SRM), which quantifies the absorbance of light by beer. The SRM scale ranges from pale yellows (low SRM values) to deep browns and blacks (high SRM values). This standardized method allows brewers to communicate and reproduce specific beer colors consistently.

Factors Affecting SRM Values

Several factors contribute to the SRM value of a beer. The type and quantity of malts used, the length of boiling, the pH levels during mashing and boiling, and the presence of additional ingredients all play a role in determining the final SRM measurement. Brewers can manipulate these variables to achieve their desired color profiles.

Conclusion

Beer color is not simply a visual aspect of the brewing process but a result of complex chemical reactions and the careful selection and treatment of malts. Through the Maillard and caramelization reactions, malt contributes not only to the color but also to the flavors and aromas of beer. Understanding the science behind beer color allows brewers to create a wide variety of visually appealing brews, from light and refreshing to dark and robust. So, the next time you raise a glass, take a moment to appreciate the artistry and science that goes into creating the beautiful colors of your favorite beers.





POWERED BY:



- "EU Shines as Region of Honour: Exploring Food Excellence in India at SIAL INDIA and Vinexpo India Conference."
- "SIAL India 2023: A Resounding Success! Over 20 Ambassadors, 300 Exhibitors, and Countless Innovations in Food & Beverages."

09th December 2023, New Delhi: SIAL INDIA and Vinexpo India, two leading global events in food and spirits, showcased cutting-edge products that seamlessly blended the worlds of wine, beverages, and culinary delights. The exhibition came to a resounding success with over 20 Ambassadors, 300 Exhibitors, and countless innovations in food & beverages.

The event was inaugurated by **Mr Janusz Wojciechowski**, Agriculture Commissioner of the European Union, **Smt. Anita Praveen**, IAS Secretary, Ministry of Food Processing Industries Government of India (MOFPI) and **Shri. Abhishek Dev**, IAS Chairman, APEDA (Agricultural & Processed Food Products Development Authority) Ministry of Commerce & Industry Government of India, **in the presence of 20 Ambassadors** from participating countries. The event was powered by MOFPI. Comexposium, France, Vinexposium and Inter Ads jointly organized the events.

SIAL India received an excellent response from the industry, with the participation of 30 countries, 300 national and international exhibitors with thousands of products. It was a grand platform where global buyers and sellers got ample networking opportunities. New products, Latest technology and innovative products were displayed from countries like **Austria, European Union, France, Greece, Italy, Iran, Indonesia, Japan, Mexico, Peru, Russia, South Korea, Tunisia, Turkiye, Thailand, USA** and more.

The EU, as the Region of Honour, hosted conference "The EU and India: a partnership in food excellence", where panellist explored ways to guarantee the safety, quality, authenticity and sustainability of agri-food products, trends in F&B innovation and products not yet widely available on the Indian market, **The session was addresses by Mr Janusz Wojciechowski EU Commissioner for Agriculture** and other high-level speakers.

Event also had French Patisserie Competition which was organized by IFCCI and hosted at SIAL INDIA. H.E Thierry Mathou, the French Ambassador to India graced the exhibition with presence and gave away awards to winners of competition. Chef Astik Oberoi grabbed the winning tittle.

Another interesting segment seen here was innovation and new products. Spicy Witch from South Korea came up with innovative transformation with the introduction of Kimchi with salad powder. This fermented Kimchi Powder streamlines the preparation process, delivering a ready-to-consume dish in 3 minutes. Its versatility allows seamless integration into vegetable dishes or salads, enriched with unique seaweed extracts.

'Kombucha,' introduced by You and I In the realm of detox beverages drew attention. The Kombucha powder is a powerhouse of probiotics and low-calorie goodness, available in five flavours. Its standout feature is the single-stick-to-go convenience – simply add it to water for a refreshing drink.

Making its Indian debut, Kizable from Florida presented 'Kizandy,' an organic, mouth-watering candy in five distinct flavours.

On the tea front, TEA Bro, an Assam-based startup, unveiled instant-flavoured Tea in eight varieties. The beauty lies in its simplicity – add hot water, and savour the tea directly without any waiting period. Its portability and exquisite taste position it as a game-changer, seamlessly blending traditional flavours with contemporary convenience.

Puja Sekhri Director Fratelli said who entered wine industry in 2009, for the very first time has introduced Tilt canned Wines. She expressed that this platform gave good opportunity to find importers and exposure to create brand awareness. She added wine should be treated in food categories as it is allowed in other countries and should have uniformity in exercise duties across India.

Suhash Arora, moderator of wine master classes at Vinexpo said, it's fantastic that new products found intersections at SIAL India. The 14 masterclasses provided insightful explanations, offerings valuable knowledge. This event was not only facilitated networking opportunities but also provided significant exposure for brands in the Indian FMCG market, enhancing their presence and potential growth.

The show could not have been more complete where live cooking was organized for all the three days. Chef Manisha Bhasin's Millet Risotto and Smoked Chicken was the recipe of the event, whereas Nishant Choubey's Rice Flour Pancake, Rosella Marmalade and Cranberry Jam didn't fail to sweeten the taste buds. Chef Rakhee Vaswani introduced the audience to Chocolate tasting from countries like Spain, Poland, Ireland, and Cyprus.

Nicola Trentesaux – Director SIAL Group said, "SIAL India is no doubt the place to be to understand the Indian food market and assess the amazing opportunities ahead of us. Not only India is now the biggest market in the world with over 1.4 billion inhabitants but the appetite of the middle class for new and innovative products is amazing.

Rodolphe Lameyse, Directeur Général, CEO, Vinexposium, said "The exhibition was the platform of passion, innovation, and the artistry of fine wines and spirits. In the heart of India, where tradition meets modernity, we gathered to toast to the richness of the wine cultures and the boundless possibilities that our Vinexpo India offers. It was not merely an event; a journey into the realms of taste, elegance, and the shared joy that comes from the perfect encounter."

Rajan Sharma, MD Interads exhibition Pvt. Ltd, said, "It was a privilege to host 5th edition of Sial India! Where we received such grand response from across globe. I express my thanks to all the participating countries, exhibitors for believing in us and making this platform even more valuable. Here we truly celebrated diversity of global culinary, innovation, and connection. The doors were open to both national and international enthusiasts, who marked a way for shaping the future of food.

EU AGRI COMMISSIONER MR. JANUSZ WOJCIECHOWSKI AT SIAL INDIA 2023



BECPL TEAM AT SIAL INDIA 2023



BECPL TEAM AT VINEXPO INDIA 2023



Exploring the Chemistry Behind Low Alcohol and Session Beers: A Technical Perspective



Rohit Chauhan

Introduction

In recent years, there has been a growing trend in the craft beer industry towards producing low alcohol and session beers. These brews are designed to provide a flavorful and enjoyable drinking experience without the high alcohol content commonly associated with traditional craft beers. In this article, we will delve into the technical aspects of brewing low alcohol and session beers, with a particular focus on the chemical reactions that contribute to their unique characteristics.

A. Understanding Alcohol Content

The alcohol content in beer is primarily determined by the fermentation process, during which yeast converts sugars from malted grains into alcohol and carbon dioxide. For low alcohol and session beers, brewers manipulate this process to limit the production of alcohol without compromising flavor.

1. Control of Fermentation Time and Temperature

One key factor in reducing alcohol content is controlling the fermentation time and temperature. Lowering these variables inhibits the yeast's ability to convert sugars completely, resulting in a beer with less alcohol. Brewers carefully monitor and adjust these parameters to achieve the desired balance between flavor and alcohol content.

2. Yeast Selection

Choosing the right yeast strain is crucial in brewing low alcohol and session beers. Some yeast strains have a lower alcohol tolerance, meaning they will produce less alcohol during fermentation. Additionally, certain yeast strains contribute unique flavors that can enhance the overall profile of the beer, compensating for the reduced alcohol content.



Exploring the Chemistry Behind Low Alcohol and Session Beers: A Technical Perspective

B. Malt Composition

The choice of malt plays a significant role in shaping the flavor and body of low alcohol and session beers. Brewers often opt for malts with lower fermentability to ensure a residual sweetness that masks the lack of alcohol.

1. Specialty Malts

Incorporating specialty malts, such as caramel and Munich malts, can add complexity to the flavor profile. These malts contribute non-fermentable sugars, enhancing the body and mouthfeel of the beer while providing a sweet, malt-forward taste.

2. Mash Temperature

Brewers carefully select the mash temperature to influence the enzyme activity responsible for converting starches into fermentable sugars. A higher mash temperature can lead to the production of less fermentable sugars, resulting in a fuller-bodied beer with lower alcohol content.

C. Hop Utilization

Hops play a dual role in low alcohol and session beers, contributing bitterness and aroma while acting as a preservative.

1. Bittering Hops

Brewers often use higher alpha acid hops for bittering to achieve a balanced flavor profile. The bitterness helps offset the sweetness from residual sugars, providing a refreshing taste without relying on a high alcohol content.

2. Late Addition and Dry Hopping

Late additions of hops, as well as dry hopping, are common techniques used to enhance aroma and flavor. These methods add layers of complexity to the beer, making it more enjoyable despite its lower alcohol content.

Conclusion

Brewing low alcohol and session beers is a delicate balancing act, requiring a nuanced understanding of the chemical reactions involved in the brewing process. By manipulating fermentation conditions, selecting appropriate yeast strains, and carefully choosing malt and hop varieties, brewers can craft beers that are not only lower in alcohol but also rich in flavor and character. As the demand for these beers continues to rise, the exploration of innovative brewing techniques and the science behind them will undoubtedly lead to even more diverse and satisfying low alcohol and session beer options for consumers.



SAYALI ANGANE

TECHNICAL AND APPLICATION SPECIALIST (F&B)

Carbonated beverages: also known as fizzy drinks or sodas, have become a part of modern life. These effervescent beverages are characterized by the presence of dissolved carbon dioxide gas, which creates bubbles and gives the drinks their distinctive fizziness. Let's delve into the production, impact, market trends and regulatory landscape of carbonated beverages.

Production: The production of carbonated beverages involves several key steps. First, carbonation is introduced into the liquid, typically water, through pressurization with carbon dioxide. Flavours and sweeteners are then added to create the desired taste profile. The mixture is carefully formulated to achieve the right balance of sweetness, acidity, and carbonation. Finally, the beverage is sealed in a bottle to preserve its fizziness.

Variety of Flavours: Carbonated beverages come in a wide array of flavours, ranging from classic cola to exotic fruit blends. The versatility in flavour profiles allows beverage companies to cater to diverse consumer preferences. Diet and zero-calorie options have also gained popularity, addressing concerns related to sugar intake and caloric content.

Cultural and Social Impact: Carbonated beverages have woven themselves into the fabric of social and cultural practices. They are often associated with celebrations, gatherings, and leisure activities. Iconic brands like Coca-Cola and Pepsi have become global symbols, reflecting not only the popularity of their products but also their influence on popular culture.

Health Considerations: While carbonated beverages are enjoyed by millions worldwide, concerns about their impact on health have arisen. The high sugar content in many traditional sodas has been linked to health issues such as obesity and diabetes. Additionally, the acidity of some carbonated drinks may contribute to dental problems. The beverage industry has responded by introducing low-sugar, diet, and alternative sweetener options.

Market Trends and Innovations: The carbonated beverage market has witnessed ongoing trends and innovations. Flavoured sparkling water, for example, has gained popularity as a healthier alternative to traditional sodas, offering the fizziness without the high sugar content. Craft sodas, artisanal and often made with natural ingredients, have also carved out a niche market, appealing to consumers seeking unique and premium beverage experiences.

Global Consumption Patterns: The consumption of carbonated beverages varies widely across the globe. While some regions, particularly North America and Europe, have a long-established soda culture, other parts of the world may prefer traditional non-carbonated beverages. The globalization of popular brands has influenced local preferences, leading to a blend of global and regional beverage choices.

Carbonation Technology Advancements: Advancements in technology have played a role in enhancing the carbonation process. Carbonation devices for home use, such as soda makers, allow consumers to carbonate water and create their custom beverages. This trend aligns with the growing interest in DIY and personalized food and drink experiences.

Challenges in the Industry: Despite its widespread popularity, the carbonated beverage industry faces challenges. Health-conscious consumers are increasingly turning to alternatives like water, herbal teas, and natural fruit juices. This shift in consumer preferences has prompted beverage companies to adapt by diversifying their product offerings and focusing on healthier options.

Regulatory Scrutiny and Sugar Taxes: Governments and health organizations have become more concerned about the health implications of excessive sugar consumption. Some countries have implemented sugar taxes on beverages to discourage high sugar content. This has led to reformulations and increased efforts by companies to develop and promote low-sugar or sugar-free options.

Future Outlook: The future of carbonated beverages is likely to be shaped by ongoing consumer demands for healthier options, sustainability, and transparency in product ingredients. Companies in the industry are expected to continue innovating to meet these evolving expectations, with a focus on reducing environmental impact and adapting to changing consumer lifestyles. As carbonated beverages navigate the evolving landscape of consumer preferences, health considerations, and environmental concerns, the industry remains a dynamic and influential player in the global beverage market.

Regulatory Landscape of Carbonated Beverages: The production and marketing of carbonated beverages are subject to a range of regulations aimed at ensuring consumer safety, fair competition, and transparency. These regulations cover various aspects of the industry, from ingredient labelling to health claims and environmental impact.

- 1. Ingredient Labelling and Standards:** Regulatory bodies often set standards for the composition and labelling of carbonated beverages. This includes specifications for allowable ingredients, nutritional information, and allergen declarations. Companies must comply with these standards to provide accurate and transparent information to consumers.
- 2. Health Claims and Marketing Practices:** Regulations govern the health claims that can be made on carbonated beverage packaging and in advertising. For instance, if a drink is marketed as "diet" or "low-calorie," it must meet specific criteria defined by regulatory authorities. Misleading marketing practices or false health claims can lead to legal repercussions.
- 3. Sugar and Caloric Content:** Due to concerns about rising obesity rates and related health issues, some countries have implemented regulations targeting the sugar and caloric content of beverages. This has led to the introduction of sugar taxes in some regions, incentivizing companies to reduce sugar levels in their products.

4. Packaging and Environmental Impact: Environmental considerations have prompted regulatory actions related to packaging. Some regions have implemented regulations to reduce the use of single-use plastics, encouraging the beverage industry to explore more sustainable packaging options. Compliance with these regulations is crucial for companies aiming to minimize their environmental footprint.

5. International Trade and Standards: As the carbonated beverage market is global, companies must navigate international trade regulations and standards. Harmonizing standards across different regions ensures consistent quality, safety, and labelling practices. Regulatory compliance becomes a complex challenge as companies operate in diverse markets with varying requirements.

6. Food Safety and Quality Assurance: Ensuring the safety of ingredients, production processes, and final products is a fundamental aspect of regulatory oversight. Regulatory bodies set standards for hygiene, quality control, and safety measures within beverage production facilities to safeguard consumer health.

7. Alcohol Content in Certain Beverages: In some regions, certain carbonated beverages may be subject to regulations related to alcohol content. This is particularly relevant for products like “hard sodas” or alcoholic sodas, where specific rules govern the permissible alcohol levels and labelling requirements.

Challenges and Adaptations: Staying compliant with diverse and evolving regulations poses challenges for the carbonated beverage industry. Navigating changes in labelling requirements, responding to health-focused regulations, and addressing environmental concerns require companies to remain agile and proactive in adapting their practices.

Conclusion: The regulatory landscape surrounding carbonated beverages reflects the ongoing efforts to balance industry innovation with consumer protection and public health. As societal expectations and concerns evolve, regulatory frameworks will likely continue to shape the trajectory of the carbonated beverage industry. Compliance with these regulations is not only a legal requirement but also a crucial aspect of maintaining consumer trust and market integrity.

HEADING- BECPL TEAM AT PROWINE INDIA 2023, MUMBAI





AKSHAT JAIN

Business Development Manager-Craft Brewing

Introduction:

Beer, the age-old elixir, has been a companion to human civilization for thousands of years. From ancient rituals to modern-day celebrations, beer has evolved into a rich tapestry of flavors and styles that captivate enthusiasts worldwide. In this exploration, we will embark on a journey through the frothy landscape of beer, uncovering its various types and the unique characteristics that make each brew a distinct experience.

The Foundation: Understanding Beer Basics

Before we dive into the diverse world of beer, let's lay the foundation. Beer is a fermented beverage primarily made from four key ingredients: water, malted barley, hops, and yeast. The magic happens during the brewing process, where these ingredients are harmoniously combined, resulting in an alcoholic beverage with a range of flavors, aromas, and appearances.

The Pioneers: Ales and Lagers

Broadly speaking, beer is classified into two main categories: ales and lagers. Ales are fermented at warmer temperatures, typically between 60-72°F (15-22°C), and showcase a variety of flavors from fruity and spicy to malty and hoppy. On the other hand, lagers, fermented at cooler temperatures (45-55°F or 7-13°C), are known for their clean, crisp profiles and often exhibit a smoother finish.

The Ale Palette: Exploring Styles

- **Pale Ale:** A classic ale known for its amber color and balanced flavors, with a noticeable hop presence. Varieties include American Pale Ale (APA) and English Pale Ale.
- **India Pale Ale (IPA):** Renowned for its hop-forward profile, IPAs come in various sub-styles like American IPA, New England IPA (NEIPA), and Double IPA (DIPA).
- **Stout:** Dark, rich, and often featuring roasted malt flavors, stouts come in diverse forms, including Dry Stout, Imperial Stout, and Sweet Stout.
- **Porter:** Similar to stouts but generally lighter in body, porters offer a mix of chocolate, caramel, and coffee notes.

The Lager Palette: Exploring Styles

- Pilsner: A pale, highly carbonated lager that originated in the Czech Republic, featuring a crisp and refreshing taste.
- Bock: A strong, malty lager with origins in Germany, bocks vary from traditional to doppelbocks, with higher alcohol content.
- Helles: A German-style pale lager known for its balance between malt sweetness and hop bitterness.
- Maibock: A springtime bock with a more pronounced hop presence and a medium to fullbodied profile.

Crafting Diversity: Specialty and Hybrid Beers

Beyond the classic categories, craft brewers have pushed the boundaries, creating hybrid styles and innovative concoctions. From sour ales and barrel-aged brews to fruit-infused and spiced beers, the craft beer movement continues to surprise and delight with its ever-expanding repertoire.

Conclusion:

As we raise our glasses to the world of beer, it's evident that its diversity is a testament to the creativity and passion of brewers worldwide. From the bold hoppy notes of an IPA to the smooth elegance of a lager, beer enthusiasts have a vast and ever-growing array of options to explore, ensuring that the world of beer remains as exciting and varied as ever. Cheers to the brewing wonders that continue to tantalize our taste buds!

DRY YEAST & ITS BENEFITS

Introduction

Dry yeast, as opposed to liquid yeast, offers several benefits for brewing beer. Here are some advantages of using dry yeast in the beer-making process:

Long Shelf Life:

Dry yeast has a significantly longer shelf life compared to liquid yeast. The dehydration process removes the moisture that yeast needs to grow, allowing dry yeast to be stored for extended periods without losing viability. This makes it a convenient option for homebrewers who may not brew regularly.

Easy Storage and Handling:

The dry form of yeast makes it easy to store and handle. Dry yeast can be stored at room temperature, and its stability simplifies transportation, reducing the risk of contamination or spoilage during transit.

Convenience in Pitching:

Dry yeast is typically easier to pitch into the wort. It can be sprinkled directly onto the surface of the wort or rehydrated before pitching. This simplicity can be advantageous for homebrewers, especially those who are new to the brewing process.

Cost-Effective:

Dry yeast is often more cost-effective than liquid yeast. The production and packaging processes for dry yeast are generally more efficient, contributing to a lower overall cost. This makes it an attractive option for brewers, particularly those on a budget or those brewing larger batches.



Kanak lata

Wider Variety of Strains:

Over time, the variety of available dry yeast strains has increased, offering brewers more options. While liquid yeast still provides a broader selection, the gap between liquid and dry yeast strains has been narrowing, providing brewers with a diverse range of choices for different beer styles.

Consistent Performance:

Dry yeast is known for its consistent performance. The dehydration process helps maintain the yeast's vitality and viability, leading to reliable fermentation. This consistency is especially beneficial for brewers who may not have access to a local homebrew shop and rely on yeast that can be shipped to them.

Reduced Risk of Contamination:

Dry yeast, being a stable and dormant form of yeast, has a lower risk of contamination compared to liquid yeast. This can be advantageous for brewers who may not have access to a sterile brewing environment.

While dry yeast has these benefits, it's important to note that both dry and liquid yeast have their places in brewing, and the choice often depends on the brewer's preferences, the beer style being brewed, and the specific requirements of the recipe.

WHITE WINE: CRISP ELEGANCE AND A SYMPHONY OF FLAVORS

Introduction

White wine, with its crisp elegance and refreshing qualities, has secured its place as a beloved beverage across cultures and cuisines. Derived from a spectrum of grape varieties and produced through meticulous processes, white wine offers a delightful array of aromas and flavors. This article explores the origins, production methods, and diverse styles that define the enchanting world of white wine.

Origins and Grape Varieties:

White wine has ancient origins, with evidence of winemaking dating back thousands of years. The diversity of white wines is attributed to the multitude of grape varieties used. From the zesty Sauvignon Blanc and the aromatic Riesling to the rich Chardonnay and the floral Viognier, each grape variety contributes distinct characteristics to the final wine.

Production Process:

Crafting white wine involves a precise and delicate process. After harvesting, the grapes are typically pressed, separating the juice from the skins. Unlike red wine, white wine is fermented without prolonged contact with the grape skins, resulting in a lighter color and less tannic structure. The aging process, whether in stainless steel tanks or oak barrels, further refines the wine's characteristics.

Styles of White Wine:

White wine comes in a diverse range of styles, each offering a unique expression. From the crisp and citrusy Sauvignon Blancs to the buttery and oaked Chardonnays, white wine enthusiasts can explore a spectrum of flavors, including notes of green apple, tropical fruits, floral aromas, and mineral undertones.



Priyanshi Sharma

Food Pairings and Enjoyment:

White wine's versatility shines in its ability to pair seamlessly with various dishes. Whether accompanying seafood, poultry, salads, or creamy cheeses, white wine enhances the dining experience. The enjoyment of white wine lies in its ability to refresh the palate, providing a perfect balance to a wide array of flavors.

Conclusion:

White wine, with its refreshing qualities and diverse expressions, invites wine lovers to embark on a sensory journey. Whether enjoyed on a warm summer day or paired with a delectable meal, white wine offers a world of flavors and aromas that captivate both novices and seasoned enthusiasts alike.





MAMTA BHARDWAJ

**Business Development Manager
(Wine Industry)**

Different types of glasses are available in the market for different styles of wine. For sommeliers and wine connoisseurs who had years of experience, it may be easier to distinguish which wine glass goes best for which wine. However, for the normal wine drinker, it may be harder to decide.

This article aims to help the non-expert to pick out the best glass to serve his/her rose wine.

Two types of wine glasses are widely accepted for use with rose wines – stemmed glasses with a short bowl and a slight taper, and those with a short bowl and a slightly flared lip. Lip of the glass is the most important part. Since these wines are fairly similar in fermentation process as white wines, the use of a white wine glass is also considered acceptable for these types of wine if a rose wine glass is not available.

When selecting a rose wine glass, those with a slightly flared lip are usually preferred for wines that are younger, crisper, and less sweet than the more mature varieties. The flared lip design lets the wine run out of the bowl and right onto the tip of the tongue where the taste buds are most sensitive to sweetness. This allows whatever sweetness is in the wine to be enhanced, giving crisp wines a more balanced flavor and minimizing any bite.

For rose wine that is mature and has a more full-bodied flavor, wine glasses that feature a slight taper are oft preferred. The bowl for mature rose wines is still short and rounded at the bottom, but shaped almost like a shortened red wine glass with a very slight taper.

Enjoy your glass of Rose wine

Cheers!!!



KANCHAN SINGH

**Chapter Head - South Delhi, India
Apex Wine Club India
1 December 2023, Friday**

A wine connoisseur's paradise, Bordeaux is located in the southwestern part of France and is known for fine wine.

Famous for world renowned wines, Bordeaux has many wine bars which offer tasting sessions. It also hosts the annual Bordeaux Wine Festival.

Bordeaux now offers sparkling aperitifs, fresh whites, oaked whites, rosés and their famous reds other than sweet white dessert wines for pudding.

It is important to note that, traditionally, Bordeaux reds have been wines to lie down in the cellar, in order to benefit from years of ageing to soften their tannins and develop more intricate flavours.

However, customers now want to be able to consume their wine immediately and even the established wine houses are making blends to be sipped immediately.

Besides, this year, the Bordeaux Wine Festival, which was held on the Garrone River Bank, featured hundreds of drones flying together to create the shape of a wine glass and a bottle. This aerial acrobatics display allowed visitors to witness the process of filling a wine glass.





BrewTimesTM



BALAJI ENZYME & CHEMICAL PVT LTD

Akshay Mittal Industrial Estate
A-113, 1st Floor, Building No 5, Sir M V Road, Andheri (East),
Mumbai - 400059 | +91-22-460 31 666
E-mail : info@becpl.in | Web. : www.becpl.in