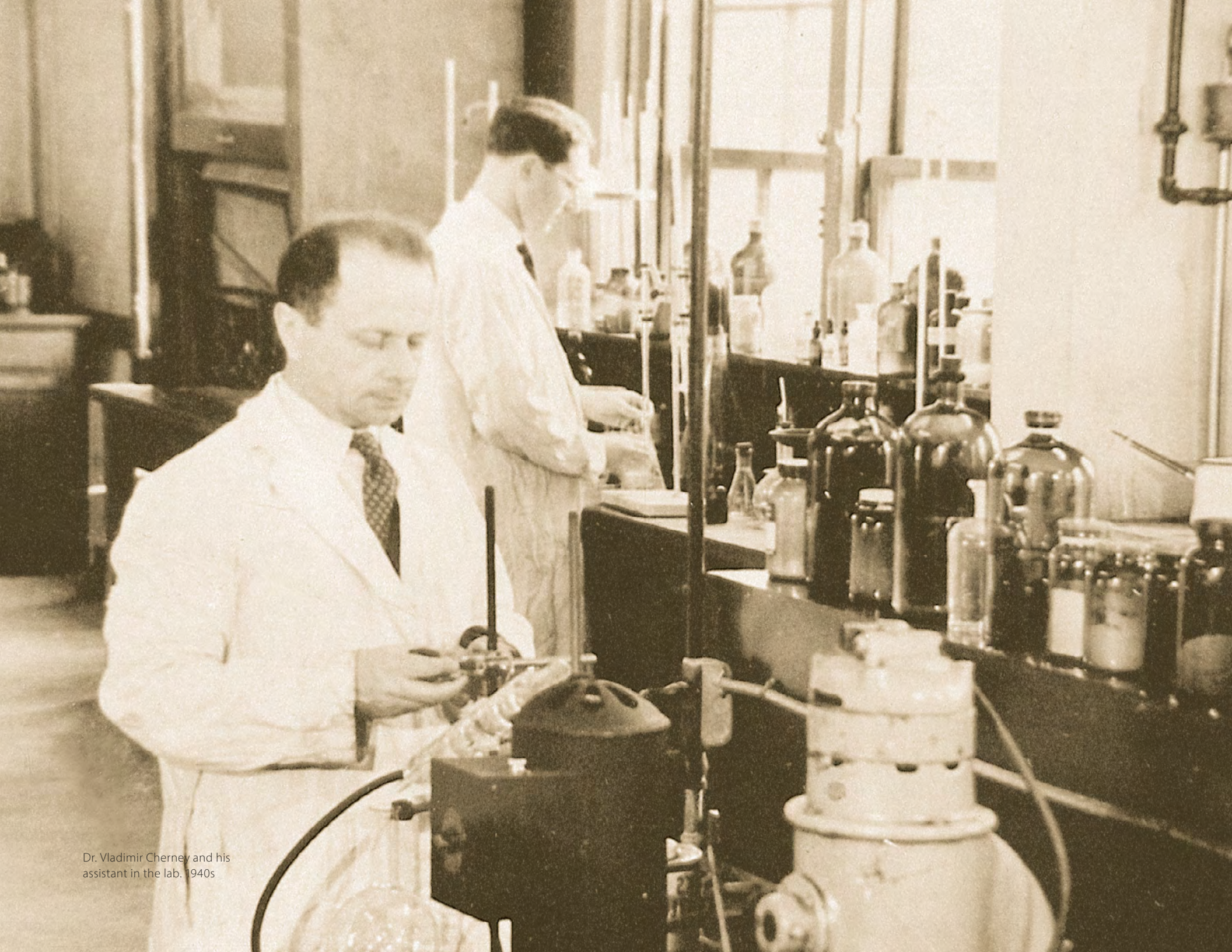


**LALLEMAND**

LALLEMAND BREWING

# BREWING CATALOG





Dr. Vladimir Cherney and his  
assistant in the lab. 1940s

# CONTENT





# WHO WE ARE

# LALLEMAND BREWING

**LALLEMAND BREWING IS A DIVISION OF LALLEMAND INC., A GLOBAL LEADER IN THE DEVELOPMENT, PRODUCTION AND MARKETING OF YEAST, BACTERIA AND SPECIALTY INGREDIENTS.**

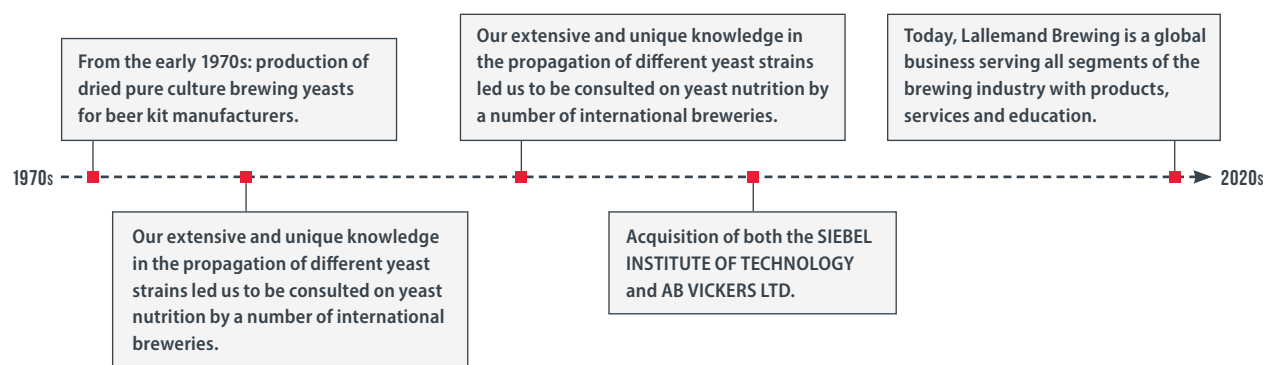
Lallemand's presence in the brewing industry dates from the early 1970s when the company started producing dried pure culture brewing yeasts for beer kit manufacturers in Canada. In subsequent years, this activity was expanded to the production of other specific ale and lager beer yeast strains for different clients in the United States, Europe and Australia and Asia.

Lallemand's extensive and unique knowledge in the propagation of different yeast strains led us to be consulted on yeast nutrition by a number of international breweries. As a result of this expertise, we developed -and continue to perfect- a specialized range of yeast and yeast nutrients that target brewing industry's specific challenges.

Lallemand's activities in the brewing industry have continued to grow, expanding beyond yeast-related production for the industrial, micro and home brewer. The acquisition of both the Siebel Institute of Technology and AB Vickers Ltd. allowed for the creation of a broader portfolio of products and services aimed at supporting the industry's needs.

Today, Lallemand Brewing is a global business serving all segments of the brewing industry with products, services and education.

## KEY MOMENTS IN LALLEMAND BREWING'S HISTORY:



# SIEBEL INSTITUTE



**THE SIEBEL INSTITUTE OF TECHNOLOGY IS AN INTERNATIONALLY RECOGNIZED BREWING INDUSTRY EDUCATION AND SERVICE PROVIDER.**

Founded in 1872 by Dr. J. E. Siebel, the Siebel Institute of Technology's objective is, in the founder's own words, to promote progress of the brewing industry "based on fermentation, which is done by instruction, investigation, analysis and otherwise." True to this promise, the Siebel Institute of Technology rapidly became one of the world's most respected brewing schools and analytical laboratories.



# AB VICKERS



**AB VICKERS IS A GLOBAL LEADER IN THE FIELD OF BREWING PROCESS AIDS AND RELATED SERVICES.**

Some of the largest and smallest brewing companies benefit from using the AB Vickers product lines from tapping into the significant expertise and resources offered by our team of brewmasters and R&D capabilities.



# LALLEMAND INC.

**LALLEMAND INC. IS A PRIVATELY-OWNED COMPANY THAT RESEARCHES, DEVELOPS, PRODUCES AND MARKETS YEASTS, BACTERIA AND OTHER MICROORGANISMS WITH THE AIM OF REPRODUCING, MANAGING AND OPTIMIZING NATURAL FERMENTATION PROCESSES IN THE AGRI-FOOD INDUSTRIES.**

The company is organized into 11 technically-driven business units focusing on various applications of yeast and bacteria in baking, fermented beverages, human and animal nutrition, fuel ethanol and for agricultural and pharmaceutical uses.

The global vision of Lallemand Inc. is to be a world leader in markets that utilize our cutting-edge solutions while contributing to the prosperity of our clients and partners.

We take pride – individually and collectively – in the quality of our work, the advanced processes we use, the products and services we provide, and in the recognized and validated efficacy of our continuous improvement programs. We take pride in meeting our customer's needs ahead of our competition.

*For additional information about Lallemand and our research centers, plants, global contacts, and much more please visit [www.lallemand.com](http://www.lallemand.com)*

THE TWELVE  
BUSINESS  
UNITS OF  
LALLEMAND

VITA D

BIOFUELS  
AND  
DISTILLED  
SPIRITS

OENOLOGY

PHARMA

BREWING



ANIMAL  
NUTRITION

SPECIALTY  
CULTURES

BAKING

HEALTH  
SOLUTIONS

PLANT CARE

ORGANIC  
YEAST

BIO-  
INGREDIENTS



# WHAT WE OFFER





**WITH OUR LONG STANDING INDUSTRY EXPERIENCE AND EXTENSIVE NETWORK OF TECHNICAL EXPERTISE, WE ARE POSITIONED TO HELP YOUR BREWERY ACHIEVE ITS GROWTH AND QUALITY GOALS.**

Along with global technical support, we offer an extensive range of products, services and education. Whether you are a small startup, a global leader in beer production or anywhere in between, we have something for you. In the following pages we have provided a comprehensive list of the products, services and educational opportunities offered by Lallemand Brewing.



# OUR PRODUCTS



# ABOUT LALBREW® PREMIUM BREWING YEASTS



## CHARACTERISTICS

**Dry brewing yeast typically contains less than 7% water.** Stringent quality standards are applied during manufacturing to avoid microbial contamination. The remarkable stability of dry yeast allows for significant QC testing in order to ensure less than 1 bacterium or wild yeast cell detected per million cells of brewing yeast. For most strains, 1g of dry yeast contains a minimum of 5 billion viable cells, but the number will vary slightly from batch to batch.



## STORAGE

**Dry yeast is packaged under vacuum in 500g packs or 11g sachets and must be stored dry, below 4°C (39°F). Exposure to humidity and oxygen will affect the viability and vitality of the yeast.** Do not use soft packs or sachets that appear to have lost their vacuum. Once a pack or sachet is open, use immediately for best results. If kept sealed (or re-sealed) under vacuum and stored under appropriate conditions, dry yeast can be used until the indicated expiration date, which is typically 2-3 years after manufacture.

## A NOTE ON ALCOHOL (ABV) TOLERANCE

Alcohol tolerance is the measure of what level of alcohol yeast can produce and survive. Since many variables in the production of ethanol can affect the ability to reach a certain ABV (including fermentation parameters, wort composition and nutrients) alcohol tolerance in the context of each yeast strain is not meant to be an indicator of the ABV levels brewers ought to reach at the culmination of the fermentation process.



# ABOUT LALBREW® PREMIUM BREWING YEASTS CONTINUED



## PITCHING

Rehydration and direct pitching of dry yeast into wort are both acceptable methods for inoculating fermentation.

Rehydration of Lallemand Brewing yeast in sterile water prior to pitching into wort has been shown to reduce stress on the cell as it transitions from dry to liquid form. However, for most fermentations, this stress is not significant enough to affect fermentation performance and flavor, so good results will also be achieved when direct pitching dry yeast into wort. Use of a rehydration nutrient has been shown to improve performance for difficult fermentations. Measure the yeast by weight within the recommended pitch rate range. Pitch rate calculators optimized for liquid yeast may result in significant overpitching. For assistance with pitching rates, visit our Pitch Rate Calculator optimized for LalBrew® Premium dry yeast strains.

[lallemandbrewing.com/en/brewers-corner/brewing-tools/pitching-rate-calculator/](http://lallemandbrewing.com/en/brewers-corner/brewing-tools/pitching-rate-calculator/)

## DIRECT PITCH (NO REHYDRATION):

Sprinkle the yeast evenly on the surface of the wort in the fermenter as it is being filled. The motion of the wort filling the fermenter will aid in mixing the yeast into the wort.

## REHYDRATION

Sprinkle the yeast on the surface of 10 times its weight in clean, sterilized water at 30-35°C (86-95°F) for ale yeasts and 25-30°C (77-86°F) for lager yeasts. Do not use wort, or distilled or reverse osmosis water, as loss in viability may result. Stir gently, leave undisturbed for 15 minutes, then stir to suspend yeast completely. Leave it to rest for 5 more minutes at 30-35°C (for ale yeast) and 25-30°C (77-86°F) for lager yeasts.

Without delay, adjust the temperature to that of the wort by mixing aliquots of wort with the rehydrated

yeast. Wort should be added in 5 minute intervals and taking care not to lower the temperature by more than 10°C at a time. Temperature shock of >10°C will cause formation of petite mutants leading to extended or incomplete fermentation and possible formation of undesirable flavors. Do not allow attemperation to be carried out by natural heat loss. This will take too long and could result in loss of viability or vitality.

Inoculate without delay into cooled wort in the fermenter. Lallemand Brewing yeast has been conditioned to survive rehydration. The yeast contains an adequate reserve of carbohydrates and Unsaturated fatty acids to achieve active growth. It is unnecessary to aerate wort upon first use.

## FOUR IMPORTANT FACTORS TO CONSIDER DURING REHYDRATION

### 1. MEDIA TYPE

Rehydration in undiluted wort causes osmotic stress to the yeast. Sterile water should be used for rehydration, but distilled water should be avoided.

### 2. TEMPERATURE

The ideal rehydration temperature is different for ale and lager strains. Ale strains should be rehydrated at 30-35°C (86-95°F), whereas lager strains should be rehydrated at 25-30°C (77-86°F).

### 3. TIME

The rehydration period should be between 20-60 minutes. A decrease in viability and vitality will result from extended storage periods after rehydration. Once rehydrated, the yeast can be pitched into wort. To avoid shocking the yeast, the temperature of the yeast should be reduced gradually to within 10°C (18°F) of the wort temperature. This can be achieved through additions of small volumes of wort to the rehydrated yeast slurry.

### 4. SANITATION

Care should be taken to avoid contamination during rehydration. The rehydration vessel should be autoclaved or sanitized before use. The outside of the yeast pack and the scissors/knife should be soaked in sanitizing solution prior to opening.



AVAILABLE IN 11G SACHETS AND 500G BRICKS

# LALBREW® PREMIUM BREWING YEASTS



**L** CONTACT CODE

## LalBrew® ABBAYE BELGIAN-STYLE ALE YEAST

*Saccharomyces cerevisiae*

LalBrew® Abbaye is an ale yeast of Belgian origin. Selected for its ability to ferment Belgian style beers ranging from low to high alcohol, LalBrew® Abbaye produces the spiciness and fruitiness typical of Belgian and Trappist style ales. When fermented at higher temperatures, typical flavors and aromas include tropical, spicy and banana. At lower temperatures LalBrew® Abbaye produces darker fruit aromas and flavors of raisin, date and fig. Traditional styles brewed with this yeast include but are not limited to Belgian White, Belgian Blonde, Belgian Golden, Dubbel, Tripel, and Quad.

**BEER STYLES**  
Belgian

**ATTENUATION**  
high

**FERMENTATION RANGE**  
17 - 25°C (63 - 77°F)

**ADDITIONAL INFORMATION**

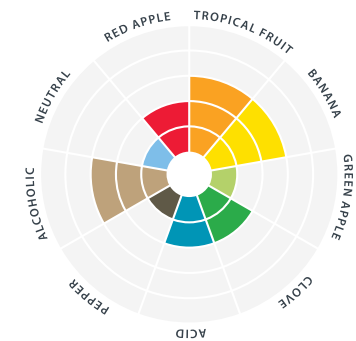
Fermentation rate, fermentation time and degree of attenuation depend on inoculation density, yeast handling, fermentation temperature and nutritional quality of wort.

**PITCHING RATE**  
50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

**FLOCCULATION**  
medium to high

**ALCOHOL TOLERANCE**  
14% ABV

**FLAVOR & AROMA CHARACTERISTICS**



**L** CONTACT CODE

## LalBrew® BELLE SAISON BELGIAN SAISON-STYLE YEAST

*Saccharomyces cerevisiae var. diastaticus*

LalBrew® Belle Saison is a Belgian-style ale yeast selected specifically for its ability to create Saison-style beers. LalBrew® Belle Saison is a diastaticus strain that allows the brewers to achieve the high attenuation characteristic of this classic style. Designed for warm-temperature fermentation true to traditional "Farmhouse" production methods, beers brewed with LalBrew® Belle Saison are fruity, spicy and refreshing.

LalBrew® Belle Saison is considered a *Saccharomyces cerevisiae var. diastaticus*. *Saccharomyces cerevisiae var. diastaticus* strains are capable of utilizing some types of dextrans. Extra care should be taken to ensure proper cleaning procedures are in place to avoid any cross-contamination with other brews.

**BEER STYLES**  
Saison

**ATTENUATION**  
high

**FERMENTATION RANGE**  
15 - 35°C (59 - 95°F)

**ADDITIONAL INFORMATION**

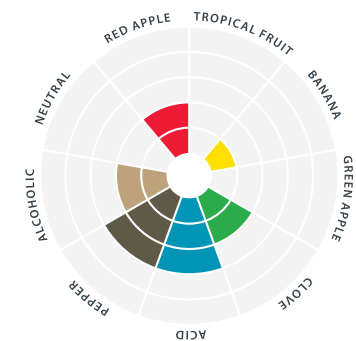
Use 50-100 g of active dry yeast to inoculate 100 litres of wort. Brewer may experiment with pitching rate to achieve a desired beer style or to suit processing conditions.

**PITCHING RATE**  
50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

**FLOCCULATION**  
low

**ALCOHOL TOLERANCE**  
15% ABV

**FLAVOR & AROMA CHARACTERISTICS**



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® BRY-97 AMERICAN WEST COAST ALE YEAST

*Saccharomyces cerevisiae*



CONTACT CODE

LalBrew® BRY-97 is an American West Coast-style ale yeast that was selected from the Siebel Institute Culture Collection for its ability to produce high quality ales. LalBrew® BRY-97 is a neutral strain with a high flocculation ability that can be used to make a wide variety of American-style beers. Through expression of a  $\beta$ -glucosidase enzyme, LalBrew® BRY-97 can promote hop biotransformation and accentuate hop flavor and aroma. Traditional ales made with LalBrew® BRY-97 include but are certainly not limited to Cream Ale, American Wheat, Scotch Ale, American Pale Ale, American Amber, American Brown, American IPA, American Stout, Russian Imperial Stout, Imperial IPA, Roggen/Rye, Old Ale and American Barleywine.

**BEER STYLES**  
American ales

**PITCHING RATE**  
50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

**ATTENUATION**  
medium to high

**FLOCCULATION**  
high

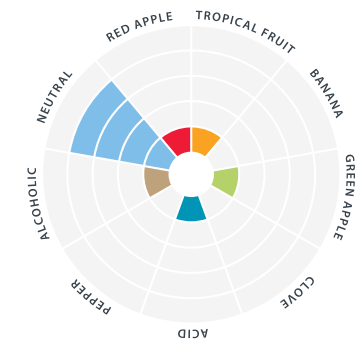
**FERMENTATION RANGE**  
15 - 22°C (59 - 72°F)

**ALCOHOL TOLERANCE**  
13% ABV

**ADDITIONAL INFORMATION**

BRY-97 American West Coast Yeast is a flocculent strain. Settling can be promoted by cooling and use of fining agents and isinglass.

**FLAVOR & AROMA CHARACTERISTICS**



## LalBrew® CBC-1 CASK AND BOTTLE CONDITIONING YEAST

*Saccharomyces cerevisiae*



CONTACT CODE

LalBrew® CBC-1 has been specifically selected from the Lallemmand Yeast Culture Collection for its refermentation properties and is recommended for Cask and Bottle Conditioning. LalBrew® CBC-1 referments beer efficiently due to its high resistance to alcohol and pressure. The flavor is neutral, therefore the original character of the beer is preserved. The yeast will settle and form a tight mat at the end of refermentation. LalBrew® CBC-1 can be used for primary fermentation of dry ciders or mead. Maltotriose is not metabolized during primary fermentation of beer, so LalBrew® CBC-1 is well suited for sweeter fruit beers or full-bodied, malty ales.

**BEER STYLES**  
bottle conditioning of all beer styles

**ADDITIONAL INFORMATION**

Shows flocculation and sedimentation at the end of the refermentation period.

primary fermentation of fruit beers, full-bodied, malty ales  
dry cider and mead

LalBrew® CBC-1 does not impact on the flavor of the original beer to be refermented.

**FERMENTATION RANGE**  
primary: 20°C  
refermentation: 15-25°C

LalBrew® CBC-1 is best used for refermentation purposes conducted preferably with priming sugars such as dextrose fermenting yeast.

**ALCOHOL TOLERANCE**  
12 - 14% ABV

When 10g of active dry yeast is used to inoculate 1hL of beer, a yeast concentration of 1-2 million cells per ml is achieved. Please note that different batch of yeast may vary in cell density; to obtain the exact cell numbers per g of dry yeast for a particular batch please contact [brewing@lallemand.com](mailto:brewing@lallemand.com)

**PITCHING RATE**  
primary: 50-100g/hL  
refermentation: 10g yeast to 1hL



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® DIAMOND LAGER YEAST

*Saccharomyces  
pastorianus*

**L** CONTACT  
CODE

LalBrew® Diamond Lager yeast is a true lager strain originating in Germany. LalBrew® Diamond Lager yeast delivers excellent fermentation performance, and has the ability to produce clean, authentic lagers. Traditional styles brewed with LalBrew® Diamond include but are not limited to Munich Helles, Dortmunder Export, German Pilsner, Bohemian Pilsner, American Pilsner, Vienna Lager, Oktoberfest/Märzen, Dark American Lager, Munich Dunkel, Schwarzbier, Traditional Bock, Doppelbock, Eisbock and California Common.

**BEER STYLES**  
lagers

**ATTENUATION**  
high

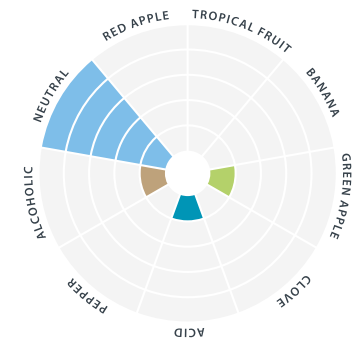
**FERMENTATION RANGE**  
10 - 15°C (50 - 59°F)

**PITCHING RATE**  
100 - 200g/hL to achieve a minimum  
of 5 - 10 million cells/mL

**FLOCCULATION**  
high

**ALCOHOL TOLERANCE**  
13% ABV

### FLAVOR & AROMA CHARACTERISTICS



## LalBrew® KÖLN Kölsch style Ale Yeast

*Saccharomyces  
cerevisiae*

**L** CONTACT  
CODE

LalBrew® Köln is ideal for brewing traditional Kölsch-style beers and other neutral ales. The neutral character of this strain accentuates delicate hop aromas while imparting subtle fruity esters. Through expression of a  $\beta$ -glucosidase enzyme, LalBrew® Köln can promote hop biotransformation and accentuate hop flavor and aroma. Colder fermentations will be more neutral in character, while warmer fermentations will have a more fruit-forward ester profile.

**BEER STYLES**  
Kölsch-style,  
neutral ales

**ATTENUATION**  
medium to high

**FERMENTATION RANGE**  
12 - 20°C (54 - 68°F)

#### ADDITIONAL INFORMATION

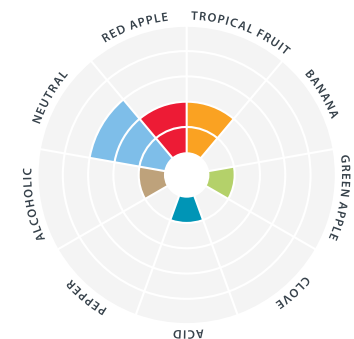
Has a slightly fruity aroma that is more neutral with colder fermentations.

**PITCHING RATE**  
100g/hL to achieve a minimum  
of 1 million viable cells/mL

**FLOCCULATION**  
medium to high

**ALCOHOL TOLERANCE**  
9% ABV

### FLAVOR & AROMA CHARACTERISTICS



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® LONDON ENGLISH-STYLE ALE YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

LalBrew® London is a true English ale strain selected for reliable fermentation performance and moderate ester production that lets the flavors and aromas of malt and hops shine through. LalBrew® London was selected from the Lallemmand Yeast Culture Collection, and is an excellent choice not only for brewing Extra Special Bitter but for other authentic heritage UK styles like Pale Ale, Bitter and Mild. LalBrew® London may also be used in the production of Ciders.

### BEER STYLES

English-style ales, pale ales

### PITCHING RATE

50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

### ATTENUATION

medium

### FLOCCULATION

low

### FERMENTATION RANGE

18 - 22°C (65 - 72°F)

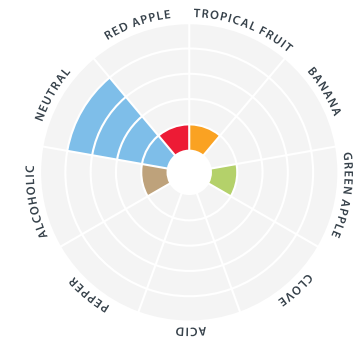
### ALCOHOL TOLERANCE

12% ABV

### ADDITIONAL INFORMATION

Produces a clean, well balanced ale. Medium attenuation preserves some beer complexity. Best for well-balanced British style ales.

### FLAVOR & AROMA CHARACTERISTICS



## LalBrew® MUNICH CLASSIC WHEAT BEER YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

LalBrew® Munich Classic is a Bavarian wheat beer strain selected from the Doemens Culture Collection. It imparts the spicy and fruity aroma profile typical of German wheat beer styles. This strain is simple to use over a wide range of recipe variations and fermentation conditions, making it a great choice for a number of traditional styles of wheat beer. A true top-cropping yeast, LalBrew® Munich Classic can be skimmed off the top of classic open fermentation vessels in the traditional manner. Styles brewed with LalBrew® Munich Classic include but are not limited to Weizen/Weissbier, Dunkelweizen and Weizenbock.

### BEER STYLES

Bavarian-style wheat

### PITCHING RATE

50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

### ATTENUATION

medium to high

### FLOCCULATION

low

### FERMENTATION RANGE

17 - 22°C (63 - 72°F)

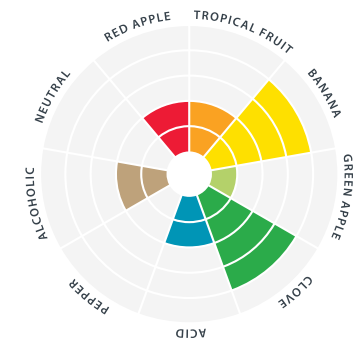
### ALCOHOL TOLERANCE

12% ABV

### ADDITIONAL INFORMATION

Munich is a non flocculent strain. In classic open fermentation vessels, the yeast can be skimmed off the top. Some settling can be promoted by cooling and use of fining agents and isinglass.

### FLAVOR & AROMA CHARACTERISTICS



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® NEW ENGLAND EAST COAST ALE YEAST

*Saccharomyces  
cerevisiae*

**L** CONTACT  
CODE

LalBrew® New England is an ale strain selected specifically for its ability to produce a unique fruit-forward ester profile desired in East Coast styles of beer. A typical fermentation with LalBrew® New England will produce tropical and fruity esters, notably stone fruits like peach. Through expression of a  $\beta$ -glucosidase enzyme, LalBrew® New England can promote hop biotransformation and accentuate hop flavor and aroma. LalBrew® New England exhibits medium to high attenuation with medium flocculation, making it a perfect choice for East Coast style ales.

### BEER STYLES

East Coast IPAs and Pale Ales

### ATTENUATION

medium to high

### FERMENTATION RANGE

15 - 22°C (59 - 72°F)

### PITCHING RATE

100g/hL to achieve a minimum of 1 million viable cells/mL

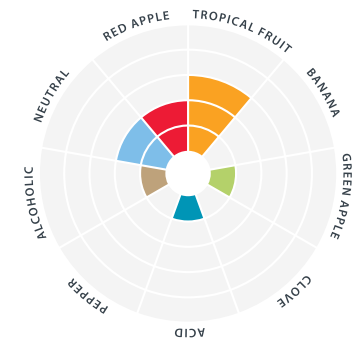
### FLOCCULATION

medium

### ALCOHOL TOLERANCE

9% ABV

### FLAVOR & AROMA CHARACTERISTICS



## LalBrew® NOTTINGHAM HIGH PERFORMANCE ALE YEAST

*Saccharomyces  
cerevisiae*

**L** CONTACT  
CODE

LalBrew® Nottingham is an English style ale yeast selected for its high performance and versatility for a wide variety of styles and fermentation conditions. Traditional styles brewed with this yeast include but are not limited to Pale Ales, Ambers, Porters, Stouts and Barleywines. In addition to these traditional styles, LalBrew® Nottingham can be used to produce Golden Ale, Kölsch, Lager-style beers, IPA, and Imperial Stout, among many others. LalBrew® Nottingham is a relatively neutral ale strain that is stress tolerant making it a good choice for high gravity, sour and other challenging fermentation conditions.

### BEER STYLES

wide variety of ales

### ATTENUATION

high

### FERMENTATION RANGE

10 - 22°C (50 - 72°F)

### ADDITIONAL INFORMATION

Shows flocculation at completion of fermentation, and settling is promoted by cooling and use of fining agents and isinglass.

Produces low concentrations of fruity and estery aromas and has been described as neutral for ale yeast, allowing the full natural flavor of malt and hops to develop.

### PITCHING RATE

50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

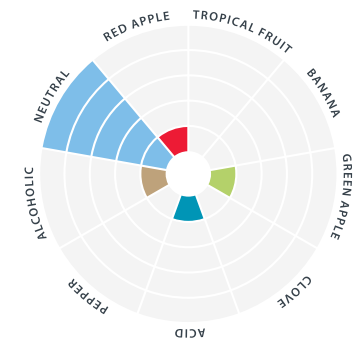
### FLOCCULATION

high

### ALCOHOL TOLERANCE

14% ABV

### FLAVOR & AROMA CHARACTERISTICS



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® VERDANT IPA ALE YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

LalBrew® Verdant IPA was specially selected in collaboration with Verdant Brewing Co. (UK) for its ability to produce a variety of hop-forward and malty beers. Prominent notes of apricot and undertones of tropical fruit and citrus merge seamlessly with hop aromas in this highly versatile strain. With medium-high attenuation, LalBrew® Verdant IPA leaves a soft and balanced malt profile with slightly more body than a typical American IPA yeast strain.

### BEER STYLES

NEIPA, English IPA, American Pale, English Bitter, Sweet Stout, Sours

### PITCHING RATE

50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

### ATTENUATION

medium to high

### FLOCCULATION

very high

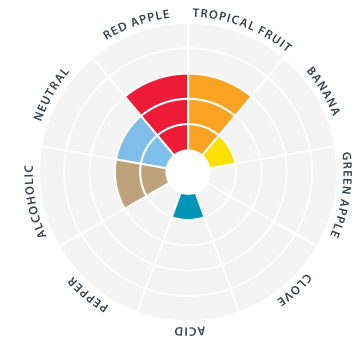
### FERMENTATION RANGE

18 - 23°C (64 - 73°F)

### ALCOHOL TOLERANCE

10% ABV

### FLAVOR & AROMA CHARACTERISTICS



## LalBrew® VOSS KVEIK ALE YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

Kveik is a Norwegian word meaning yeast. In the Norwegian farmhouse tradition, kveik was preserved by drying and passed from generation to generation. Kveik is the original, traditional dried yeast! The LalBrew® Voss strain was obtained from Sigmund Gjernes (Voss, Norway), who has maintained this culture using traditional methods since the 1980's and generously shared it with the wider brewing community. LalBrew® Voss supports a wide range of fermentation temperatures between 25-40°C (77-104°F) with a very high optimal range of 35-40°C (95-104°F). Very fast fermentations are achieved within the optimal temperature range with full attenuation typically achieved within 2-3 days. The flavor profile is consistent across the entire temperature range: neutral with subtle fruity notes of orange and citrus. Flocculation is very high producing clear beers without filtration or use of process aids.

### BEER STYLES

Norwegian farmhouse ales, fastfermented neutral ales

### PITCHING RATE

50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

### ATTENUATION

medium to high

### FLOCCULATION

very high

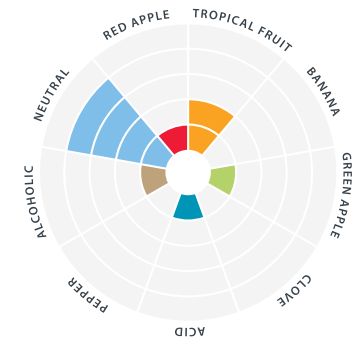
### FERMENTATION RANGE

25 - 40°C (77 - 104°F)  
Optimal: 35 - 40°C (95 - 104°F)

### ALCOHOL TOLERANCE

12% ABV

### FLAVOR & AROMA CHARACTERISTICS



# LALBREW® PREMIUM BREWING YEASTS CONTINUED



## LalBrew® WINDSOR BRITISH-STYLE BEER YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

LalBrew® Windsor ale yeast is a true English strain that produces a balanced fruity aroma and imparts a slight fresh yeasty flavor. Beers created with LalBrew® Windsor are usually described as full-bodied, fruity English ales. Brewers choose LalBrew® Windsor to produce beers that range from Pale Ale to Porter with moderate alcohol levels and the flavor and aroma characteristics of the best traditional ales. Traditional styles brewed with this yeast include but are not limited to Milds, Bitters, Irish Reds, English Brown ales, Porters and Sweet Stouts.

**BEER STYLES**  
fruity English ales, pale ales, porters

**ATTENUATION**  
medium

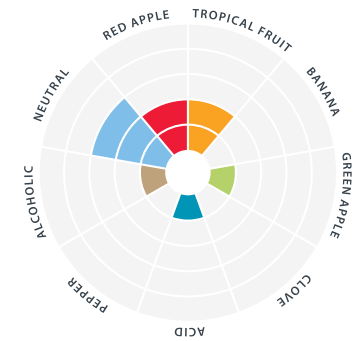
**FERMENTATION RANGE**  
15 - 22°C (59 - 72°F)

**PITCHING RATE**  
50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL

**FLOCCULATION**  
low

**ALCOHOL TOLERANCE**  
12% ABV

### FLAVOR & AROMA CHARACTERISTICS



## LalBrew® WIT WHEAT ALE YEAST

*Saccharomyces cerevisiae*

**L** CONTACT CODE

LalBrew® Wit yeast is a relatively neutral strain which can be used to produce a wide variety of wheat beer styles. Ester and phenol production is lower than for traditional hefeweizen strains such as Munich Classic. LalBrew® Wit provides a baseline profile of banana and spice aromas, but leaves space for the brewer to showcase other spice additions typical of Belgian-style beers. Traditional styles brewed with this yeast include but are not limited to Belgian Witbier, American Wheat, Berliner Weiss, Gose, Hefeweizen, Dunkelweiss, and Weizenbock.

**BEER STYLES**  
wheat-based beers, Weizen and Hefeweizen

**ATTENUATION**  
medium to high

**FERMENTATION RANGE**  
17 - 22°C (63 - 72°F)

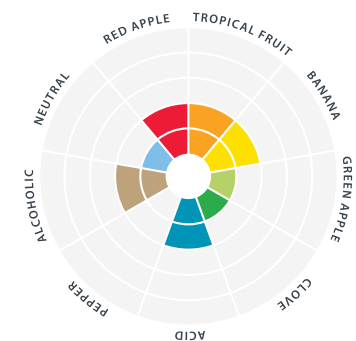
**ADDITIONAL INFORMATION**  
Aroma is estery to both palate and nose with typical banana notes. Does not display malodours when properly handled.

**PITCHING RATE**  
50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL















**FLOCCULATION**  
low

**ALCOHOL TOLERANCE**  
12% ABV

### FLAVOR & AROMA CHARACTERISTICS



# BREWING YEASTS OVERVIEW

	STRAIN	BEER STYLES	ATTENUATION	FERMENTATION RANGE	FLOCCULATION	ALCOHOL TOLERANCE	PITCHING RATE
	<b>LalBrew® ABBAYE</b>	Belgian	high	17 - 25°C (63 - 77°F)	medium to high	14% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® BELLE SAISON</b>	Saison	high	15 - 35°C (59 - 95°F)	low	15% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® BRY-97</b>	American ales	medium to high	15 - 22°C (59 - 72°F)	high	13% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® CBC-1</b>	champagne-like and fruit beers	---	primary: 20°C refermentation: 15-25°C	---	12 - 14% ABV	primary: 50-100g/hL refermentation: 10g yeast to 1hL
	<b>LalBrew® DIAMOND</b>	lagers	high	10 - 15°C (50 - 59°F)	high	13% ABV	100 - 200g/hL to achieve a minimum of 5 - 10 million cells/mL
	<b>LalBrew® KÖLN</b>	Kölsch-style, neutral ales	medium to high	12 - 20°C (54 - 68°F)	medium to high	9% ABV	100g/hL to achieve a minimum of 1 million viable cells/mL
	<b>LalBrew® LONDON</b>	English-style ales, pale ales	medium	18 - 22°C (65 - 72°F)	low	12% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® MUNICH CLASSIC</b>	Bavarian-style wheat	medium to high	17 - 22°C (63 - 72°F)	low	12% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® NEW ENGLAND</b>	East Coast IPAs and Pale Ales	medium to high	15 - 22°C (59 - 72°F)	medium	9% ABV	100g/hL to achieve a minimum of 1 million viable cells/mL
	<b>LalBrew® NOTTINGHAM</b>	wide variety of ales	high	10 - 22°C (50 - 72°F)	high	14% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® VERDANT IPA</b>	NEIPA, English IPA, American Pale, English Bitter, Sweet Stout, Sours	medium to high	18 - 23°C (64 - 73°F)	very high	10% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® VOSS</b>	Norwegian farmhouse ales, fastfermented neutral ales	medium to high	25 - 40°C (77 - 104°F) Optimal: 35 - 40°C (95 - 104°F)	very high	12% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® WINDSOR</b>	fruity English ales, pale ales, porters	medium	15 - 22°C (59 - 72°F)	low	12% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL
	<b>LalBrew® WIT</b>	wheat-based beers, Weizen and Hefeweizen	medium to high	17 - 22°C (63 - 72°F)	low	12% ABV	50 - 100g/hL to achieve a minimum of 2.5 - 5 million cells/mL







# WILDBREW™ BREWING YEAST AND BACTERIA



## WILDBREW™ SOUR PITCH

**L** CONTACT CODE WildBrew™ Sour Pitch is a high-performance, high-purity lactic acid bacteria specifically selected for its ability to produce a wide range of sour beer styles. WildBrew™ Sour Pitch produces a clean and balanced citrus flavor profile typical of both traditional and modern sour beer styles. When inoculated at optimal temperature and the right conditions it is a powerful, safe and easy way to handle bacteria for various beer souring techniques, such as the typical kettle souring process. Besides providing an outstanding performance, WildBrew™ sour Pitch is capable of delivering consistent results for brewers. Styles brewed with this bacteria can include, but are not limited to, Berliner Weisse, Gose, Lambic, American Wild and Sour IPA.

**BEER STYLES**  
Sours

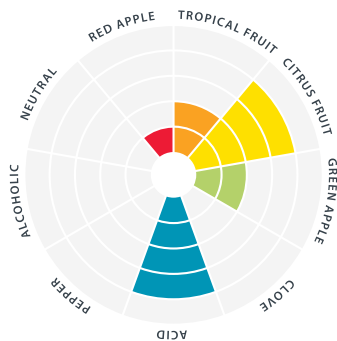
**INOCULATION RATE**  
10g/hL

**FERMENTATION RANGE**  
30 - 40°C (86 - 104°F)

**PH RANGE**  
3.2 - 3.5

**HOP TOLERANCE**  
8 IBU

**FLAVOR & AROMA CHARACTERISTICS**



## WILDBREW™ HELVETICUS PITCH

**L** CONTACT CODE WildBrew™ Helveticus Pitch is a high-performance, high-purity lactic acid bacteria specifically selected for its ability to produce a wide range of sour beer styles. WildBrew™ Helveticus Pitch produces an intense and sharp citrus flavor profile typical of both traditional and modern sour beer styles. When inoculated at optimal temperature and the right conditions, it is a powerful, safe and easy way to handle bacteria for various beer souring techniques, such as a typical kettle souring process. Besides providing an outstanding performance, WildBrew™ Helveticus Pitch is capable of delivering consistent results for brewers. Styles brewed with this bacteria include, but are not limited to, Berliner Weisse, Gose, lambic-style, American Wild, and Sour IPA.

**BEER STYLES**  
Sours

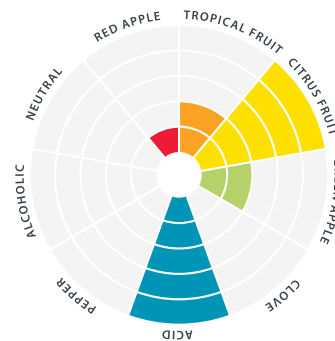
**INOCULATION RATE**  
10g/hL

**FERMENTATION RANGE**  
38 - 45°C (100 - 113°F)

**PH RANGE**  
3.0 - 3.5

**HOP TOLERANCE**  
In lab tests, growth was inhibited at:  
4ppm iso-alpha acid and 4ppm beta acid

**FLAVOR & AROMA CHARACTERISTICS**



## WILDBREW™ PHILLY SOUR

**L** CONTACT CODE WildBrew™ Philly Sour is a unique species of *Lachancea* selected from nature by University of Sciences in Philadelphia, PA, USA (Patent pending N° PCT/US20 18/043 148). WildBrew™ Philly Sour produces moderate amounts of lactic acid in addition to ethanol in one simple fermentation step. This first yeast in the WildBrew™ series is a great choice for innovative, sessionable sour beers with refreshing acidity and notes of stone fruit. With high attenuation, high flocculation and good head retention, WildBrew™ Philly Sour is an ideal yeast for traditional styles such as Berliner Weiss, Gose, American Lambic Style, American Wild Ales and Sour IPAs.

**BEER STYLES**

Berliner Weisse, Gose, Lambic-style, american wild, and Sour IPA

**AROMA**

Sour, stone fruit, peach

**FERMENTATION RANGE**

17 - 25°C (63 - 77°F)

**ATTENUATION**

High

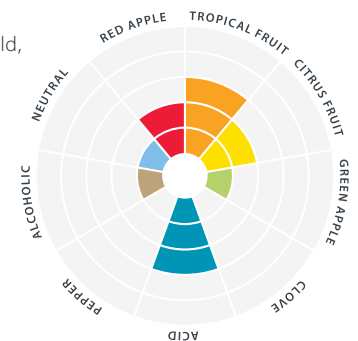
**FLOCCULATION**

High

**PITCHING RATE**

50-100g/hL to achieve a minimum of 0.5-1 million viable cells/mL

**FLAVOR & AROMA CHARACTERISTICS**



# AB VICKERS ENZYMES

## ABV ALPHAMYLASE LT30

A Food Grade bacterial alpha-amylase derived from a selected non-GMO strain of *Bacillus subtilis*. Also a liquefying enzyme. It's action on starch substrates produces a decrease of viscosity.

**A** CONTACT CODE

### BENEFITS

Liquefies starch substrates and facilitates the use of starches with higher temperature gelatinisation.

Allows the use of high levels of adjunct and increases the level of attenuation and at the same time reduces the potential for starch positive worts.

## ABV ALPHAMYLASE FA

A liquid fungal alpha-amylase obtained from a selected strain of *Aspergillus oryzae*. (EC 3.2.1.1) Hydrolyses the  $\alpha$ -1,4 glucosidic linkages in starch, producing large amounts of maltose. Can be used for liquefaction and saccharification of gelatinised starch. In the starch industry, it can be used for the production of high maltose syrups (45-60%) and in the alcohol industry, it can be used in the saccharification stage.

**A** CONTACT CODE

### BENEFITS

Enables a higher level of fermentable sugars in wort fermentations.

Eliminates residual starch in wort.

Allows control of attenuation of brewery fermentations.

Facilitates removal of starch hazes in beer.

## ABV GLUCANASE PREMIER

A Food Grade Beta-glucanase. Can completely or partially break down soluble and insoluble celluloses and hemicelluloses such as those found in wheat, barley and other cereals.

**A** CONTACT CODE

### BENEFITS

Contributes a consistent source of necessary beta-glucanase which will significantly improve lautering and wort filterability problems.

Also guards against beta-glucan induced beer hazes and improves beer filterability.

## ABV GLUCANASE PLUS

A complex enzyme blend specifically formulated for application in the brewhouse to achieve optimum wort filtration using either lauter tun or filter press whilst also guaranteeing excellent extract recovery and final beer filtration. Designed to perform efficiently over a wide range of mashing temperatures and can be used when adjuncts (wheat, barley etc.) are used at moderate levels. Derived from classical, non-GMO Fungal organisms, the primary activities of Glucanase Plus are beta-glucanase, xylanase and alpha amylase.

**A** CONTACT CODE

### BENEFITS

Efficient wort filtration on lauter tun or mash filter.

Increased extract recovery.

Efficient final beer filtration.

## ABV GLUCOAMYLASE 400

A food grade saccharifying glucoamylase or amyloglucosidase enzyme derived from a selected strain of *Aspergillus niger*. It is an exoglucosidase capable of hydrolysing both the  $\alpha$ -1,6 and  $\alpha$ -1,4 glucosidic linkages of starch, liberating single glucose units.

**A** CONTACT CODE

### BENEFITS

Maximizes the conversion of starch containing substrates to fermentable sugars and minimises residual carbohydrates.

Provides a high degree of attenuation.

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# AB VICKERS ENZYMES CONTINUED

## ABV PROTOZYME NP

**Bacterial Neutral Protease** - a neutral protease enzyme derived from a selected non-GMO Food Grade strain of *Bacillus subtilis*.

**A** CONTACT CODE

### BENEFITS

Allows the use of higher levels of adjuncts in the mash.

Increases soluble protein and improves free amino nitrogen levels which lead to enhanced yeast vitality in the fermentation process.

May improve downstream processing efficiencies.

## ABV CHILLZYME

A protease obtained from the plant *Carica papaya*. It is used in brewing to prevent the formation of chill hazes by hydrolysing proteins to soluble peptides and amino acids. It is best added to the cold conditioning tank or may also be added to the bright beer tank prior to pasteurisation.

**A** CONTACT CODE

### BENEFITS

Prevents the formation of protein-tannin complexes.

Reduces the risk of chill hazes in packaged beers and leading to longer shelf-life.

## ABV ALPHA ACETOLACTATE DECARBOXYLASE

A decarboxylase enzyme which prevents the formation of diacetyl by the decarboxylation of alpha-acetolactate to acetoin, and is derived from *Bacillus licheniformis*. Should be added at the start of fermentation.

**A** CONTACT CODE

### BENEFITS

Reduces cold conditioning time.

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# AB VICKERS YEAST NUTRIENTS

## ABV YEASTLIFE EXTRA YEAST NUTRIENT

A powder yeast nutrient based on readily available sources of nitrogen blended with additional amino acids, minerals and vitamins. The two main requirements for consistent, predictable fermentations are healthy yeast and a nutrient balanced wort. It is generally recognised that only wort produced from a well modified, all malt grist approaches these needs, and even this requires supplementation with oxygen and zinc. The common practice of high gravity, adjunct brewing has introduced two fermentation problems: nutrient deficiency and conditions of high

stress for yeast. Yeast generated under these difficult conditions typically show symptoms of reduced vigour, which can be compounded at each regeneration. Problems associated with reduced vigour include slow or sticking fermentation, off-flavours associated with sulphur containing compounds, slow diacetyl reduction, and autolysis.

### BENEFITS

- Faster fermentation
- Consistent fermentation
- Reduced off flavours

**A** CONTACT CODE

## ABV SERVOMYCES BIOLOGICAL NUTRIENT CONTAINING INACTIVE BREWERS YEAST

Developed by a team of scientists at TU Munich / Weihenstephan in conjunction with Lallemand, Servomyces is the most unique yeast nutrient available in brewing. This patented product is a biological substance produced without chemicals or additives. Through its specialised properties Servomyces improves yeasts ability to incorporate essential nutrients, especially zinc into its cellular structure.

### BENEFITS

- Cuts down fermentation time improving process efficiency.
- Improves and increases flocculation
- Improves the overall health and viability of yeast.

**L A** CONTACT CODE

abvickers





# AB VICKERS PROCESS AIDS

## KETTLE FININGS

### ABV BREAKBRIGHT KETTLE FININGS

The semi-refined form of the seaweed species *Euchemia cottonii*, used for wort clarification and available in powdered or tablet form. It contains a dispersive aid, which allows effective action when added to the whirlpool as well as wort copper. The species *Euchemia cottonii* is rich in the kappa isomer of carrageenan. When added to boiling wort, kappa carrageenan reacts strongly with soluble proteins, notably the proline rich haze precursor fraction. When the wort is cooled the carrageenan protein complex becomes unstable and precipitates out of solution. The clear wort that results produces a beer with enhanced processing characteristics.

A CONTACT CODE

AVAILABLE IN POWDER OR TABLET FORM

#### BENEFITS

Improved hot break compaction in whirlpool, improved filtration.

Longer filter runs.

Improved beer haze and colloidal stability.

### ABV COMPAC CG KETTLE FININGS

The semi-refined form of the seaweed species *Euchemia cottonii*, used for wort clarification and available in granular or tablet form. The species *Euchemia cottonii* is rich in the kappa isomer of carrageenan. When added to boiling wort, kappa carrageenan reacts strongly with soluble proteins, notably the proline rich haze precursor fraction. When the wort is cooled the carrageenan protein complex becomes unstable and precipitates out of solution. The clear wort that results produces a beer with enhanced processing characteristics.

A CONTACT CODE

AVAILABLE IN GRANULE OR TABLET FORM

#### BENEFITS

Improved hot break compaction in whirlpool, improved filtration.

Longer filter runs.

Improved beer haze and colloidal stability.

abvickers

# AB VICKERS PROCESS AIDS

## BEER CLARIFICATION

### ABV ALPHAFLOC PASTE BEER CLARIFICATION

Alphafloc paste is a highly concentrated, stabilized isinglass finings product offering the benefits of low shipping cost and ease of use. A simple mixing process is all that is required to produce a ready-to-use liquid finings within minutes. The ready-to-use product is added to beer at the end of fermentation to rapidly sediment the yeast and proteins that would otherwise result in reduced filtration efficiency and increased beer losses

**A** CONTACT CODE

#### BENEFITS

- Requires shorter cold storage time and has improved filterability
- Less beer is lost during sediment removal.
- Other benefits include reduced cold storage time, fewer vessels, lower energy use, reduced beer loss, improved filtration, faster throughput, reduced powder use, improved beer haze and stability, less re-work

### ABV PROTOFINE® BEER CLARIFICATION

Protofine is a natural, plant-derived formulation designed to promote the flocculation and precipitation of yeast and various protein complexes during cold storage of beer. The active components of Protofine have been widely used throughout the food industry for many decades and have been developed specifically for use in beer.

**A** CONTACT CODE



#### BENEFITS

- Plant derived and natural
- Reduced cold storage time
- Improves beer haze and stability
- Improves filtration performance
- Only one simple reconstitution step needed
- Vegan Friendly

### ABV LIQUID ISINGLASS BEER CLARIFICATION

Added to beer post fermentation to clarify it by removing yeast and protein particles. Ready for use (RFU) and concentrated products are available. Isinglass is essential for cask beer production in that it quickly yields bright beer with a tight, stable sediment.

**A** CONTACT CODE

#### BENEFITS

- Reduced cold storage time
- Fewer vessels, lower energy use
- Reduced beer loss and power use
- Improved filtration, beer haze and stability
- Faster throughput
- Less re-work

### ABV VICFINE BEER CLARIFICATION

Vicfine is purified isinglass in convenient powder form. It is added to beer at the end of fermentation to speed maturation and improve filtration by removing yeasts and protein particles. For ease of use Vicfine in its standard form includes the necessary acid and preservative already blended. Beer treated with Vicfine requires shorter cold storage time, and has improved filterability. The sediments produced by Vicfine in the cold storage vessel are more compact, so less beer is lost during their removal.

**A** CONTACT CODE

**S02-FREE OPTION ALSO AVAILABLE**

#### BENEFITS

- Reduced cold storage time
- Improved filtration
- Improved beer haze and stability

# AB VICKERS PROCESS AIDS

## BEER CLARIFICATION

### ABV PROTOSOL BEER CLARIFICATION

Specifically selected colloidal silica sol. Promotes sedimentation of proteins and other solids from beer and wort.

Protosol effectively clarifies wort and beer at very low addition rates  
» increased throughput of your brewery without the need for investment in tank or filtration capacity.

**A** CONTACT  
CODE



#### BENEFITS

Protosol is a processing aid so is not required to be listed on labels

Protosol does not contain animal derivatives

Beer filterability is enhanced due to removal of solids

Vegan friendly

abvickers



# AB VICKERS PROCESS AIDS

## FOAM STABILIZERS

### ABV ALLFOAM FOAM STABILIZER

Allfoam is a beer head stabilizer based on propylene glycol alginate. It is produced and distributed in a powder form and stabilizes foam by interacting with foam positive proteins while reducing the impact of foam negative factors.



CONTACT  
CODE

#### BENEFITS

- Protects beer from foam negatives
- Easy to prepare
- Easy to use
- Maintains attractive, stable foam

### ABV DRIFOAM FOAM STABILIZER

A powder form of propylene glycol alginate produced by the esterification of alginic acid. It is designed to give a trouble free method of enhancing and protecting beer foam. Many years of development have been undertaken to identify the ideal blend of seaweed species required to yield the right quality of Alginic acid, and to optimise the critical esterification stage. Drifoam stabilises beer in two ways: Firstly by actively interacting with foam positive hydrophobic beer polypeptides. Secondly by reducing the impact of foam negative factors. This latter effect explains the positive role Drifoam plays in protecting beer foam from external contamination, particularly from grease and detergents.



CONTACT  
CODE

#### BENEFITS

- Pure form of foam stabilizer
- Enhanced beer foam
- Increased foam stability

### ABV FOAMAID FOAM STABILIZER

A liquid form of propylene glycol alginate (which is produced by the esterification of alginic acid). It is designed to give a trouble free method of enhancing and protecting beer foam. Many years of development have been undertaken to identify both the ideal blend of seaweed species required to yield alginic acid of the necessary quality, and to optimise the critical esterification stage. Foamaid contains sodium metabisulphite (E223).



CONTACT  
CODE

#### BENEFITS

- Enhanced beer foam
- Increased foam stability





# AB VICKERS PROCESS AIDS

## BEER ANTIOXIDANTS

### ABV VICANT BEER ANTIOXIDANT

Vicant is an anti-oxidant and anti-browning agent designed to enhance flavor and colloidal stability in beer. It is a white, crystalline powder which is fully soluble in water. Vicant supplies sources of sulphur dioxide and ascorbate. The active component function by scavenging dissolved oxygen and blocking staling reactions.

**A** CONTACT CODE

#### BENEFITS

- Improved flavor stability
- Improved colloidal stability
- Slower rate of browning



# AB VICKERS PROCESS AIDS

## BEER STABILIZERS

### ABV ALPHACLAR S BEER STABILIZER

Even after filtration, beer contains proteins which originate from the raw ingredients. These proteins will react with polyphenols, also present in the beer, to form unacceptable haze. Alphaclar S is a single-use cross-linked polyvinylpyrrolidone (PVPP). It is a colloidal haze stabiliser which increases the shelf-life of beer. Alphaclar S absorbs the haze-active polyphenols which would otherwise react with haze-active proteins in filtered beer to form colloidal haze during storage.

**A** CONTACT CODE

#### BENEFITS

- Increases beer shelf-life due to preventing colloidal haze formation
- Only the specific haze-active polyphenols are removed.
- PVPP is insoluble so it is removed by filtration and therefore is a processing aid so is not required to be listed on labels

### ABV BRITESORB®

#### BEER STABILIZER

Britesorb silica gels offer a comprehensive range of stabilisation products to suit all your beer stabilisation needs. Britesorb silica gels are permitted for use under the German Beer purity laws. Beer naturally contains protein and polyphenol material which over time will cause chill haze and eventually lead to a permanent haze. Britesorb's range of silica gels selectively adsorb the haze forming proteins in beer, but do not remove the head positive proteins therefore promoting a stable and attractive head of foam. Britesorb's range of silica gels has a very short reaction time and can be used for both in line dosing or tank stabilisation, allowing you greater process flexibility. Britesorb silica gels are removed completely by filtration and can even improve your filtration efficiency.

**A** CONTACT CODE

#### BENEFITS

- Improved filtration
- Improved beer haze and stability



12 Mix & Match Sensory Kit 1L  
www.siebelinstitute.com

18  
9  
9

Sour  
Contaminated  
Metallic



# SENSORY FLAVOR DESCRIPTIONS

## ACETALDEHYDE

Green apple, cut grass

### COMMON SOURCES

Fermentation product, staling or contamination

## ACETIC ACID

Vinegar-like

### COMMON SOURCES

Contamination (mash, bacteria or wild yeast)

## ALMOND (BENZALDEHYDE)

Marzipan, Almonds

### COMMON SOURCES

Specific styles (Including Barrel Aging) yeast growth or raw materials

## BARNYARD (4-ETHYLPHENOL)

Barnyard, Horsey, Brett-related flavors, Wine-like, Alcohol

### COMMON SOURCES

Common Flavor Component in Many Beers Inoculated with *Brettanomyces*. Also Present in some barrel aged beers

## BITTER (ISOLONE)

Hoppy, bitter

### COMMON SOURCES

Hopping, hop addition

## CAPRYLIC ACID

Soapy, fatty, candle wax

### COMMON SOURCES

Microbial contamination or yeast breakdown at maturation

## CARAMEL (5-METHYL FURFURAL)

Caramel, Spicy, Sweet, Almond

### COMMON SOURCES

Present in Specific Styles and a Common Flavor Component in Barrel Aged Beers

## COCONUT (2-HEPTANOL)

Dill, Earthy, Coconut

### COMMON SOURCES

Present in some barrel aged beers

## CONTAMINATION

Sour, buttery

### COMMON SOURCES

Contamination (*Lactobacillus*)

## D.M.S. (DIMETHYL SULFIDE)

Cooked corn, cooked vegetables

### COMMON SOURCES

Wort boil, wort cooling or contamination

## DIACETYL (2,3-BUTANEDIONE)

Butter, butterscotch

### COMMON SOURCES

Microbial contamination or improper maturation

## EARTHY (2-ETHYL FENCHOL)

Geosmin, soil-like

### COMMON SOURCES

Packaging or water-derived contamination

## ETHYL ACETATE

Solvent-like, nail polish remover

### COMMON SOURCES

Wort composition and yeast growth

## ETHYL HEXANOATE

Aniseed, apple or licorice

### COMMON SOURCES

Fermentation product, wort composition or yeast health

## EXOTIC (6-NONALACTONE)

Coconut, Vanilla, Fruity, Glue-like

### COMMON SOURCES

Higher Concentrations in Aged Beers (Including Barrel Aged), Thermal Load Indicator of Brewing Process

## GERANIOL

Floral, geranium flowers

### COMMON SOURCES

Hop addition and variety

## GRAINY (ISOBUTYRALDEHYDE)

Husk-like, nut-like

### COMMON SOURCES

Excessive run-off or insufficient wort boil

## HEFEWEIZEN

Spicy, banana

### COMMON SOURCES

Specific beer styles



# SENSORY FLAVOR DESCRIPTIONS CONTINUED

## HERBAL (MYRCENE)

Herbaceous, Resinous, Green, Balsamic, Piney, Light Terpene/Hydrocarbon Character

### COMMON SOURCES

Higher concentrations in specific hop varieties

## INDOLE

Farm, barnyard

### COMMON SOURCES

Bacterial infection during fermentation

## ISOAMYL ACETATE

Banana, peardrop

### COMMON SOURCES

Fermentation product, wort composition or yeast health

## ISOVALERIC ACID

Cheesy, old hops, sweaty socks

### COMMON SOURCES

Use of old, degraded hops

## LACTIC ACID

Sour, sour milk

### COMMON SOURCES

Beer spoilage bacteria

## LIGHT-STRUCK (3-METHYL-2-BUTENE-1-THIOL)

Skunky, toffee or coffee like

### COMMON SOURCES

Clear or green bottles

## LINALOOL

Fruity, Floral, Blueberry, Lavender, Rose-wood

### COMMON SOURCES

Associated with time of addition and length of boil; higher concentrations in specific hop varieties; Geraniol decomposition

## MERCAPTAN (ETHANETHIOL)

Sewer-like, drains

### COMMON SOURCES

Poor yeast health, autolysis

## METALLIC (FERROUS SULFATE)

Metal, tin-like, blood

### COMMON SOURCES

Water sources, non-passivated vessels

## PAPERY (TRANS-2-NONENAL)

Cardboard, oxidized

### COMMON SOURCES

Product of oxidation, staling

## PEAT-LIKE (GUAIACOL)

Peat-like, Smoky, Woody, Medicinal

### COMMON SOURCES

Present in some barrel aged beers

## PINEAPPLE (ETHYL BUTYRATE)

Pineapple-like, Brett-related flavors, Rum-like, Tropical Fruit

### COMMON SOURCES

Common Flavor Component in Many Beers Inoculated with Brettanomyces. Also Present in some barrel aged beers

## SMOKY (SYRINGOL)

Smoky (smoked wood/smoked fish), Phenolic

### COMMON SOURCES

Present in Specific Styles and a Common Flavor Component in Barrel Aged Beers

## TOBACCO ( $\beta$ -DAMASCENONE)

Natural, Woody, Sweet, Fruity, Plum, Spicy Tobacco Nuances, Menthol-like

### COMMON SOURCES

A Specific Note Found in Higher Concentrations in Certain Hop Varieties and Present in some barrel aged beers

## VANILLA (VANILLIN)

Custard powder, vanilla essence

### COMMON SOURCES

Specific Styles (Barrel Aged, Common Wood Flavor)

## WHISKEY (LACTONE)

Woody, Oakey, Coconut, Rum-like, Green

### COMMON SOURCES

Common Flavor Component in Barrel Aged Beers

## WOODY (CARYOPHYLLENE AND HUMULENE FRACTION)

Woody, Resinous

### COMMON SOURCES

Characteristic of the Hop Heavier Volatiles and Present in some barrel aged beers



# AVAILABLE SENSORY KITS



## REGULAR SENSORY KIT 12X1 SELECTED FLAVORS TO SPIKE 1L



CONTACT CODE

The Regular Sensory Training Kit contains 12 of the most common flavors found in beer. This kit is suitable for intermediate training of groups of 3 people (12 oz.) or 10 people (1L).

1x ACETALDEHYDE  
1x BITTER  
1x CONTAMINATION

1x D.M.S.  
1x DIACETYL  
1x ETHYL HEXANOATE

1x ISOAMYL ACETATE  
1x ISOVALERIC ACID  
1x LIGHT-STRUCK

1x METALLIC  
1x PAPERY  
1x SPICY



## CRAFT SENSORY KIT 12X1 SELECTED FLAVORS TO SPIKE 1L



CONTACT CODE

The Craft Sensory Kit contains 12 flavor compounds that may be found in many unique styles of craft beer.

1x ALMOND  
1x D.M.S.  
1x DIACETYL

1x ETHYL HEXANOATE  
1x GERANIOL  
1x GRAINY

1x HEFEWEIZEN  
1x ISOAMYL ACETATE  
1x ISOVALERIC ACID

1x PAPERY  
1x SPICY  
1x VANILLA



## BARREL AGED SENSORY KIT 12X1 SELECTED FLAVORS TO SPIKE 1L



CONTACT CODE

This kit contains the following flavors.

1x ALMOND  
1x VANILLA  
1x EXOTIC

1x WOODY  
1x TOBACCO  
1x SMOKY

1x PEAT-LIKE  
1x BARNYARD  
1x COCONUT

1x CARAMEL  
1x WHISKEY  
1x PINEAPPLE



# AVAILABLE SENSORY KITS CONTINUED



## SPECIALTY SENSORY KIT 24X1 INDIVIDUAL FLAVORS TO SPIKE 1L

24x YOUR CHOICE

Our Specialty Sensory Training Kit is ideal for companies conducting sensory training on a frequent or large-scale basis.

**S** CONTACT CODE



## 12 MIX&MATCH SENSORY KIT 12X1 INDIVIDUAL FLAVORS TO SPIKE 1L

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

The 12 Mix&Match Sensory Kit can be custom designed. You may choose any 12 flavor compounds that suit your individual needs.

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

**S** CONTACT CODE



## 5 MIX&MATCH SENSORY KIT 5X1 INDIVIDUAL FLAVORS TO SPIKE 1L

1x YOUR CHOICE

1x YOUR CHOICE

1x YOUR CHOICE

The 5 Mix&Match Sensory Kit can be custom designed. You may choose any 5 flavor compounds that suit your individual needs.

1x YOUR CHOICE

1x YOUR CHOICE

**S** CONTACT CODE

# AVAILABLE SENSORY KITS CONTINUED



## ESSENTIAL OFF-FLAVOR KIT 6X1 SELECTED FLAVORS TO SPIKE 1L

The Essential Off-Flavor Kit contains 6 of the most frequently encountered off-flavors common to beers of all styles.

**S** CONTACT CODE

1x **CONTAMINATION**  
1x **DIACETYL**

1x **PAPERY**  
1x **D.M.S.**

1x **ISOVALERIC ACID**  
1x **H<sub>2</sub>S**



## INTERMEDIATE OFF-FLAVOR KIT 12X1 SELECTED FLAVORS TO SPIKE 1L

The Intermediate Off-Flavor Kit offers a total of 12 compounds that cover a variety of spoilage-related flavors as well as artifacts from other sources.

**S** CONTACT CODE

1x **ACETALDEHYDE**  
1x **ACETIC ACID**  
1x **CONTAMINATION**

1x **D.M.S.**  
1x **DIACETYL**  
1x **GRAINY**

1x **INDOLE**  
1x **ISOVALERIC ACID**  
1x **LIGHT STRUCK**

1x **METALLIC**  
1x **PAPERY**  
1x **H<sub>2</sub>S**



## ADVANCED OFF-FLAVOR KIT 18X1 SELECTED FLAVORS TO SPIKE 1L

The Advanced Off-Flavor Kit offers 18 different compounds that cover the full spectrum of off-flavors that are critical for beer tasters to know towards accurately evaluating beer.

**S** CONTACT CODE

1x **ACETALDEHYDE**  
1x **ACETIC ACID**  
1x **BUTYRIC ACID**  
1x **CAPRYLIC ACID**  
1x **CONTAMINATION**

1x **D.M.S.**  
1x **DIACETYL**  
1x **EARTHY**  
1x **GRAINY**  
1x **INDOLE**

1x **ISOVALERIC ACID**  
1x **LACTIC ACID**  
1x **LIGHT STRUCK**  
1x **MERCAPTAN**

1x **METALLIC**  
1x **PAPERY**  
1x **SPICY**  
1x **H<sub>2</sub>S**



# AVAILABLE SENSORY KITS CONTINUED



**S** CONTACT CODE

## COMPREHENSIVE SENSORY KIT 25X1 SELECTED FLAVORS TO SPIKE 1L

The Comprehensive Sensory Training Kit offers 25 vials representing a large variety of the most important flavors and aromatics found in beer. While breweries with established tasting panel structures will find this kit valuable, it can also be used for "taster calibration" by brewers guilds, homebrew groups and beer judges.

- |                  |                    |                    |             |
|------------------|--------------------|--------------------|-------------|
| 1x ACETALDEHYDE  | 1x D.M.S.          | 1x HEFEWEIZEN      | 1x METALLIC |
| 1x ACETIC ACID   | 1x DIACETYL        | 1x INDOLE          | 1x PAPERY   |
| 1x ALMOND        | 1x EARTHY          | 1x ISOAMYL ACETATE | 1x SPICY    |
| 1x BITTER        | 1x ETHYL ACETATE   | 1x ISOVALERIC ACID | 1x VANILLA  |
| 1x BUTYRIC ACID  | 1x ETHYL HEXANOATE | 1x LACTIC ACID     |             |
| 1x CAPRYLIC ACID | 1x GERANIOL        | 1x LIGHT-STRUCK    |             |
| 1x CONTAMINATION | 1x GRAINY          | 1x MERCAPTAN       |             |



**S** CONTACT CODE

## BASIC SENSORY KIT 6X4 SELECTED FLAVORS TO SPIKE 1L

The Basic Sensory Training Kit offers 4 pre-measured vials of six of the most common and important beer-related flavor compounds. This kit is perfect for companies that do frequent sensory training panels using these core standards. It is also suitable for those looking for basic sensory training.

- |                  |             |                    |
|------------------|-------------|--------------------|
| 4x ACETALDEHYDE  | 4x D.M.S.   | 4x ISOAMYL ACETATE |
| 4x CONTAMINATION | 4x DIACETYL | 4x PAPERY          |





# OUR SERVICES



# YEAST MAINTENANCE AND EVALUATION SERVICES

Through the Siebel Institute of Technology, Lallemand Brewing provides a full range of yeast banking and maintenance services to some of the greatest names in North American brewing. Now, with our expanded Microbiological Services division in Montreal (Canada), we are pleased to offer the industry's most advanced yeast management and evaluation services.

Our services adhere to the strictest scientific standards, assuring the purity and performance of every culture under our care. We offer the most advanced range of testing available in the brewing industry, with yeast banking and maintenance packages that meet the needs of breweries of every size. Breweries can choose from one of our pre-packaged programs, or we can work with your company to build effective and affordable tailored programs.

*To contact our Yeast Maintenance and Evaluation Services team directly, please email us at [brewing.yeastgenetics@lallemand.com](mailto:brewing.yeastgenetics@lallemand.com)*



CONTACT  
CODE

BRONZE (YCMB)  
SILVER (YCMS)  
GOLD (YCMG)

## YEAST BANKING PACKAGES INITIAL DEPOSIT (YEAR ONE)

- ✓ ✓ ✓ **CHOOSE 3 PRESERVATION METHODS**
  - a. Liquid nitrogen, cryostorage at -80°C, microbank
  - b. All electrical equipment on back-up power supply
  - c. Limited access to all strains and database
  - d. Security deposit at another facility
- ✓ ✓ ✓ **PURITY CHECK / DETECTION OF CONTAMINANTS**  
By using various selective and differential media for the detection of bacteria and wild yeasts
- ✓ ✓ ✓ **ALE AND LAGER DIFFERENTIATION**  
Melibiose utilization and fermentation. Growth test at 37°C
- ✓ ✓ ✓ **GENUS AND SPECIES IDENTIFICATION**  
Biochemical profile and genus and species identification using api ID32 galleries
- ✓ ✓ ✓ **PHENOLIC OFF FLAVORS (POF TEST)**
- ✓ ✓ ✓ **KILLER PROFILE**  
Evaluation of the strain sensitivity to known killer toxins and its ability to synthesize killer toxins
- ✓ ✓ ✓ **DNA PROFILING BY DELTA-PCR ON MIXT CULTURE + 2 COLONIES**  
To look for strain purity and to create a fingerprint at time 0 for future strain differentiation and culture yeast evaluation.
- ✓ ✓ ✓ **GENETIC STABILITY EVALUATION BY PFGE ON 5 COLONIES**  
PFGE allows strains differentiation, detection of chromosomal mutations as well as genetic stability evaluation
- ✓ ✓ ✓ **STORAGE IS INCLUDED FOR YEAR ONE**  
The Storage Package level is determined by your Yeast Banking Package level (ie Silver Yeast Banking can choose Silver [or Bronze] level of Storage)

## ANNUAL YEAST STORAGE PACKAGES FOR EACH SUBSEQUENT YEAR (YEAR TWO +)

- ✓ ✓ ✓ Yeast storage using the different methods mentioned above and sub culturing if necessary
- ✓ ✓ ✓ Annual verification of your culture yeast strain against its BRY reference by delta-PCR
- ✓ ✓ ✓ Annual verification of your culture yeast strain against its BRY reference by PFGE

# YEAST GENETIC SERVICES

While many of our advanced Microbiological Services use cutting-edge analytical technologies employed by some of the world's largest breweries, their applications can be utilized by breweries and brewing-related companies of every size.

Our DNA fingerprinting and rapid analysis services can give you critical information about your yeast, improving your understanding of its characteristics, performance and purity. Have a look on the following pages for some of the most important applications of our yeast services as well as our range of testing services and their underlying technologies.

*To contact our Genetic Services team directly, please email us at [brewing.yeastgenetics@lallemand.com](mailto:brewing.yeastgenetics@lallemand.com)*



# YEAST GENETIC SERVICES

## YEAST STRAIN IDENTIFICATION

### BY PCR FINGERPRINTING (YCSPCR)

#### APPLICATIONS

PCR fingerprinting can identify and differentiate production yeast strains. This is a valuable tool for checking yeast slopes, detecting cross contamination, monitoring production yeast cultures and in some instances to detect mutations.



CONTACT CODE

#### TECHNOLOGY

While differentiation of brewing strains is notoriously difficult to perform using traditional lab techniques, PCR fingerprinting offers a quick and accurate means of differentiating brewing yeast strains based on analysis of multiple regions of the genome. This "ASBC recommended" method utilizes PCR (Polymerase Chain Reaction) technology to amplify inter-delta regions of the genome, which are known to be highly variable in terms of number, distribution and size between strains. Through this process a unique DNA fingerprint can be obtained for each individual yeast strain.

## YEAST STRAIN IDENTIFICATION AND DIFFERENTIATION

### BY MICROSATELLITES (YCSPMICRO)

#### APPLICATIONS

This method has the highest level of discrimination power among the methods we currently offer. It can therefore be used for the identification and differentiation of closely related strains of *S. cerevisiae* and *S. pastorianus*. It also displays a very high degree of reproducibility allowing us to build a database of controls for future comparisons.



CONTACT CODE

#### TECHNOLOGY

Microsatellites is a method that targets short and variable tandem repeats (VNTR) in organisms. Due to their high degree of variability, these regions are considered as a good tool to analyze genetic diversity among strains.

## YEAST STRAIN IDENTIFICATION

### BY ANALYSIS OF MTDNA (YCSPMITO)

#### APPLICATIONS

mtDNA analysis is used for the identification and differentiation of production yeast strains, and it can also be used to indicate mitochondrial mutations.



CONTACT CODE

#### TECHNOLOGY

It has been reported that there are more variable regions in the yeast mitochondrial DNA than in the nuclear DNA. These variations can be exploited to produce a DNA fingerprint which can be used to differentiate strains that are closely related, or to complement analysis of nuclear DNA as described above.

## SACCHAROMYCES DIASTATICUS DETECTION

### BY PCR (YCSDIA)

#### APPLICATIONS

This test is used to identify *Saccharomyces* diastaticus, a *Saccharomyces* wild yeast.



CONTACT CODE

#### TECHNOLOGY

While varieties of *Saccharomyces cerevisiae* strains are very difficult to identify by classical methods, the detection of the STA-1 gene by PCR enables the identification of *Saccharomyces* diastaticus as this gene is coding for a glucoamylase, an enzyme which enables the utilization of dextrins.

## IDENTIFICATION OF YEAST SPECIES

### BY ITS ANALYSIS (YCSITS)

#### APPLICATIONS

This test is used to identify isolated yeast contaminants.



CONTACT CODE

#### TECHNOLOGY

Yeast species can be identified by analysis of the ITS region within yeast ribosomal DNA. This method, which is cheaper to perform than DNA sequencing (See above), involves PCR amplification of the ITS region of the genome followed by digestion using restriction enzymes. The ITS region of DNA is known to vary in size and composition between yeast species. Consequently, the size and number of the resulting DNA fragments can be compared to a database comprising more than 200 species of yeast, leading to identification.



# YEAST GENETIC SERVICES CONTINUED

## IDENTIFICATION OF BACTERIA SPECIES

### BY DNA SEQUENCING (YCSSEQB)

#### APPLICATIONS

Identification of isolated bacterial contaminants can give breweries important information about the nature and origins of bacteria found in their yeast and in their products. Traditional methods to identify bacteria can be time consuming and often lack sensitivity, particularly when trying to differentiate closely related species of brewing microbes. DNA sequencing allows the rapid and precise identification of bacteria to the species level, based on differences within ribosomal DNA sequences.



#### TECHNOLOGY

This method involves the amplification of rDNA by PCR followed by sequencing of the resulting rDNA fragment. Identification to the species level is performed by comparison to a Basic Local Alignment Search Tool (BLAST) database comprising > 1 million entries for bacteria.

## IDENTIFICATION OF WILD YEAST SPECIES

### BY DNA SEQUENCING (YCSSEQY)

#### APPLICATIONS

Wild yeast can be difficult to identify as traditional methods for yeast identification are often labor intensive and lack precision. Our DNA sequencing process allows for the accurate identification of isolated yeast contaminants to the species level including an expansive range of wild yeast strains associated with the food and beverage industry.



#### TECHNOLOGY

Sequencing of the D1-D2 domain within yeast ribosomal DNA can be used to rapidly and accurately identify yeast species. This method involves the amplification of rDNA by PCR followed by sequencing of the resulting fragment. Identification of yeast species is performed by comparison to a Basic Local Alignment Search Tool (BLAST) database of wild yeast strains common in the food and beverage industries.

## IDENTIFICATION OF YEAST MUTANTS

### BY RFLP ANALYSIS OF TY ELEMENTS (YCSRFLP)

#### APPLICATIONS

Brewing yeast cultures can change over time due to genetic drift, leading to the accumulation of mutants. These changes typically have a negative influence on fermentation performance and can lead to altered flavor profiles, inappropriate flocculation and fermentation inconsistencies. This service analyses yeast cultures for the presence of mutants. This is an especially important tool for monitoring production yeast cultures for genetic drift, checking yeast samples for the presence of mutants, optimizing serial repitching and associated yeast handling processes. It is also useful for the differentiation of closely related strains.



#### TECHNOLOGY

Mutations can be detected by analyzing cultures using RFLP of yeast transposons (Ty elements). Ty elements are regions of the genome which are known to be highly susceptible to movement and this can indicate more widespread changes throughout the DNA. Here we use a molecular probe to produce a fingerprint of yeast DNA according to the size and location of Ty elements. Fingerprints can be seen to vary compared to the original strain when a mutant yeast is present.

## ANALYSIS OF YEAST GENETIC STABILITY

### BY KARYOTYPING (YCSPFGE)

#### APPLICATIONS

Brewing yeast strains are often susceptible to mutation, characterized by changes to the DNA. Karyotyping offers a tool for the analysis of genetic stability in new or current production strains, analysis of large scale mutations, and for strain differentiation.



#### TECHNOLOGY

The in-built capacity of a yeast strain to mutate can be assessed by analysis of chromosomes, since large scale genetic changes are frequently observed in polyploid and allopolyploid yeast. To determine genetic stability, a number of isolated colonies are analyzed using Pulsed Field Gel Electrophoresis (PFGE) to create a chromosomal fingerprint, or karyotype. If variation is seen between the karyotypes of different colonies, the yeast strain can be considered to be genetically unstable.

# ANALYTICAL SERVICES

## LALLEMAND BREWING'S LABORATORY SERVICES CONSTITUTE ONE OF THE INDUSTRY'S MOST COMPLETE RANGE OF BREWING-RELATED TESTS.

Our tests are conducted using the most stringent standards, employing methods prescribed by groups like the American Society of Brewing Chemists and AOAC INTERNATIONAL. We strive to conduct tests and deliver results as promptly as

possible, providing our customers with information that is both timely and accurate.

*For a comprehensive list of analytical services please visit [siebelinstitute.com/services/analytical-services-catalog/](http://siebelinstitute.com/services/analytical-services-catalog/)*

## LALLEMAND BREWING BRINGS ADDITIONAL SERVICES TO THE BREWING INDUSTRY VIA AB VICKERS' EXTENSIVE LABORATORY AND TECHNICAL CAPABILITIES.

Our technical support staff is composed of qualified brewers with extensive experience and technical knowledge of the entire brewing process.

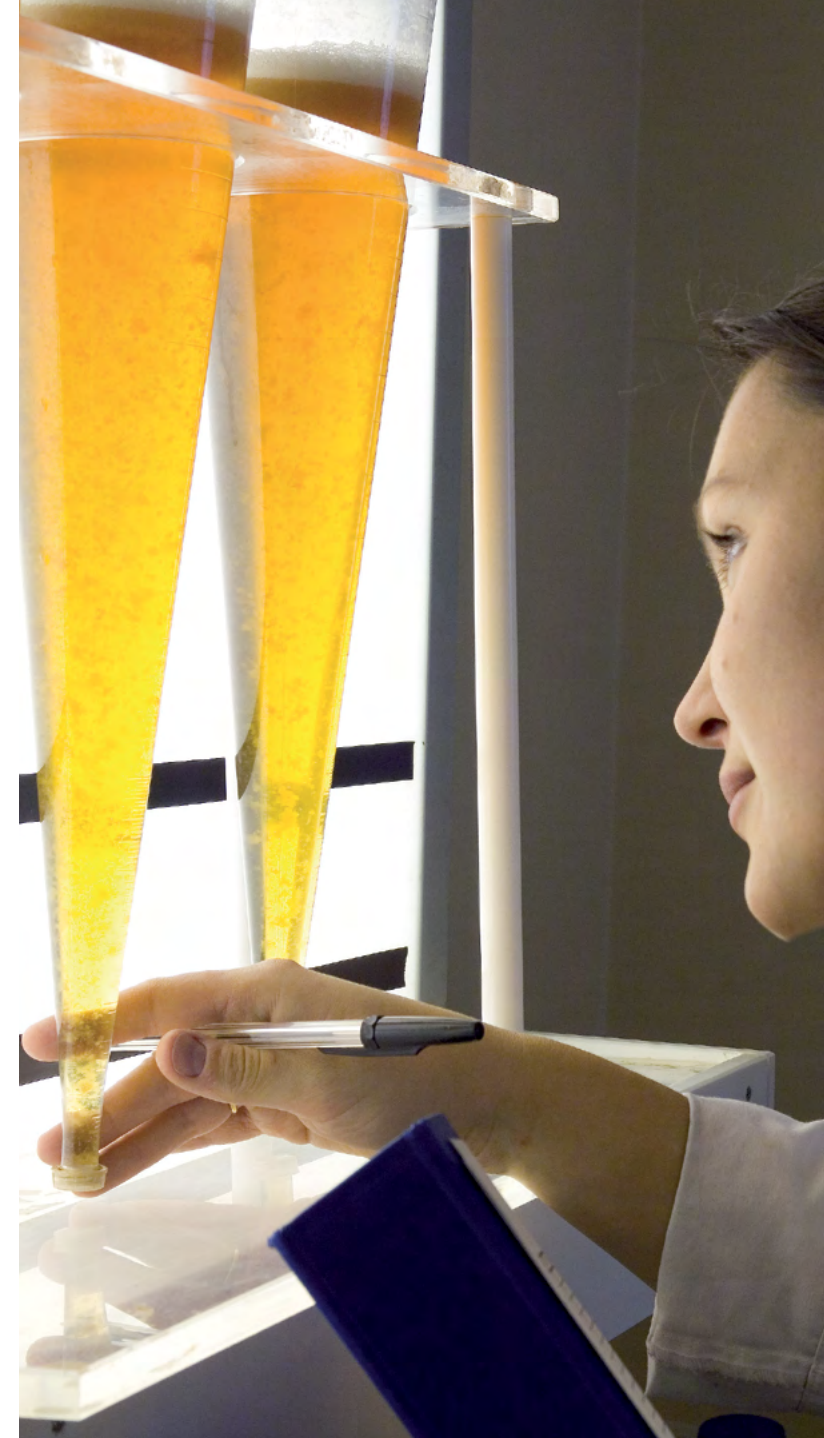
We work closely with breweries by providing support both on-site and in our laboratories depending on the type of service needed. Some routine services, such as finings optimizations, can be carried out in our laboratories or -if required- at laboratories on the brewery site. Our labs allow for more complex

tests, including analysis of compounds such as polyphenols and sensitive proteins in beer stability studies or assessments of enzyme addition rates and customized enzyme blend performance under defined brewhouse or raw material conditions. This service allows breweries to accurately tailor product and dose rates around their particular recipes to produce beers efficiently and up to a defined quality standard

*To contact our Analytical Services team directly, please email us at [brewing.analyticalservices@lallemand.com](mailto:brewing.analyticalservices@lallemand.com)*



CONTACT  
CODE





# CONSULTING SERVICES



## BREWERY CONSULTANCY

**Our approach to consultancy has evolved to meet the constant evolution of the needs of the brewing industry.** Rather than assigning a single consultant to a project, we draw from a worldwide team of experienced professionals with applied knowledge of every critical phase of this industry to create a shared source of knowledge for tackling the project at hand. Our team of consultants blends decades of experience with up-to-the-minute knowledge of emerging trends and technologies, creating one top consultancy teams in the world.

Our methodology for any consulting project follows a systematic approach for efficiently leveraging our worldwide pool of knowledge. In the initial phase

of evaluation, you will work with a Siebel Institute Service Analyst to develop a “Needs Assessment Profile”, defining your current operating standards, perceived realities, and desired outcomes. Our analyst then draws from our team of consulting experts, choosing a consultant (or multiple consultants) that best meets the demands of your project. Our consultant(s) will subsequently work with you to thoroughly evaluate your operations and to provide solutions based on the collective experience of our entire consultancy team

### CONSULTING SERVICES PROVIDED INCLUDE, BUT ARE NOT LIMITED TO:

- Planning and start-up
- Equipment acquisition and installation
- Plant design
- Fermentation and QC/QA issues
- Process evaluation
- Staff training
- Brewery management issues

*To contact our Consulting Services team directly, please email us at [brewing.consultingservices@lallemand.com](mailto:brewing.consultingservices@lallemand.com)*



# PILOT BREWING SERVICES

**THROUGH THE SIEBEL INSTITUTE OF TECHNOLOGY, LALLEMAND BREWING OFFERS A PILOT BREWING SERVICE THAT ALLOWS EXECUTING A COMPLETE RANGE OF RESEARCH AND TESTS FOR BREWING OPERATIONS. THIS SERVICE CAN DELIVER VALUE FOR ALL BREWERIES, REGARDLESS OF SIZE.**

Specifically designed to emulate the physical dynamics of a wide range of commercial brewing systems, our pilot plant enables us to design and test new recipes and to evaluate changes in a customer's existing recipes.

Along with recipe development or enhancement, our pilot brewery facility allows for conducting research on a wide variety of brewing-related variables, including:

- Filtration products
- Effect of raw ingredient variations
- Enzyme and additive effects on recipes
- Packaging material quality, including PET bottle evaluation
- Processing aids (at all points of the process)

Our advanced pilot brewery facility is operated by senior Siebel Institute of Technology researchers. From the time you give us your requirements to the day the final report is delivered, your project will be completed with the speed, accuracy and value that the Siebel Institute of Technology has built its reputation on for over 140 years.

*To contact our Pilot Brewing Services team directly, please email us at [brewing.pilotbrewing@lallemand.com](mailto:brewing.pilotbrewing@lallemand.com)*



CONTACT  
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EDUCATION

# EDUCATION

**Our classes include a mix of participants from breweries of all sizes who hail from locations from all over the world.** This broad base of participants enhances the learning experience of each student by exposing them to differences in culture, equipment, methods and beer styles. In our formal lectures and demonstrations we focus their attention on one common theme: beer. Students may come to the Institute with the biases of their own particular brewing environment, but they all leave in the simple and honest camaraderie of being a brewer. We have a saying here at the Institute, "Not only do we teach our students, but we also help them to teach each other." The institute continues to focus on one basic theme as was published by Dr. J. E. Siebel in a Western Brewer ad from 1893. He stated, "The object of the institute is to promote the progress of the industries based on fermentation, which is done by instruction, investigation, analysis and otherwise."

Siebel Institute of Technology is approved by the Division of Private Business and Vocational Schools of the Illinois Board of Higher Education. For further information please visit the official IBHE website at [ibhe.org](http://ibhe.org).

**Discover the many educational offerings of Lallemand Brewing on the following pages.**

## EDUCATION NOTES

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Dr. John Ewald Siebel

SINCE 1872, THE SIEBEL INSTITUTE HAS ATTRACTED AN EXTENSIVE GLOBAL FOLLOWING. OUR ALUMNI SPAN MORE THAN 60 COUNTRIES AND ARE FOUND IN ALMOST EVERY MAJOR BREWERY.



#### SIEBEL INSTITUTE

Since its founding in 1872, the Siebel Institute of Technology has educated brewers from practically every country in the world, from breweries large and small. The Siebel name is unparalleled for education in the art and science of brewing and remains one of the most respected brewing schools to this day.



#### WORLD BREWING ACADEMY

The World Brewing Academy is an educational alliance between Siebel Institute of Technology and Doemens Academy of Munich, Germany, offering dual campus/dual continent and web-based brewing courses and programs since 2001.

[LEARN MORE ONLINE](https://www.siebelinstitute.com)  
[siebelinstitute.com](https://www.siebelinstitute.com)  
[worldbrewingacademy.com](https://www.worldbrewingacademy.com)

[CONTACT CODE](#)

# WORLD BREWING ACADEMY PROGRAMS AND COURSES

**The World Brewing Academy (WBA)** was established in 2001 as an alliance between Doemens Academy (Munich, Germany) and Siebel Institute of Technology (Chicago, U.S.A.) in order to provide students with a truly international education in brewing technology. The programs and courses offered by the WBA give students the unique opportunity to experience different brewing cultures on two continents.

**Just beginning your brewing path?** Start with our entry level WBA Executive Overview of the Brewing Process course, and then continue your way up through the other offerings.

**Already have some brewing experience?** Depending on your level of knowledge, you may be able to jump right into one of our advanced offerings. Our three advanced-level programs will give you a solid foundation and pathway to becoming a confident professional brewer or brewmaster. You may also take the modules independently, or enroll in them over time to complete a program. Also, our online lecture series makes it very easy to pick and choose lecture topics to round out your brewing knowledge expertise.

To register or learn more visit [worldbrewingacademy.com](http://worldbrewingacademy.com)





# BECOME A MASTER BREWER

Each WBA program module below can be taken independently, or together to complete the certificate programs.

## ☆☆☆ ENTRY LEVEL COURSE

May be needed as a prerequisite, depending on prior brewing knowledge and experience.



**A** Executive Overview of the Brewing Process

## ☆☆☆ INTERMEDIATE COURSE

May be needed as a prerequisite, depending on prior brewing knowledge and experience.



**B** Concise Course in Brewing Technology



Best course for starting your brewing career

## ☆☆☆ ADVANCED PROGRAMS

B and C may be prerequisites, depending on prior brewing knowledge and experience.



**C** WBA Specialized Lectures (see available online lectures)

Complete modules to receive certificate that follows



**1** WBA Raw Materials and Wort Production Module



**2** WBA Beer Production and Quality Control Module



**3** WBA Packaging and Process Technology Module



**WBA ADVANCED BREWING THEORY**



**4** WBA Business of Brewing and Technical Case Studies



**5** WBA Applied Brewing Techniques Module



**6** WBA European Brewing Study Tour Module



**WBA INTERNATIONAL DIPLOMA IN BREWING TECHNOLOGY**



**7** WBA Advanced Applied Brewing Techniques Module



**WBA MASTER BREWER PROGRAM**



## NEW WBA COURSES COMING SOON

- DOEMENS BIRSOMMELIER

- WBA CRAFT CIDER COURSE

To register or learn more visit  
[worldbrewingacademy.com](http://worldbrewingacademy.com)

### COURSE LOCATION



Available Online



Chicago Campus



Munich Campus



Dual Campus (Munich/Chicago)

### COURSE LEVEL

☆☆☆ Entry Level Course

☆☆☆ Intermediate Course

☆☆☆ Advanced Course

# WBA ENTRY LEVEL COURSE

## A EXECUTIVE OVERVIEW OF THE BREWING PROCESS

☆☆☆ | 

The web-based course touches on an extensive range of “need to know” brewery and brewing topics at a basic level in an online, 3-week format. This course has proven itself time and time again as perfect for industry executives, administrative and managerial staff, as well as those just considering entrance into the world of professional brewing operations, with the convenience of never having to leave your home.

### ☆☆☆ ENTRY LEVEL COURSE

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*



**A** Executive Overview of the Brewing Process

### ☆☆☆ INTERMEDIATE COURSE

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*



**B** Concise Course in Brewing Technology

### ☆☆☆ ADVANCED PROGRAMS

*B and C may be prerequisites, depending on prior brewing knowledge and experience.*

# WBA INTERMEDIATE COURSE

## B CONCISE COURSE IN BREWING TECHNOLOGY

☆☆☆ |  

Created by the international faculty of the World Brewing Academy, this course provides students a comprehensive knowledge of the brewing process, the dynamics of brewery operations, and issues currently affecting the industry. **Students gain a level of industry knowledge that will greatly benefit them in any area of responsibility in the brewery, covering critical main topics important to the success of brewery operations of any size.** You'll leave this all-encompassing course confident in your applicable knowledge of brewing and the industry as a whole.

Offered on campus, or as an online course. The online course allows students from anywhere in the world to participate from the convenience of their home or place of work, with presentations available at any time, day or night, weekdays and weekends.



*Best course for starting or advancing your career in the brewing industry.*

### ☆☆☆ ENTRY LEVEL COURSE

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*



**A** Executive Overview of the Brewing Process

### ☆☆☆ INTERMEDIATE COURSE

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*



**B** Concise Course in Brewing Technology

### ☆☆☆ ADVANCED PROGRAMS

*B and C may be prerequisites, depending on prior brewing knowledge and experience.*



# WBA ADVANCED LEVEL PROGRAMS

## **ADVANCED BREWING THEORY PROGRAM**

★★★★ |  

Advanced Brewing Theory (ABT) offers students an in-depth understanding of the technical issues encountered in professional brewing, whether craft or industrial. With content designed around the syllabus of the Institute of Brewing and Distilling (IBD), UK, our course materials address critical topics in brewing technology, giving students the knowledge they need to improve their products, processes and profits. ABT consists of three modules. Students may take any of these modules as a separate unit, electing to complete the program at a later date. Throughout the duration of this intensive program, students are taught by the instructional staff of the WBA, drawing on the talents of some of the most knowledgeable scientists, technologists and brewmasters in the world.

### **(3) PROGRAM MODULES INCLUDE:**

*Modules can be taken individually or as a part of the certificate program.*

#### **1 RAW MATERIALS AND WORT PRODUCTION**

★★★★ |  

#### **2 BEER PRODUCTION AND QUALITY CONTROL**

★★★★ |  

#### **3 PACKAGING AND PROCESS TECHNOLOGY**

★★★★ |  

### ☆☆☆ **ENTRY LEVEL COURSE**

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*

 **A** Executive Overview of the Brewing Process

### ☆☆☆ **INTERMEDIATE COURSE**

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*







  **B** Concise Course in Brewing Technology

### ☆☆☆ **ADVANCED PROGRAMS**




*B and C may be prerequisites, depending on prior brewing knowledge and experience.*

 **C** WBA Specialized Lectures *(see available online lectures)*

Complete modules to receive certificate that follows

-   **1** WBA Raw Materials and Wort Production Module
-   **2** WBA Beer Production and Quality Control Module
-   **3** WBA Packaging and Process Technology Module

 **WBA ADVANCED BREWING THEORY**

-  **4** WBA Business of Brewing and Technical Case Studies
-  **5** WBA Applied Brewing Techniques Module
-  **6** WBA European Brewing Study Tour Module

 **WBA INTERNATIONAL DIPLOMA IN BREWING TECHNOLOGY**

-  **7** WBA Advanced Applied Brewing Techniques Module

 **WBA MASTER BREWER PROGRAM**

To register or learn more visit [worldbrewingacademy.com](http://worldbrewingacademy.com)

# WBA ADVANCED LEVEL PROGRAMS CONTINUED

## INTERNATIONAL DIPLOMA IN BREWING TECHNOLOGY PROGRAM

★★★★ | 

Conducted at our campuses in Chicago and Munich, this dual continent program will prepare graduates to advance their careers through advanced classroom theory and practical application by hands-on brewing. This 12-week program is comprised of segments, divided into 1-to 3-week modules, with each module specializing in a particular area of brewing technology. The Diploma program starts with 7 weeks at our Siebel Institute campus in Chicago, and students then travel to Doemens Academy in Munich, Germany, to complete the last 5 weeks of this amazing, two-continent program.

### (6) PROGRAM MODULES INCLUDE:

Modules can be taken individually or as a part of the certificate program.

1 2 3

#### 4 BUSINESS OF BREWING & TECHNICAL CASE STUDIES

★★★★ | 

#### 5 APPLIED BREWING TECHNIQUES

★★★★ | 

#### 6 EUROPEAN BREWERY STUDY TOUR

★★★★ | 

### ☆☆☆ ENTRY LEVEL COURSE

May be needed as a prerequisite, depending on prior brewing knowledge and experience.

 **A** Executive Overview of the Brewing Process

### ☆☆☆ INTERMEDIATE COURSE

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# WBA ADVANCED LEVEL PROGRAMS CONTINUED

## MASTER BREWER PROGRAM

★★★★ | 

Our most comprehensive, dual-campus/dual continent program offered and unique in its design, the Master Brewer will prepare graduates to advance their careers and knowledge in a 20-week "fast track" approach. Classroom theory in both Chicago and Munich, coupled with practical brewing and lab training in Munich at Doemens Academy will provide students with the knowledge and hands-on experience to obtain a head brewer or managerial position within the industry. This program is comprised of 7-modules, split between Siebel Institute in Chicago and Doemens Academy in Munich, with each module specializing in particular areas of brewing technology. The content addresses issues in brewing from an international perspective, providing students with an educational experience unlike any other offering in the world!

### (7) PROGRAM MODULES INCLUDE:

Modules can be taken individually or as a part of the certificate program.

1 2 3 4 5 6

## 7 ADVANCED APPLIED BREWING TECHNIQUES

★★★★ | 

### ☆☆☆ ENTRY LEVEL COURSE

May be needed as a prerequisite, depending on prior brewing knowledge and experience.

 **A** Executive Overview of the Brewing Process

### ☆☆☆ INTERMEDIATE COURSE

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 **WBA MASTER BREWER PROGRAM**

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NEW!



## WORLD BREWING ACADEMY SPECIALIZED LECTURES

Siebel Institute and the World Brewing Academy are delighted to announce the launch of the WBA Specialized Lecture Series. These lectures cover a multitude of specific topics pertaining to all processes of beer production, including: raw materials, QA/QC, mashing, alternative fermentation techniques, and all the way to brewery engineering. These specialized lectures are perfect for those in the industry looking to increase their knowledge in a specific area. Business owners will also benefit from the flexibility these lectures offer them to provide specific continuous education to their workforce.

All lectures are fully narrated and range from 20 to 90 minutes. Lectures can be enrolled in and taken at any time, and there is no waiting period for enrollment. Even though the student is not part of a specific class, each will still have access to a monitor for questions for the duration of the lecture access window.

  
Enroll in lectures at any point. Select the topics you want to learn about.

### ☆☆☆ INTERMEDIATE COURSE

*May be needed as a prerequisite, depending on prior brewing knowledge and experience.*







  **B** Concise Course in Brewing Technology

### ☆☆☆ ADVANCED PROGRAMS

*B and C may be prerequisites, depending on prior brewing knowledge and experience.*

 **C** WBA Specialized Lectures (see available online lectures)

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-   **2** WBA Beer Production and Quality Control Module
-   **3** WBA Packaging and Process Technology Module

**REACH OUT TO LEARN MORE & SIGN UP**

[WBALectureSeries@siebelinstitute.com](mailto:WBALectureSeries@siebelinstitute.com)

# AVAILABLE ONLINE LECTURES



SERIES 100

## MALTING AND RAW MATERIALS

**Adjuncts**

**Introduction to Hops**

**Hops** – Types and Forms

**Structure and Morphology of Barley**

**Biochemical Changes in Barley**

**Evaluation for Malting**

**Malting Process** – Steeping

**Malting Process** – Germination

**Malting Process** – Kilning

**Evaluation of Malt** – The Maltster's View

**Evaluation of Malt** – The Brewer's View

**Hops: Chemistry and Analysis** – Storage and Stability

**Hop Character and Advanced Hop Products**

**Brewing Water Composition**

**Brewing Water Adjustments**

SERIES 200

## BREWHOUSE

**Brewery Hazards**

**Milling**

**Wort Separation** – Lautering

**Mash Filters**

**Wort Boiling**

**Brewing Calculations** – Mixing Formula

**Recipe Formulation**

**Brewery Waste** – Liquid and Solid Effluents

**Brewhouse Cleaning and Sanitation**

**Hop Addition “Hot Side”**

**Mashing Enzymes**

**Mashing Techniques and Wort Composition**

**Wort Clarification**

**Wort Cooling and Aeration**

**Brewhouse Lab Analysis**

SERIES 300

## YEAST AND CELLARS

**Yeast Physical Behavior**

**Fermentation Operations**

**Alternative Fermentation Techniques**

**Yeast** – Flavor Compounds

**Yeast Quality Measurement**

**Yeast Management** – Handling Practices

**Dry Yeast Production**

**Alternative Aging and Storage Techniques**

**Beer Filtration** – Theory and Mechanisms

**Beer Filtration** – Filters and Operations

**Centrifuges**

**Carbonation**

**Sterile Filtration**

**NEW LECTURES ARE CONTINUOUSLY BEING ADDED!**

Stay up to date by visiting [worldbrewingacademy.com](http://worldbrewingacademy.com)



**ENROLL BY EMAILING**

[WBALectureSeries@siebelinstitute.com](mailto:WBALectureSeries@siebelinstitute.com)

BREWING CATALOG PAGE 61



# AVAILABLE ONLINE LECTURES



SERIES 400

## QUALITY ASSURANCE AND CONTROL

Introduction to Brewing Microbiology  
Beer Spoilage Potential and Brewery Contaminants  
Detection and Identification  
Brewery CIP  
Oxygen Control  
Colloidal Stability  
Flavor Stability  
Beer Chemical Analyses  
Interpretation of Beer Analysis  
Comprehensive QA/QC Program  
Beer Foam  
Beer Color  
Gushing Explained  
Sensory Evaluation  
Types of Taste Panels

SERIES 500

## PACKAGING

Bottle Conditioning  
Kegging Single Valve Keg  
Draught Dispense  
Principles of Canning  
Packaging Operations Overview  
Cask conditioning  
Packaging Materials  
Packaging Line Design and Flow  
Glass Bottle and PET Technology  
Empty Bottles and Crates Inspection  
Bottle Washing  
Bottle Filling and Crowning Technology  
Pasteurization

SERIES 600

## ENGINEERING

Brewery Design  
Fluid Flow Fundamentals  
Gases in a Brewery  
Valves in a Brewery  
Pumps in a Brewery  
Steam Fundamentals  
Principles of Heat Transfer  
Glycol Fundamentals  
Principles of Refrigeration  
Materials of Construction  
Basic Energy Calculations  
Process Control and Automation  
Hygienic Design  
Introduction to PID  
Liquid Processing

**NEW LECTURES ARE CONTINUOUSLY BEING ADDED!**

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# SIEBEL INSTITUTE COURSES

## DRAUGHT EXECUTIVE COURSE

☆☆☆ | 👤

## DRAUGHT MASTER COURSE

☆☆☆ | 👤 *Milwaukee Campus*

Siebel Institute of Technology offers some of the most comprehensive draught training in the industry. These two courses allow students to choose the level of training that meets their skill level, budget and goals. The courses offer a mix of technical theory and hands-on activities.

## CRAFT DISTILLING OPERATIONS AND TECHNOLOGY

The Craft Distilling Operations and Technology course is designed to give students the critical information they need to create distilled spirits in a small-scale distillation environment. Students will learn the theory behind working successfully in small distillery operations as well as related management, logistical and marketing issues.

☆☆☆ | 👤

## START YOUR OWN BREWERY COURSE

The Start Your Own Brewery course presents issues that every prospective brewery or brew pub owner should know to help plan and build a successful business from the ground up, while avoiding common pitfalls and mistakes that can compromise the efficiency and profitability of the business.

☆☆☆ | 👤



# SIEBEL INSTITUTE COURSES CONTINUED



## MASTER OF BEER STYLES AND EVALUATION COURSE

The Master of Beer Styles and Evaluation course is designed to offer professional brewers, home brewers, as well as beer hobbyists, the needed knowledge of beer styles in order to formulate and brew beers to style, and to evaluate and judge beer recipes. The first day involves a deep dive into all things sensory, to understand what causes certain flavor and aromatic compounds. After, the remaining 3-days is spent delving into worldwide beers styles, the evolution of these styles, and tastings to recognize the characteristics of these beers.



## ESSENTIAL QUALITY CONTROL COURSE

The Essential Quality Control course provides the basic fundamental knowledge necessary to achieve the highest levels of consistency and quality within your brewery or brew pub. In line with any successful quality program, this course includes: implementing comprehensive sensory evaluation, using basic instrumentation, and following proper and accepted methods of the ASBC.



## SENSORY PANEL MANAGEMENT COURSE

The first line of quality control and product evaluation in any brewery is formed by a trained taste panel. This course instructs you in the tools and techniques essential to utilizing taste panels appropriately and collecting and analyzing the results compiled from trained tasters, and taking the right actions based on the results, your brewery will improve quality, consistency and profitability.



## BREWING MICROBIOLOGY COURSE

The Siebel Institute Brewing Microbiology course is designed to provide the theoretical knowledge and practical skills required to implement an effective microbiological quality control / quality assurance program. The course will acquaint the student with the appropriate methods for biological and sanitary control within the brewery, and will promote an understanding of the essential modern-day tools for effective microbiological evaluation of process and product.

A background image showing several glasses of beer on a wooden table, with a whiteboard visible on the left. The text 'LEARN MORE ONLINE' is overlaid in large white letters.

LEARN MORE ONLINE

[siebelinstitute.com](http://siebelinstitute.com)

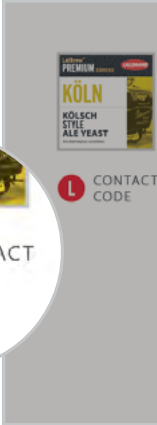

[worldbrewingacademy.com](http://worldbrewingacademy.com)



# CONTACT US

# CONTACT INFORMATION

For ordering products, getting more information, or asking any questions, please use the corresponding Contact Code to get in touch.



**LALBREW™ KÖLN**  
**KOLSCH-STYLE ALE YEAST**

LalBrew™ Köln is ideal for brewing traditional Kölsch-style b other neutral ales. The neutral character of this strain acc delicate hop aromas while imparting subtle fruity esters. expression of a  $\beta$ -glucosidase enzyme, Köln can prom biotransformation and accentuate hop flavor and aroma fermentations will be more neutral in character, while fermentations will have a more fruit-forward ester profile.

Match the item's Contact Code with the codes shown below.

## **L** CONTACT CODE

LALLEMAND BREWING WEBSITE  
[WWW.LALLEMANDBREWING.COM](http://WWW.LALLEMANDBREWING.COM)

EMAIL  
[brewing@lallemand.com](mailto:brewing@lallemand.com)



## **A** CONTACT CODE

AB VICKERS WEBSITE  
[WWW.ABVICKERS.COM](http://WWW.ABVICKERS.COM)

EMAIL  
[abvickers@lallemand.com](mailto:abvickers@lallemand.com)



## **S** CONTACT CODE

SIEBEL INSTITUTE WEBSITE  
[WWW.SIEBELINSTITUTE.COM](http://WWW.SIEBELINSTITUTE.COM)

EMAIL  
[siebelinstitute@lallemand.com](mailto:siebelinstitute@lallemand.com)









Offices and plant on Prefontaine street in Montreal (Canada). This manufacturing plant is still producing Lallemand yeast today. 1950s



Montreal plant's delivery truck. 1930s

