

MALOLAKTISK GÆRING AF SURE GRUNDTVINE TIL MOUSSERENDE VINFREMSTILLING

CARL-HENRIK BROGREN

ZOOM-MØDE 29.APRIL 2021 (ERFA MOUSSE SJÆLLAND GRUPPEN)



VÆLG DEN RETTE DRUESORT TIL MOUSSERENDE VIN – HVAD ER KRITERIERNE ?

JKI (Julius Kühn Institut, Geweilerhof) udviklede PIWI sorter egnet til mousserende vin

- Villaris - Høst (JKI 20.9), Oe 80=19.3 Brix, TA 6.9 g/L https://www.julius-kuehn.de/media/Veroeffentlichungen/Flyer/Rebsorte-Villaris_.pdf
- Felicia - Høst (JKI 15.9), Oe 83 TA 7.8 g/L https://www.julius-kuehn.de/media/Veroeffentlichungen/Flyer/Rebsorte-Felicia_.pdf
- Calardis Blanc – Høst (JKI 9.10), Oe 84 TA 7.5 g/L https://www.traubenshow.de/images/stories/Calardis_blanca/Bilder/Rebsorte-Calardisblanc_Gf.1993-22-6_.pdf
- Calardis Musque - Høst (JKI 15.9), Oe 93 TA 7.4 g/L https://www.traubenshow.de/images/stories/Calardis_blanca/Bilder/Rebsorte-Calardisblanc_Gf.1993-22-6_.pdf

Andre potentielt egnede sorter

- Riesel - Høst (Freitag, 29.9), Oe 90 TA ? [Datenblatt-Riesel.pdf](#)
- Sauvignac VB CAL 604 - Høst Oe 90-99 (17.10), TA ? https://piwi-international.de/wp-content/uploads/2020/04/2020_Maerz_Neue-Sorten-im-Vergleich-ddw.pdf
- Souvignier Gris - Høst Oe (Antes), TA ? https://www.google.dk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewijreL_maPwAhXisosKHaBIDocQFjAGegQIBhAD&url=https%3A%2F%2Fwww.traubenshow.de%2Finformationen-zu-rebsorten%2Fertragsrebsorten-auswahl-in-deutschland-a-z%2F266-s%2Fsouvignier-gris&usg=A

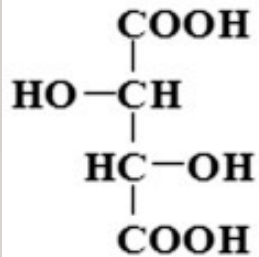
<https://www.oiv.int/public/medias/2273/oiv-liste-publication-2013-complete.pdf>

<https://piwi-international.de/en/about-piwi/piwi-grapes/>

VISSE GENERELLE KRITERIERNE FOR EGNED E SORTER TIL MOUSSERENDE VIN !

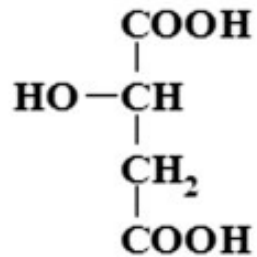
- Duesorten skal helst kunne modnes i det dansk fugtige og kølige efterårsklima, d.v.s. senest medio Oktober
- Duesorten skal være vedvarende sygdomsresistent mod meldug, vinskimmel m.v. (vælg PIWI sorter)
- Druesorten skal ved modning ikke have et sukkerindhold over 20 Brix (83 Oe), da alkohol% ikke må overstige 11%vol ved 1. gæringens afslutning
- Druesorten skal ved modning have et sukkerindhold på mindst 17 Brix (75 Oe), så chaptalisering undgås.
- Druesorten bør ved modning (høst) have et højt indhold af totalsyre (7-9 g/L)
- Druesorten bør ved modning (høst) skal gerne have et indhold af vinsyre på mindst 3-5 g/L, og husk vinsyren ændres ikke væsentligt under græringen, men falder ved kuldestabilisering afhængigt af kaliumindholdet i mosten . Derfor anvendt et lavt presstryk på ved 1-1.5 bar
- Druesorten bør ved modning (høst) ikke indeholde mere end 2.0-3.0 g/L æblesyre. Der om ønsket kan fjernes ved malolaktisk gæring. Højere æblesyreindhold – som tegn på umod´ne druer, fører til højt indhold af L-mælkesyre, der sensorisk for vinen til at smage som mejeriprodukter (yoghurt, mælk, smør, ost)

DRUERNES OG FEREMENTERINGENS FORSKELLIGE SYRER



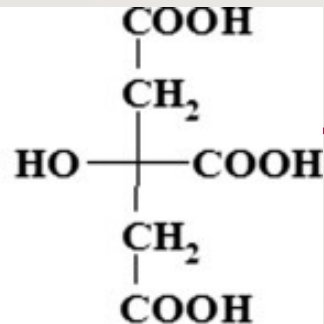
Vinsyre smager af vin

L-(+)-tartaric acid



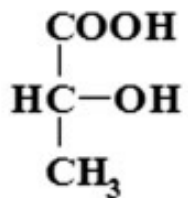
Æblesyre smager af æbler

L-(-)-malic acid

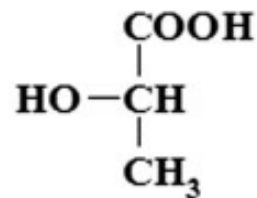


Citronsyre smager af citron

Citric acid

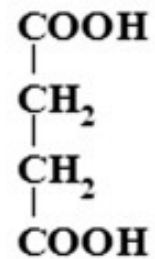


D-(-)-lactic acid

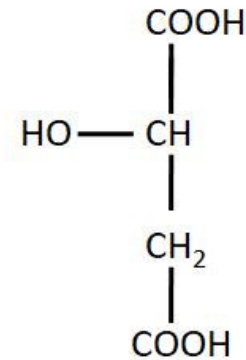


Mælkesyre smager af yougurt og mælk

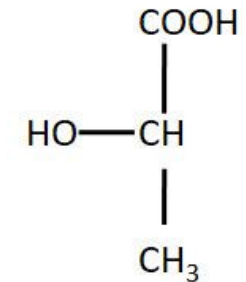
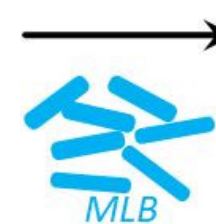
L-(+)-lactic acid



Succinic acid



Malic Acid



Lactic Acid

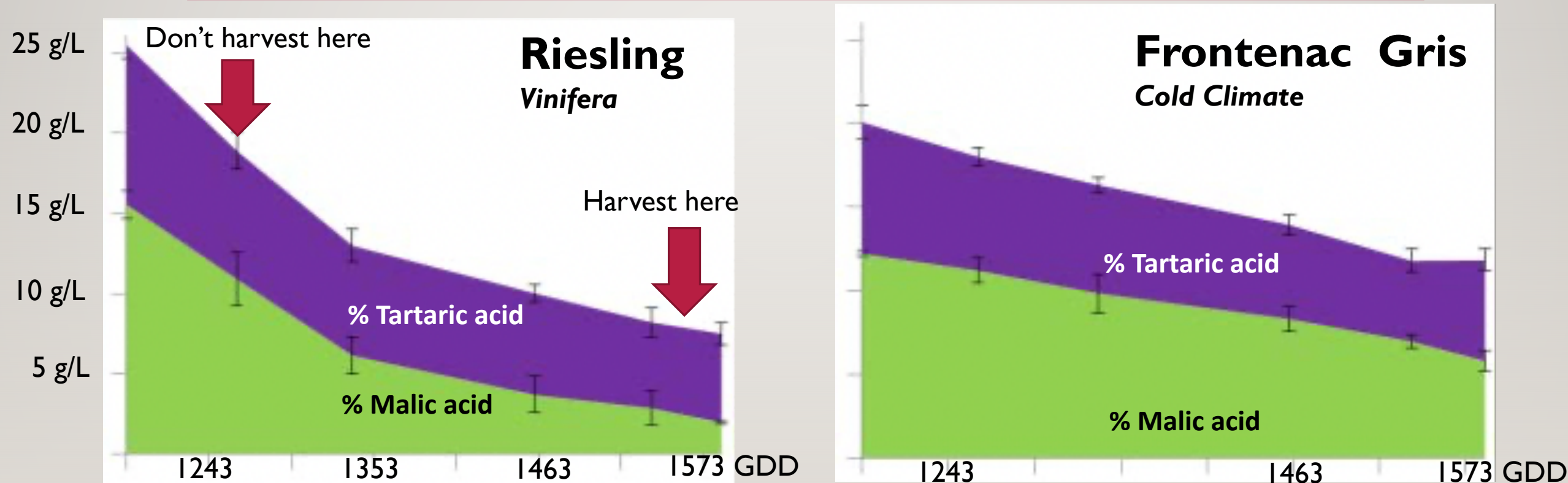


+ CO₂

DRUEMODNINGENS SYREPROFIL

FIGURE 3: VARIATION IN TARTARIC AND MALIC ACID PROPORTIONS FOR FOUR COLD CLIMATE WINE GRAPE CULTIVARS AND FOUR *V. VINIFERA* CULTIVARS AT SIX SAMPLING DATES DURING THE BERRY RIPENING SEASON IN 2012.

<https://fruit.webhosting.cals.wisc.edu/wp-content/uploads/sites/36/2016/03/FruitRipeningProfiles.pdf>



FERMENTERINGENS SYREPROFIL

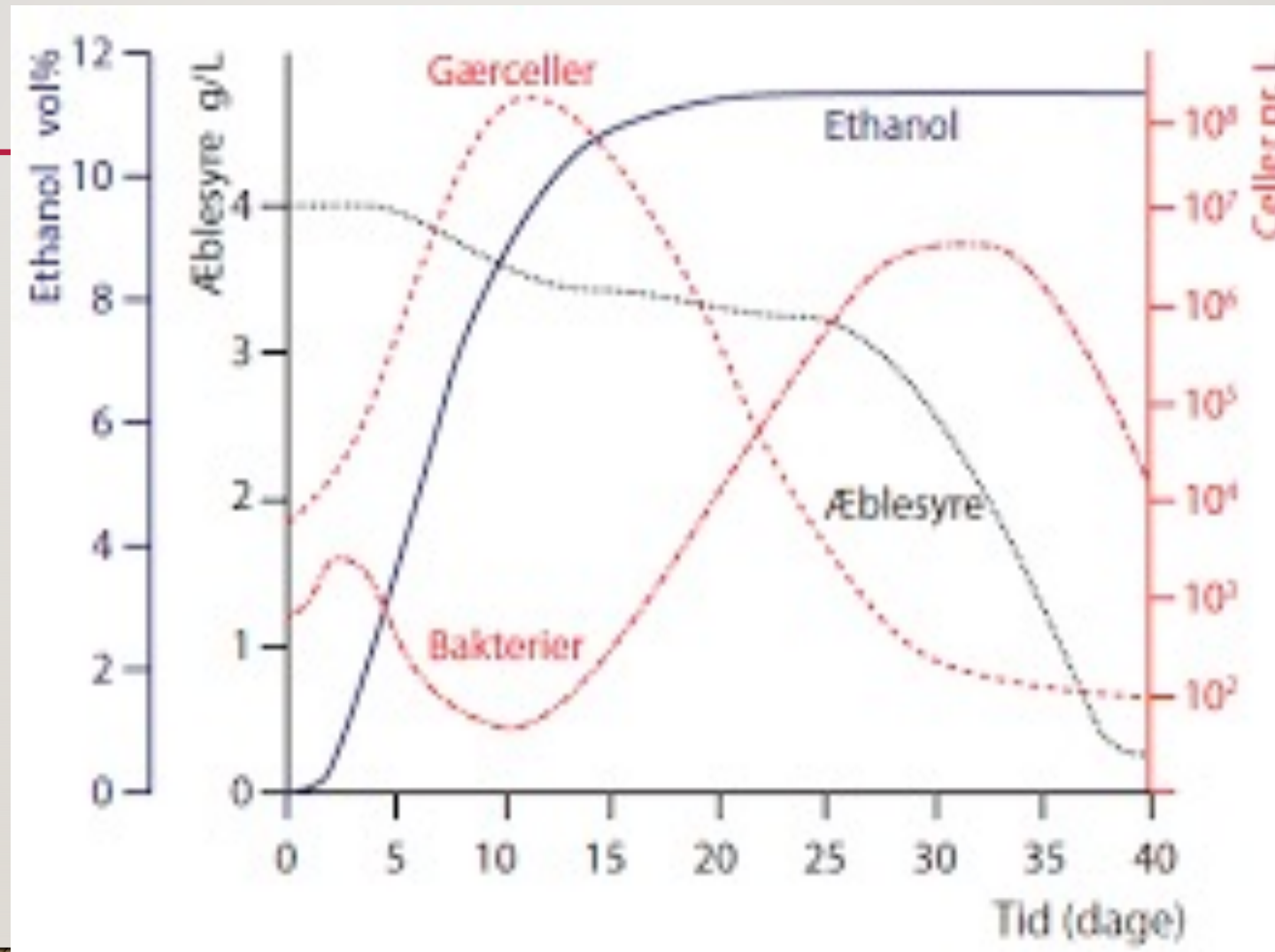
Minimum TA = 7.0 g/L

Maksimum Alkohol = 11,0%v

Minimum Alkohol = 9.5%v

pH = 2.9-3.1 før MLF

pH = 3.0-3.2 efter MLF



Minimum TartA = 4.0 g/L

Maksimum MA = 3.0 g/L
Før MLF

Maksimum MA = 0.4 g/L
Efter MLF

GÆR OG MALOLAKTISKE BAKTERIOER SKAL PASSE SAMMEN

Gær	Temperature	Alkohol Maks %	MLF Kompatibel	Sulfit produktion	
DV10	10-35 grader	18%vol	God	Høj ??	Lallemand
EC1118	10-30 grader	18%vol	Medium	Medium	Lallemand
QA 24	10-28 grader	16%vol	Meget god	Medium	Lallemand
IOC 18-2007	8-30 grader	15%vol	Good	Lav	IOC
La Marquise	10-30 grader	15.5%vol		Lav	OenoFrance - Sofralab
BC S103	10-35 grader	18%vol		Ingen	Lesaffre - Fermentis
71B	15-30 grader	14%vol	Meget god	Høj	Lallemand

Bakterier	TSO2 resistens	Alkohol resistens	Syre (pH) resistens	Temperature	
CH-35	45 ppm	14%vol	pH>3.1	15-25 grader	Chr-Hansen
CH-11	35 ppm	15%vol	pH>3.0	14-25 grader	Chr-Hansen
CH-Sparta	23 ppm (50 ppm PDC)	14%vol	pH>2.9 (2.8 m/ PDC)	17-25 grader	Chr-Hansen
Inobacter IOC	60 ppm PDC	14%vol	pH>2.9 (PDC)	18-22 grader	IOC
Vitalactic BL-01	70 ppm PDC	14%vol	pH>2.85 (PDC)	20-23 grader	OenoFrance

EKSEMPEL PÅ SYRESAMMENSÆTNINGENS RØLE FØR OG EFTER 1. GÆRING MED DV10 GÆR AF GRUNDEVINEN SAMT FØR OG EFTER EN MALOLAKTISK SERIEL BEHANDLING MED ANVENDT ADAPTATION (PIED DE CUVÉE) OG VITILACTIC STARTER BL-01 MALOLAKTISKE BAKTERIER

Total sulfit	Ved høst*	Efter 1st gæring*		Efter seriel MLF*	Efter 2nd gæring m/ MLF	Sensorisk profil	Høj Kvalitet	Lav Kvalitet
pH	2.89	3,08		3,16	3,12		3.0-3.2	<3.0 >3.2
Vinsyre (TartA)	3.2 g/L	3.0 g/L		3.0 g/L	2.9 g/L	Vinøs, druesmag	3-5 g/L	<2 g/L
Æblesyre (MA)	4.0 g/L	3.8 g/L		0.2 g/L	0.3 g/L	Grønne æbler	<0.4 g/L	>1.0 g/L
Mælkesyre (LA)	0.0 g/L	0.2 g/L		2.5 g/L	2.5 g/L	Yougurt smør, mælk	<2 g/L	>2 g/L
Totalsyre (TA) Som vinsyre	10 g/L	9.3 g/L		7.4 g/L	7,2 g/L	Afhænger især af forholdet imellem vinsyre og æblesyre	7-9 g/L pH 3.0-3.2	5-7 g/L = pH > 3.2 10-12 g/L = pH < 2.9
Eddikesyre (VA)	0.0 g/L	0.15 g/L		0.17 g/L	0.19 g/L	VA/TA=0.0264 (2.6%) VA>0.8 g/L eddikesmag	VA<0.2 g/L VA/TA<0.025 (2.5%)	VA>0.4 g/L VA/TA >0.05 (5%)
Total sulfit** (TSO2)	Ca. 50 mg/L Præsulfitering	67 mg/L		57 mg/L	Ukendt	Under den sensoriske grænseværdi	< 25 mg/L ved pH 3.1	> 25 mg/L ved pH 3.1

*) Data from FOSS WineScan **) Præsulfitering anvendt af druemosten ved høst

CHR-HANSEN MALOLAKTISKE BAKTERIER

Culture name	Sum-up			Culture type	Inoculation guidelines		Flavor profile		Performance		Robustness					
	MLF	Pairing	Sensory profile		Species	Stage of inoculation	Type of inoculation	Dairy like flavors diacetyl, butanediol...	Fruit flavors	Malic to Lactic acid conversion speed	Bioprotection against	Maximum total SO ₂	pH	Alcohol	Min. Temp (°C)	Max. Temp (°C)
NoVA™	Fastest MLF possible	Concerto	Fruit forward	Lp	Grape juice & Must	R	+	+++	Extremely fast	Acetobacter Molds (Botrytis)	5 ppm	≥ 3.4	0%	17	28	
CH35	Largest inoculation spectrum: the 4WD of MLF. Relatively slow ferment.	Prelude Melody	Bring high complexity to red and white wines	Oe	Must & Wine	C S	+++	+	Slow		45 ppm	≥ 3.1	14%	15	25	
Oenos	Yardstick culture. Robust and suitable for most wines. Well balanced.	Prelude Melody Merit/Jazz	Classical			C S	++	+	Normal	Brett.		40 ppm	≥ 3.2	14%	17	25
CiNe™	Ideal to reduce sulfites in white and rosé wines. Modern style red wines.	FrootZen Concerto Jazz	Fruit forward Improve mouthfeel			C S	NONE	+	Normal	Brett.		30 ppm	≥ 3.2	14%	≥18	25
CH16	Ideal for warm climate wines	Concerto Jazz	Classical modern red wine style			C S	++	++	Normal	Brett.		40 ppm	≥ 3.4	16%	17	25
CH11	Ideal for cool climate wines	FrootZen Melody Jazz	Neutral			R C S	+	++	Normal to Fast			35 ppm	≥ 3.0	15%	14	25
Oenos 2.0	Fastest <i>O. oeni</i>	Concerto Prelude Melody Jazz	Neutral to Classical			C S	+	++	Fast	Brett.		40 ppm	≥ 3.2	15%	17	25
SPARTA™	Ideal for sparkling base wines	FrootZen Prelude Melody Merit	Neutral			R C S	+	++	Slow to Fast			50 ppm in PDC	> 2.9	14%	17	25

Chr-Hansen anbefaler MLF uden "Pied de Cuvée" adaptation

*) SPARTA uden PDC - Maksimum total SO₂ = 35 ppm (mg/L)

IOC OG OENO-FRANCE HAR DERES EGNE MALOLAKTISKE KULTURER SPECIELT EGNET TIL MOUDSSERENDE VINE

CHR HANSEN

Improving food & health

Viniflora® SPARTA™

Information Produit
Version: 4 PI GLOB FR 26-05-2017

Description

Viniflora® SPARTA™ est une culture pure sous forme concentrée et congelée d' *Oenococcus oeni*. Cette bactérie malolactique hétéro-fermentaire a été soigneusement sélectionnée pour réaliser une fermentation malolactique rapide et sûre.

Description culture:
Oenococcus oeni.

Num. Article: 712696
Taille 10X50 MLU
Conditionnement Bag(s) In box

Couleur: Blanc cassé à légèrement brun
Format: F-DVS
Forme: Granulat congelé

Stockage & manutention

< -45 °C / < -49 °F

Conditions de transport

Les ferments "FroZen" doivent être transportés en utilisant de la carbo-glace avec un temps de transport maximal de 72 heures.

Durée de vie

Lorsque stocké selon nos recommandations, le produit a une D.L.U.O. de 24 mois

Dosage

Il est recommandé d'utiliser une dose de 500 g dans 35-50 hl / 900-1300 gallons US dans des conditions normales. Pour les dosages dans des conditions difficiles ou très difficile, merci de consulter le tableau des dosages.

Utilisation

Cette bactérie a été sélectionnée pour réaliser une fermentation malolactique rapide et sûre, par ensemencement direct dans les vins blancs difficiles. Elle fonctionne parfaitement sur vins rosés et blancs ainsi que sur les vins rouges. Ses principales caractéristiques sont :

- Ensemencement direct dans les vins
- Haute concentration de cellules actives pour assurer un démarrage rapide en fermentation
- Haut niveau de pureté microbiologique
- Excellente tolérance aux pH bas et aux taux élevés de SO₂
- Fermentation assurée en cas de vins blancs difficiles
- Faible production d'acidité volatile
- Ne produit pas d'amines biogènes *

*Au cours des fermentations malolactiques, les flores indigènes produisent des amines biogènes à partir des acides aminés. Cette souche de bactérie malolactique a été sélectionnée parmi les flores indigènes en utilisant les techniques les plus sophistiquées de screening, d'analyse et de production afin de délivrer des ferments malolactiques qui ne produisent pas les amines biogènes suivantes : histamine, tyramine, putrescine, phenylethylamine, isoamylamine, cadaverine.

Pour plus d'information sur les amines biogènes dans les vins ou pour déterminer comment les éviter, consultez le code OIV des bonnes pratiques de viti-viniculture et visitez notre site : <http://www.oiv.int/oiv/info/enguidesov/biogenic>

www.chr-hansen.com

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DATA SHEET

INOBACTER BACTERIA

Oenological bacteria with re-activation and acclimatisation phases (starter).
For very low pH musts and wines.

ENOLOGICAL APPLICATIONS

Adding selected bacteria triggers malolactic fermentation for white and rosé wines.

INOBACTER is used following a three stage protocol (reactivation, starter, seeding the vat) which enables bacteria to adapt to the lowest pHs.

As the winemaker chooses, the bacteria can be added to the must, during alcoholic fermentation or at the end of it.

The very great tolerance of this strain under extreme conditions guarantees total effectiveness for breaking down malic acid.

CHARACTERISTICS

- Revivifiable population > 1.10⁹ CFUs/g of powder.

Strain of *Oenococcus oeni* validated and recommended by the microbiology laboratory at the Pôle Technique et Environnement de CIVC.

- Particularly tolerant of low pHs (from 2.9)
- Optimal temperature ranges: 18-22°C
- Alcohol up to 14% by vol
- Free SO₂ < 10 mg/L
- Total SO₂ < 60 mg/L
- Low production of volatile acidity.
- Limited production of diacetyl.
- No production of biogenic amines.

The INOBACTER strain does not originate from, and does not come into contact during any of the production processes, with genetically modified organisms. Every batch is controlled by the microbiology laboratory at the Pôle Technique et Environnement de CIVC.

DOSE RATE

- 0.72 g of bacteria/hL of wine or 4 g/L of reactivation medium.

PACKAGING AND STORAGE

INOBACTER is a kit containing a sachet of oenological bacteria and a sachet of special activator.

- Kits for seeding 25 hL, 100 hL, 500 hL, 1,000 hL and 2,000 hL of must or wine.

INOBACTER must be kept cold. The powder retains its characteristics for at least 36 months (which is its shelf life) from the date of production if kept at -18°C and at least 18 months when stored at +4°C.

However open sachets must be used immediately because the freeze-dried powder is hygroscopic and the bacteria very quickly lose their activity.

The packaging in aluminium sachets keeps the bacteria out of contact with oxygen and moisture.

Institut Oenologique de Champagne
ZI de Mardeuil - Allée de Cumières
BP 25 - 51201 EPERNAY Cedex France

Tél +33 [0]3 26 51 96 00
Fax +33 [0]3 26 51 02 20
www.ioc.eu.com

The information contained in this document is that which we dispose of to the best of our knowledge at this time. Users are still obliged to take their own precautions and carry out their own trials. All current regulations must be scrupulously observed.

VITILACTIC® STARTER BLO1

Oenococcus oeni wine bacteria for high acidity white wines.

Preparation controlled by the microbiology laboratory of the "Pôle Technique et Environnement du CIVC" (Epernay, France).

1 APPLICATIONS

Selected from sparkling French wines, **VITILACTIC® STARTER BLO1** is especially suitable for the deacidification of white wines, including the most acidic ones.

VITILACTIC® STARTER BLO1 also contributes to the production of wines with considerable aromatic elegance and well preserved fruitiness.

2 MICROBIOLOGICAL AND ENOLOGICAL PROPERTIES

- Low pH tolerance: **VITILACTIC® STARTER BLO1** is a very acidophilic lactic acid bacteria able to grow at pH values above 2.85 after acclimatization (through preparation of a bacterial starter)
- Alcohol tolerance: ≤ 14% vol.
- Temperature tolerance: between 20 and 23°C
- High SO₂ tolerance: up to 70 mg/L of total SO₂
- Volatile acidity production: very low. **VITILACTIC® STARTER BLO1** lacks the enzyme citrate permease and does not metabolize citric acid. Thus, the risk of volatile acidity production from transformation of citric acid is avoided
- Production of biogenic amines: low
- Organoleptic deviation: none. **VITILACTIC® STARTER BLO1** does not degrade citric acid, it does not produce diacetyl, which is responsible for strong lactic and buttery notes
- Bacteria cinnamoyl esterase negative: cannot produce precursors for ethylphenol production by *Brettanomyces*

3 INSTRUCTIONS FOR USE

Inoculation with **VITILACTIC® STARTER BLO1** involves the following protocol.

From a complete "marc" ("cuvee" and "taille") of 25.5 hL non chaptalized and with half of the dose of SO₂:

Reactivation phase and the "malolactic fermenting starter" have to be realized at the same time.

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PROTOKOL FOR MLF ADAPTATION - PIED DE CUVÉE.

VITILACTIC® STARTER BLO1™

Lactic acid bacteria for high acidity white wines.

Preparation controlled by the microbiology laboratory of the "Pôle Technique et Environnement du CIVC".



--- APPLICATIONS ---

Selected from sparkling French wines, VITILACTIC® STARTER BLO1™ is especially suitable for the de-acidification of white wines, including the most acidic ones.

VITILACTIC® STARTER BLO1™ also contributes to the production of wines with considerable aromatic elegance and well preserved fruitiness.

--- MICROBIOLOGICAL AND ENOLOGICAL PROPERTIES ---

- Species: *Oenococcus oeni*.
- Alcohol tolerance: $\leq 14\%$ volume.
- Application temperature: between 20 and 23 °C.
- High SO₂ tolerance: up to 70 mg/L of total SO₂.
- Low pH tolerance: VITILACTIC® STARTER BLO1™ is a very acidophilic lactic acid bacterium able to grow at pH values above 2.85 after acclimatization (through preparation of a bacterial starter).
- Volatile acidity production: very low. VITILACTIC® STARTER BLO1™ lacks the enzyme citrate permease and does not metabolize citric acid. Thus, the risk of volatile acidity production from transformation of citric acid is avoided.
- Production of biogenic amines: low.
- Organoleptic deviation: none. Since VITILACTIC® STARTER BLO1™ does not degrade citric acid, it does not produce diacetyl, which is responsible for strong lactic and buttery notes.
- "Phenol negative" bacteria, which means that VITILACTIC® F cannot degrade coumaric acid into coumaric acid which is the origin of volatile phenol precursors responsible for the development of the off-odors associated with *Brettanomyces bruxellensis*.

STARTER BLO1™

VITILACTIC®

STARTER BLO1™

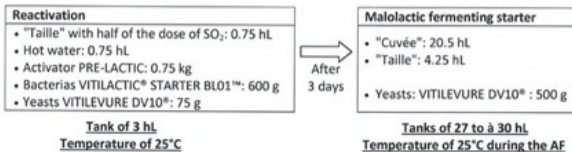


--- INSTRUCTIONS FOR USE ---

Inoculation with VITILACTIC® STARTER BLO1™ involves the following protocol:

From a complete "marc" ("cuvée" and "taille") of 25.5 hL non chaptalized and with half of the dose of SO₂:

Reactivation phase and the "malolactic fermenting starter" have to be realized at the same time.



Reactivation phase

In a 3 hL container, dilute 0.75 hL of "taille" with the same volume of hot water to get a final temperature of 25°C.

Add the PRE-LACTIC activator (0.75 kg), preferably in a part of the hot water before incorporation in the must, to facilitate the distribution. The activator could thus increase the pH of the reactivation medium till 3.2 to 3.5 (it is consequently not necessary to control the pH during this phase).

Add directly (without any rehydration) in the reactivation medium 75 g of the yeasts VITILEVURE DV10® and 600 g of the bacterias VITILACTIC® STARTER BLO1™. Sprinkle these powders, stirring the medium.

Keep the temperature of the reactivation medium at 25°C. After 3 days, add the reactivation medium into the malolactic fermenting starter (analytic controls are not necessary).

Malolactic fermenting starter

The rest of the "marc" (20.5 hL of "cuvée" + 4.25 hL of "taille") is blended in a tank of 27 to 30 hL. This must starts the fermentation with 500 g of the yeasts VITILEVURE DV10® previously rehydrated in a mix must/water (1/2 h at 35°C). The temperature of fermentation of the starter is maintained at 25°C.

After 3 days, the reactivation medium can be incorporated in the fermenting starter. As soon as the alcoholic fermentations is finished, maintain the temperature at 20°C.

Use of the "malolactic fermenting starter"

The malolactic fermenting starter is used when the decrease of the acidity is equivalent to the 2/3rd of the acid malic degradation. This stage is evaluated:

- by the malic acid analysis (final content is roughly 1.5 g/L),
- or by the decrease of the total acidity (roughly 1.5 to 2 g H₂SO₄/L compared to the one of the must).

The analytic control of the malolactic fermenting starter is done after 6 days, then every 2 days.

Nutritional complement recommended:

For the wines likely to have deficiencies in essential nutrients for lactic bacterias (must with a nitrogen deficiency, botrytized must, must very clarified, wine from Chardonnay...); add 20 to 30 g/hL of MALOVIT® B before inoculation with the starter of VITILACTIC® STARTER BLO1™.

This protocol has been suggested by the CIVC and is related to the winemaking of sparkling wines (CF article "Faire la fermentation malolactique sans chauffage": "How to do the malolactic fermentation without heating" published by the CIVC in the review "Le Vigneron Champenois - June 2009).

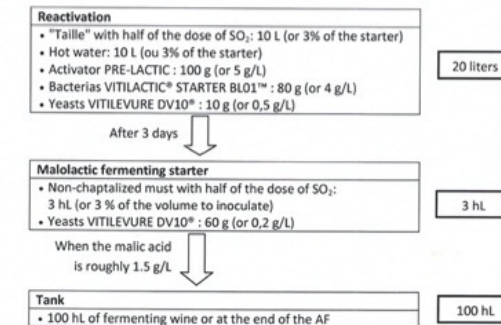
STARTER BLO1™

VITILACTIC®

STARTER BLO1™



To inoculate 100 hL of wine (or any other volume, taking into account the values in % and in g/L):



--- PACKAGING ---

25 g, 100 g or 500 g kits.

--- STORAGE AND TRANSPORT ---

Store unopened original package:

- 18 months at 4°C.
 - 36 months at -18°C.
- Once opened, use rapidly.

Can withstand several days at room temperature.

Indeed, the quality of the VITILACTIC bacteria is preserved if the product is stored at room temperature at a temperature below 25°C. Similarly, their quality is not affected by temperature variations during transport provided that their frequency and intensity are limited:

- Do not expose the product at a temperature above 30°C.
- Limit the number of temperature peaks between 25 and 30°C.

A Danstar product, distributed by:



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MALOLAKTISK NÆRING FREMMER MLF

CHR HANSEN

Improving food & health

BACTIV-AID 2.0

Product Information
Version: 7 PI GLOB EN 12-27-2019

Description

BACTIV-AID 2.0 is a malolactic nutrient made of a blend of inactivated yeasts selected specifically to improve the growth conditions for malolactic bacteria in wine. BACTIV-AID 2.0 ensures that the bacteria have sufficient supply of nutrients. BACTIV-AID 2.0 optimizes the growth conditions for the bacteria which help to ensure a fast, successful malolactic fermentation without any negative effect on wine aroma or flavor. BACTIV-AID 2.0 is also known to scavenge some frequent inhibitory compounds that may be present in the wine like medium chain fatty acids (C8, C10, C12).

Material No:	621038	Color:	Light brown
Size	5X2500 L	Type	Pouch(es) in box
Form:	Powder		

Storage

0 - 8 °C / 32 - 46 °F

Shelf life

Stored in a cool and dry place, the product will have a shelf life of at least 48 months.

Dosage

It is recommended to use one pouch in 25 hl / 660 US gallons.

Application

This nutrient supplement is recommended for use in all wines inoculated with Viniflora® malolactic cultures. Adding this product will ensure a fast and clean malolactic fermentation in most wines. It will reduce the time needed for malolactic fermentation with up to 40 %. To achieve the full benefits it should always be added at the time of inoculation with malolactic culture. BACTIV-AID is strongly recommended if your wine has one of the following characteristics:

- Highly clarified white wine
- Wine that has difficult physical parameters like high alcohol or low pH
- Wine that has a history of problematic malolactic fermentation
- Wine that has completed alcoholic fermentation more than 14 days ago
- If the wine is from a grape variety that normally has problems going through malolactic fermentation, e.g. Merlot or Chardonnay.

Directions for use

BACTIV-AID should be added to the wine at the time of inoculation with malolactic culture. Before adding BACTIV-AID to the tank/barrel, dissolve the powder in luke warm water free from chlorine and/or sulfite residues. Water temperature should be at room temperature. Add BACTIV-AID to the wine, and make sure it is completely dissolved in the wine.

www.chr-hansen.com Page: 1 (3)

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TECHNISCHES MERKBLATT

NUTRIFLORE PDC GÄRUNGSAKTIVATOR

Nährstoff zur Optimierung der Herstellung von Milchsäure-Fermentationsstartern

➤ OENOLOGISCHE ANWENDUNG

NUTRIFLORE PDC ist ein natürlicher Aktivator für die Milchsäurebakterien. Er besteht aus inaktivierten Hefen, die für ihren Reichtum an Wachstumsfaktoren ausgewählt wurden.

NUTRIFLORE PDC ermöglicht die Aktivierung der Bakterien-Enzymsysteme durch das Beimengen zweckgebundener Nährstoffe (Vitamine, Mineralstoffe und Aminosäuren) in das Medium. Ihr Vorhandensein ermöglicht mit Sicherheit eine Beschleunigung der Herstellung von Fermentationsstartern.

Darüber hinaus ermöglicht NUTRIFLORE PDC ein besseres Wachstum und eine stärkere Lebensfähigkeit der Milchsäurebakterien.

➤ ANWENDUNG UND SICHERHEITSHINWEISE

Dosierung: 25 g/hL [pro Hektoliter Fermentationsstarter].

NUTRIFLORE PDC zum Zeitpunkt der Inokulation mit Milchsäurebakterien in den Fermentationsstarter geben.

Für eine bessere Homogenisierung, das Produkt zuvor in einer kleinen Menge Wasser oder Wein zu einer Suspension auflösen.

➤ CHARAKTERISTIKA

Inaktivierte Hefen: Gehalt an organischem Stickstoff < 10% der Trockenmasse.

➤ PACKUNGSGRÖßE UND LAGERUNG

Beutel von 250 g.

Bitte an einem trockenen, geruchsfreien Ort bei gemäßigter Temperatur lagern. Nach Öffnung des Beutels sollte das Produkt schnell verwendet werden und ist nicht länger haltbar.

Institut (Enologique de Champagne
ZI de Mardeuil - Allée de Cumières
BP 25 - 51201 EPERNAY Cedex France

Tél +33 (0)3 26 51 96 00
Fax +33 (0)3 26 51 02 20
www.ioc.eu.com

Die in diesem Datenblatt enthaltene Information entspricht unserem aktuellen Kenntnisstand. Sie enthält die Benutzer keinesfalls, eigene Vorsichtsmaßnahmen zu treffen und eigene Versuche anzustellen. Jede bestehende Regulierung muss strengstens befolgt werden.

VERSION 23-07-14/A

5.110 VE

MALOVIT B

ACTIVATEUR DE FERMENTATION MALOLACTIQUE POUR LES VINS BLANCS
DIFFICILES

Levures inactivées spécifiques, parois de levures, éléments support.

CHAMP D'APPLICATION

- ◆ MALOVIT B est un activateur mis au point pour l'amélioration de la fermentescibilité malolactique des vins de base de Champagne issus du Chardonnay.
- ◆ MALOVIT B compense en effet efficacement les carences naturelles de ces vins en certains acides aminés indispensables au bon développement des bactéries lactiques.
- ◆ MALOVIT B est un activateur de fermentation malolactique dont la formulation est destinée à améliorer la multiplication et la viabilité des bactéries lactiques sélectionnées après leur inoculation dans le vin.
- ◆ MALOVIT B convient particulièrement à la bactérie lactique VITILACTIC STARTER BL01.
- ◆ MALOVIT B permet d'assurer le déroulement complet de la fermentation malolactique avec sécurité et rapidité.
- ◆ MALOVIT B est recommandé pour une utilisation préventive.

DOSE D'EMPLOI

- ◆ Dose conseillée : 20 g/hL à 30 g/hL

MODE D'EMPLOI

- ◆ Pour 25 hL de vin, mettre en suspension 500 g de MALOVIT B dans 5 L à 10 L d'eau ou de vin. Agiter 2 à 3 minutes. Incorporer dans la cuve au vin au cours d'un remontage pour assurer une bonne répartition.
- ◆ Ajouter MALOVIT B juste avant l'ensemencement en bactéries lactiques sélectionnées.

LEGISLATION

- ◆ Dose maximale légale de MALOVIT B : 80 g/hL.
- ◆ Toutefois cette dose ne se justifie pas d'un point de vue œnologique.

085/09

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79, av. A.A. Thévenet - B.P. 1031 - Magenta - 51319 Epemay cedex
Tél. : 00 33 (0)3 26 51 56 45 - Fax : 00 33 (0)3 26 51 87 60
www.oenotechnic.com

KONKLUSIONER

- Anvendt en egnet druesort til fremstilling af mousserende grundvin, der ikke har for højt sukkerhold. For høje alkohol% hæmmer 2. gæringen. Sigt efter druer der er modne ved 17-20 Brix (= 75-83 Oe)
- Anvendt druer der kan modne i det fugtige danske efterår inden medio oktober uden at få sygdomme som meldug og vinskimmel. Sprøjt forebyggende med sprøjtesvovl en gang før blomstring og en gang før modningsprocessen starter.
- Anvendt om muligt kun sunde modne druer, der ikke har et højt indhold af æblesyre, som efter en malolaktisk gæring vil betyde højt indhold af L-mælkesyre, som har en uheldig indvirkning på aroma/smag-profilen.
- Undgå præsulfitering af druemosten, hvis din vin skal bruges til fremstilling af sur lavtrykspresset grundvin, der bør malolaktisk gæres før 2. gæring på tryktank (Charmat) eller flaske (Methode Traditionelle), Det totale sulfit indhold har en stærkt hæmmende virkning på malolaktiske bakterier
- Anvendt er (champagne)gærtype, der er lavproducerende af sulfit, gærer ved lav temperatur, og danner mindst muligt VA (Eddikesyre)
- Anvendt en Stamme af malolaktiske bakterier med høj resistens med total sulfit, tålee høj surhedsgrad (lavt pH) og alkohol op til mindst 14%
- Foretag ALTID en "Pied de Cuvée" adaptation af de malolaktiske bakterier til grundvinens indhold af 10-11% alkohol, 35-75 mg/L (ppm) Total sulfit (TSO₂),

Tabel 3: Sammenlignende analyser mellem FOSS Winescan, ATAGO Brix/Acid-meter og ACCUVIN Quicktest. Analysedata fra en blindsmagning (benchmarking) af 5 udenlandske og 7 danske mousserende vine i juni 2019

Ref: Brogren - Vinpressen Februar 2020 =

https://vinosigns.dk/wp-content/uploads/2020/03/C.-H.-Brogren-Analyser-Del-2-Vinpressen_2020_1_pp22-26.pdf.pdf

	Fransk Champagne	Fransk Crémant	Tysk Sekt	Italiensk Prosecco	Spansk Cava	Dansk Mousse 1	Dansk Mousse 2	Dansk Mousse 3	Dansk Mousse 4	Dansk Mousse 5	Dansk Mousse 6	Dansk Mousse 7
Mousserende betegnelse	EXTRA BRUT	BRUT	BRUT	EXTRA DRY	BRUT	EXTRA DRY	BRUT NATURE	BRUT NATURE	SEC	EXTRA DRY	EXTRA DRY	BRUT
FOSS Winescan												
Alkohol % vol	12,27	12,10	12,42	10,89	11,46	11,93	12,30	11,44	11,45	10,97	12,20	12,64
pH surhedsgrad	3,26	3,15	2,74	3,20	3,12	2,94	3,70	3,54	3,28	3,08	3,36	3,31
Totalsyre g/L (TA)	5,88	5,97	10,93	5,65	6,24	9,96	5,82	6,95	7,26	7,48	5,85	6,51
Vinsyre g/L	1,30	2,56	4,07	2,27	1,98	2,64	0,14	1,89	2,64	2,98	1,39	1,58
L-/Eblesyre g/L	0,15	0,09	3,74	2,65	1,13	4,94	0,00	0,00	0,47	0,87	0,34	0,32
L-Mælkesyre g/L	2,27	1,02	0,17	0,10	1,04	0,28	4,21	3,70	1,91	1,72	2,05	2,30
Eddikesyre (VA) g/L (VA)	0,21	0,27	0,23	0,11	0,14	0,22	0,32	0,38	0,44	0,23	0,52	0,50
Ratio VA/TA	0,036	0,045	0,021	0,019	0,022	0,022	0,055	0,055	0,061	0,031	0,089	0,077
Restsukker g/L (RS)	4,12	6,35	10,32	16,75	7,71	12,30	1,67	0,70	24,10	13,75	13,67	11,07
Glukose g/L	0,44	1,52	3,33	4,35	2,52	5,36	0,00	0,00	9,28	5,57	6,55	4,50
Fruktose g/L	2,69	3,80	5,46	11,19	3,97	7,11	0,81	0,70	14,61	7,61	7,17	6,16
Glycerol g/L	4,24	4,88	5,31	4,11	4,17	6,07	4,00	3,57	7,05	4,00	6,07	6,27
Ratio RS/TA	0,70	1,06	0,94	2,97	1,24	1,24	0,29	0,10	3,32	1,84	2,34	1,70
TECTRONIK Biosensor												
Alkohol % vol	12,48	12,36	11,59	11,58	11,72	11,94	12,86	10,90	11,98	11,98	12,65	13,12
L-/Eblesyre g/L (MA)	<dt	<dt	2,32	1,38	0,34	3,98	<dt	<dt	0,12	0,25	0,21	0,19
ATAGO Brix/Acid2												
Totalsyre g/L (TA)	7,0	7,2	12,5	6,9	8,1	10,5	7,4	8,3	7,8	9,9	6,5	7,1
ACCUVIN Quick-test												
Totalsyre g/L (TA)	6	6	9	6,5	7	9	6,5	7	7	6,5	6	6,5
L-/Eblesyre g/L (MA)	0,16	0,11	3,0	2,2	1,1	6,0	0,16	0,08	0,60	0,75	0,30	0,24
L-Mælkesyre g/L (LLA)	2,5	1,2	0,12	0,08	1,2	0,12	>4,0	>4,0	2,5	1,2	2,51	2,67
D-Mælkesyre g/L (DLA)	0,12	0,20	0,30	0,50	0,30	0,30	0,20	0,20	0,50	0,12	0,45	0,49
Restsukker g/L (RS)	3	5	10	15	10	10	1,5	0,3	20	15	13	10
Fri Sulfid mg/L (FSO2)	18	18	18	18	18	23	8	18	0	28	23	23
DR. METER pH-Meter												
pH surhedsgrad	3,16	2,94	2,90	3,11	2,98	2,99	3,66	3,44	3,22	3,03	3,14	3,25
VINOFERM vinometer												
Alkohol % vol	12,0	12,0	12,5	11,5	11,5	12,0	12,0	11,0	12,0	11,5	12,5	13,0

HVAD ER SIGTEMÅLENE FOR KVALITET I MOUSSERENDE VINE ?

Tab. 4 Vergleichsübersicht von Qualitäts-Schaumweinen des Getränkehandels in Deutschland (Bach und Holbach 1994)

Gruppe	1	2	3	4	5	6	7	8	9		
Proben je Gruppe	7	6	13	8	6	6	5	11	4		
Bezeichnung	Einheit	Markensekt									
		bis € 3,11	von 3,58 bis € 5,11	über € 5,11	Sekt b. A.	Winzer-Sekt	Champagne	Asti	rosé und rot	Cava	
Pos.	Mittelwerte										
1	ges. Überdruck 20 °C	bar	3,9	4,2	4,5	5,1	4,6	5,3	4,0	3,9	5,0
2	rel. Dichte 20/20	-	1,0057	0,9997	0,9997	0,9969	1,0015	0,9962	1,0311	1,0112	0,9967
3	vorh. Alkohol	g/l	87,2	93,1	91,7	94,2	90,3	97,6	57,3	89,5	94,0
4	Gesamt-Extrakt	g/l	52,8	39,4	39,0	32,8	43,0	32,0	106,7	70,2	32,1
5	ges. Zucker nach Inv.	g/l	30,9	20,5	20,1	12,8	20,7	13,4	89,4	45,6	15,9
6	zuckerfreier Extrakt ¹⁾	g/l	18,4	19,3	19,9	21,0	21,0	19,7	18,2	23,9	17,2
7	Glycerin	g/l	6,1	6,2	6,5	7,1	7,0	5,8	4,7	6,7	5,3
8	pH-Wert	-	3,15	3,09	3,12	3,09	2,91	3,10	3,05	3,26	2,94
9	Gesamtsäure	g/l	5,8	6,5	6,6	7,1	7,6	7,5	6,0	5,6	5,8
10	Weinsäure	g/l	2,4	2,7	2,4	2,3	2,2	2,8	2,3	2,1	3,1
11	Äpfelsäure	g/l	0,5	1,0	1,4	2,0	3,2	1,1	1,6	0,7	0,4
12	Milchsäure	g/l	1,0	1,2	1,2	1,0	0,4	2,8	0,5	1,3	0,6
13	Citronensäure	g/l	0,5	0,4	0,3	0,2	0,2	0,2	0,5	0,3	0,4
14	flüchtige Säuren	g/l	0,17	0,17	0,10	0,08	0,00	0,17	0,14	0,23	0,30
15	Asche	g/l	1,6	1,6	1,5	1,5	1,4	1,1	1,6	2,0	1,1
16	Kalium	mg/l	610	560	529	530	484	378	506	773	323
17	ges. Polyphenole	mg/l	238	249	212	210	186	226	213	938	243
18	Acetaldehyd (Ethanal)	mg/l	65	76	53	59	44	44	63	44	58
19	SO ₂ , gesamtes	mg/l	164	138	122	142	135	55	134	120	110
20	SO ₂ , freies + Red.	mg/l	17	14	13	19	16	5	8	12	9
21	ges. Stickstoff	mg/l	179	210	240	243	224	476	163	270	165
22	ges. Aminosäuren	mg/l	147	175	265	283	260	960	300	244	114
23	ges. biogene Amine	mg/l	19	17	18	22	19	26	27	35	16

¹⁾ Die Zahlen stellen Mittelwerte aus den jeweiligen Sektgruppen dar. Somit ist die rechnerische Ermittlung aus den Zellen 4 und 5 nicht möglich.

Type of wine	pH	Totalsyre g/L(TartA)	Vinsyre g/L	Æblesyre g/L	Mælkesyre g/L	Tryk Bar
Sekt b.A.	3,09	7.1	2.3	2,0	1.0	5-3
Winzer-Sekt	2,91	7.6	2.2	3.2	0.4	4.6
Champagne	3.10	7.5	2.8	1,1	2,8 (+/- MLF)	5.3
Asti	3.05	6.0	2.3	1,6	0.5	4.0
Cava	2,94	5.8	3.1	0.4	0.6	5.0

Sekt, Schaum- und Perlwein –
by Hans Peter Bach , Gerhard Troost , et al. | Apr 26, 2010