

Table S1. Summary of commercial non-*Saccharomyces* yeasts datasheets available on the market. Information obtained from the website of the companies that commercialize them (“commercial website”) for winemaking.

Yeast Specie	Brand Format * (Company)	Ethanol Tolerance (% v/v)	Impact on the Aromatic Profile	Other Contributions to the Wine	Commercial Website
<i>Torulaspora delbrueckii</i>	Biodiva TD291 ADY (Lallemand)	10.0	<ul style="list-style-type: none"> Higher content of esters, terpenes and thiols. Low production of volatile acidity, acetaldehyde. 	<ul style="list-style-type: none"> High production of glycerol. Osmophilic yeast (late harvest and ice wines). High production of polysaccharides: mouth-feel. 	https://www.lallemand-wine.com/en/north-america/products/catalogue/
<i>Torulaspora delbrueckii</i>	Prelude ADY (CHR Hansen)	9.0	<ul style="list-style-type: none"> Higher intensity and aromatic complexity. High production of medium-chain fatty-acid esters (more stable esters). Improvement of fruit flavors (thiols, esters). Low production of volatile phenols, volatile acidity, acetaldehyde, H₂S. 	<ul style="list-style-type: none"> High production of polysaccharides: mouth-feel. 	https://www.rjoenology.com/ft_en/Yeast%20strains/PREL-UDE%20PDS%20July%202010.pdf
<i>Torulaspora delbrueckii</i>	Zymaflore Alpha ADY (Laffort)	10.0	<ul style="list-style-type: none"> Co-fermentation with <i>S. cerevisiae</i>: <ul style="list-style-type: none"> higher expression of thiols 3SH and A3SH. higher production of 2-phenylethanol and esters. Low production of volatile phenols, volatile acidity, acetaldehyde, acetoin, diacetyl, H₂S. 		https://laffort.com/es/productos/zymaflore-alpha/
<i>Torulaspora delbrueckii</i>	Viniferm NSTD ADY (Agrovin)	9.5	<ul style="list-style-type: none"> Higher expression of thiols: grapefruit, boxwood. Higher flowery aroma: 2-phenylethanol. Low production of volatile acidity, acetaldehyde, acetoin, H₂S. 	<ul style="list-style-type: none"> High production of polysaccharides: mouth-feel. Co-fermentation with <i>S. cerevisiae</i>: lower alcohol content. 	https://www.agrovin.com/producto/viniferm-nstd/
<i>Torulaspora delbrueckii</i>	EnartisFerm Qt ADY (Enartis)	10.0	<ul style="list-style-type: none"> Contribution of fruity aromas (esters). Low production of volatile acidity, H₂S. 	<ul style="list-style-type: none"> Osmophilic yeast (high sugar grape must). 	https://www.enartis.com/it/prodotti/vino/lieviti/non-saccharomyces/enartisferm-q-tau/

<i>Torulaspora delbrueckii</i>	EnartisFerm Qt Liquido CRY (Enartis)	12.0	<ul style="list-style-type: none"> • Contribution of fruity aromas (esters). • Low production of volatile acidity, H₂S. 	<ul style="list-style-type: none"> • Increasing of mouth-feel: high production of glycerol and polysaccharides. • Osmophilic yeast (high sugar grape must). • Capacity to ferment in monoculture. • Improvement of foam persistence (Hs) in base wine (sparkling winemaking). 	https://www.enartis.com/it/prodotti/vino/lieviti/lieviti-liquidi/enartisferm-q%CF%84-liquido/
<i>Torulaspora delbrueckii</i>	Oenovin Torulaspora BIO ADY (Oeno)	Not available	<ul style="list-style-type: none"> • Contribution of fruity aromas. Red fruit. • Low production of volatile acidity. 		https://www.oeno.it/wp-content/uploads/ST-Oenovin-Torulaspora-Oeno-BIO-2018-rev1.pdf
<i>Torulaspora delbrueckii</i>	Torulaspora delbrueckii FLY (Probiotec)	9.5	<ul style="list-style-type: none"> • Higher flowery aroma: 2-phenylethanol. • Low production of volatile acidity, acetaldehyde. • No production of H₂S. 	High production of glycerol: mouth-feel.	https://www.probiotec.it/schede/Torulaspora-delbrueckii.pdf
<i>Torulaspora delbrueckii</i>	Torulaspora delbrueckii 12.2 FLY (Probiotec)	11.5	<ul style="list-style-type: none"> • Higher flowery aroma: 2-phenylethanol. • Low production of volatile acidity, acetaldehyde. • No production of H₂S. 	<ul style="list-style-type: none"> • High production of glycerol: mouth-feel. • Capacity to ferment in monoculture. • Ability to second fermentation in sparkling wines. 	https://www.probiotec.it/schede/Torulaspora-delbrueckii-12.2.pdf
<i>Lachancea thermotolerans</i>	Laktia ADY (Lallemand)	10.0	<ul style="list-style-type: none"> • Higher aromatic complexity. • Low production of volatile acidity. 	<ul style="list-style-type: none"> • High production of glycerol. • High lactic acid production: acidity + freshness. • Biocompatible for co-inoculation with malolactic bacteria (malolactic fermentation, MLF). 	https://www.lallemand-wine.com/en/north-america/products/catalogue/wine-yeasts/109/level2-laktia/
<i>Lachancea thermotolerans</i>	Concerto ADY (CHR Hansen)	10.0	<ul style="list-style-type: none"> • Higher intensity and aromatic complexity. • Integration of red fruit (strawberry), black fruit, spices. • Low production of volatile acidity, acetaldehyde, H₂S. 	<ul style="list-style-type: none"> • High lactic acid production: acidity + freshness. • Biocompatible for co-inoculation with malolactic bacteria (MLF). • Production of polysaccharides: mouth-feel. • More rounded and smoother mouthfeel. 	https://www.gusmer-wine.com/catalog/chr-hansen-yeast/concerto/
<i>Lachancea thermotolerans</i>	Octave ADY (CHR Hansen)	11.0	<ul style="list-style-type: none"> • Esters: enhance fruit flavors. Stone fruits (peach, apricots) and pear notes. • Low production of acetic acid, phenols, H₂S. 	<ul style="list-style-type: none"> • Capacity to increase the lactic acid content: increased acidity and pH reduction. • Reduction of alcohol content. • Bioprotection in the pre-fermentative stage. • Reduction of SO₂ added dose. • Disadvantage: Inhibits MLF. 	https://www.gusmer-wine.com/catalog/chr-hansen-yeast/octave/

<i>Lachancea thermotolerans</i>	EnartisFerm Qk CRY (Enartis)	8.0	<ul style="list-style-type: none"> Higher production of 2-phenylethanol (rose, flower). Low production of volatile acidity. 	<ul style="list-style-type: none"> Capacity to increase the lactic acid content: increased acidity and pH reduction. Reduction of alcohol content. High production of glycerol. 	https://www.enartis.com/it/prodotti/vino/lieviti/lieviti-liquidi/enartisferm-q%26%99/
<i>Lachancea thermotolerans</i>	Excellence X'Fresh ADY (Lamothe-Abiet)	Not available	More “fresh and fruity” aromatic profile.	<ul style="list-style-type: none"> Capacity to increase the lactic acid content: increased acidity and pH reduction. Reduction of alcohol content. 	https://lamothe-abiet.com/es/levaduras/excellence-x-fresh/
<i>Lachancea thermotolerans</i>	LEVULIA Al-comeno ADY (AEB)	7.2	Low production of volatile acidity.	<ul style="list-style-type: none"> Capacity to increase the lactic acid content: increased acidity and pH reduction. Reduction of alcohol content. More freshness and balance on the palate. 	https://www.aeb-group.com/es/levulia-alcomeno-11434
<i>Lachancea thermotolerans</i>	Kluyveromyces thermotolerans FLY (Probiotec)	8.0	<ul style="list-style-type: none"> Higher production of 2-phenylethanol (rose, flower). Low production of acetaldehyde. 	<ul style="list-style-type: none"> Capacity to increase the lactic acid content: increased acidity and pH reduction. High production of glycerol. 	https://www.probiotec.it/schede/Kluyveromyces-thermotolerans.pdf
<i>Metschnikowia pulcherrima</i>	Flavia MP346 ADY (Lallemand)	Not available	<ul style="list-style-type: none"> Higher expression of terpenes and thiols (α-arabinofuranosidase activity). Low production of volatile acidity, acetaldehyde. 	<ul style="list-style-type: none"> More perception of acidity and freshness. Polysaccharides releasing and early autolysis: mouth-feel. 	https://www.lallemand-wine.com/en/north-america/products/catalogue/wine-yeasts/56/level2-flavia/
<i>Metschnikowia pulcherrima</i>	Oenoferm MProtect ADY (Erbslöh)	6.0	<ul style="list-style-type: none"> Low production of acetic acid and ethyl acetate. Prevention of off-flavours. 	<ul style="list-style-type: none"> Biocontrol of spontaneous grape microbiota. Reduction of SO₂ added dose. 	https://erbsloeh.com/fileadmin/user_upload/pdf/Wine/technical_data_sheet/GB/oenoferm_mprotect-technical_data_sheet-english-erbsloeh.pdf
<i>Metschnikowia pulcherrima</i>	AWRI Obsession ADY (AB Biotek)	7.0	<ul style="list-style-type: none"> Improvement of dark fruit flavour. Capability to mask green characters. Low production of volatile acidity. 	Increasing of colour and complexity in red wines.	https://www.abbiotek.com/perch/resources/next-generation-awri-obsession-product-information-may-2019-web.pdf

<i>Metschnikowia pulcherrima</i>	LEVULIA Pulcherrima ADY (AEB)	11.5	<ul style="list-style-type: none"> • Monoculture: Increase of higher alcohols and terpenes. • Co-cultivation: Increase of higher alcohols, ethyl esters, phenyl-acetate, isoamyl-acetate and terpenes. • Low production of volatile acidity. 	<ul style="list-style-type: none"> • Capacity to ferment in monoculture. • Capacity to finish the fermentative process. 	https://www.aeb-group.com/es/levulia-pulcherrima-10586
<i>Metschnikowia pulcherrima</i>	Primaflora VB BIO ADY (AEB)	Pre-fermentative phase	<ul style="list-style-type: none"> • Preservation of enzymes. • Contributes to the flavor and aromatic complexity. • Prevention of off-flavours: H₂S, butyric odors, volatile phenols, acetic acid, etc. • Less extraction of unpleasant flavors. 	<ul style="list-style-type: none"> • Lower production of biogenic amines. • Bioprotection in the pre-fermentative stage. • Reduction of SO₂ added dose. 	https://www.aeb-group.com/es/primaflora-vb-bio-10541
<i>Metschnikowia pulcherrima</i>	Excellence B-Nature ADY (Lamothe-Abiet)	Pre-fermentative phase	Improvement of the aromatic complexity.	<ul style="list-style-type: none"> • Bioprotection in the pre-fermentative stage. • Reduction of SO₂ added dose. 	https://lamothe-abiet.com/es/levaduras/excellence-b-nature/
<i>Metschnikowia fructicola</i>	Levia Nature ADY (Oeno)	Pre-fermentative phase	Low production of volatile acidity.	<ul style="list-style-type: none"> • Bioprotection in the pre-fermentative stage. • Reduction of SO₂ added dose. • Facilitates the implantation of <i>S. cerevisiae</i>. 	https://www.oeno.it/prodotto/levia-nature/
<i>Metschnikowia fructicola</i>	Gaia ADY (Lallemand)	Pre-fermentative phase	<ul style="list-style-type: none"> • Improvement of the sensory expression and preserving varietal character. • Low production of volatile acidity. 	<ul style="list-style-type: none"> • Competitive factor: active K2 (bioprotection in the pre-fermentative stage). • Reduction of SO₂ added dose. • Facilitates the implantation of <i>S. cerevisiae</i>. 	https://www.lallemand-wine.com/en/north-america/products/catalogue/wine-yeasts/103/gaa/
<i>Wickerhamomyces anomalus</i>	Anti Brett 1 FLY (Probiotec)	4.0	<ul style="list-style-type: none"> • No production of acetic acid. • Low production of H₂S. 	<ul style="list-style-type: none"> • Active mycocin against <i>Brettanomyces</i>. • Synergy with <i>Kluyveromyces wickerhamii</i>. 	http://www.probiotec.it/schede/anti-brett-1.pdf
<i>Kluyveromyces wickerhamii</i>	Anti Brett 2 FLY (Probiotec)	2.0	<ul style="list-style-type: none"> • No production of acetic acid. • Low production of H₂S. 	<ul style="list-style-type: none"> • Active mycocin against <i>Brettanomyces</i>. • Synergy with <i>Wickerhamomyces anomalus</i>. 	https://www.probiotec.it/schede/anti-brett-2.pdf

<i>Schizosaccharomyces pombe</i>	Atecrem 12H CRY (BioEnologia)	14.0	Low production of acetic acid, volatile acidity.	<ul style="list-style-type: none"> • Malic acid degradation. • Gluconic acid degradation. • High production of glycerol (until 15 g/L). • High production of polysaccharides. • Production of vitisin A. • Reduction of ochratoxin A (OTA). 	https://www.bioenologia.com/vino/atecrem-12h
<i>Schizosaccharomyces pombe</i>	Promalic ENCY (Proenol)	Not available	Improvement of the freshness and aromatic profile.	<ul style="list-style-type: none"> • Malic acid degradation. • No contact between yeast and must/wine. • Easy removal of encapsulated yeast after deacidification process. 	https://www.proenol.com/web/productos/leveduras-encapsuladas/promalic-detail
<i>Starmerella bacillaris</i>	Atecrem 11H CRY (BioEnologia)	10.0	Middle production of volatile acidity.	High production of glycerol (until 14 g/L).	https://www.bioenologia.com/vino/atecrem-11h
<i>Zygosaccharomyces bailii</i>	Fructoferm W3 ADY (Lallemand)	14.7		Fructophilic yeast for the treatment of stuck fermentations (Sütterlin, 2010).	https://www.yumpu.com/de/document/read/36907518/fructoferm-w3
<i>Zygosaccharomyces parabailii</i>	Hardened Spaniard FLY (Mainiacal Yeast)		It lends notes of fresh cut apples and earthy/hazelnut like flavors.	“Flower-film yeast” for Sherry wines.	https://www.mainiacal.com/pro-brewers
<i>Pichia kluyveri</i>	Frootzen AFY (CHR Hansen)	5.0	<ul style="list-style-type: none"> • Expression of thiols 3SH and A3SH. • Low production of volatile phenols, volatile acidity, H₂S. 		https://www.chr-hansen.com/es/food-cultures-and-enzymes/fermented-beverages/cards/product-cards/frootzen-first-ever-pichia-kluyveri-yeast
<i>Pichia kluyveri</i>	Pichia kluyveri MIP-001 FLY (Propagate Lab)	Low tolerant		According to the technical datasheet, is a yeast strain commonly found in wine.	https://www.propagate-lab.com/pichia-kluyveri

<i>Pichia kluyveri</i> , <i>Kazachastania</i> <i>servazzii</i>	Trillyeast CRY (BioEnologia)	2.0	<ul style="list-style-type: none"> High production of esters: rose, peach, pear and apple. Strong notes of olea fragrans and licorice. 	High production of glycerol.	https://www.bioenologia.com/vino/trillyeast
<i>Torulaspora delbrueckii</i> + <i>Saccharomyces cerevisiae</i>	Oenoferm Wild & Pure ADY (Erbslöh)	Not available	<ul style="list-style-type: none"> Production of fruity esters. Higher expression of terpenes. Support the ripe and exotic fruit aroma. 	Creamier, long-lasting, pleasant flavour and mouth-feel.	https://erbsloeh.com/fileadmin/user_upload/pdf/Wine/technical_data_sheet/GB/oenoferm_wild_and_pure_f3-technical_data_sheet-english-erbsloeh.pdf
<i>Torulaspora delbrueckii</i> + <i>Saccharomyces cerevisiae</i>	New Nordic Ale Yeast FLY (White Labs)	10.0		The technical datasheet only mentions its use in white and red winemaking.	https://www.whitelabs.com/yeast-single?id=177&type=YEAST
<i>Torulaspora delbrueckii</i> + <i>Metschnikowia pulcherrima</i>	Zymaflore Égide ADY (Laffort)	Pre-fermentative phase		<ul style="list-style-type: none"> Bioprotection in the pre-fermentative stage). Reduction of SO₂ added dose. Facilitates the implantation of <i>S. cerevisiae</i>. 	https://laffort.com/es/productos/zymaflore-egide/
<i>Metschnikowia pulcherrima</i> + <i>Saccharomyces cerevisiae</i>	Primaflora VR BIO ADY (AEB)	Pre-fermentative phase	<ul style="list-style-type: none"> Preservation of enzymes. Contributes to the flavor and aromatic complexity. Prevention of off-flavours: butyric odors. Less extraction of unpleasant flavors. 	<ul style="list-style-type: none"> Lower production of biogenic amines and acetamides. Bioprotection in the pre-fermentative stage). Reduction of SO₂ added dose. 	https://www.aeb-group.com/es/primaflorasupsup-vr-bio-10555
<i>Lachancea thermotolerans</i> + <i>Saccharomyces cerevisiae</i>	Symphony ADY (CHR Hansen)	16.0	<ul style="list-style-type: none"> Enhancement of fruity flavors: thiols and esters. White wines: floral aroma, tropical fruity notes. Red wines: complex and round flavors. Low production of acetic acid, volatile acidity, volatile phenols, H₂S. 	<ul style="list-style-type: none"> Limited lactic acid production from sugars. Biocompatible with malolactic bacteria. 	https://irp-cdn.multiscreensite.com/747494ab/files/uploaded/16-CHR-yeast%20Viniflora%20Symphony%20TDS.pdf
<i>Lachancea thermotolerans</i> (40%) + <i>Saccharomyces cerevisiae</i> (60%)	Rhythm ADY (CHR Hansen)	17.0	<ul style="list-style-type: none"> Improvement of fruity flavors: thiols and esters. Low levels of acetic acid, volatile acidity, volatile phenols, H₂S. 	<ul style="list-style-type: none"> Lactic acid production from sugars. Enhancement of complexity and mouth-feel. Improve palate weight. Biocompatible with malolactic bacteria. 	https://www.gusmerwine.com/catalog/chr-hansen-yeast/rhythm/

<i>Lachancea thermotolerans</i> (10%) + <i>Torulaspora delbrueckii</i> (10%) + <i>Saccharomyces cerevisiae</i> (80%)	Harmony ADY (CHR Hansen)	17.0	<ul style="list-style-type: none"> • Improvement of fruity flavors: thiols and esters. • Low levels of acetic acid, volatile acidity, volatile phenols, H₂S. 	<ul style="list-style-type: none"> • Middle production of polysaccharides. • Biocompatible with malolactic bacteria. 	https://www.gusmer-wine.com/catalog/chr-hansen-yeast/harmony/
<i>Lachancea thermotolerans</i> + <i>Torulaspora delbrueckii</i> + <i>Saccharomyces cerevisiae</i>	Melody ADY (CHR Hansen)	15.0	<ul style="list-style-type: none"> • White wine: improvement of the aromatic intensity and increasing of tropical fruit flavor: thiols y esters. • Red wine: more pronounced fruity and spicy notes. • Low production of volatile phenols, volatile acidity, H₂S. 	<ul style="list-style-type: none"> • Facilitates the malolactic fermentation. • Middle production of polysaccharides: mouth-feel. 	https://www.gusmerenterprises.com/wp-content/uploads/2015/05/Viniflora-MELODY-PDS.pdf

* ADY (active dry yeast), FLY (fresh liquid yeast), CRY (cream yeast), AFY (active frozen yeast), ENCY (encapsulated yeast).