

## BREWERY ANALYSIS CATALOG 2024

*Fine analysis in brewing revolutionized process control: validation of inputs and brewing practices, precise control of fermentations according to raw materials, optimization of aromatic potential, control of defects and their appearance...*

*These numerous applications complement sensory analysis and support the brewer's work.*

*Contact our chemists: they are at your disposal to discuss your needs and evaluate with you the feasibility of these analyses in your context.*

### Legend

#### Analytical methods



Our analyses are based on mass spectrometry techniques, coupled with liquid or gas chromatography (LC-MS, GC-MS).






Analyses marked with this symbol benefit from isotopic dilution method. Isotopic dilution is a quantitative analysis technique based on the use of specific internal standards, which significantly improves the accuracy and repeatability of the results obtained.

This technique relies on the ability to synthesize standard molecules, a unique NYSEOS know-how.

### Thiols

*Thiols play an important role in brewing, contributing to complex, sought-after aromas such as citrus, guava and passion fruit.*

*Accurate quantitative measurement of thiols in hops and beers gives brewers a competitive edge, enabling them to control and optimize aroma profiles, while ensuring consistency and superior beer quality.*

Code	Matrix	Analyzed compounds	Applications
<b>THIOLS AND THIOLS PRECURSORS</b>			
VA-4THIOLS	Hop / Beer	<b>THIOLS MENU</b> (4 molecules) 3-sulfanyhexanol (3SH), 3-sulfanyhexyle acetate (3SHA), 4-methyl-4-sulfanylpentan-2-one (4MSP) and 3-sulfanyl-4-methylpentanol (3S4MP)	 Grapefruit Passion fruit
VA-PRTHI	Hop / Malt / Beer / Wort	<b>THIOLS PRECURSORS</b> (6 molecules) cysteine-3SH, cysteinyl-glycine-3SH, $\gamma$ -glutamyl-cysteine-3SH, glutathion-3SH, cysteine-4MSP and glutathion-4MSP	 Thiols precursors
VA-PRTHI-AL	Hop / Malt / Beer / Wort	<b>COMPLEMENTARY 3SH PRECURSORS</b> cysteinyl-glycine-3SH-al, $\gamma$ -glutamyl-cysteine-3SH-al and glutathion-3SH-al	 Thiols precursors

Code	Matrix	Analyzed compounds	Applications
<b>OTHER KEY AROMA COMPONENTS</b>			
VA-TERP	Hop / Beer	<b>TERPENOLS</b> (7 molecules) <i>Linalol, Geraniol, Nerol, Citronellol, <math>\alpha</math>-Terpineol, cis-Rose Oxyde and trans-Rose Oxyde</i>	Floral
VA-ESTERS	Beer	<b>ESTERS</b> (12 molecules) <i>Hexyl acetate, isoamyl acetate, 2-phenylethyl acetate, ethyl decanoate, ethyl hexanoate, ethyl octanoate, ethyl butanoate, ethyl 2-hydroxypropanoate, ethyl 3-hydroxybutanoate, ethyl 2-methylbutanoate, ethyl 2-methylpropanoate, ethyl 2-hydroxyisocaproate</i>	Fruity
VA-C13	Hop / Beer	<b>C13-NORISOPRENOIDS</b> <i><math>\beta</math>-damascenone, <math>\alpha</math>-ionone, <math>\beta</math>-ionone, TDN</i>	Violet / Kerosene Fruity enhancer
VA-BOISE	Beer	<b>WOODY MARKERS</b> (16 molecules) <i>4-methyl guaiacol, 5-methyl furfural, cis-isoeugenol, cis-whiskey lactone, ethyl vanillin, eugenol, furfural, guaiacol, maltol, o-cresol, syringaldehyde, syringol, trans-2-nonenal, trans-isoeugenol, trans-whiskey lactone et vanillin</i>	Woody / Vanilla / Smoked
<b>ORGANOLEPTIC DEFECTS</b>			
VA-ACET	Beer	<b>ETHYL ACETATE</b> <i>Ethyl acetate</i>	Solvent / Varnish
VA-DMS	Beer	<b>DMS</b> <i>Dimethyl sulfur</i>	Cooked vegetables / Canned corn
VA-PDMS	Beer / Wort	<b>DMS POTENTIAL</b> <i>Indirect measurement of dimethyl sulfur after chemical release</i>	DMS precursors
VA-SL2	Beer	<b>LIGHT SULFUR COMPOUNDS</b> <i>2-mercaptoethanol, Ethanethiol, Methanethiol and hydrogen sulfide</i>	Rotten egg / stale water / Light taste
VA-SL3	Beer	<b>REDUCTION MENU</b> (13 molecules) <i>Hydrogen Sulfide, Methanethiol, Ethanethiol, 2-mercaptoethanol, 2-(methylthio)-1-ethanol, 3-(methylthio)-1-propanol, 5-(2-hydroxyethyl)-4-methylthiazole, benzothiazole, diethyl disulfide, diethyl sulfide, dimethyl disulfide, ethyl thioacetate and methyl thioacetate</i>	Negative sulfur
VA-DIACET	Beer	<b>TOTAL DIACETYLE</b> <i>Butane-2,3-dione</i>	Butter
VA-T2N	Beer	<b>TRANS-2-NONENAL</b> <i>Trans-2-nonenal</i>	Paper / Cardboard
VA-ALDE	Beer	<b>ALDEHYDES</b> (16 molecules) <i>2,4-decadienal, 2-methylbutanal, 2-methylpropanal, 3-methylbutanal, 5-methylfurfural, benzaldehyde, decanal, furfural, heptanal, hexanal, methional, nonanal, octanal, pentanal, 2-phenylacetaldehyde, trans-2-nonenal</i>	Honey / Bitter almond / Nut / Cooked potato
VA-ACIDE	Beer	<b>SHORT-CHAIN ACIDS</b> <i>Butanoic acid, hexanoic acid, octanoic acid, decanoic acid</i>	Cheesy / Rancid
VA-PHEN2	Beer	<b>ETHYLS PHENOLS</b> <i>4-ethylguaiacol, 4-ethylphenol</i>	Stable / Clove / Spicy
VA-HA	Beer / Cork	<b>HALOHANISOLES</b> <i>2,3,4,5,6-pentachloroanisole (PCA) 2,3,4,6-tetrachloroanisole (TeCA) 2,4,6-trichloroanisole (TCA) 2,4,6-tribromoanisole (TBA)</i>	Musty smell / Corky taste

The list of parameters analyzed is not exhaustive. Please contact us for any request.

Quotation on request



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