



Oak and Barrel Alternatives: Art and Science

7th Annual VinCo Conference
January 16 to 19

Jeff McCord, Ph.D.
VP Research and Technical Sales



www.stavin.com





Outline

1. Sourcing Oak and a Tour of StaVin.
2. Barrel Alternatives – what are the, how and when do use them for Wine Production?
3. Understanding how Oak Alternatives equate to Barrels and how best to use them.
4. The Trial Pack – minimize hassle, maximize results.
5. The StaVin Oak Calculator.

Barrel Quality Toasted Oak

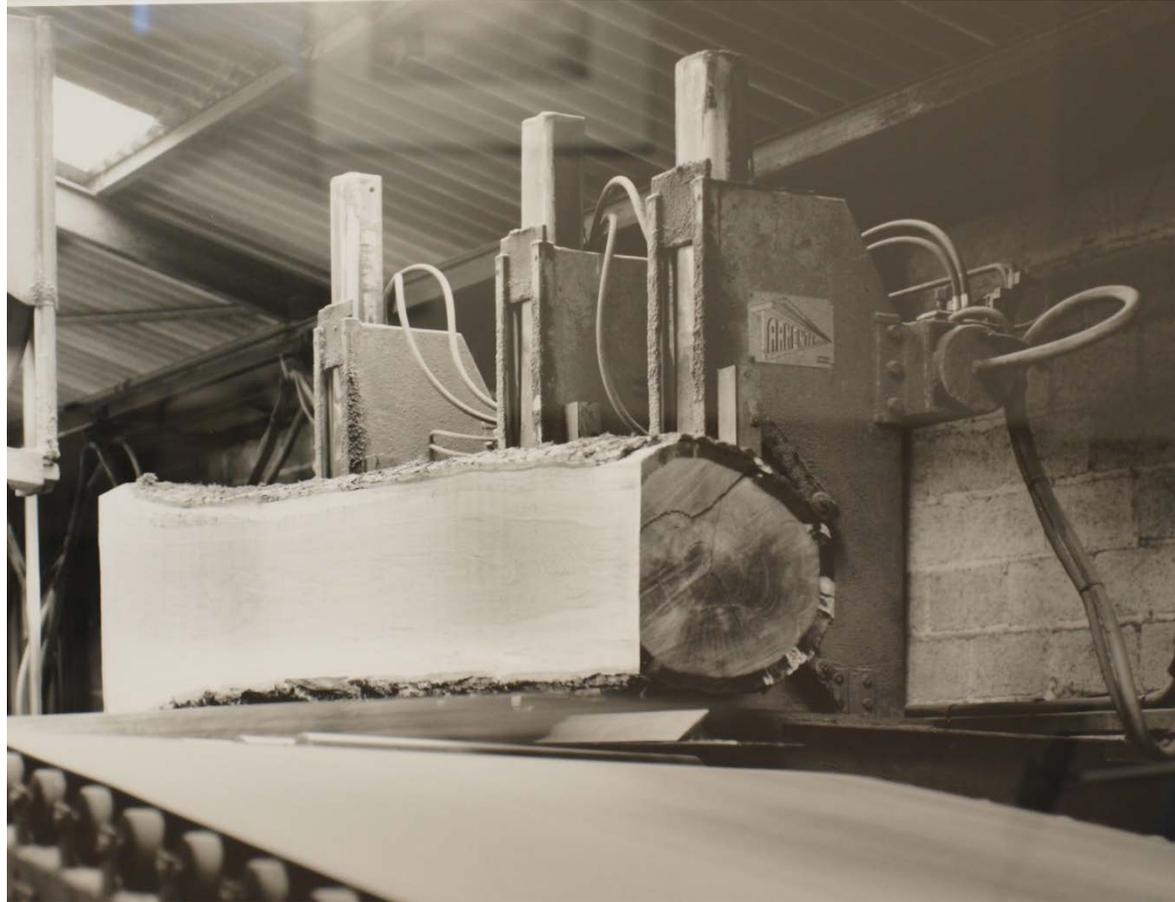
- Oak sourcing
 - 3 years in the natural elements
- Seasoning
 - 3 years in the natural elements
- Toasting
 - Traditional fire toasting by hand



Sourcing Oak



Milling the Oak



Seasoning Oak In France



French Oak is cut into thin stave and tight stacked for shipping



Loose Stacking At StaVin



Seasoning In Our Yard



All StaVin oak is seasoned for for a minimum of 3years

Halogenated Anisole/Phenol QC



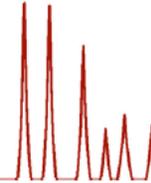
Atmospheric Trapping Full Containers



Active Bentonite Trapping



Every Stave Is Tested



**LABORATORY
REPORT
458681**

StaVin
Attn: Jeff Murrell
Post Office Box 1693
Sausalito, CA 94966

Samples Received
20 September 2010 11:06 am

Analysis Reported
23 September 2010 7:11 pm

Analyte	Result	Analysis Date	Method Reference
009200076 Atmospheric Trapping- 210693 Cont. #2			
2,4,6-trichloroanisole	<0.1 ng/g	9/23/10	
2,4,6-tribromoanisole	<0.1 ng/g	9/23/10	

The results in this report relate only to samples as submitted.

This report shall not be reproduced except in full, without the written approval of ETS Laboratories.

This report is intended only for the individual or entity to which it is addressed and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the reader of this report is not the intended recipient or the person responsible for delivering this report to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this report is strictly prohibited. If you have received this report in error, please notify us immediately by telephone and return the original report to us at the address below via postal services.

Gordon Burns
Technical Director

A handwritten signature in red ink, appearing to read 'GB', located below the name and title of the Technical Director.

Certificate of Analysis

Can be provided



StaVin Inc.
PO Box 1693
Sausalito, CA 94966-1693
Phone: 415-331-7849 Fax: 415-331-0516
Email: info@stavin.com

Issued to: Industrias Vinicas SA
Galvarino Gallardo 1588
Santiago, Chile

Certificate of Analysis for Halogenated Anisoles

Product Description: French, Hungarian and American White Oak. One lot consists of approx. 20 M³ of loose stacks staves.

Method of Testing: Active Bentonite trapping of the container atmosphere for not less than 3 days. Most rigorous testing available.

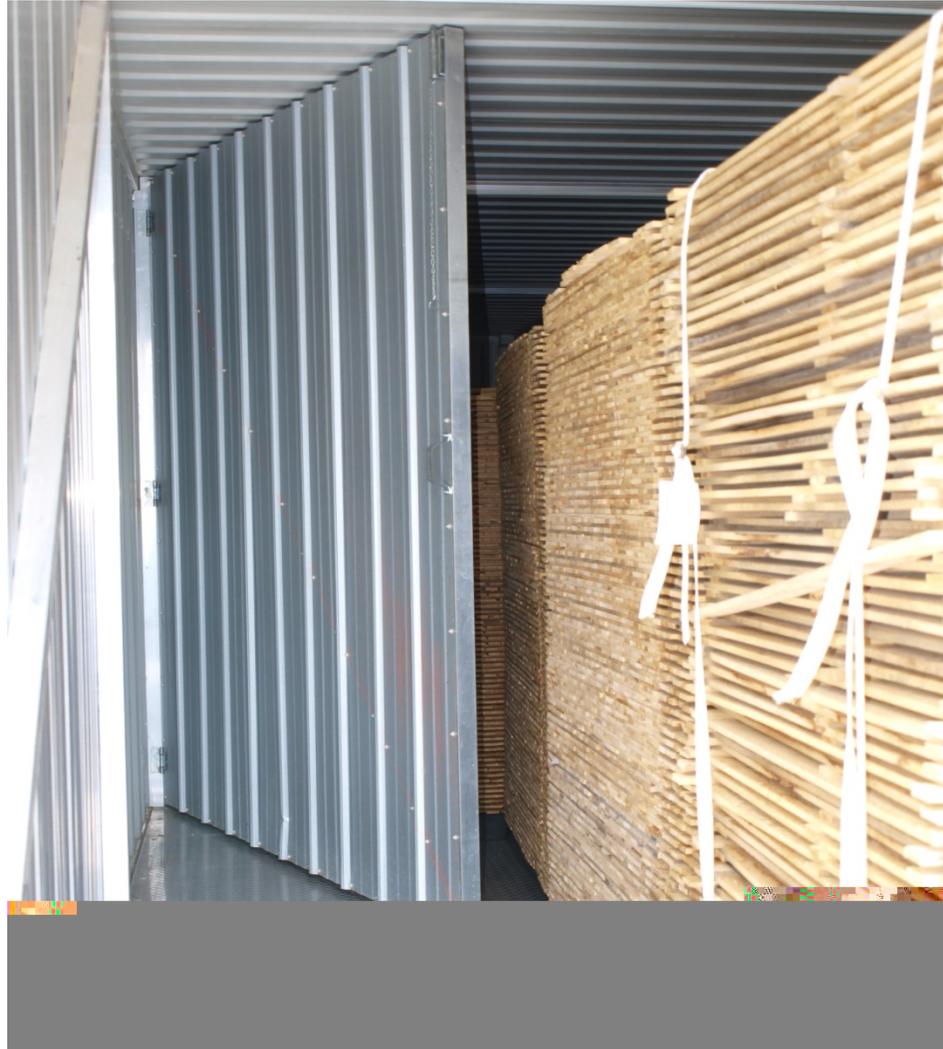
Analysis: Bentonite is extracted and analyzed by ETS Laboratories, St. Helena, CA and reported as nanograms Halogenated Anisole per gram of bentonite.

Specification: No off odor, taint; TCA <1.0 ng/g (ppb), TBA <1.0 ng/g (ppb)

OAK LOT No.: ** #, #, **
Results: Pass

Alan F Sullivan

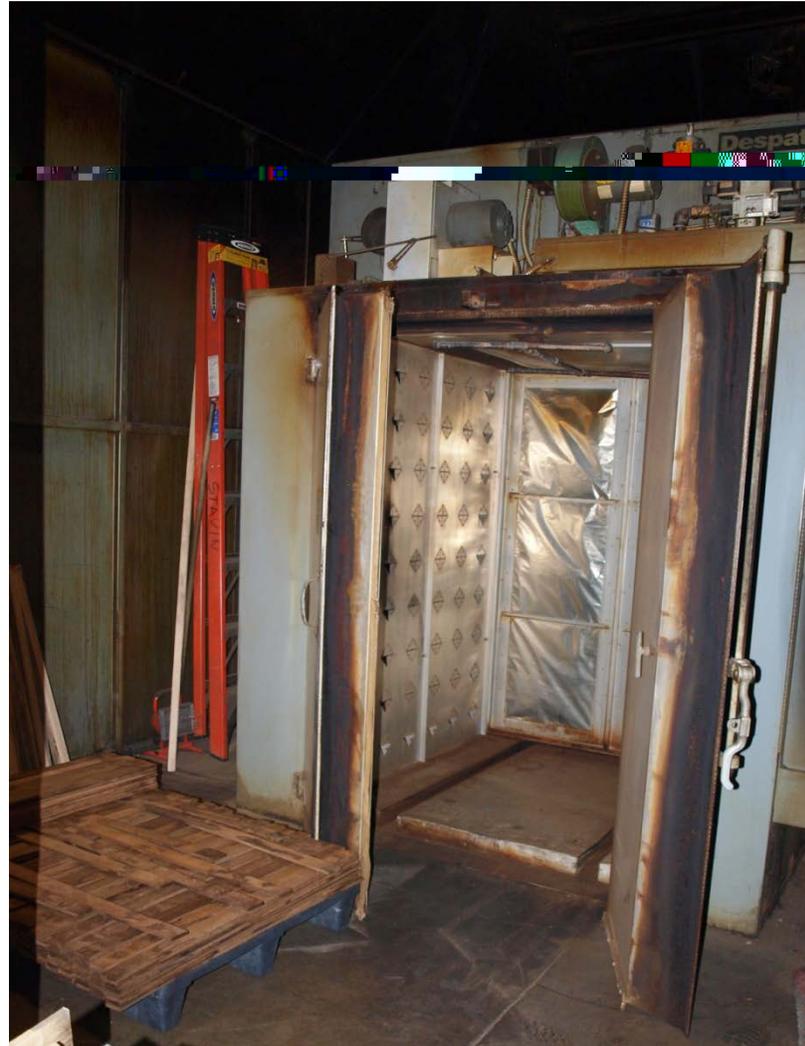
Split and Retest Any Positives



Toasting

- Fire toasting by hand – Silver Package
 - StaVin product line
 - Traditional nostalgic aromas and flavors
 - Barrel like qualities
- Convection toasting in the oven – Green Package
 - Savour product line
 - Modern flavors

Convection oven

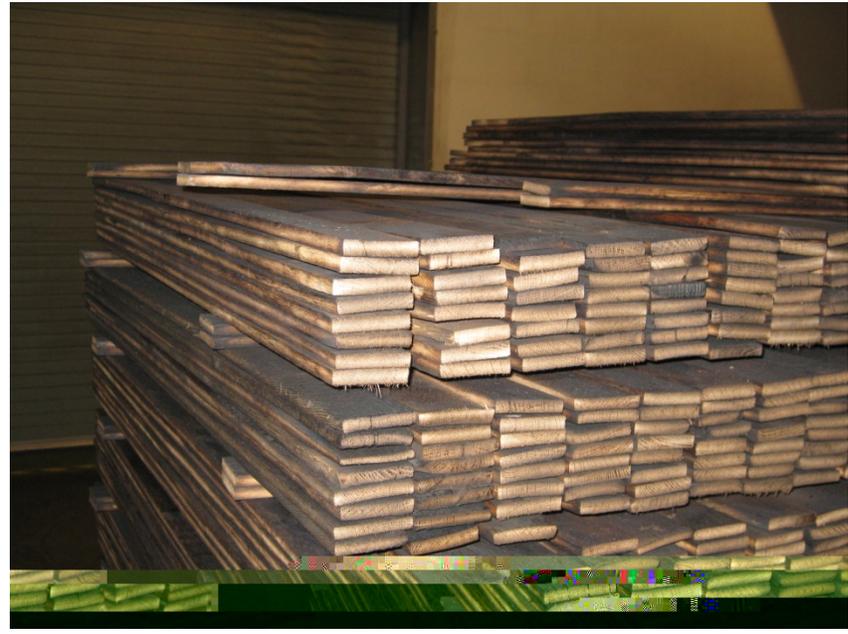


Convection Toasting

- Programmable time and temperature gradient controls toasting
- Uniform toast level throughout the entire stave



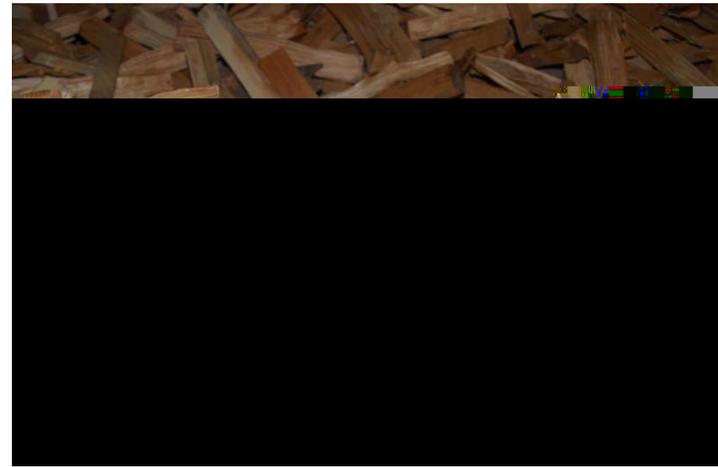
Convection vs. Fire Toasting



Toasting Room



Fire Baskets With White Oak



Both Sides Are Toasted



Toasting QC



Sorting



Packaging For Quality



Products Are Readily Available



Choose the Right Product



Timeframe

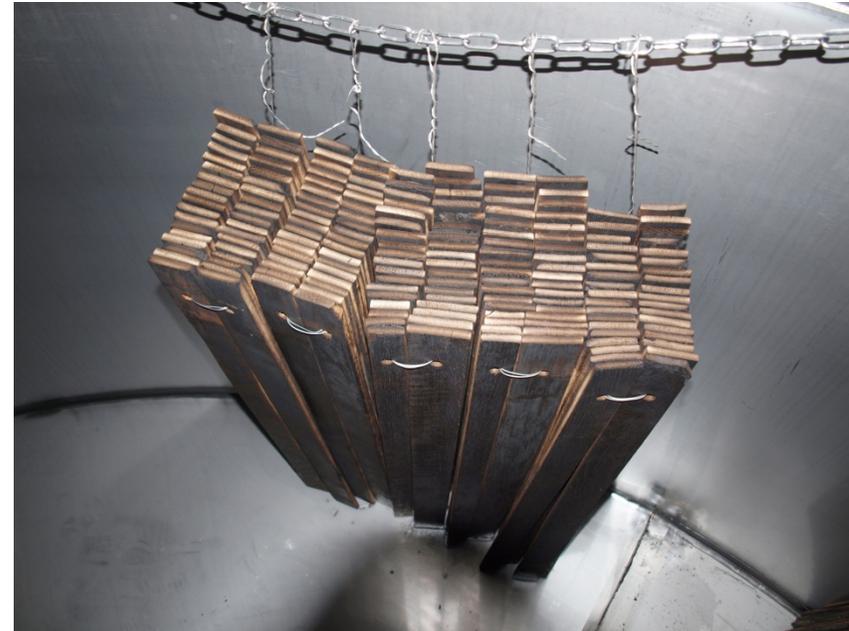
Economics

Logistics

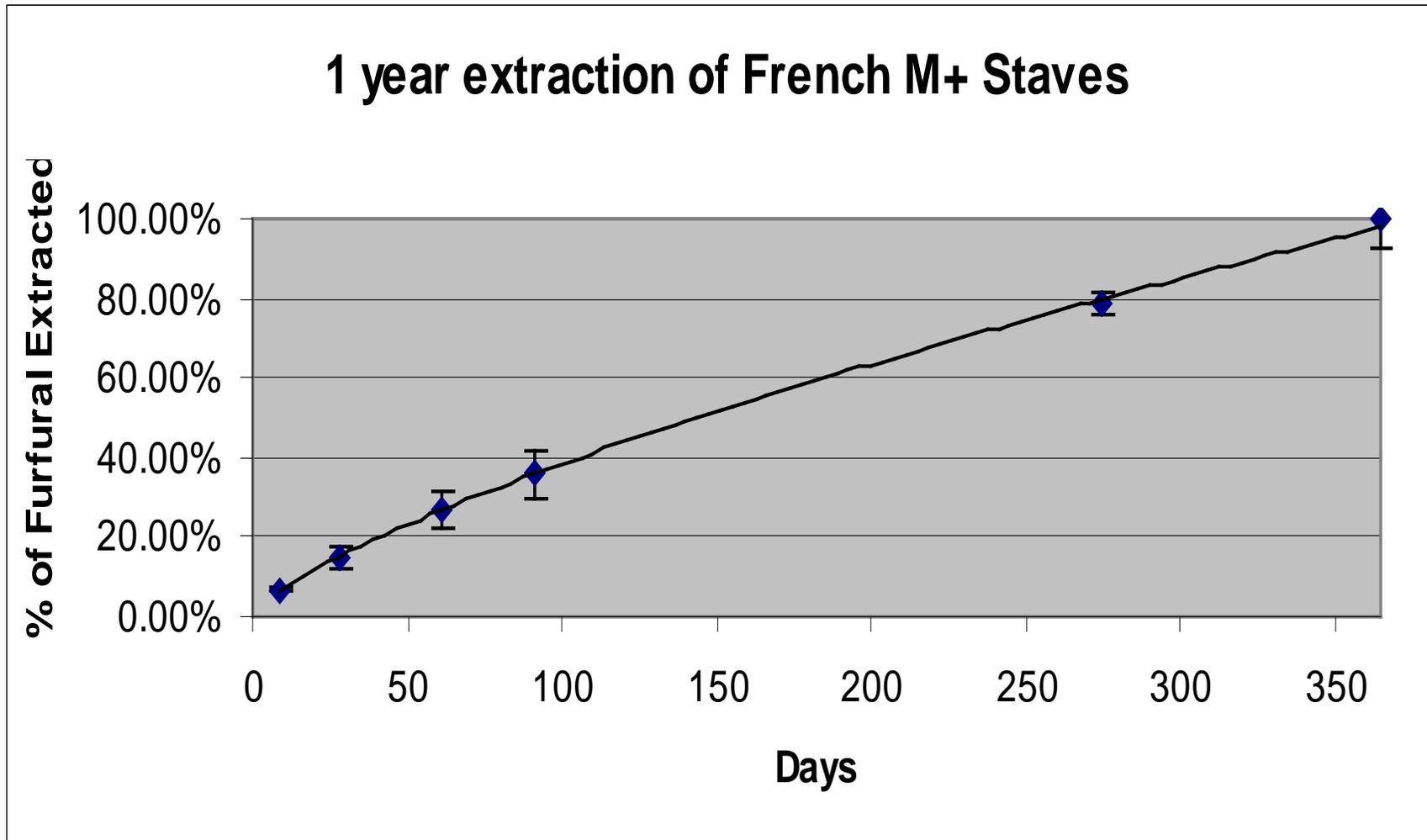
Desired oak impact

Fan Packs

- Advantages
 - Can be used throughout fermentation and aging
 - Long and slow extraction
- Disadvantages
 - Not a bagged product



Fan Pack Extraction Curve

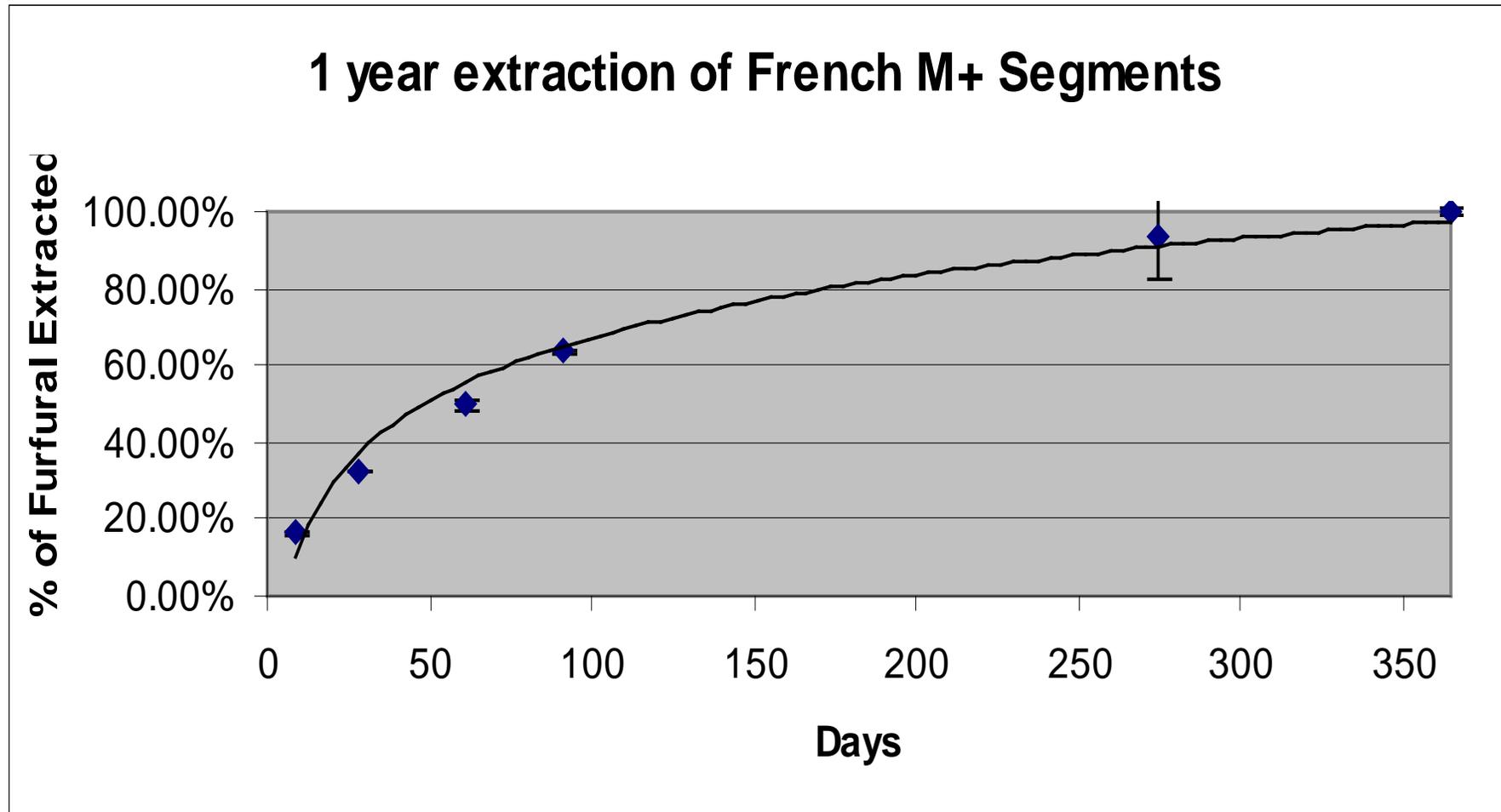


Segment

- Advantages
 - Bagged product with slower extraction
 - Red fermentation
- Disadvantages
 - Cost



Segment Extraction Curve

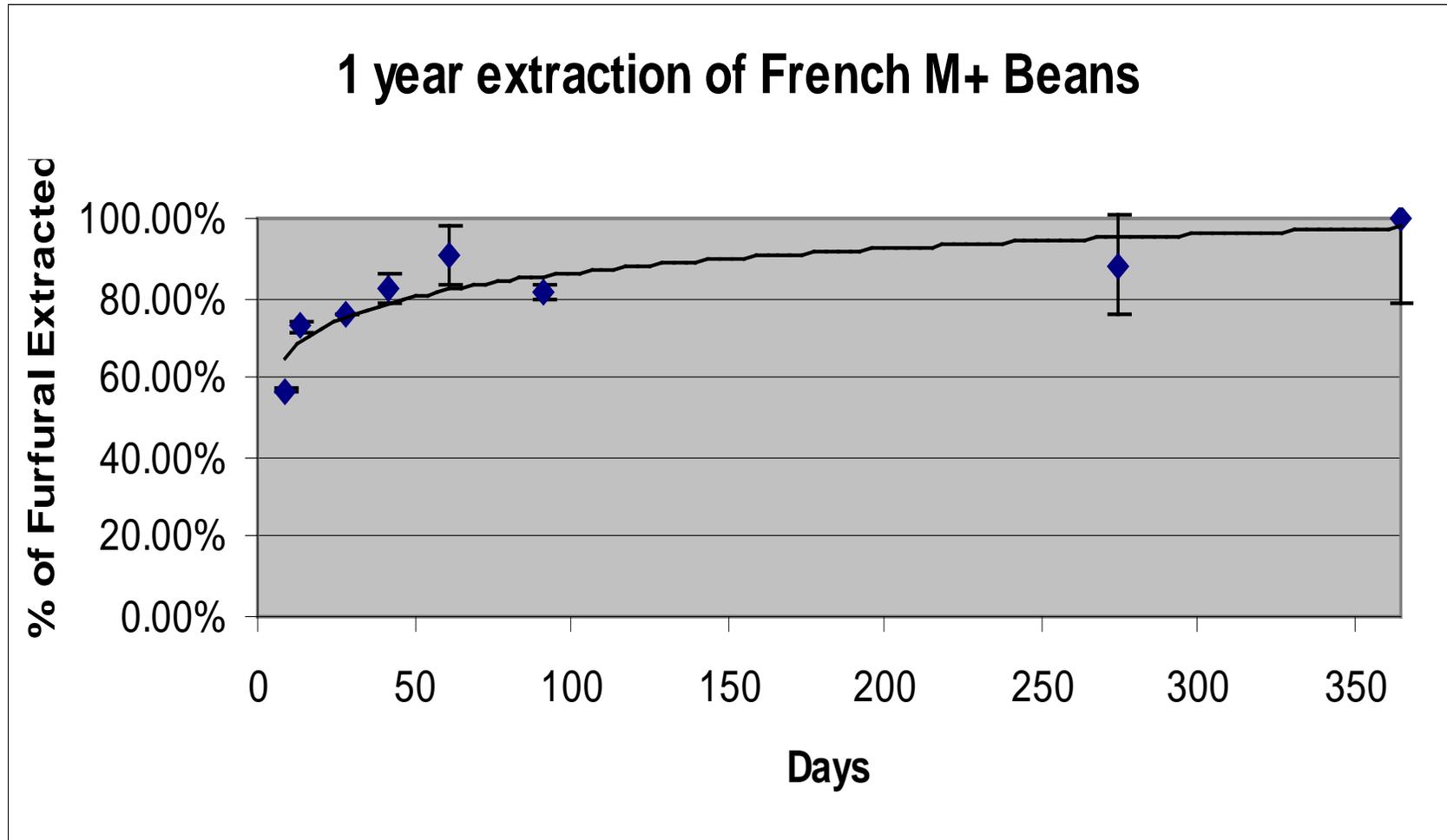


Beans

- Advantages
 - Fast extraction
 - More economical
- Disadvantages
 - Fast extraction



Bean Extraction Curve



Products Used In Barrel



Barrel Replica



Barrel Insert

Barrel Inserts

- Advantages

- Cost vs. a new barrel
- No MOX required
- Familiarity
- Long slow extraction

- Disadvantages

- Used barrel sanitation
- Can't be used for red fermentation
- Minimum quantities



Replicas

- Advantages
 - Customizable
 - Great for experimentation
 - Can be used for red fermentations
- Disadvantages
 - Removal
 - Obstacle to stirring and bulldog racking



Chips and Granular

- Advantages
 - Fermentation products
 - Extremely quick extraction (1-9 days)
 - Dosed in at the crusher
 - Cost
- Disadvantages
 - Can have a more aggressive impact than full staves



Calculating New Barrel Equivalent

- <http://www.stavin.com/research.htm>
 - Oak calculator spreadsheet

<u>Product</u>	<u>Standard Size</u>	<u>Gallons treated at 100% NBE</u>
Fan pack	44 sq. ft	180
Segments	15 pound bag	180
Beans	20 pound bag	800
Replica	10 section	60

Evolve Past Barrel Limitations

- Sensory directed oak selection
- Oak and air during red fermentations
- Accelerated maturation
- Short timeframe applications
- Decrease cost while maintaining quality



Improve Wine Quality By Eliminating Inferior Barrels

- Increase the quality of your purchased barrels
 - Use alternatives to improve on second rate barrels



- Reduce the use of “neutral” barrels
 - Sanitation
 - Labor
 - Ullage

Optimize Alternatives for Your Wines

- Oak concentration
 - New barrel equivalent
- Oak origin
 - French, Hungarian, American
- Toast level and style
 - Medium to Heavy
- Extraction timeline and lifespan
 - Granular – rapid (single use)
 - Chips – weeks (single use)
 - Beans – months (1 year)
 - Segments/Staves – 3 months minimum (2 years)



StaVin & Savour Oak Products

- StaVin

- 3 year seasoned
- Fire toasted by hand
- All products produced from toasted staves
- Sorted and barrier packaged -**Silver**
- Barrel flavors and aromas

- Savour

- 3 year seasoned
- Oven toasted
- All products produced from toasted staves
- Sorted and barrier packaged -**Green**
- New World flavors and aromas

Oven versus Fire Toasting



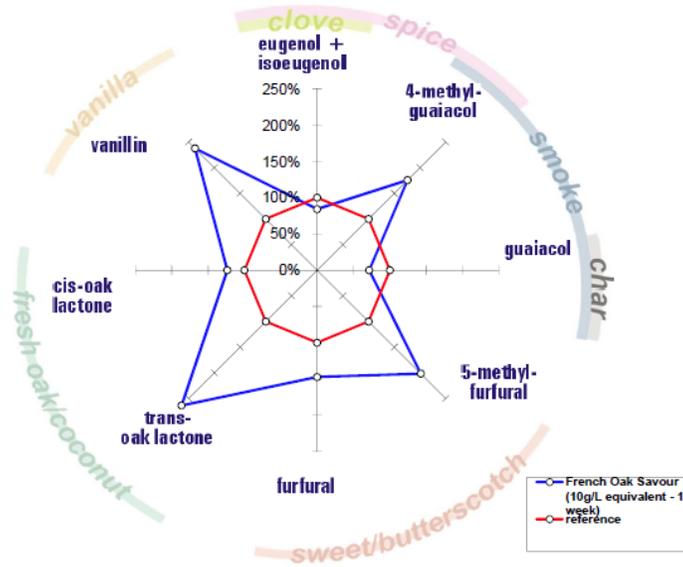
REPORT
890130
SUPPLEMENT

StaVin
Attn: Jeff Murrell
Post Office Box 1693
Sausalito, CA 94966

Samples Received
22 March 2018

Analyses Reported
23 March 2018

603220776 French Oak Savour (10g/L equivalent - 1 week)



eugenol (ug/L)	6	furfural (ug/L)	10375
isoeugenol (ug/L)	10	trans-oak lactone (ug/L)	59
4-methylguaiacol (ug/L)	20	cis-oak lactone (ug/L)	82
guaiacol (ug/L)	18	vanillin (ug/L)	323
5-methylfurfural (ug/L)	1046		

Comments: The reference is an average of all the samples in Group# 890130

Results relate only to the items tested. The report shall not be reproduced except in full without the approval of the laboratory.



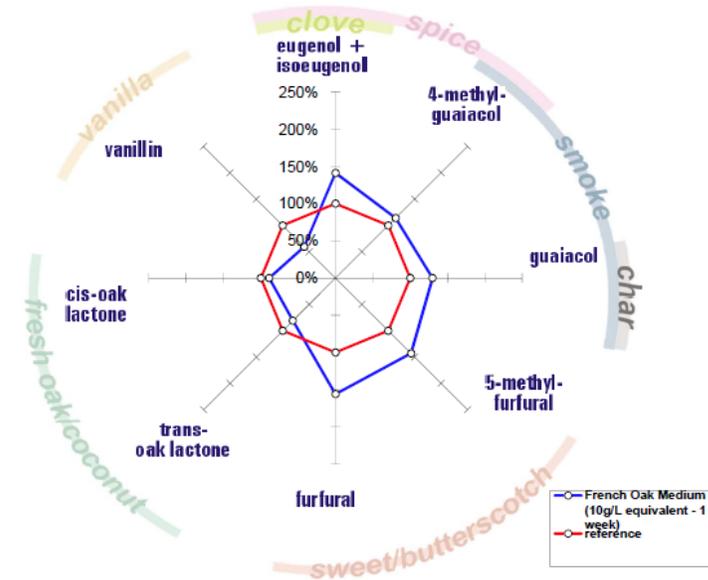
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890130
SUPPLEMENT

StaVin
Attn: Jeff Murrell
Post Office Box 1693
Sausalito, CA 94966

Samples Received
22 March 2018

Analyses Reported
23 March 2018

603220778 French Oak Medium + (10g/L equivalent - 1 week)

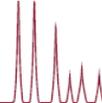


eugenol (ug/L)	8	furfural (ug/L)	10989
isoeugenol (ug/L)	19	trans-oak lactone (ug/L)	18
4-methylguaiacol (ug/L)	13	cis-oak lactone (ug/L)	59
guaiacol (ug/L)	32	vanillin (ug/L)	81
5-methylfurfural (ug/L)	742		

Comments: The reference is an average of all the samples in Group# 890130

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Comparison of Toast levels

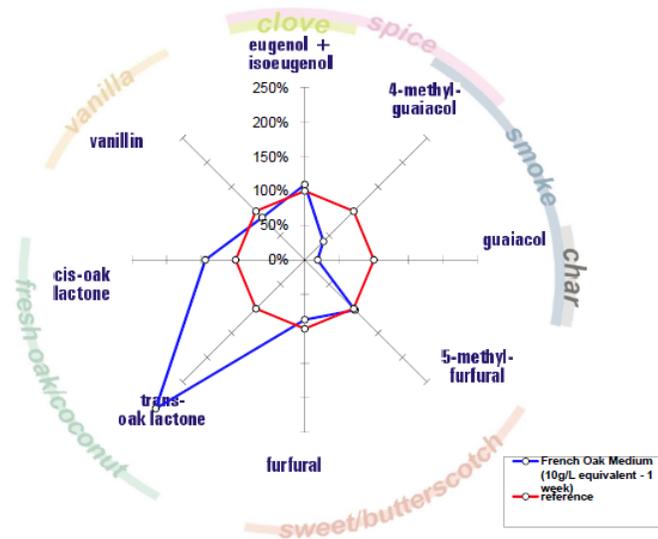


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StaVin
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Samples Received
22 March 2016
Analyses Reported
23 March 2016

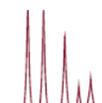
603220777 French Oak Medium (10g/L equivalent - 1 week)



eugenol (ug/L)	9	furfural (ug/L)	6111
isoeugenol (ug/L)	12	trans-oak lactone (ug/L)	68
4-methylguaiaicol (ug/L)	4	cis-oak lactone (ug/L)	96
guaiaicol (ug/L)	5	vanillin (ug/L)	118
5-methylfurfural (ug/L)	534		

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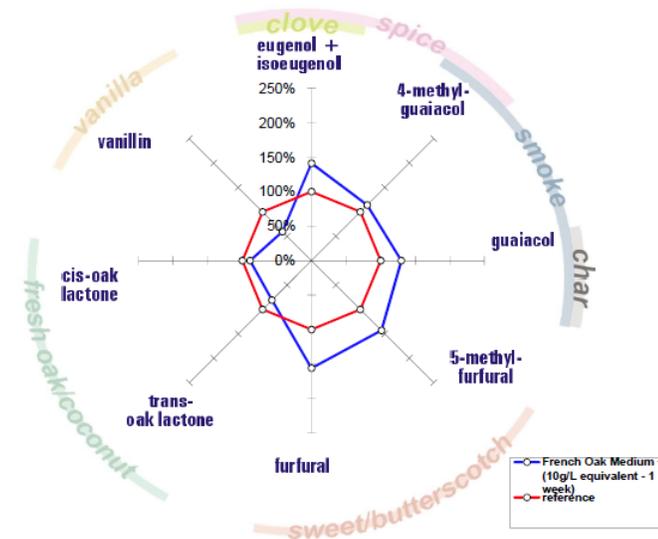


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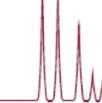
603220778 French Oak Medium + (10g/L equivalent - 1 week)



eugenol (ug/L)	8	furfural (ug/L)	10989
isoeugenol (ug/L)	19	trans-oak lactone (ug/L)	18
4-methylguaiaicol (ug/L)	13	cis-oak lactone (ug/L)	59
guaiaicol (ug/L)	32	vanillin (ug/L)	81
5-methylfurfural (ug/L)	742		

Comments: The reference is an average of all the samples in Group# 890130

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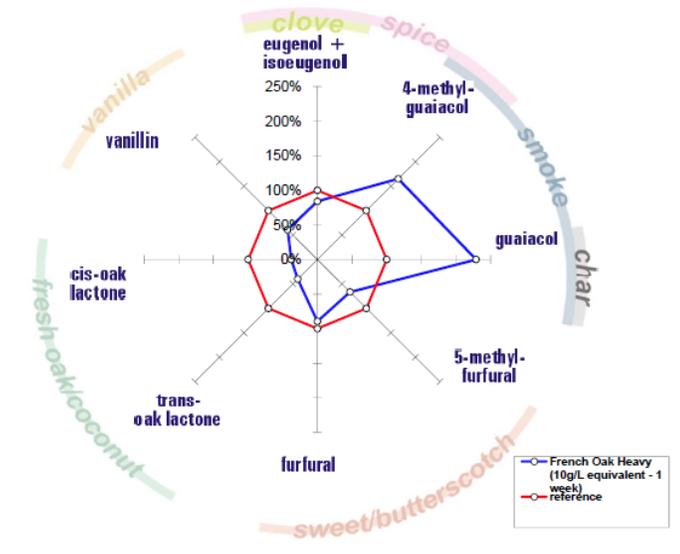


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SUPPLEMENT

StaVin
Attn: Jeff Murrell
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Samples Received
22 March 2016
Analyses Reported
23 March 2016

603220779 French Oak Heavy (10g/L equivalent - 1 week)

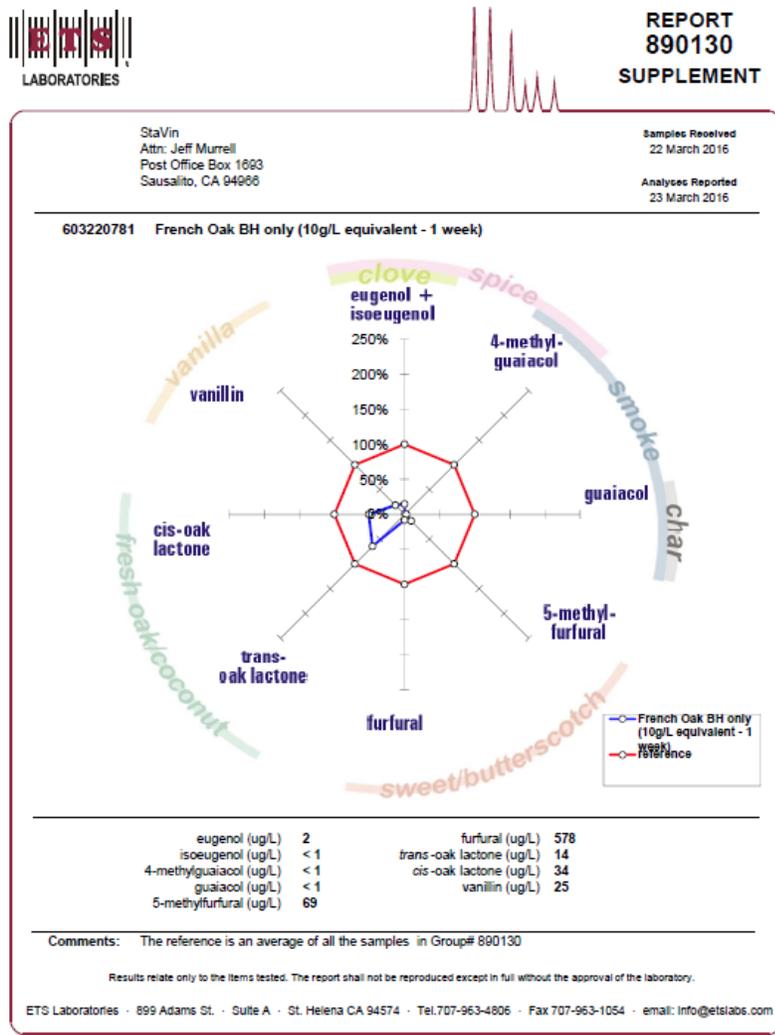


eugenol (ug/L)	5	furfural (ug/L)	6312
isoeugenol (ug/L)	11	trans-oak lactone (ug/L)	9
4-methylguaiaicol (ug/L)	18	cis-oak lactone (ug/L)	25
guaiaicol (ug/L)	57	vanillin (ug/L)	83
5-methylfurfural (ug/L)	345		

Comments: The reference is an average of all the samples in Group# 890130

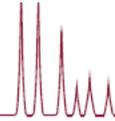
Results relate only to the items tested. The report shall not be reproduced except in full without the approval of the laboratory.

Barrel Head (almost untoasted oak)



- Little if any “toasted” oak flavors are imparted
- Depending on the wine some sweet coconut/vanilla can come through.
- Biggest impact is the ellagitannins extracted in the wine, acting as flavor modifiers and as antioxidants.

Barrel Head Effects



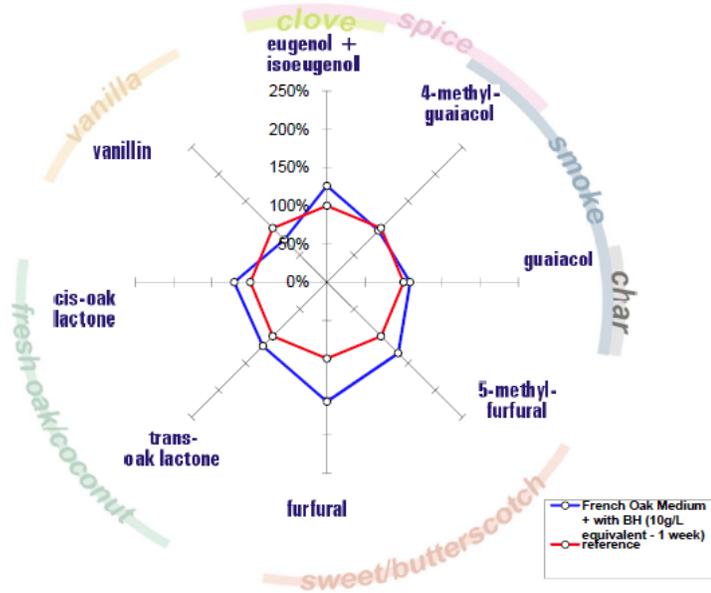
**REPORT
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SUPPLEMENT**

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Sausalito, CA 94966

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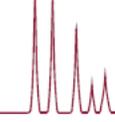
603220780 French Oak Medium + with BH (10g/L equivalent - 1 week)



eugenol (ug/L)	8	furfural (ug/L)	11020
isoeugenol (ug/L)	16	trans-oak lactone (ug/L)	26
4-methylguaiacol (ug/L)	11	cis-oak lactone (ug/L)	80
guaiacol (ug/L)	27	vanillin (ug/L)	107
5-methylfurfural (ug/L)	682		

Comments: The reference is an average of all the samples in Group# 890130

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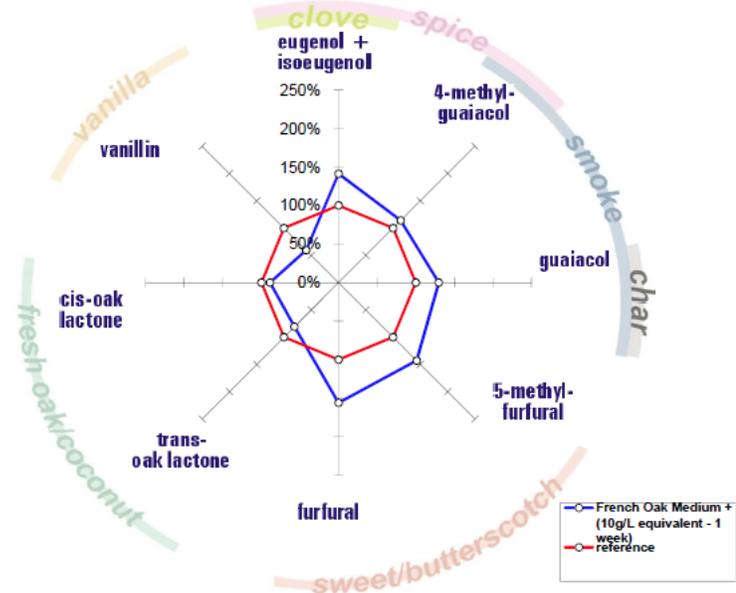
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Post Office Box 1693
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Analyses Reported
23 March 2016

603220778 French Oak Medium + (10g/L equivalent - 1 week)



eugenol (ug/L)	8	furfural (ug/L)	10989
isoeugenol (ug/L)	19	trans-oak lactone (ug/L)	18
4-methylguaiacol (ug/L)	13	cis-oak lactone (ug/L)	59
guaiacol (ug/L)	32	vanillin (ug/L)	81
5-methylfurfural (ug/L)	742		

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Sensory Directed Innovation

- The Barrel Head
 - All about mouthfeel
 - Light heat treatment
 - Used in conjunction with toasted oak
 - 75% toasted oak, 25% Barrel Head ratio
 - Used to emulate untoasted barrel heads



StaVin Oak Customization Trials



- One week trials for sensory evaluation
 - Add 6.6 g/L of oak beans to a bottle of your wine to give 100% new barrel equivalent of oak impression
 - Use less as desired (i.e. 3.3 g/L = 50% NBE)
 - Maintain at ~60 °F
 - Taste after one week

StaVin Trial Pack



INSTRUCTIONS

Telephone: 415-331-7849

info@stavin.com

www.stavin.com

NOTE: Trial pack allows comparison of each toast level with and without Barrel Head added.

1. Add 1 pouch to 750 ml of wine to impart approximately 50% New Barrel Flavor.
2. Peel the pouch label and adhere to each bottle of wine for record keeping.
3. **Let sit at cellar temp for 1 week only.**
4. Taste and evaluate for desired attributes.

StaVin Trial Pack

- Aids the winemaker determining best oak profile for any particular wine
- Helps define source, toast level, toast type or combination of products
- Consistent and Reliable
- Most importantly helps define the amount of oak
- Does not absolutely define the final product
- Sometimes it works best to eliminating sources, toast or type of toast.

Why use Oak Trials

- Oak trials are **TEDIOUS**
- Oak trials are usually ignored, or forgotten
- Takes too much time or I don't have the time
- Every wine is different
- Using the oak profile you like in one wine will not always work well in another, even in the same variety
- Unless you try, you miss a combination of oak that really works well for that wine, thereby missing the chance to make the best wine you could.



Remember!

How you Toast the Oak Affects the Aromas and Flavors

- Two general types of toasting for Barrel Alternatives
 - Fire Toasting
 - Oven Toasting
- One type is not necessarily better than the other just produce very different flavor and Aroma profiles.



Choose the Right Product



Calculating New Barrel Equivalent

- <http://www.stavin.com/research.htm>
 - Oak calculator spreadsheet

<u>Product</u>	<u>Standard Size</u>	<u>Gallons treated at 100% NBE</u>
Fan pack	44 sq. ft	180
Segments	15 pound bag	180
Beans	20 pound bag	800
Replica	10 section	60



StaVin Oak Calculator

- Can utilize to estimate Oak needed
- Can compare options
- Estimate needs for touch up
- Use to work out trials



TOASTED OAK & BARREL HEAD TOAST

StaVin Oak with Barrel Head Calculator

Gallons of Wine	<input type="text" value="10000"/>
Desired Toasted Oak Concentration	<input type="text" value="50%"/>
StaVin Product	<input type="text" value="Staves"/>
Minimum Suggested Extraction Time	<input type="text" value="4 months"/>
Standard (25%) or Custom Barrel Head %	<input type="text" value="25%"/>

Use		
Order	27.8	StaVin 44 sq. ft. fan packs
	AND	
Use		
Order	27.8	StaVin 14.7 sq. ft. Barrel Head fan packs

Click The Tabs Below For Standard, Benchtop Trial, Touch Up and Fermentation Dosages

Summary

- While Barrel Alternatives can come close to matching Barrel flavor profiles, extraction dynamics are quite different
- StaVin Trial packs can help winemakers optimize their oak program for individual wines
- The trial procedure is rapid and allows easy customization of oak profiles for individual wines.
- Toasting times and types produce distinctive aroma and flavor profiles, somewhat dependent on the source of oak
- Barrel Head can influence aromas and flavors in wine mostly due to larger molecular weight compounds extracted into the wine.



Thank you for your attention,
any questions?

