Controlled Liquid Nitrogen Dosing

"Inerting Head Space Oxygen of Screw Cap Closures through Liquid Nitrogen Dosing"

Jens Braun

Columbit Australia

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Markets/Industries

- Food (shrimp, chips, spice, oils, meat)
- Beverage (water, energy, juice, wine)
- Electronics (power, chips, drives)
- Bio-Technology (cryogenic freezers)

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Liquid Nitrogen

- Inexpensive / Small Usage /Available
- Used under atmospheric conditions
- Minimizes SO_2 balance
- Does not freeze wine / No taste issue
- Does not dissolve in wine
- Ecologically friendly
- Expands to a gas 700:1 volumetrically

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Screw Cap - Oxygen a Problem?

- Oxygen is a problem mainly for whites
- No cork – more head space O_2
- Oxygen migrates from head space to wine
- Overseas shipment.
- Taste (fruitiness) and Color

Cryotech Recommendations

- UltraDoser SC350
- Minimal SO_2 Adjustments
- Dose immediately after filler
- Allow ~4 – 10 seconds to purge before capping.
- Dose for ~2 psi residual pressure
- Settings 0.040” nozzle, 40 msec.

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UltraDoser SC350

Caymus Data – Dissolved O_2 Conundrum

- Rate: 90 bpm
- Dwell Time to Cap: 13 seconds
- Control (no dosing): 0.35 ppm
- Dose with L Argon: <0.03 ppm
- Dose with L Nitrogen: <0.03 ppm

Joel Gott – Dissolved O_2 Sauvignon Blanc

- Rate: 100 bpm
- Dwell Time 4.5 seconds

		PPM		
		1 day		8 weeks
Control:	DO	0.28		0.94
	TO	0.50	1.68	
Dosing:	DO	0.25		0.27
	TO	0.45		0.48

Head Space Screw Cap Oxygen

Marlborough Bottling – NZ

Kim Crawford Sauvignon Blanc

Nitrogen Gas Purge: 9-13% O_2

Liquid Nitrogen Purge: 1.5-3.5% O_2

Ultradoser on a Mobile Line

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Cryotech References

- E&J Gallo
- Kendall-Jackson
- Caymus Vineyards
- Domaine Chandon
- Napa Wine Company
- Mason Winery
- Joel Gott
- Delicato Vineyards
- Fosters Wine (Beringer/Meridian)
- Laird Mobile Bottling
- Constellation (Bonny Doon/Hogue)
- Bronco (Barrel Ten – Hacienda Cellars)
- Turnbull Winery
- Siduri Winery
- Sebastiani
- Ultima Mobile Bottling
- Top-It-Off Mobile Bottling
- Ryan McGee Mobile Bottling
- Bravo Mobile Bottling

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