The Australian Wine Research Institute

Testing Protein Stability, Feeling the HEAT

Eric Wilkes

Group Manager Commercial Services

AWRI COMMERCIAL SERVICES

SO MUCH MORE THAN A GREAT LAB

Now we understand what it is, how do we test it?

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Deceptively simple question?

The reference method remains, 6 hours at 80° C

But there are a lot of things that can go wrong with even this simple test.

Most common reason for testing.

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Bentonite fining trial.

Mimic production scale!

1. Representative sample of juice or wine
   - same solids content as the bulk wine
2. Bentonite preparation
   - same bentonite, same slurry, same water
3. Bentonite addition and mixing
   - mixing regime and contact time similar to plant conditions
4. Test to predict stability
   - allow to settle then filter prior to test

Bentonite fining trial

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0.0 0.2 0.4 0.6 0.8 1.0

Bentonite rate (g/L)

Measure turbidity of unheated samples

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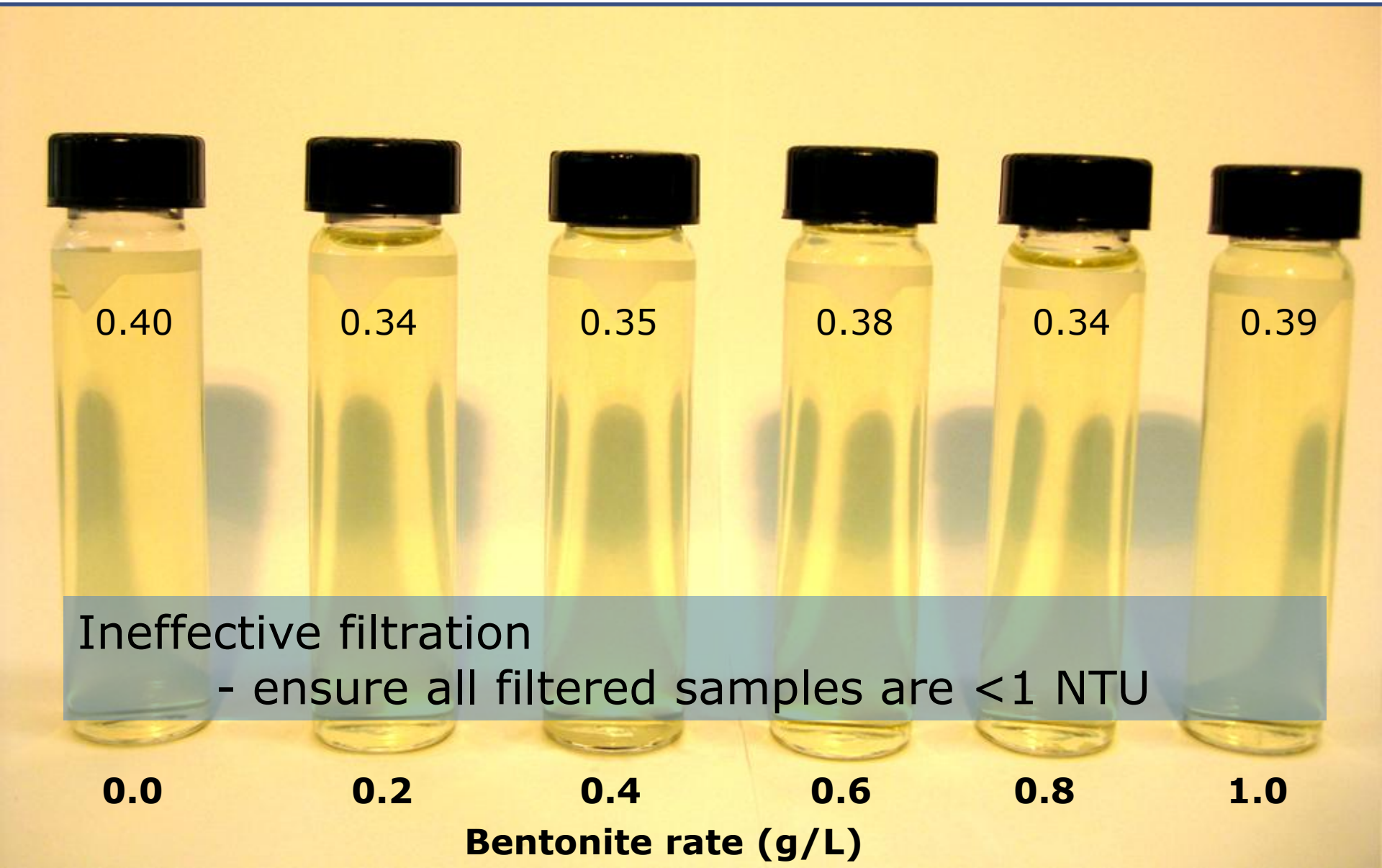

Ineffective filtration
- ensure all filtered samples are <1 NTU

Heating step

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Water bath 80ºC

Common mistakes

- Water entering vials during heating
  - ensure vials are not below water level

Heating step

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Water bath 80ºC

Heating mantle

Common mistakes

- Temperature not reached

Heating step

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Water bath 80ºC

Heating mantle

Time 2-6 hours

Measure turbidity of heated samples

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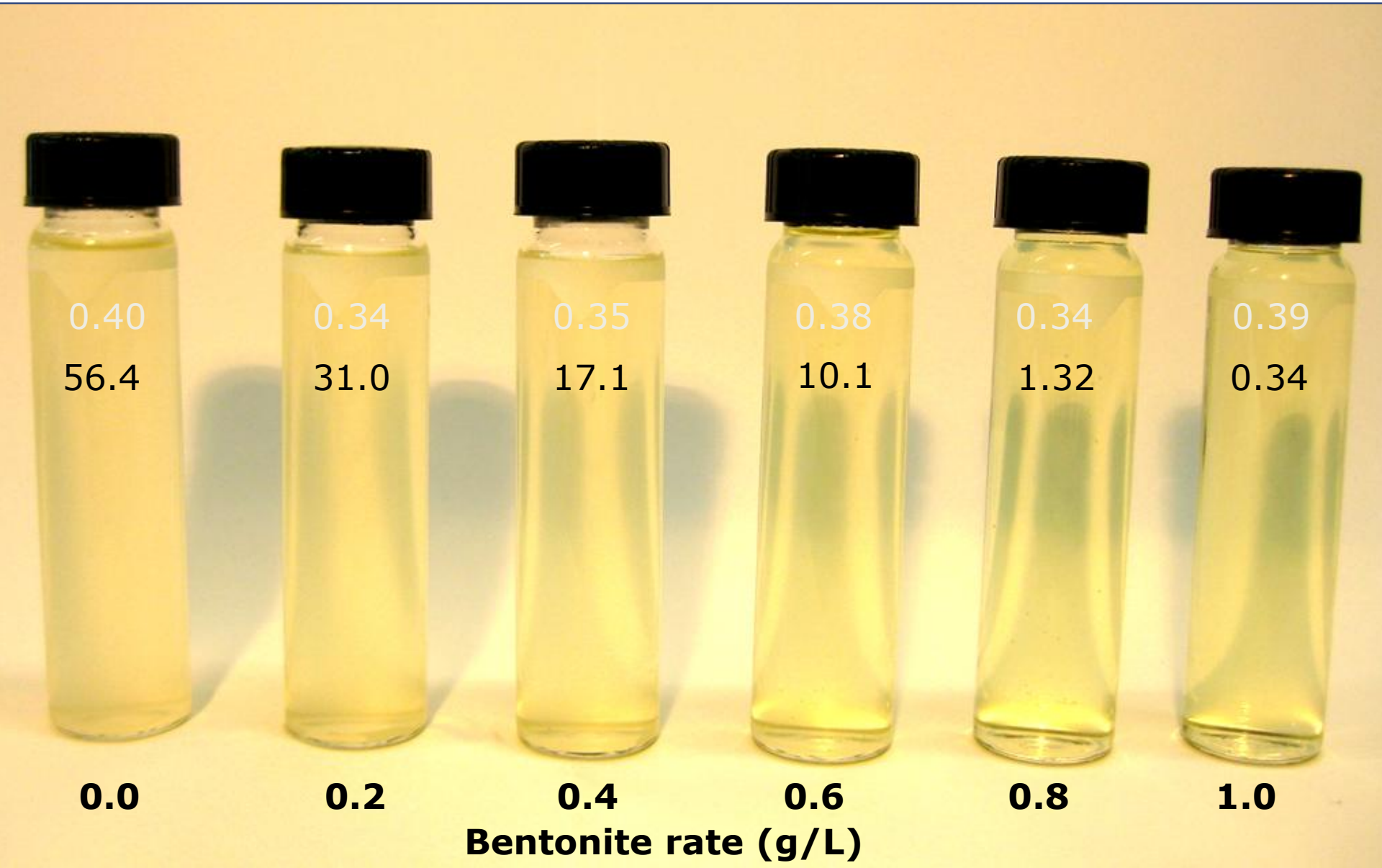

Interpretation Δ NTU

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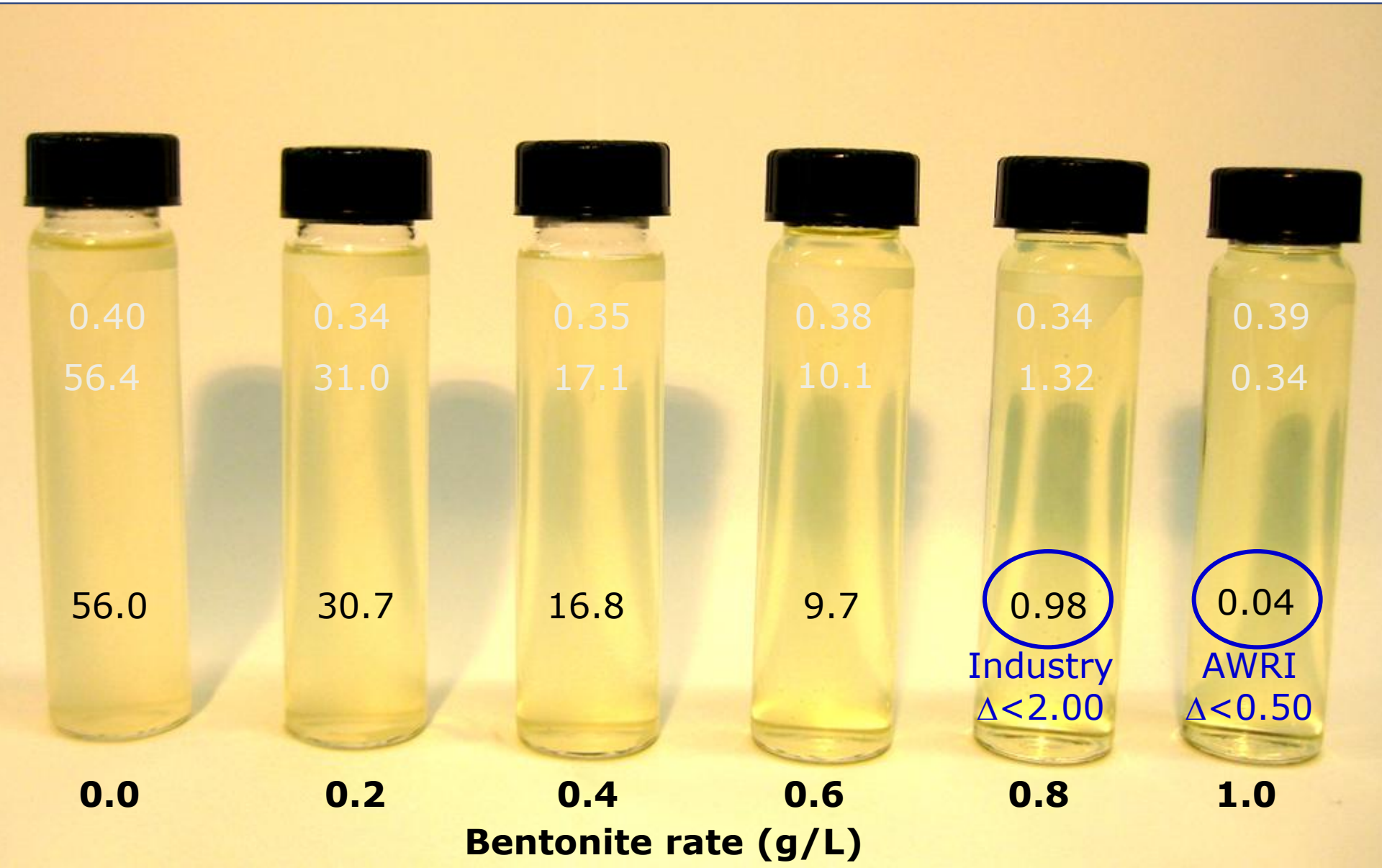

Measurement

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Incorrect judgement

- measure NTU before and after heating on all samples
- visual assessment (2 people)

Transfer of wines from test tubes to NTU tubes

WINEMAKING CALCULATORS NAVIGATION

- Acid
- Acidity Conversion
- Ascorbic Acid
- Bentonite
- Carbon
- Copper Sulfate
- Crème of Tartar
- Deacidification
- Diammonium Phosphate
- Ferro Cyanide
- Fining Trial
- Fortification
- Gelatine

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How to determine a bentonite addition

Suggestions / questions / comments? email the calculator services staff | Print

Bentonite addition

Desired addition rate of bentonite		g/L
Volume of wine/ferment/juice		L
Concentration of bentonite solution		(w/v) %
Calculate litres of bentonite solution to add		L

Temperature and time of heating effect the estimated bentonite dosage

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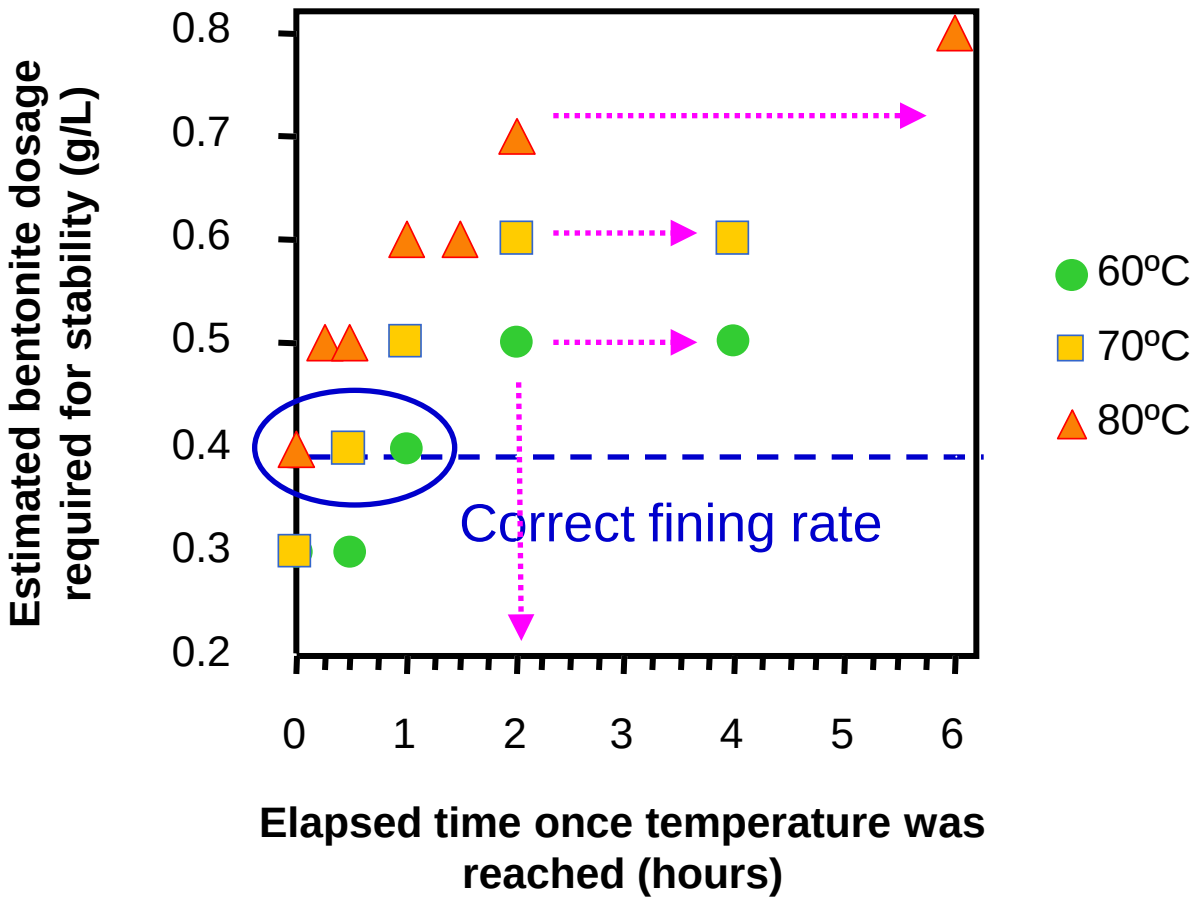

The time of the cooling step after heating also influences the result

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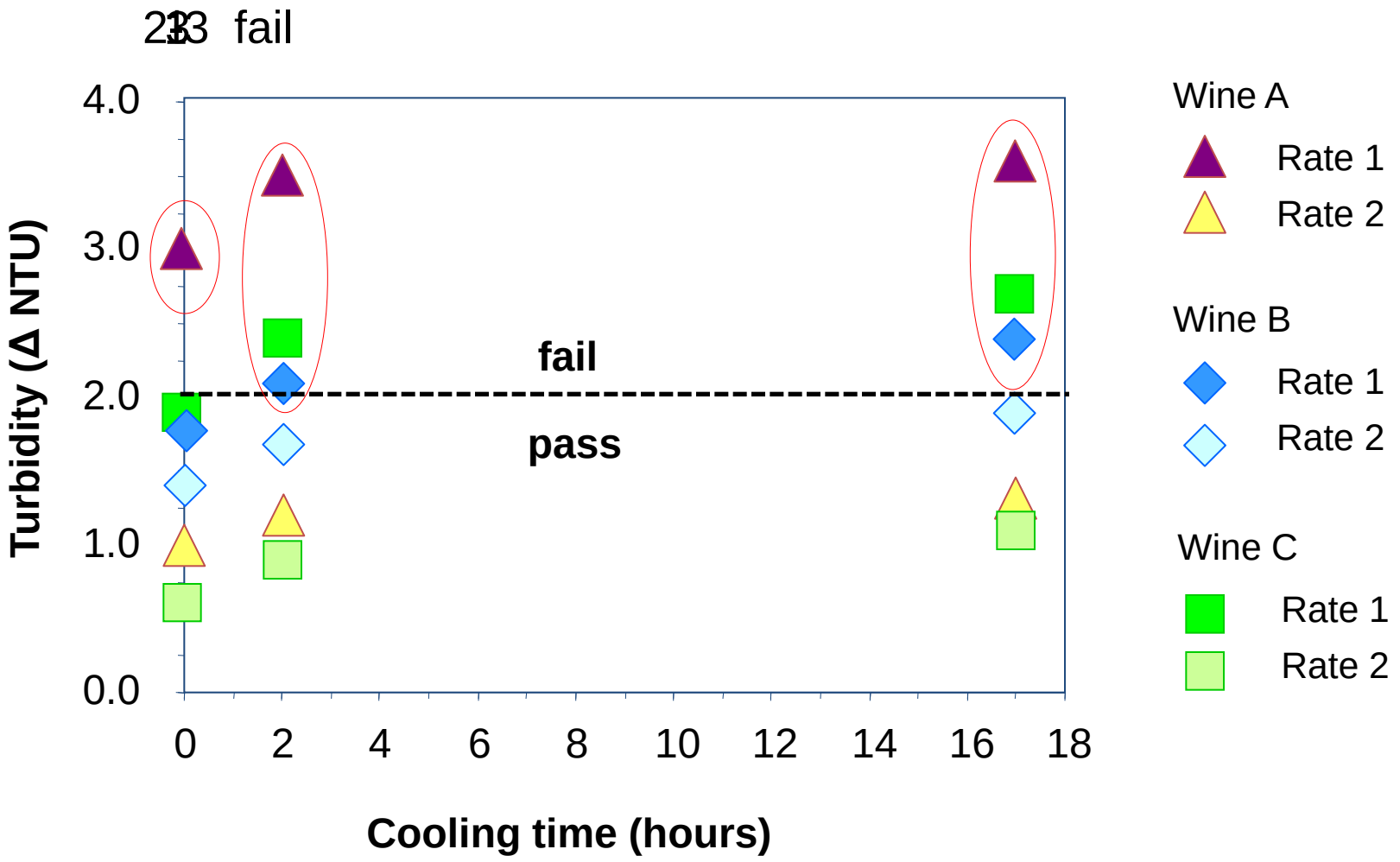

Cooling step

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water bath until 20ºC

on the bench overnight

on ice

2hours

under running water

Ability of tests to predict stability

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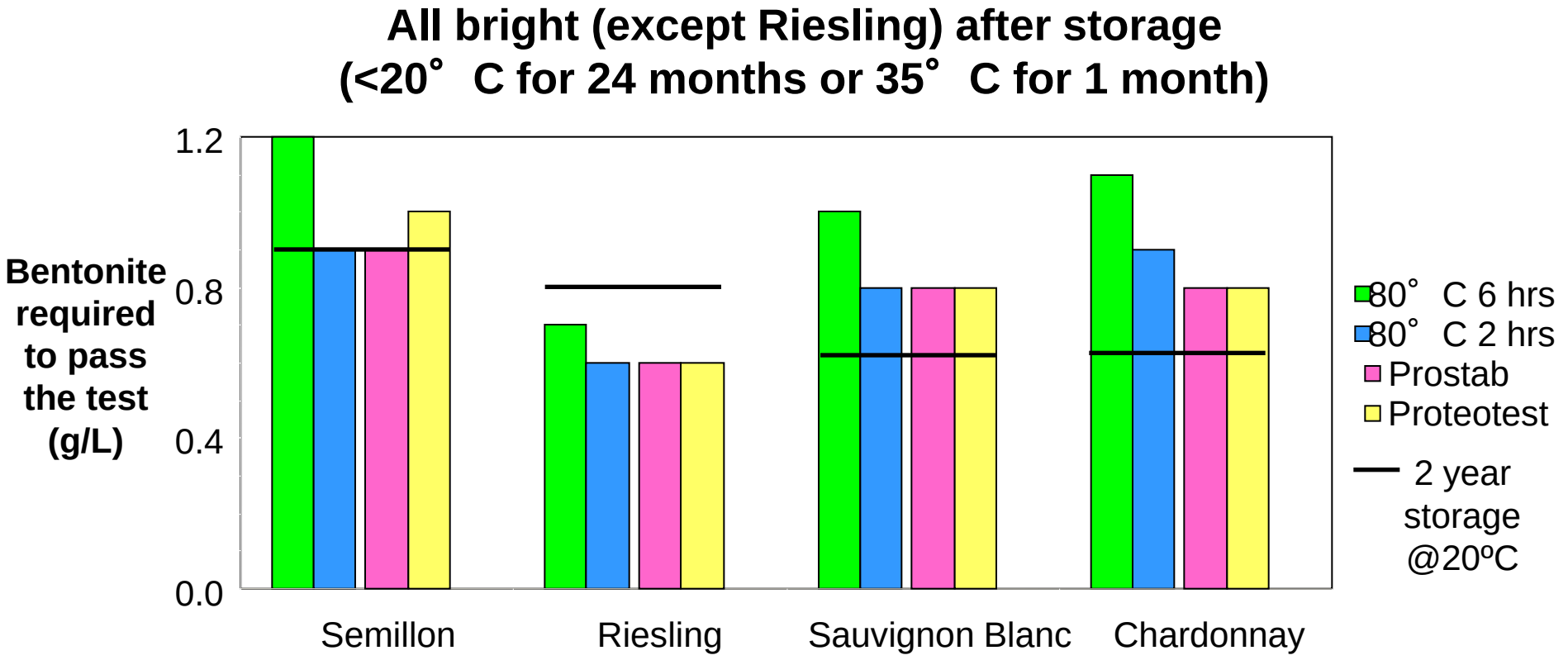

Bento test

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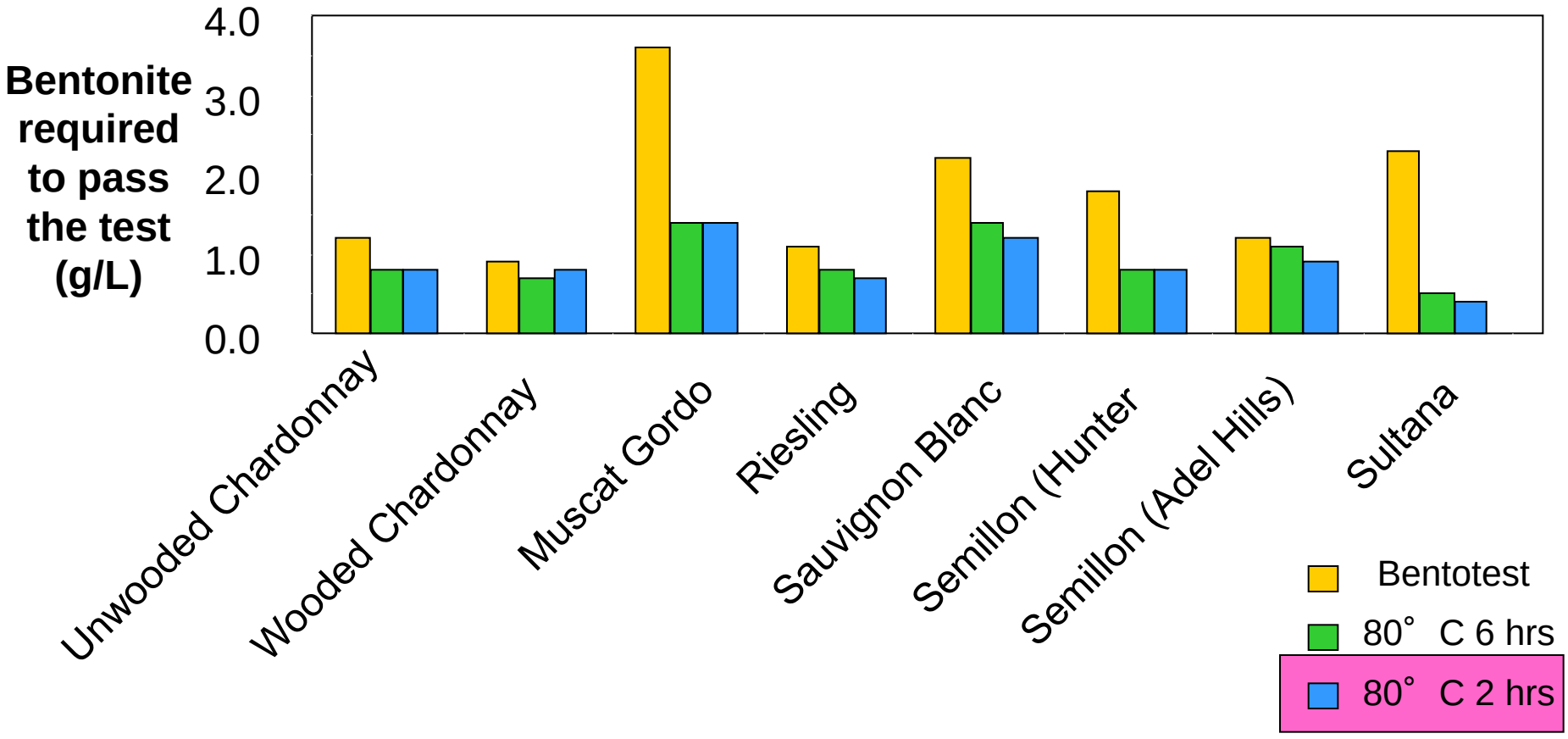
All bright after storage (<20˚ C for 2½ years or 20˚ C-35˚ C for 1 week or 35˚ C for 1 month)



Take home messages

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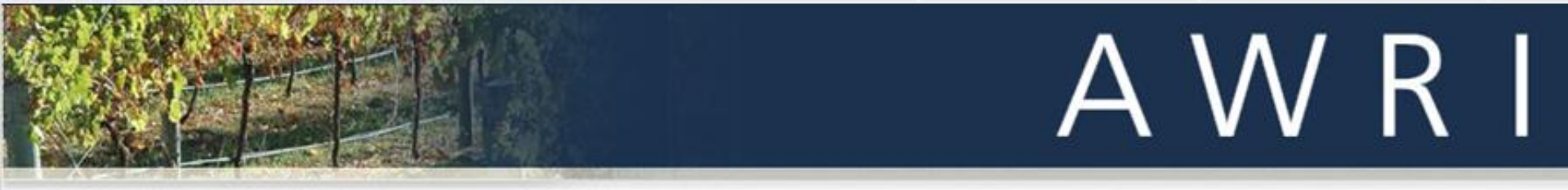
- Check stability of final blend prior to bottling
- Perform bentonite trials
  - Get the method right
  - Use the same conditions in the lab and cellar
  - Use consistent methodology – heating and cooling times
  - Use NTU and Visual assessment
- Understand bentonite-type choice



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SUPPORT NAVIGATION

- Extension and industry support
- Advanced Wine Assessment Course
- Agrochemicals
- AWRI Presentations
- Frequently asked questions (FAQs)
- John Fornachon Memorial

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How to set up a fining trial

Suggestions / questions / comments? email the calculator services staff | Print

How to set-up a laboratory-scale fining trial

- Always carry out a fining trial before any additions are made in the cellar
- Incorrect additions might result in under- or over-finings, quality loss (stripping), product loss (lees), added expense etc.
- Always include a control
- Always use the same batch of fining agent in the laboratory trial as used in the cellar
- Use fresh samples