

## Wine Color Analysis

### Summary

Color is one of the parameter to examine the wine quality. Many times, faulty brewing processes lead to bacterial growth and other contamination. These contaminations may result in a change of the color of wine.

UV/VIS Spectroscopy is a non-destructive technique that can be used to check the quality of wine without disturbing its physical or chemical properties by analyzing its color intensity.

Features that are evaluated in UV/VIS spectroscopy are the hue and color intensity of the wine.

### Wine Color Intensity

The absorption measurements in the violet, green and red areas of the visible spectrum are accumulated to measure how dark the wine is. It is favorable for white wine to have a low absorption in these areas.

### Wine Hue

The wine Hue is a measurement that indicates the tone of the wine. It is the ratio from the absorbance in the violet to the absorbance in the green. There are specific acceptance criteria for white wine as well as for red wine.

### Sample and Reagent

White wine (Chardonnay)

Red wine (Tavernello)



### Instrument and accessories

- Mettler-Toledo UV7 (ME-30254726)
- Plastic disposable cuvettes, path length 10 mm
- Rainin pipette 1 - 5 mL (ME-170011790)



### Sample preparation

Fill three labeled cuvettes with undiluted red wine.

Do the same with the white wine.

Fill an additional cuvette with distilled water and treat it as blank solution for the baseline correction.

## Measurement

Perform the measurement the following method parameters:

Method: Fixed wavelength  
 Path length: 1 cm  
 Dilution factor: 1  
 No of Wavelengths: 3  
 Wavelength selection: 420, 520, 620 nm  
 Background correction: None  
 Calculations:

$$\text{Wine hue} = A(420) / A(520)$$

$$\text{Wine color intensity} = A(420) + A(520) + A(620)$$

	Acceptance Criteria
Hue value red wine	0.8 – 1.2
Hue value white wine	> 1.2

Note: this method is available as a template on the UV7, UV5Bio and UV5Nano spectrophotometer.

## Results

The mean of the calculation for each sample is reported.

Sample	Color intensity	Hue
Red wine	7.515 A	0.8738
White wine	0.342 A	3.4172

## Conclusion

The measurements of the batch of wine samples used in this application comply with the acceptance criteria regarding the wine Hue.

## Further information

[www.mt.com/uv-vis](http://www.mt.com/uv-vis)