

How do you validate a APHA/Pt-Co/Hazen 500 liquid color standard?

As described in Section 6 of ASTM D1209, there are 2 criteria to validate a APHA/Pt-Co 500 standard:

- The APHA/Pt-Co 500 Color Standard must have a defined chemical composition and be prepared in accordance with section 6 of ASTM D1209.
- After preparation, the APHA/Pt-Co 500 standard must meet a absorbance criteria at 4 points in the blue region of the visible spectrum per Table 1 of ASTM D1209.

6. Platinum-Cobalt Reference Standards

6.1 *Platinum-Cobalt Stock Solution*— Dissolve 1.245 g of potassium chloroplatinate (K_2PtCl_6) and 1.00 g of cobalt chloride ($CoCl_2 \cdot 6H_2O$) in water. Carefully add 100 mL of hydrochloric acid (HCl, sp gr 1.19) and dilute to 1 L with water. The absorbance of the 500 platinum-cobalt stock solution in a cell having a 10 mm light path, with reagent water in a matched cell as the reference solution, must fall within the limits given in Table 1.

ASTM D1209 TABLE 1 Absorbance Tolerance Limits For No. 500 Platinum-Cobalt Stock Solution

Wavelength, nm	Absorbance, A
430	0.110 to 0.120
455	0.130 to 0.145
480	0.105 to 0.120
510	0.055 to 0.065

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- In the Spectral Data View of EasyMatch QC, place your mouse over the view and Right Click/Configure to report Absorbance spectral data instead of Transmission. If you do not have a Spectral Data View displayed, put your mouse over the Color Data Table/Right Click/Split Horizontally and Add Spectral Data View.
- Fill a **10 mm path length cell** with distilled water and place on transmission bench on a HunterLab diffuse d/8 sphere instrument.
- Standardize in TTRAN LAV (Large Area of View) UV Filter in the Nominal position using the Light Blocker and 10 mm cell + DI water to set bottom and top-of-scale.
- As a PQ Performance Qualification step, read back the cell + DI water as an OQ (Operation Qualification) step. The transmission at 430, 455, 480 and 510-nm should be 100% with the corresponding absorbance being 0%.
- Read the APHA/Pt-Co 500 Liquid Color Standard to see if it reads within the absorbance tolerances at 430, 455, 480 and 510 nm in Table 1 of ASTM D1209. If your instrument only reports at 10 nm intervals. Average the absorbance at 450 and 460 nm.

If the APHA/Pt-Co/Hazen 500 Color Standard meets both the chemical and absorbance criteria of ASTM D1209, it is a 500 Standard.