

Question:

If customer uses USPRO/USVIS/VISTA to measure the sample's APHA .

After Standardization (use the 20mm cell fill with the Purified water),measure the same water APHA20mm,what is the correct value to indicate the standardization was successful.

Answer:

APHA is only valid when the average result from three consecutive readings is reported. HunterLab used a third power polynomial of the YI E313 C/2 reading to calculate APHA

For USVis/USPro the Instrument Repeatability is stated to be $dE^* < 0.03$

The act of standardizing the instrument creates the following TOS $L^*=100.00$ $a^*=0.00$ $b^*=0.00$

If the average of the next three reading produces a $L^*=100.00$ $a^*=0.00$ $b^*=0.03$ the dE^* from standardization passes our repeatability specification, the calculated APHA 20mm would be 0.31 This implies the maximum APHA after standardization would have to be < 0.3 because HunterLab only has a repeatability specification not an APHA accuracy specification.

A better way to state this is that the Standardization check for APHA is 0.0 ± 0.3 , meaning that any value between -0.3 and 0.3 should be reported as 0.0 since the operator cannot distinguish between those values due the uncertainty created by the instrument repeatability.

For VISTA the Instrument Repeatability is stated to be $dE^* < 0.025$

The act of standardizing the instrument creates the following TOS $L^*=100.00$ $a^*=0.00$ $b^*=0.00$

If the average of the next three reading produces a $L^*=100.00$ $a^*=0.00$ $b^*=0.025$ the dE^* from standardization passes our repeatability specification, the calculated APHA 20mm would be 0.26 This implies the maximum APHA after standardization would have to be < 0.26 because HunterLab only has a repeatability specification not an APHA accuracy specification.

A better way to state this is that the Standardization check for APHA is 0.0 ± 0.26 , meaning that any value between -0.26 and 0.26 should be reported as 0.0 since the operator cannot distinguish between those values due the uncertainty created by the instrument repeatability.