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FORENSIC TESTING PROGRAM

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Paint Analysis
Test No. 21-5452 Summary Report

Each sample set consisted of one item containing a known paint sample and two items containing questioned paint chips. Participants were requested to compare the items and report their findings. Data were returned from 55 participants and are compiled in the following tables:

This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample set consisted of three items with layered paint and primer: one known sample (Item 1) and two questioned samples (Items 2 and 3) were cut from a painted section of drywall. Items 1 and 3 came from a section of drywall with the same primer and topcoat. Item 2 was prepared with a different primer and topcoat than Items 1 and 3. Examiners were instructed to examine the samples and determine if either questioned sample could have originated from the same source as the known paint sample.

SAMPLE PREPARATION: The drywall substrate was wiped down to remove dust before painting. For the following preparations, each coat was allowed to dry overnight before applying the next coat.

ITEMS 1 and 3 (ASSOCIATION): The known Item 1 and questioned Item 3 samples were prepared by applying two coats of primer (Behr Multi-Surface® Interior/Exterior Water-Based Primer, Eggshell White) to a drywall substrate. Then two layers of topcoat (Behr Ultra® Interior, Eggshell Jade Mist) were applied. For Item 1, paint samples were scored into squares that were approximately ½" x ½" and removed. One ½" x ½" piece was packaged into a glassine bag and then into a pre-labeled Item 1 coin envelope. For Item 3, paint samples were scored into squares that were approximately ¼" x ¼" and removed. Two ¼" x ¼" pieces were packaged into a glassine bag and then into a pre-labeled Item 3 coin envelope. Items 1 and 3 were taken in close spatial proximity to one another and were kept together as an association group and packaged into the sample sets as described below.

ITEM 2 (ELIMINATION): The questioned Item 2 samples were prepared by applying two coats of primer (Zinsser Cover Stain Oil-Base Interior/Exterior Primer, White) to a separate piece of drywall substrate from Items 1 and 3. Then two layers of topcoat (Glidden Premium™, Eggshell Jade Mist color match) were applied. Paint samples were scored into squares that were approximately ¼" x ¼" and removed. Two ¼" x ¼" pieces were packaged into a glassine bag and then a pre-labeled Item 2 coin envelope.

SAMPLE SET ASSEMBLY: For each sample pack, an Item 1 and an Item 3 from the same association group along with an Item 2 were placed into a pre-labeled envelope and sealed with invisible tape. This process was repeated until all of the sample sets were prepared. Once verification was completed, all sample sets were further sealed with evidence tape and initialed "CTS."

VERIFICATION: All three laboratories that conducted the predistribution examination of the completed sample sets reported the expected association and elimination results. The methods that were employed by the predistribution laboratories included: stereomicroscopy, FTIR, SEM/EDX, and microspectrophotometry.

Summary Comments

This test was designed to allow participants to assess their proficiency in the examination, comparison, and interpretation of multi-layered architectural paint samples. Each sample set consisted of three items with layered paint and primer; one known sample (Item 1) and two questioned samples (Items 2 and 3) were cut from painted drywall substrates. Items 1 and 3 originated from a drywall substrate with the same primer and topcoat. Item 2 originated from a second drywall substrate that was prepared with a different primer and topcoat than what was used for Items 1 and 3 (Refer to Manufacturer's Information for preparation details).

Of the 55 participants that reported examination results, all participants (100%) reported that the Item 3 questioned paint chips could have originated from the same source as the Item 1 known paint sample. For the Item 2 questioned paint chips, 54 participants (98.2%) reported that Item 2 could not have originated from the same source as the Item 1 known paint sample. The final participant reported that the questioned paint chips for Item 2 could have originated from the Item 1 known paint sample.

The most common examination methods used include FTIR, Stereomicroscope, and SEM/EDX.

Examination Results

Could the questioned paint chips recovered from the opening crease of the trash bag (Item 2) and/or from the victim's hair (Item 3) have originated from the damaged area of the suspect's basement room wall as represented by Item 1?

TABLE 1

Item 1			Item 1		
WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
27EAQZ	No	Yes	DB888R	No	Yes
2JHUTP	No	Yes	DQY8XR	No	Yes
2MZU97	No	Yes	ECXV3T	No	Yes
47NX6W	No	Yes	ENNMMW	No	Yes
4AM9ZW	No	Yes	ETJEXE	No	Yes
4ZZA87	No	Yes	EZ788T	No	Yes
6Q6R73	No	Yes	FFT4LT	No	Yes
6QP9L6	No	Yes	FHK33D	No	Yes
73FL2T	No	Yes	GUUZKL	No	Yes
7ETLVZ	No	Yes	H6L9FT	No	Yes
7VJPC6	No	Yes	HL8RBF	No	Yes
87X4UX	No	Yes	JBR2BP	No	Yes
8REFMK	No	Yes	L77YFN	No	Yes
9QCBHV	No	Yes	L83C4G	No	Yes
9R9LFJ	No	Yes	LB2NYG	No	Yes
A6D4PX	No	Yes	N4T4PG	No	Yes
ALZJTU	No	Yes	N8TCVC	No	Yes
B3FB6Y	No	Yes	NDWFKB	No	Yes
B67CBM	No	Yes	NEDBN7	No	Yes
C26VBX	No	Yes	NHEJRG	Yes	Yes
C72G6L	No	Yes	PUXKND	No	Yes

TABLE 1

WebCode	Item 1 Item 2	Item 1 Item 3	WebCode	Item 1 Item 2	Item 1 Item 3
QJXE8K	No	Yes			
T6DER7	No	Yes			
U8AGUC	No	Yes			
UC4DGH	No	Yes			
V9LD23	No	Yes			
VPMH46	No	Yes			
VPP892	No	Yes			
VX6UG7	No	Yes			
W7T8UA	No	Yes			
WYRR99	No	Yes			
Y4X64C	No	Yes			
YRLX37	No	Yes			
ZJ7EJ7	No	Yes			

Examination Response Summary **Participants: 55**

Responses	Item 1 Item 2	Item 1 Item 3
Yes	**1** *(1.8%)*	**55** *(100%)*
No	**54** *(98.2%)*	**0** *(0%)*
Inc	**0** *(0%)*	**0** *(0%)*

Examination Methods

TABLE 2

WebCode	Stereomicroscope	Polarized Light	Fluorescence	Pyrolysis GC	FTIR	Solubility / Chemical	Microspectrophotometry	XRF / XRS	SEM / EDX	Other
27EAQZ	✓				✓				✓	UV
2JHUTP	✓	✓	✓		✓				✓	
2MZU97	✓				✓				✓	Raman spectroscopy
47NX6W	✓	✓	✓		✓	✓	✓		✓	
4AM9ZW	✓			✓	✓		✓		✓	
4ZZA87	✓	✓	✓		✓					
6Q6R73	✓	✓			✓					Raman spectroscopy
6QP9L6	✓	✓	✓	✓	✓					Cross Section
73FL2T	✓	✓	✓		✓					microtoming
7ETLVZ	✓				✓		✓		✓	
7VJPC6	✓				✓					
87X4UX	✓				✓	✓				
8REFMK	✓			✓	✓				✓	
9QCBHV	✓				✓					
9R9LFJ	✓		✓		✓			✓		Raman
A6D4PX	✓				✓					
ALZJTU	✓			✓	✓			✓		
B3FB6Y	✓		✓		✓		✓			XRD and also Haptics (Differentiation based on hardness and toughness of the paint layers)
B67CBM	✓	✓	✓		✓					RamanMicroscopy
C26VBX	✓				✓	✓				
C72G6L	✓	✓			✓		✓		✓	
DB888R	✓	✓			✓					
DQY8XR	✓				✓				✓	Raman
ECXV3T	✓			✓	✓			✓		Raman
ENNMMW	✓			✓	✓				✓	

TABLE 2

WebCode	Stereomicroscope	Polarized Light	Fluorescence	Pyrolysis GC	FTIR	Solubility / Chemical	Microspectrophotometry	XRF / XRS	SEM / EDX	Other
ETJEXE	✓	✓	✓		✓				✓	
EZ788T	✓				✓		✓		✓	
FFT4LT	✓			✓	✓				✓	
FHK33D	✓				✓		✓		✓	
GUUZKL	✓		✓		✓					
H6L9FT	✓				✓				✓	Chromato-Vue cabinet Model CC-60
HL8RBF	✓			✓	✓		✓		✓	
JBR2BP	✓				✓				✓	
L77YFN	✓				✓		✓			
L83C4G	✓	✓	✓		✓		✓		✓	
LB2NYG	✓				✓				✓	
N4T4PG	✓				✓			✓		
N8TCVC	✓	✓			✓				✓	
NDWFKB	✓		✓		✓	✓			✓	Comparison Microscope
NEDBN7	✓	✓		✓	✓	✓		✓	✓	
NHEJRG	✓	✓	✓		✓				✓	
PUXKND	✓				✓	✓				fluorescence
QJXE8K					✓				✓	
T6DER7	✓	✓	✓		✓				✓	
U8AGUC	✓				✓			✓	✓	Raman Spectroscopy
UC4DGH	✓				✓					Visual
V9LD23	✓	✓	✓		✓			✓		
VPMH46	✓		✓		✓				✓	
VPP892	✓				✓				✓	
VX6UG7	✓		✓		✓				✓	
W7T8UA	✓				✓	✓				DIGITAL MICROSCOPE
WYRR99	✓				✓					Raman spectroscopy

TABLE 2

WebCode	Stereomicroscope	Polarized Light	Fluorescence	Pyrolysis GC	FTIR	Solubility / Chemical	Microspectrophotometry	XRF / XRS	SEM / EDX	Other
Y4X64C	✓				✓					
YRLX37	✓	✓	✓		✓				✓	
ZJ7EJ7	✓	✓	✓	✓	✓				✓	

Response Summary **Total Participants: 55**

	Stereomicroscope	Polarized Light	Fluorescence	Pyrolysis GC	FTIR	Solubility/chemical	Microspectrophotometry	XRS/XRF	SEM/EDX
Participants	54	18	19	10	55	7	10	7	31
Percent	*98%*	*33%*	*35%*	*18%*	*100%*	*13%*	*18%*	*13%*	*56%*

Conclusions

TABLE 3

WebCode	Conclusions
27EAQZ	Items 1A-1C were analyzed stereoscopically with UV light. Items 1A and 1C were analyzed instrumentally by Fourier Transform Infrared Spectrometry (FTIR) and Scanning Electron Microscopy/Energy Dispersive Spectrometry (SEM/EDS). Due to differences in fluorescence under UV light, Item 1B was excluded as sharing a common source with Item 1A. Items 1A and 1C were both two-layer paint systems with similar visual and chemical properties. Items 1A and 1C could share a common source of origin. Questioned Item 1C could also have originated from additional sources that are indistinguishable in all assessed examinations and analyses. No statistical or numerical probabilities can be applied to the conclusions of this report.
2JHUTP	The results of the examination support that the paint chips, Item 3, originate from the damaged area of the basement wall, from which Item 1 is collected (Level +2). The results of the examination extremely strongly support that the paint chips, Item 2, do not originate from the damaged area of the basement wall, from which Item 1 is collected (Level -4).
2MZU97	Based on visual observations with stereomicroscopy and the analytical results from infrared spectroscopy, raman spectroscopy, and SEM-EDX ITEM 2 can be distinguished from ITEM 1. The results support very strongly the proposition that the paint chips recovered from the opening crease of the trash bag (ITEM 2) originate from an unknown green and white painted object or wall rather than that these traces originate from the suspect's basement room wall (ITEM 1). Based on visual observations with stereomicroscopy and the analytical results from infrared spectroscopy, raman spectroscopy, and SEM-EDX, ITEM 3 can not be distinguished from ITEM 1. Small differences observed in the Raman signal from item 1 comparend to item 3 (one additional pigment is detected) can be explained by inhomogenity of the sample. The results support the proposition that the paint chips recovered from the victim's hair (ITEM 3) originate from the suspect's basement room wall (ITEM 1) rather than that these traces orginate from an unknown green and white painted object or wall.
47NX6W	No significant differences were observed in the microscopic, physical, and chemical properties when the Questioned Exhibit 3 (Item 3) was compared to the Known Exhibit 1 (Item 1), therefore the questioned sample (Item 3; Exhibit 3) could have originated from the same source represented by the known sample (Item 1; Exhibit 1) or of a paint sample exhibiting the same physical, microscopic, and chemical properties. Significant differences were observed in the microscopic, physical and chemical properties when the Known Exhibit 1 (Item 1) was compared to the Questioned Exhibit 2 (Item 2), therefore the questioned sample (Item 2; Exhibit 2) did not originate from the source represented by the known sample (Item 1; Exhibit 1).
4AM9ZW	Items 1, 2, and 3 were analyzed using stereomicroscopy and infra-red spectroscopy. Items 1 and 3 were additionally examined by microspectrophotometry, scanning electron microscopy/energy-dispersive x-ray spectrometry (SEM/EDS), and pyrolysis gas chromatography-mass spectrometry. Seafoam green paint found in Item 3 was similar to the seafoam green paint in Item 1 in color, type, layer structure, texture, and elemental composition (Type 3 association). This means that the paint chips recovered from the victim's hair could have originated from the damaged area of the suspect's basement room wall. Seafoam green paint found in Item 2 was different from the seafoam green paint in Item 1 (Elimination). This means that the paint chips recovered from the opening crease of the trash bag did not originate from the damaged area of the suspect's basement room wall. Trace Interpretation Scale: Type 1 Association: Physical Match: The compared items exhibit physical features that demonstrate they were once part of the same object. Type 2 Association: Association with Distinctive characteristics: Items are consistent in all measured and observed physical properties, chemical composition and/or microscopic characteristics, and therefore could have originated from the same source. The items further share distinctive characteristics that would not be typically

TABLE 3

WebCode	Conclusions
	encountered in the relevant population. Type 3 Association: Association with Conventional characteristics: Items are consistent in all measured and observed physical properties, chemical composition and/or microscopic characteristics, and therefore could have originated from the same source. Because other items have been manufactured or are naturally occurring that would also be indistinguishable from the submitted evidence, an individual source cannot be determined. Type 4 Association: Association with limited characteristics and/or examination: 1). Items are consistent in all measured and observed physical properties, chemical composition and/or microscopic characteristics, and therefore could have originated from the same source. This type of evidence may be commonly encountered in the environment or may have limited comparative value. Or 2). The comparison between items may be categorized as a Type 4 Association if the association is limited by the inability to perform a complete analysis or if minor variations are observed in the examination results. Inconclusive: No conclusion could be reached regarding an association or an elimination between the items. Elimination: Items exhibit differences in one or more of the following: physical properties, chemical composition, or microscopic characteristics and therefore did not originate from the same source. Non-Association: The items were different in physical properties, chemical composition, and/or microscopic characteristics, indicating that the items did not originate from the same source. However, these differences were insufficient for a definitive elimination.
4ZZA87	The paint chip in item 2, from the trash bag, could not have originated from the damaged area of the the basement wall at the scene. The paint chip in item 3, from the hair, could have originated from the damaged area of the basement wall at the scene. In my opinion, the findings provide strong support for the proposition that the paint chip in item 3 originated from basement wall rather than not. I have used my experience in evaluating the findings.
6Q6R73	Item 1 cannot be excluded as a source for Item 3. Item 1 is not consistent with Item 2.
6QP9L6	The questioned paint chips recovered from the victim's hair (Item 3) could have originated from the damaged area of the suspect's basement room wall (Item 1), because of the similarities of their physical properties and chemical compositions. The questioned paint chips recovered from the opening crease of the trash bag (Item 2) could NOT have originated from the damaged area of the suspect's basement room wall (Item 1), because of the differences of their physical properties and chemical compositions.
73FL2T	The finding of the paint on the victim's hair (item 3) matching the wall paint (item 1) offers strong support for the proposition that the paint on the hair came from the wall rather than it came from an unknown source. The finding of the paint in the trash (item 2) not matching the paint from the wall offers moderately strong support for the proposition that the paint from the trash did not come from the wall rather than it did. I have chosen the above phrases from the following scale: weak support, moderate support, moderately strong support, strong support, very strong support, and extremely strong support.
7ETLVZ	One of the paint chips from the victim's hair (Item #3) was analyzed and compared to the known reference paint sample from the suspect's wall (Item #1). Based on the examinations conducted, the layers comprising the analyzed paint chip from Item #3 are comparable in color, texture, relative thickness, and chemical composition to the corresponding layers of Item #1. Accordingly, the analyzed paint chip from Item #3 and Item #1 originated from the same source or from different sources painted in the same manner (Type IV Association). This level of association was reached due to the limited layer structure of the submitted samples. The paint from the trash bag (Item #2) does not compare to the known reference paint sample from the suspect's wall (Item #1). No further analysis at this time.
7VJPC6	1). The known paint sample representative of the damaged area of the suspect´s basement room wall (item 1), the questioned paint chips recovered from the opening crease of the trash

TABLE 3

WebCode	Conclusions
	bag (item 2), and the questioned paint chips recovered from the victim's hair (item 3) consist of a two layers paint system with the following layer structure: Items 1 and 3: light green topcoat layer, acrylic latex; and white undercoat layer, acrylic latex. Items 2: light green topcoat layer, polyvinyl acetate latex; and white undercoat layer, orthophthalic alkyd enamel with calcium carbonate and talc. 2). The two layered paint samples in items 1 and 3 matched in colors, textures and chemical composition. It was concluded that the paint in these items could have a common origin. The possibility that they don't share a common origin depends on whether or not, the transfers detected to the victim´s hair coming from another surface (building or house) that particularly has the same type of finish (same layer sequence, physical properties and chemical composition). 3). The two layered paint chips in item 1 and 2 match in the physical properties studied, particularly in color and layer sequence, but don't match regarding the chemical composition of light green topcoat layer and white undercoat layer. It was concluded that the paint in these items don't have a common origin.
87X4UX	On analysis, I found the questioned paint chips recovered from the victim's hair 'Item 3' were similar with the known paint sample representative of the damaged area of the suspect's basement room wall 'Item 1'. I also found that the questioned paint chips recovered from the opening crease of the trash bag 'Item 2' were not similar with the known paint sample representative of the damaged area of the suspect's basement room wall 'Item 1'.
8REFMK	The suspect's basement room wall (as represented by item 3) was eliminated as a possible source of the paint recovered from the victim's hair (item 2). The suspect's basement room wall (as represented by item 3) could not be eliminated as a possible source of the paint recovered from the trash bag (item 1). As such, the paint recovered from the trash bag (item 1) either came from the suspect's basement room wall (as represented by item 3) or from another source of paint that is indistinguishable from item 3 with respect to the properties listed in the results. Other sources of paint indistinguishable to item 3 would include other damaged walls painted with two layers of architectural paint of the same colours and formulations.
9QCBHV	The paint layers from item 2 did not match the paint layers from item 1 when analyzed using FTIR. The paint layers from item 3 did match the paint layers from item 1 using FTIR analysis. The paint designated as item 3 likely originated from the same location as item 1 since the paint layers matched.
9R9LFJ	In my opinion, the findings provide moderately strong support for the proposition that Item 3 (Questioned paint sample recovered from the victim's hair) originated from Item 1 (Known sample from the damaged area of the suspect's basement room wall). Item 2 could not have originated from Item 1 based on different chemical compositions of both the pale green and white layers.
A6D4PX	ITEM 3 COULD HAVE ORIGINATED FROM ITEM 1.
ALZJTU	The questioned paint chips recovered from the victim's hair (Item 3) and the known paint sample representative of the damaged area of the suspect's basement room wall (Item 1) were consistent on color, layering, and chemical composition and could have the same source. The questioned paint chips recovered from the opening crease of the trash bag (Item 2) and the known paint sample (Item 1) were inconsistent on chemical composition and could not have the same source.
B3FB6Y	With most of the used methods, the paint chips from Item 1 and Item 2 are distinguishable, therefore the paint chips recovered from the opening crease of the trash bag (Item 2) could not have originated from the damaged area of the suspect's basement room wall as represented by Item 1. With all methods we used, the paint chips from Item 1 and Item 3 are indistinguishable, therefore the questioned paint chips recovered from the victim's hair (Item 3) could have originated from the damaged area of the suspect's basement room wall as represented by Item

TABLE 3

WebCode	Conclusions
	1.
B67CBM	Questioned paint chips recovered from the victim's hair (Item 3) matched in colour, layer structure, and chemical composition with Item 1, known paint sample representing the damaged area of the suspect's basement room wall. Thus, the questioned paint chips in Item 3 could have originated from the same source as the known paint sample in Item 1. Questioned paint chips in Item 2 were inconsistent with the known paint sample in Item 1 and cannot thus originate from the same source as the the paint sample in Item 1.
C26VBX	The questioned paint chips recovered from the victim's hair (Item 3) could have originated from the damaged area of the suspect's basement room wall (Item 1).The questioned paint chips recovered from the opening crease of the trash bag (Item 2) did not originate from the damaged area of the suspect's basement room wall (Item 1).
C72G6L	Items 1 and 2 originated from different sources. Items 1 and 3 originated from the same source, or a source of similar manufacturing.
DB888R	The submitted known paint sample in Item 1 was examined and compared to 1 of the 2 exhibits in Item 3 using polarized light microscopy, visible microscopy, and fourier transform infrared spectroscopy (FTIR). The examined exhibits from Item 1 and Item 3 each consist of 2 paint layers. The 2 paint layers of Items 1 and 3 are consistent in appearance, microscopic, and chemical properties. Thus, Item 3 could have originated from the same source as Item 1 as represented by the examined samples in Items 3 and 1, or another paint source exhibiting the same analyzed characteristics and layer structure. No analysis was performed on the remaining exhibit in Item 3; therefore, no conclusions can be reached on this sample. The two submitted exhibits in Item 2 were examined microscopically and found to be consistent in layer structure with Item 1. One exhibit from Item 2 was selected and the green paint layer was analyzed using polarized light microscopy, visible microscopy, and FTIR. The FTIR results reveal discriminating differences between the green layer of Item 2 and the green layer of Item 1. Thus, Item 2 could not have originated from the same source as Item 1 as represented by the examined samples in Items 2 and 1. No analysis was performed on the remaining exhibit in Item 2; therefore, no conclusions can be reached on this sample.
DQY8XR	The questioned paint chips recovered from the victim's hair, marked "Item 3", could have originated from the same source as the control paint representative of the damaged area of the suspect's basement room wall, marked "Item 1", or another source of paint with similar characteristics. The questioned paint chips recovered from the opening crease of the trash bag, marked "Item 2", did not originate from the same source as the control paint representative of the damaged area of the suspect's basement room wall, marked "Item 1".
ECXV3T	The content of the Item 1, Item 2, and Item 3 have been analyzed. The Item 1 content is a 1.5 cm squared multilayer green paint chip recovered from the suspect's basement room wall. A careful observation with the stereomicroscope shows a green basecoat above a white primer layer, laying on a brown support. The Item 2 content are two 1 cm squared multilayer green paint chips recovered from the opening crease of the trash bag. A careful observation with the stereomicroscope shows a green basecoat above a white primer layer, laying on a brown support. The Item 3 content are two 1 cm squared multilayer green paint chips recovered from the victim's hair. A careful observation with the stereomicroscope shows a green basecoat above a white primer layer, laying on a brown support (wood). The two layers of each samples are visually indistinguishable from each other. The comparative analyzes of the infrared absorption bands show that the infrared spectra of the Item 2 layers are different from the infrared spectra of the Item 1 layers. The layers of Item 1 and Item 3 are indistinguishable with 3 analytical techniques. Hence, the paint chip recovered from the victim's hair (Item 3) could have probably originated from the suspect's basement room wall (Item1).

TABLE 3

WebCode	Conclusions
ENNMMW	Microscopic examination: All of them (Item 1,2 and 3) contain two layers, which is light green and white coat (from top to bottom). Item 1 and Item 3 were found to be consistent in color, layer sequence, microscopic appearance, and instrumental analysis. However, Item 1 and Item 2 were found to be different in instrumental analysis. Accordingly, Item 3 has originated from Item 1, but Item 2 has not.
ETJEXE	1). Exhibits 1 (known paint sample representative of the damaged area of suspect's basement room wall), 2 (questioned paint chips recovered from the opening crease of the trash bag), and 3 (questioned paint chips recovered from the victim's hair) each contained multilayered paint chips with the following layer sequence: light green top layer and white bottom layer. 2). Comparative examinations of Exhibit 3 (questioned paint chips recovered from the victim's hair) with the paint from Exhibit 1 (known paint sample representative of the damaged area of suspect's basement room wall) disclosed them to be consistent in their physical characteristics, organic compositions, and elemental compositions. Therefore, Exhibit 3 could have originated from Exhibit 1 or another source with the same characteristics. 3). Comparative examinations of Exhibit 2 (questioned paint chips recovered from the opening crease of the trash bag) with the paint from Exhibit 1 (known paint sample representative of the damaged area of suspect's basement room wall) disclosed them to be inconsistent in their chemical compositions. Therefore, Exhibit 2 could not have originated from Exhibit 1. 4). It should be noted that a paint association is not a means of positive identification and the number of possible sources for a specific paint is unknown.
EZ788T	Physical and chemical examinations indicate that: Item 1 and 3 are indistinguishable from each other. Therefore, item 3 (Questioned paint chips recovered from the victim's hair) could have originated from item 1 (Known paint sample representative of the damaged area of the suspect's basement room wall). Item 2 is distinguishable from item 1 in chemical composition. Therefore, item 2 (Questioned paint chips recovered from the opening crease of the trash bag) did not originated from item1 (Known paint sample representative of the damaged area of the suspect's basement room wall).
FFT4LT	Results of Examinations: The Item 1 known paint chip from the suspect's basement room wall was examined and compared to the Item 2 questioned paint chips recovered from the trash bag and the Item 3 questioned paint chips recovered from the victim's hair. Based on the examinations conducted, the two layers of paint (green over white) comprising Item 1 could not be distinguished in sequence, color, texture, and chemical composition to the corresponding layers of paint in Item 3. Accordingly, Item 3 originated from the same source as Item 1 or from a different source painted in the same manner (Type III Association: see Interpretation section). This type of association was reached because other surfaces painted with the same colors and formulations in the same sequence as Item 1 would also be indistinguishable. Item 1 and Item 2 differed in chemical composition. Therefore, Item 2 did not originate from the same source as Item 1 (Elimination). The following analytical techniques were used in the examination of these items: visual and stereomicroscopical observations, Fourier transform infrared spectroscopy, pyrolysis gas chromatography with mass spectrometry, and scanning electron microscopy with backscattered electron imaging and energy dispersive X-ray spectroscopy. Interpretation: The following categories and their descriptions are meant to provide context to the conclusions reached in this report. Every category may not be applicable in every case nor for every material. Type I Association: Physical/Fracture Match: The items exhibit physical features that demonstrate they were once part of the same object. Associations of Evidence with Class Characteristics: Class characteristics are physical and/or chemical properties that place an item within a particular group of items. Associations of evidence with class characteristics can have varying degrees of significance. In general, the smaller the size of the group relative to the relevant population, the more significant the association. A class association cannot

TABLE 3

WebCode	Conclusions
	definitively establish that the items came from the same source. Type II: Association with Highly Discriminating Characteristics: An association in which items could not be differentiated. Therefore, the possibility that the items came from the same source cannot be eliminated. Additionally, the items share unusual characteristics that would not be expected to be encountered in the relevant population. Type III: Association with Discriminating Characteristics: An association in which items could not be differentiated. Therefore, the possibility that the items came from the same source cannot be eliminated. Other items have been manufactured that would also be indistinguishable from the submitted items and could be encountered in the relevant population. Type IV: Association with Limitations: An association in which items could not be differentiated. Therefore, the possibility that the items came from the same source cannot be eliminated. As compared to the categories above, this type of association has decreased evidential value. For example, the items are more commonly encountered in the relevant population, a complete analysis was not performed due to limited characteristics or a limited analytical scheme, or minor variations were observed in the data. Inconclusive: No conclusion could be reached. Elimination: The items exhibit exclusionary differences that demonstrate they did not originate from the same source.
FHK33D	In my opinion the presence of the 2 layered paint (pale green/white) present in the hair of the vicitm provides a level 3 association between it and the the known paint from the wall. A level 3 association is where exhibits are consistent in observed and measured physical properties and/or chemical composition and, therefore, could have originated from the same source. Because other exhibits have been manufactured that would also be indistinguishable from the submitted evidence, an individual source cannot be determined.
GUUZKL	The paint recovered from the trash bag (item 2) was found to be similar in colour and cross-sectional layer structure to the paint from the suspect's basement room wall (item 1), however was different in chemical composition and properties such that they could not have had a common origin. The paint recovered from the deceased's hair (item 3) was found to be similar in colour, cross-sectional layer structure, chemical properties, and composition to the paint from the suspect's basement room wall (item 1), such that in our opinion, they could have had a common origin. This supports the scenario that the victim's head has had contact with the wall in the suspect's basement.
H6L9FT	Paint chips recovered from the victim’s hair (Item 3) may originated from the damaged area of the suspect's basement room wall (Item 1). Paint chips recovered from the opening crease of the trash bag (Item 2) are different from the damaged area of the suspect's basement room wall (Item 1).
HL8RBF	Item 3 could have originated from Item 1 as represented by the known submitted exemplar, or from another source exhibiting all of the same analyzed characteristics. Item 2 could not have originated from the source represented by Item 1. Because paint is mass produced, it is not possible to state that a paint chip originated from a particular source to the exclusion of all other surfaces containing paint that exhibits the same physical and chemical properties.
JBR2BP	The comparative Microscopic observation and chemical analysis of the paint samples collected from the opening crease of the trash bag (Item 2), the victim’s hair (Item 3), and the control sample collected from the damaged area of the suspect's basement room wall as represented by Item 1, revel that: The paint in ITEM 1 and that in ITEM 3 show similarities in color, paint type, and chemical composition. The paint in ITEM 2 and that in ITEM 3 or 1 show slight differences in chemical composition.
L77YFN	1). The know paint sample representative of the damage area of the suspect's basement room wall (item 1), the questioned paint chips recovered from the victim's hair (item 3), consist to two layers paint system with the following layer structure: For items 1 and 3: 1). soft green acrylic

TABLE 3

WebCode	Conclusions
	latex paint with calcium carbonate, and 2). white acrylic latex with calcium carbonate. For item 2: 1). soft green ortho alkyd enamels with talc, and 2). white ortho alquid with talc and calcium carbonate. 2). The two layered paint chips in items 1 and 3 matches in all properties investigated, particulary in colors, textures, types, layer sequence, and chemical composition. It was concluded that the paint in these items could have a common origin. The possibility that they do not share a common origin depend on whether or not, the victim could have obtained a paint transfer from another wall that presents the same layer sequence, same thickness, porosity, color, and chemical composition. 3). The two layered paint chips in item 2 and 1 match in the physical and microscopic properties studied, particularly in color and layer sequence, but don´t match regarding the chemical composition of the two layers. It was concluded that the paint in these items don´t have a common origin.
L83C4G	The Interpretations and Opinions stated below are based solely on the representative samples analyzed. Representative paint layers in Item 1 were examined and compared with the paint layers in Items 2 and 3 visually, microscopically, and instrumentally. Items 1 and 3 were consistent in all measured physical, microscopic, chemical, and elemental and color properties. They could have come from the same source, or any other source with the same properties. Items 1 and 2 were found to be inconsistent in physical characteristics and chemical composition and could not have come from the same source.
LB2NYG	Item 3 was consistent in color, layer structure and organic and inorganic composition with Item 1, and could have a common source with that item. Item 2 was different in composition from Item 1 and could not have come from the source represented by Item 1.
N4T4PG	It was determined utilizing visual examination that items 2 and 3 exhibit the presence of paint. It was determined utilizing Stereomicroscopy, Fourier Transform Infrared Spectroscopy, and X-Ray Fluorescence Spectroscopy that the mint topcoat and white primer layers from questioned paint sample 3 are consistent with the mint topcoat and white primer layers from the known paint sample, item 1. Therefore, the known paint sample, item 1, cannot be eliminated as being the source of the questioned paint sample from item 3. It was determined utilizing Stereomicroscopy and Fourier Transform Infrared Spectroscopy that the questioned paint item 2 exhibits different FTIR results with the known paint sample, item 1. Therefore, the known paint sample, item 1, can be eliminated as being the source of the questioned paint sample from items 2.
N8TCVC	Item 1 RESULTS: A light green, two-layer paint chip was analyzed for comparison to the unknown paint chips (Items 2 and 3). Item 2 RESULTS: Two light green two-layer paint chips were found. In the samples analyzed, the unknown paint (Item 2) and the standard paint (Item 1) are not the same in chemical characteristics. The unknown paint (Item 2) could not have originated from the standard (Item 1). Item 3 RESULTS: Two light green two-layer paint chips were found. In the samples analyzed, the unknown paint (Item 3) and the standard paint (Item 1) are the same in physical and chemical characteristics. The unknown paint (Item 3) either originated from the standard (Item 1) or another source of paint possessing the same distinct physical and chemical characteristics.
NDWFKB	Examination of Item #1 revealed the presence of a piece of drywall painted light green on one side. The light green paint had the following layer structure: Light Green and White. Examination of Items #2 and #3 each revealed the presence of two pieces of drywall painted light green on one side. The light green paint had the following layer structure: Light Green and White. The light green paint from Item #2 is not consistent with the light green paint from Item #1. Therefore, the light green paint from Item #2 did not originate from the same source as the light green paint from Item #1. The light green paint from Item #3 is physically and chemically consistent with the light green paint from Item #1. Therefore, the light green paint from Item #3 could have originated from the same source as the light green paint from Item

TABLE 3

WebCode	Conclusions
	#1.
NEDBN7	CONCLUSIONS: The questioned paint recovered from the victim's hair (item 3) is the same distinct type of paint as the known paint on the damaged wall (item 1) and originated either from that source or another source of architectural paint having the same distinct characteristics. The questioned paint recovered from the trash bag (item 2) did not originate from the source of paint represented by item 1. RESULTS: The paint from the trash bag and from the victim's hair (items 2 and 3) was examined for the purpose of determining whether or not there is any paint present like that on the damaged wall (item 1). The paint standard from the damaged wall (item 1) has the following layer structure: 1). Light blue-green acrylic latex enamel finish coat. 2). White acrylic latex enamel primer. This paint exhibits characteristics typical of an architectural finish and was used for comparison with questioned paint recovered from the trash bag and the victim's hair (items 2 and 3). The questioned paint recovered from the victim's hair (item 3) has the same layer structure as the known paint from the damaged wall (item 1). Examination and comparison of the questioned paint from the victim's hair (item 3) with item 1 revealed they are alike with respect to layer structure, layer colors, layer textures, microchemical reactivities, binder characteristics, and pigment characteristics. It is therefore concluded that the questioned paint recovered from the victim's hair (item 3) is the same distinct type of paint as that on the damaged wall (item 1) and originated either from that source, or from another source of architectural paint having the same distinct characteristics. The questioned paint recovered from the trash bag (item 2) has the following layer structure: 1). Light blue-green polyvinyl acetate enamel finish coat. 2). White primer. Examination and comparison of the questioned paint from the trash bag (item 2) with item 1 revealed they are dissimilar with respect to layer textures, general binder types and pigment characteristics. It is therefore concluded that the questioned paint recovered from the trash bag (item 2) did not originate from the source of paint represented by item 1.
NHEJRG	The results stongly supports that ITEM 2 and ITEM 3 have the same origin as ITEM 1.
PUXKND	The paint in item 3 is similar in color, layer structure, solubility, fluorescence, and infrared absorbance spectra to the paint in item 1. Therefore the paint in items 1 and 3 could have originated from the same source. The paint in item 2 is similar in color and layer structure to the paint in item 1; however, it is dissimilar in infrared absorbance spectra. Therefore, the paint in items 1 and 2 could not have originated from the same source.
QJXE8K	Following FTIR and SEM/EDS analysis we conclude that, due to chemical and morphological differences, the paint chip recovered from the crease of the trash bag (item 2) could not have originated from the suspect’s basement room wall (item 1). However, both layers of the sample taken from the victim’s hair (item 3) present close physical and chemical similarities to those of the sample from the suspect’s basement room wall (item 1). Therefore, we believe that item 3 could have originated from the suspects basement room wall (item 1).
T6DER7	The Questioned paint in Item 3 is consistent with the Known paint in Item 1 on the basis of color, layer structure, organic, and elemental composition. Therefore, the paint in Items 1 and 3 could have shared a common source. The Questioned paint in Item 2 is not consistent with the Known paint in Item 1 on the basis of organic and elemental composition.
U8AGUC	The paint chips recovered from the opening crease of the trash bag (Item 2) couldn't have originated from the damaged area of the suspect's basement room wall as represented by Item 1. The paint chips recovered from the victim's hair (Item 3) could have originated from the damaged area of the suspect's basement room wall as represented by Item 1.
UC4DGH	1). Item 2 did not originate from the source of Item 1. 2). Item 3 originated either from the source of Item 1 or from another source having paint layers with color, texture, and chemical characteristics indistinguishable from Item 1.

TABLE 3

WebCode	Conclusions
V9LD23	The paint layers from item 2 were different in some chemical and physical characteristics to the paint layers from item 1. Therefore the paint chip from item 2 could not have originated from the source for item 1. The paint layers from item 3 were similar in all chemical and physical characteristics to the paint layers from item 1. Therefore the paint chip from item 3 could have originated from the same source as for item 1 or another source of similar manufacture with the same characteristics.
VPMH46	Item 1, Item 2, and Item 3 are each composed of a 2-layer architectural paint system. The top layer is a light green color coat and the second layer is a white primer. The questioned paint chips recovered from the victim's hair (Item 3) are similar in color, layer structure, chemistry and elemental composition in comparison to the known paint from the suspect's basement room wall (Item 1). The paint from Item 3 could have originated from Item 1 or any other paint source similar in color, layer structure, chemistry and elemental composition. The questioned paint chips recovered from the opening crease of the trash bag (Item 2) are similar in color and layer structure, but different in chemistry and elemental composition in comparison to the known paint from the suspect's basement room wall (Item 1). The paint from Item 2 could not have originated from the same paint source as Item 1.
VPP892	Physical, microscopic, and instrumental analysis and comparison of Item 3 with Item 1 revealed them to be consistent with respect to color, texture, type, layering sequence, binder composition, and elemental composition. Therefore, the paint recovered from the victim's hair came from the suspect's basement wall or another source manufactured to the same specifications. Physical, microscopic, and instrumental analysis and comparison of Item 2 with Item 1 revealed them to be inconsistent with respect to binder composition and elemental composition. Therefore, the paint recovered from the trash bag did not originate from the suspect's basement wall.
VX6UG7	Item 1: One two-layer light green paint standard was analyzed for comparison to Items 2 and 3. Item 2: Two two-layer light green paint samples were present. The unknown paint recovered from the opening crease of the trash bag and the standard paint (Item 1) from the damaged area of the suspect's basement room wall are not the same in chemical characteristics. The unknown paint recovered from the opening crease of the trash bag could not have originated from the standard. Item 3: Two two-layer light green paint samples were present. The unknown paint recovered from the victim's hair and the standard paint (Item 1) are the same in physical and chemical characteristics. The unknown paint recovered from the victim's hair either originated from the standard from the damaged area of the suspect's basement room wall or another source of paint possessing the same distinct physical and chemical characteristics.
W7T8UA	On analysis, I found: i). The known paint sample representative of the damaged area of the suspect's basement room wall (Item 1) to be similar to the questioned paint chips recovered from the victim's hair (Item 3). ii). The known paint sample representative of the damaged area of the suspect's basement room wall (Item 1) to be dissimilar to the questioned paint chips recovered from the opening crease of the trash bag (Item 2). Based on the findings, I am of the opinion that: i). The known paint sample representative of the damaged area of the suspect's basement room wall (Item 1) and the questioned paint chips recovered from the victim's hair (Item 3) could have come from the same source. ii). The known paint sample representative of the damaged area of the suspect's basement room wall (Item 1) and the questioned paint chips recovered from the opening crease of the trash bag did not come from the same source (Item 2).
WYRR99	Paint chips recovered from the victim's hair (Item 3) could have originated from the damaged area of the suspect's basement room wall (Item 1). Paint chips recovered from the opening crease of the trash bag (Item 2) could not have originated from the damaged area of the suspect's basement room wall (Item 1).

TABLE 3

WebCode	Conclusions
Y4X64C	In my opinion, Item 3 (Questioned paint chips recovered from the victim's hair) may was originated from same source of Item 1 (Known paint sample representative of the damaged area of the suspect's basement room wall.) while Item 2 (Questioned paint chips recovered from the opening crease of the trash bag.) may was not originated from source of Item 1.
YRLX37	Considering the morphology, number, and color of layers, no significant differences were observed between Item 1 and Item 3. The analysis performed by FTIR and SEM-EDX determined that both samples are indistinguishable with the techniques used. Therefore, Item 1 and Item 3 could have the same origin. Considering the morphology, number, and color of layers, no significant differences were observed between Item 1 and Item 2. However, the analysis performed by FTIR and SEM-EDX determined that both samples have different composition. According to these results, Item 1 and Item 2 have different origins.
ZJ7EJ7	Paint analysis was performed on the following items: Item 1.1, Item 1: Known paint sample representative of the damaged area of the suspect's basement room wall. Item 1.2, Item 2: Questioned paint chips recovered from the opening crease of the trash bag. Item 1.3, Item 3: Questioned paint chips recovered from the victim's hair. The paint sample of Item 1.1, 1.2, and 1.3 consisted of two layers of white architectural paint. The paint sample of Item 1.3 is similar in color, layer structure and chemical composition to the paint of Item 1.1. Accordingly, the Item 1.3 and 1.1 paints originated from the same source or from a different source painted in the same manner. This conclusion should be considered a Type III Association in the Association Scale presented at the end of this report. The white paint of Item 1.2 and the multilayer white paint of Item 1.1 are different in chemical composition; therefore, the paints of Items 1.1 and 1.2 do not share a common origin. This conclusion should be considered an elimination in the Association Scale presented at the end of this report. Paint comparisons were performed using fluorescence activity, comparison microscopy, polarized light microscopy (PLM), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy with energy dispersive x-ray spectroscopy (SEM-EDS), and pyrolysis gas chromatography with mass spectrometry (pyrolysis GC-MS). Association Scale: Type I Association: A physical match; items fit back to one another demonstrating that the items are from the same source. Type II Association: An association in which items are consistent in all measured physical properties and/or chemical composition and share atypical characteristics (e.g., factory repaint layers) that would not be expected to be readily available in the relevant population. Type III Association: An association in which items are consistent in all measured physical properties and/or chemical composition and, therefore, could have originated from the same source, but not exclusively, because other manufactured items in this class would be indistinguishable from the submitted evidence. Type IV Association: An association in which items are consistent in all measured physical properties and/or chemical composition and, therefore, could have originated from the same source. As compared to a Type III association, items categorized as a Type IV share characteristics that are more common amongst these kinds of manufactured products. Alternatively, an association between items would be categorized as a Type IV if a limited analysis was performed due to characteristics or size of the specimen(s). Type V Association: An association in which items are consistent in some, but not all, measured physical properties and/or chemical composition. Some minor variation(s) exist between the known and questioned items and could be due to factors such as sample heterogeneity, weathering, contamination of the sample(s), or having a sample of insufficient size to adequately assess homogeneity of the entity from which it was derived. Inconclusive: No conclusion could be reached regarding an association/elimination between the items. Elimination: The items were dissimilar in physical properties and/or chemical composition, indicating that they did not originate from the same source.

Additional Comments

TABLE 4

WebCode	Additional Comments
4ZZA87	In a real case, I would ask if additional damage was present at the scene and ask for further control samples for comparison with item 2. The paint sample layers in each item were very soft and difficult to prepare suitable sections for microscopy and analysis.
7ETLVZ	Interpretation: The following descriptions are meant to provide context to the levels of opinions reached in this report. Every type of conclusion may not be applicable in every case nor for every material type. Type I Association: A physical match; items physically fit back to one another, indicating that the items were once from the same source. Type II Association: An association in which items are consistent in all measured physical properties and/or chemical composition and share atypical characteristic(s) (e.g., repaint layers) that would not be expected to be readily available in the relevant population. Type III Association: An association in which items are consistent in all measured physical properties and/or chemical composition and, therefore, could have originated from the same source. Because other items have been manufactured that would also be indistinguishable from the submitted evidence, an individual source cannot be determined. Type IV Association: An association in which items are consistent in all measured physical properties and/or chemical composition and, therefore, could have originated from the same source. As compared to a Type III association, items categorized as Type IV share characteristics that are more common amongst these kinds of manufactured products. Alternatively, an association between items would be categorized as a Type IV if a limited analysis was performed due to characteristics or size of the specimen(s). Type V Association: An association in which items are consistent in some, but not all physical properties and/or chemical composition. Some minor variation(s) exist(s) between the known and questioned items and could be due to factors such as sample heterogeneity, contamination of the sample(s), or having a sample of insufficient size to adequately assess homogeneity of the entity from which it was derived.
7VJPC6	At the moment we don't routinely received cases with that kind of samples in our laboratory. We work routinely with automotive paint chips.
9R9LFJ	The Pyrolysis-GCMS technique could not be used as it was not fit for casework.
B67CBM	The findings provide moderately strong support for the proposition that the paint chips in Item 3 orginate from the same source as the paint sample in Item 1.
ECXV3T	The XRF spectra of the Item 1 and Item 3 primer layers show randomly Zinc. It is highly luckily that the Zinc comes from the brown supports as shown by its XRF spectra. Analyses in Py-GC-MS were performed on those primer layers confirmed that they are indistinguishable with four analytical techniques.
L77YFN	Since the comparison was made between two layers of paintings only, the result of this analysis must be considered together with the remains of elements that the investigation of the case reveals.
T6DER7	It should be noted that in the absence of a fracture match between paint flakes, paint does not possess enough individual chemical and microscopic characteristics to be positively identified as originating from a particular source to the exclusion of all other sources. The conclusions in this report only pertain to the paint that was analyzed from each submission and makes no assumptions about the entire contents of each Submission.
VPMH46	Item 1, Item 2 and Item 3 were examined visually and using stereomicroscopy, fluorescence, Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy/energy dispersive X-Ray spectroscopy (SEM/EDS). Samples collected and/or analyzed during the

TABLE 4

WebCode	Additional Comments
	examination and analysis of the items in this case (ex. glass slides) have been returned to and retained with the original item.
Y4X64C	The examination of paint chips were carried by using Stereomicroscope and Fourier-transform infrared spectroscopy (FTIR).
YRLX37	In all the samples analyzed by FTIR we observed that some paint fragments showed additional infrarred bands attributable to plaster from the substrate. Therefore, special attention was given to this type of sample contamination.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 21-5452: Paint Analysis

DATA MUST BE SUBMITTED BY **Nov. 22, 2021, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: 9YAZ2K

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Scenario:
Police are investigating a homicide of a man whose body was found wrapped in a trash bag near a local park. Green paint chips were found within the opening crease of the trash bag and in the victim's hair. The police located a potential suspect three days later and conducted a warranted search of his house. There was damage to the suspect's basement room wall, which is similar in color to the paint chips found in the trash bag and on the victim. Police are requesting that you examine the recovered paint chips from the trash bag and victim's hair and determine if either of them could have originated from the suspect's basement room wall.

Please Note:
-Samples contained within each individual item are representative of a single source.
-The purpose of this test is the examination of paint; please ignore the drywall substrate.

Items Submitted (Sample Pack P2):
Item 1: Known paint sample representative of the damaged area of the suspect's basement room wall.
Item 2: Questioned paint chips recovered from the opening crease of the trash bag.
Item 3: Questioned paint chips recovered from the victim's hair.

1.) Could the questioned paint chips recovered from the opening crease of the trash bag (Item 2) and/or from the victim's hair (Item 3) have originated from the damaged area of the suspect's basement room wall as represented by Item 1?

	Yes	No	Inconclusive
Item 2:	○	○	○
Item 3:	○	○	○

2.) Indicate the procedure(s) used to examine the submitted items:

Please check all that apply.

Microscopic Exams:	☐ Stereomicroscope	☐ Polarized Light
	☐ Fluorescence	
☐ Pyrolysis GC	☐ FTIR	☐ Solubility/Chemical
☐ XRS/XRF	☐ SEM/EDX	☐ Microspectrophotometry

Other (specify):

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

3.) What would be the wording of the Conclusions in your report?

4.) Additional Comments

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ASCLD/LAB, ANAB, and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

○ This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)

○ This participant's data is **not** intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Have the laboratory's designated individual complete the following steps
only if your laboratory is accredited in this testing/calibration discipline
by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory

ANAB Certificate No.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)