



Fibers Analysis Test No. 25-5439

Summary Report

Each participant received a sample pack consisting of known fabric and questioned fiber samples which they were asked to examine these items using their existing protocols. Data were returned from 97 participants and are compiled into the following tables:

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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 pack consisted of known fabric and questioned fiber samples. Participants were asked to examine the fibers, identify the fiber type, and determine if the questioned fibers could have originated from the known fabric.

SAMPLE PREPARATION: Each fabric used was laid out separately and any extraneous debris removed with a lint roller, and then cut into 2 x 2" square swatches. Elimination item(s) were prepared separately from other items to prevent contamination.

KNOWN ITEMS: One section of known fabric, approximately 2 x 2" in size, was selected and deposited into a glassine bag and then placed into a pre-labeled item envelope and sealed.

QUESTIONED ITEMS: A predetermined number of warp and weft fibers were teased from the edges of the fabric swatches, deposited into a glassine bag and then placed into a pre-labeled item envelope and sealed.

SAMPLE PACK ASSEMBLY: All items were placed into a pre-labeled sample pack and sealed. This process was repeated until all of the sample packs were prepared.

VERIFICATION: Predistribution results were consistent with each other and the manufacturer's preparation information. The predistribution laboratories identified the fiber(s) as Manufactured or Vegetable and the following procedures were used to examine the items: Stereomicroscopy, Polarized Light Microscopy, Comparison Microscopy, Fluorescence, Macroscopic Examination, IR/FTIR, and UV light.

Preparation Information				
Item	Known/ Questioned	Association/ Elimination	Generic Name	Color
1	Known		Polypropylene (Olefin)	Solar Eggshell
2	Questioned	Elimination	Cotton	Natural Denim
3	Questioned	Association	Polypropylene (Olefin)	Solar Eggshell

Summary Comments

This test was designed to allow participants to assess their proficiency in the examination, identification, and comparison of fibers. Participants were supplied with one known piece of fabric (Item 1) and two sets of questioned fiber samples (Items 2 and 3). Items 1 and 3 originated from the same fabric. Item 2 originated from a different fabric than that of Items 1 and 3. Refer to the Manufacturer's Information for preparation details.

ASSOCIATION RESULTS: Of the 97 responding participants in Table 1, 95 (98%) identified Item 3 and eliminated Item 2 as having originated from the Item 1 known fabric. Of the remaining two participants, one participant did not identify Item 3 and the last participant does not report fiber comparisons.

FIBER TYPE DETERMINATION: Of the 97 responding participants in Table 2, 91 (94%) reported a fiber type, which consisted of Manufactured, Olefin for Items 1 and 3 and Vegetable, Cotton for Item 2. CTS is aware that some laboratories may not further identify the fibers once an exclusionary difference has been made. Thus, responses including "not further categorized/characterized" are not indicated as outliers for elimination items.

EXAMINATION METHODS: The most commonly reported examination methods included: Stereomicroscopy (97%), IR/FTIR (95%), Polarized Light (89%), Comparison Microscopy (77%), Macroscopic Examination (71%), and Fluorescence (70%).

Association Results

Could either of the questioned fibers recovered from the suspect's car seat (Item 2) or the suspect's jacket (Item 3) have originated from the victim's deck furniture (Item 1)?

TABLE 1

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
2B8UHH	No	Yes	7WQNBY	No	Yes
2H6HC3	No	Yes	8H4VZX	No	Yes
2TM4JH	No	Yes	8HNCFZ	No	Yes
2W2YYF	No	Yes	92TEQA	No	Yes
39W8K4	No	Yes	98XCZE	No	Yes
3HMVDL	No	Yes	9G7MRD	No	Yes
3JTF2L	No	Yes	9JD6PA	No	Yes
3NQWDF	No	Yes	A6CTUA	No	Yes
3QE7P2	No	Yes	A7MUF9	No	Yes
3Y7LE7	No	Yes	A9B4RV	No	Yes
47NGTE	No	Yes	ADGZAA	No	Yes
47PAN2			ANZEDC	No	Yes
4KLQCE	No	Yes	ARYP9C	No	Yes
4NMU42	No	Yes	BJ48AU	No	Yes
4Y4GD2	No	Yes	BPUGJT	No	Yes
6BR3UG	No	Yes	BVH6CC	No	Yes
74ARH2	No	Yes	CDFM28	No	Yes
7ADV7E	No	Yes	CLQ4BT	No	Yes
7E9LEB	No	Yes	D4LXJB	No	Yes
7J4FCC	No	Yes	E9BVNR	No	Yes

TABLE 1- Association Results

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
ERMK2P	No	No	NYDC2F	No	Yes
F8XNX4	No	Yes	PA9KKH	No	Yes
FGJR64	No	Yes	PRTCJH	No	Yes
GNDCMP	No	Yes	Q3MCAR	No	Yes
GVXC33	No	Yes	Q6BLLD	No	Yes
J44X7M	No	Yes	QCABZW	No	Yes
J47M9X	No	Yes	QDQ8TW	No	Yes
J7UWKK	No	Yes	QTWQ4T	No	Yes
JAU9FK	No	Yes	RJRXCD	No	Yes
JCVB42	No	Yes	RKMGEF	No	Yes
JNPRT3	No	Yes	RMZDP6	No	Yes
JRAHGL	No	Yes	RWW3ZT	No	Yes
JUDCX3	No	Yes	T2PHPR	No	Yes
K2N8YC	No	Yes	T3ZKBQ	No	Yes
KBWQQL	No	Yes	TAGWQD	No	Yes
KFUATJ	No	Yes	TM7VFU	No	Yes
KJQVKM	No	Yes	TTTL3P	No	Yes
KWEZRJ	No	Yes	TTNRU	No	Yes
LRD6EB	No	Yes	U8BXTP	No	Yes
M89V2X	No	Yes	URUZQA	No	Yes
M974AH	No	Yes	VXZV8P	No	Yes
N497XW	No	Yes	WCUZPK	No	Yes
N8NEMG	No	Yes			

TABLE 1- Association Results

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
WJFVRA	No	Yes			
WZZLRA	No	Yes			
XLC2L7	No	Yes			
XXMB4Q	No	Yes			
Y329GJ	No	Yes			
Y73C8K	No	Yes			
YJMRAJ	No	Yes			
YNJD48	No	Yes			
YTDF6L	No	Yes			
YV4G9P	No	Yes			
ZQ2ZBL	No	Yes			
ZW9NPM	No	Yes			

Association Response Summary			Participants: 97
<p>Could either of the questioned fibers recovered from the suspect's car seat (Item 2) or the suspect's jacket (Item 3) have originated from the victim's deck furniture (Item 1)?</p>			
	<u>Item 2</u>	<u>Item 3</u>	
Yes:	0 (0.0%)	95 (97.9%)	
No:	96 (99.0%)	1 (1.0%)	
Inc:	0 (0.0%)	0 (0.0%)	
<p>The sum of the responses here may be less than the total number of participants responding due to omitted responses.</p>			

Fiber Type Determination

What is the fiber type and generic name of the fiber(s) in each item?

TABLE 2

WebCode	Item 1	Item 2	Item 3
2B8UHH	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
2H6HC3	Manufactured, Olefin(Polypropylene)	Vegetable, Cotton	Manufactured, Olefin(Polypropylene)
2TM4JH	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
2W2YFF	Manufactured, Olefin, Polypropylene	Vegetable, Cotton	Manufactured, Olefin, Polypropylene
39W8K4	Manufactured, Olefins	Vegetable, Cotton	Manufactured, Olefins
3HMVDL	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
3JTF2L	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
3NQWDF	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
3QE7P2	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
3Y7LE7	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
47NGTE	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
47PAN2	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
4KLQCE	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
4NMU42	Olefin fiber, polypropylene	Natural fiber	Olefin fiber, polypropylene
4Y4GD2	Manufactured, Olefin, polypropylene	Vegetable, Cotton	Manufactured, Olefin, polypropylene
6BR3UG	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
74ARH2	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
7ADV7E	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
7E9LEB	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
7J4FCC	Manufactured, Olefin (polypropylene)	Vegetable, Cotton	Manufactured, Olefin (polypropylene)
7WQNBY	Manufactured Olefin	Vegetable Cotton	Manufactured Olefin
8H4VZX	Manufactured, Olefin (Polypropylene)	Vegetable, Cotton	Manufactured, Olefin (Polypropylene)
8HNCFZ	Manufactured, Olefin	Vegetable, not further characterized	Manufactured, Olefin
92TEQA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
98XCZE	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
9G7MRD	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin

TABLE 2- Fiber Type Determination

WebCode	Item 1	Item 2	Item 3
9JD6PA	Manufactured, ModAcrylic	Vegetable, Cotton	Manufactured, ModAcrylic
A6CTUA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
A7MUF9	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
A9B4RV	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ADGZAA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ANZEDC	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ARYP9C	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
BJ48AU	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
BPUGJT	Manufactured, Olefin, polypropylene	Vegetable, Cotton	Manufactured, Olefin, polypropylene
BVH6CC	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
CDFM28	Manufactured, Olefin (Polypropylene)	Vegetable, Cotton	Manufactured, Olefin (Polypropylene)
CLQ4BT	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
D4LXJB	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
E9BVNR	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ERMK2P	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
F8XNX4	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
FGJR64	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
GNDCMP	Olefin fibers (PP)	Cellulose	Olefin fibers (PP)
GVXC33	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
J44X7M	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
J47M9X	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
J7UWKK	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
JAU9FK	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
JCVB42	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
JNPRT3	Manufactured, Olefin, Polypropylene	Vegetable, Cotton	Manufactured, Olefin, Polypropylene
JRAHGL	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
JUDCX3	Manufactured Olefin	natural Cotton	Manufactured Olefin
K2N8YC	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
KBWQQL	Manufactured	Vegetable, Cotton	Manufactured

TABLE 2- Fiber Type Determination

WebCode	Item 1	Item 2	Item 3
KFUATJ	Manufactured Olefin(PP)	Vegetable Cotton	Manufactured Olefin(PP)
KJQVKM	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
KWEZRJ	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
LRD6EB	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
M89V2X	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
M974AH	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
N497XW	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
N8NEMG	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
NYDC2F	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
PA9KKH	Manufactured, Nylon	Vegetable, Cotton	Manufactured, Nylon
PRTCJH	Manufactured - Olefin	Vegetable - not further characterized	Manufactured - Olefin
Q3MCAR	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
Q6BLLD	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
QCABZW	Manufactured, Olefin, polypropylene	vegetable, Cotton	Manufactured, Olefin, polypropylene
QDQ8TW	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
QTWQ4T	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
RJRXCD	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
RKMGEF	Manufactured, Olefin	Vegetable, not further categorized	Manufactured, Olefin
RMZDP6	Manufactured, Polypropylene, isotactic	Vegetable, Cotton	Manufactured, Polypropylene, isotactic
RWW3ZT	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
T2PHPR	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
T3ZKBQ	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
TAGWQD	Manufactured - Olefin	Vegetable, natural cellulose, Cotton	Manufactured - Olefin
TM7VFU	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
TTTL3P	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
TTNRU	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
U8BXTP	Manufactured, Polypropylene	Vegetable, Cotton	Manufactured, Polypropylene
URUZQA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin

TABLE 2- Fiber Type Determination

WebCode	Item 1	Item 2	Item 3
VXZV8P	Manufactured, Polypropylene	N/A	Manufactured, Polypropylene
WCUZPK	synthetic, Olefin	Vegetable, Cotton	synthetic, Olefin
WJFVRA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
WZZLRA	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
XLC2L7	Manufactured Olefin	Vegetable Cotton	Manufactured Olefin
XXMB4Q	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
Y329GJ	Olefin	Cotton	Olefin
Y73C8K	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
YJMRAJ	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
YNJD48	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
YTDF6L	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
YV4G9P	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ZQ2ZBL	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin
ZW9NPM	Manufactured, Olefin	Vegetable, Cotton	Manufactured, Olefin

Fiber Type Determination Response Summary			Participants: 97
What is the fiber type and generic name of the fiber(s) in each item?			
<u>Item 1</u>	<u>Item 2</u>	<u>Item 3</u>	
Olefin: 94 (96.9%)	Cotton: 94 (96.9%)	Olefin: 94 (96.9%)	
*Other: 3 (3.1%)	*Other: 3 (3.1%)	*Other: 3 (3.1%)	
*This category represents the total number of participants that reported a response other than the consensus response.			

The sum of the responses here may be less than the total number of participants responding due to omitted responses.

Examination Methods

TABLE 3

WebCode	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	Other
2B8UHH	✓	✓	✓	✓	✓	✓	✓				
2H6HC3	✓		✓		✓	✓	✓				
2TM4JH	✓	✓	✓	✓	✓	✓		✓			
2W2YFF	✓	✓		✓		✓		✓			
39W8K4	✓			✓		✓					GC\MS PYROLYSIS
3HMVDL	✓	✓	✓	✓	✓	✓					
3JTF2L	✓	✓	✓	✓	✓	✓	✓	✓			
3NQWDF	✓	✓	✓	✓	✓	✓					Raman
3QE7P2	✓	✓	✓	✓		✓					
3Y7LE7	✓	✓	✓		✓	✓					
47NGTE	✓	✓	✓	✓		✓					
47PAN2	✓		✓		✓	✓					
4KLQCE	✓	✓	✓	✓	✓	✓			✓		
4NMU42	✓	✓	✓	✓	✓	✓					
4Y4GD2	✓	✓	✓	✓	✓	✓					
6BR3UG	✓	✓	✓		✓	✓		✓			
74ARH2	✓	✓	✓	✓	✓	✓					
7ADV7E	✓	✓	✓	✓	✓	✓					
7E9LEB	✓	✓	✓	✓		✓	✓	✓			SEM-EDS
7J4FCC	✓	✓	✓	✓	✓	✓					PGCMS

TABLE 3- Examination Methods

WebCode	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	Other
7WQNBV	✓	✓	✓	✓		✓					
8H4VZX	✓	✓		✓	✓	✓	✓				
8HNCFZ	✓	✓	✓	✓	✓	✓					
92TEQA	✓	✓	✓	✓	✓	✓					longitudinal cross section
98XCZE	✓	✓	✓	✓		✓					RAMAN
9G7MRD	✓	✓	✓	✓	✓	✓	✓				
9JD6PA	✓		✓		✓						Burning test
A6CTUA	✓	✓	✓		✓	✓					Fluorescence (UV light box)
A7MUF9	✓	✓	✓	✓	✓	✓	✓				Thin Layer Chromatography
A9B4RV	✓	✓	✓	✓	✓	✓					
ADGZAA	✓	✓	✓	✓		✓					
ANZEDC	✓	✓	✓	✓	✓	✓		✓			
ARYP9C	✓	✓	✓	✓	✓	✓		✓			
BJ48AU	✓	✓	✓	✓	✓	✓					
BPUGJT	✓	✓	✓	✓		✓					Raman spectroscopy
BVH6CC	✓	✓	✓		✓	✓		✓			
CDFM28	✓		✓		✓			✓			
CLQ4BT	✓	✓	✓	✓	✓	✓	✓				
D4LXJB	✓	✓	✓	✓		✓					
E9BVNR	✓		✓			✓					GC/MS PYROLYSIS, VSC
ERMK2P	✓	✓	✓	✓	✓	✓	✓	✓			
F8XNX4	✓	✓	✓		✓	✓					UV

TABLE 3- Examination Methods

WebCode	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	Other
FGJR64	✓	✓	✓	✓	✓	✓				✓	
GNDCMP	✓				✓	✓	✓	✓			
GVXC33	✓	✓	✓	✓	✓	✓	✓				
J44X7M	✓				✓	✓		✓			PyGC-MS, SEM/EDS
J47M9X	✓		✓		✓	✓		✓			
J7UWKK	✓	✓	✓	✓	✓	✓	✓	✓			
JAU9FK	✓	✓	✓	✓	✓	✓	✓	✓			
JCVB42	✓	✓	✓	✓	✓	✓		✓			
JNPRT3	✓	✓	✓	✓	✓	✓	✓				
JRAHGL	✓	✓				✓					
JUDCX3	✓			✓	✓	✓		✓			
K2N8YC	✓	✓	✓	✓	✓	✓	✓				
KBWQQL	✓										
KFUATJ	✓		✓		✓	✓	✓				
KJQVKM	✓	✓	✓	✓	✓	✓	✓				
KWEZRJ	✓		✓			✓	✓				
LRD6EB	✓	✓	✓	✓		✓					
M89V2X	✓	✓	✓	✓	✓	✓					
M974AH	✓	✓	✓		✓					✓	
N497XW	✓	✓	✓	✓	✓	✓					
N8NEMG	✓		✓		✓	✓					Py-GC/MS, SEM/EDS

TABLE 3- Examination Methods

WebCode	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	Other
NYDC2F			✓		✓	✓					
PA9KKH	✓	✓	✓								
PRTCJH	✓	✓	✓	✓	✓	✓	✓		✓		
Q3MCAR	✓	✓	✓	✓	✓	✓	✓		✓	✓	PGC/MS
Q6BLLD	✓		✓			✓	✓				Pyrolysis gas chromatography-mass spectrometry
QCABZW		✓	✓	✓		✓			✓		
QDQ8TW	✓	✓	✓	✓		✓			✓		
QTWQ4T	✓	✓	✓	✓	✓	✓			✓		
RJRXCD	✓		✓		✓	✓			✓		
RKMGEF	✓	✓	✓	✓		✓	✓				
RMZDP6	✓			✓	✓	✓					
RWW3ZT	✓	✓	✓	✓	✓	✓			✓		
T2PHPR	✓	✓	✓	✓	✓	✓					
T3ZKBQ	✓	✓	✓	✓	✓	✓	✓	✓	✓		
TAGWQD						✓					
TM7VFU	✓		✓	✓		✓			✓		
TTTL3P	✓	✓	✓	✓	✓	✓	✓				
TTNRU	✓	✓	✓	✓	✓	✓	✓		✓		
U8BXTF	✓	✓	✓		✓	✓					
URUZQA	✓	✓	✓	✓	✓	✓			✓		Alternate Light Source
VXZV8P	✓	✓	✓	✓	✓	✓			✓		

TABLE 3- Examination Methods

WebCode	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	Other
WCUZPK	✓		✓	✓		✓	✓				
WJFVRA	✓	✓	✓	✓		✓					
WZZLRA	✓	✓			✓	✓					DXR Raman
XLC2L7	✓		✓			✓					Pyrolyzer-GC/MS
XXMB4Q	✓	✓	✓		✓	✓					
Y329GJ	✓	✓	✓	✓	✓	✓	✓				
Y73C8K	✓	✓	✓		✓	✓					Refractive Index (RI)
YJMRAJ	✓	✓	✓	✓	✓	✓		✓	✓		
YNJD48	✓	✓	✓	✓	✓	✓					
YTDF6L	✓	✓	✓	✓		✓	✓				
YV4G9P	✓	✓	✓	✓		✓					Raman
ZQ2ZBL	✓	✓	✓	✓	✓	✓					✓
ZW9NPM	✓	✓	✓	✓		✓	✓				✓

Examination Methods Response Summary											Participants: 97
	Stereomicroscope	Comparison	Polarized Light	Fluorescence	Macroscopic Exam	IR/FTIR	Microspectrophotometry	Solubility Tests	Cross-Section	Melting Point	
Participants	94	75	86	68	69	92	28	3	33	4	
Percent	97%	77%	89%	70%	71%	95%	29%	3%	34%	4%	

Conclusions

TABLE 4

WebCode	Conclusions
2B8UHH	<p>Exhibit 1 (known section of fabric from the victim's deck furniture) disclosed the presence of one piece of light-yellow woven fabric. Analysis of the fibers that make up the fabric disclosed them to be olefin, subclass polypropylene. Exhibit 2 (questioned fibers recovered from suspect's car seat) disclosed the presence of light-yellow to colorless fibers. Analysis of these fibers disclosed them to be cotton. Exhibit 3 (questioned fibers recovered from the suspect's jacket) disclosed presence of light-yellow to colorless fibers. Analysis of these fibers disclosed them to be olefin, subclass polypropylene. Comparative examinations of the questioned fibers in Exhibit 3 with the known fibers from a section of the victim's deck furniture in Exhibit 1 disclosed them to be indistinguishable in all assessed microscopic characteristics and optical properties with no exclusionary difference. Further analysis disclosed several of these fibers to be chemically indistinguishable by microspectrophotometry (MSP) and Fourier transform infrared spectroscopy (FTIR). Therefore, the fibers in Exhibit 3 could have originated from the deck furniture fabric in Exhibit 1 or from another source with the same characteristics (Type IV Inclusion). This association is limited because light-colored to colorless fibers could be more commonly encountered in the general population and lack distinguishing dye characteristics to differentiate them. Comparative examinations of the questioned fibers in Exhibit 2 with the known fibers from Exhibit 1 disclosed them to be different in microscopic characteristics and fiber type. Therefore, the fibers in Exhibit 2 could not have originated from the section of fabric in Exhibit 1 (Exclusion).</p>
2H6HC3	<p>Item 3 could be originated from Item 1.</p>
2TM4JH	<p>The following methodologies were used in the examination of this case: visual examination, physical examination, microscopy, fluorescence, and FTIR. Examination of Item 1 revealed the presence of white woven fabric comprised of at least two different types of polypropylene yarns. Examination of Item 2 revealed the presence of four white cotton yarns. The four white yarns, composed of cotton fibers, are not consistent in construction or composition with the white yarns composed of polypropylene fibers from the fabric in Item 1. Therefore, these white yarns could not have originated from the fabric from the victim's deck furniture in Item 1. Examination of Item 3 revealed the presence of four white yarns consisting of two types of polypropylene fibers. Two white yarns, composed of polypropylene fibers, were consistent in color, construction, and composition with the Direction A white yarns composed of polypropylene fibers from the fabric in Item 1. Two white yarns, composed of polypropylene fibers, were consistent in color, construction, and composition with the Direction B white yarns composed of polypropylene fibers from the fabric in Item 1. Therefore, all four white yarns from the suspect's jacket, Item 3, could have originated from the fabric from the victim's deck furniture in Item 1.</p>
2W2YYF	<p>The fabric from the 'deck furniture' (Item 1) was constructed with threads of colourless, staple, polypropylene fibres woven together. The threads in both the warp and the weft had a crimped appearance from being woven into fabric, with the warp threads appearing less crimped than the weft threads. The fibres recovered from the 'suspect's car seat' (Item 2) consisted of four threads constructed with colourless cotton fibres. Consequently, the four threads from the 'suspect's car seat' could not have originated from the 'deck furniture'. The fibres recovered from the 'suspect's jacket' (Item 3) consisted of four threads constructed with colourless, staple, polypropylene fibres. The four threads had a crimped appearance, indicating they likely originated from a woven fabric, with two of the threads appearing less crimped than the other two. Two of the threads from the 'suspect's jacket' were indistinguishable in appearance and construction from the warp threads in the fabric from the 'deck furniture'. The other two threads from the 'suspect's jacket' were indistinguishable in appearance and construction from the weft threads in the fabric from the 'deck furniture'. In addition to this, the colourless polypropylene fibres in the four threads from the 'suspect's jacket' were indistinguishable from the colourless polypropylene fibres in the fabric from the 'deck furniture' with respect to their appearance, size, and cross-sectional shape. In my opinion, this result provides strong support for the contention that the four colourless polypropylene threads from the 'suspect's jacket' originated from the 'deck furniture'.</p>
39W8K4	<p>The questioned fiber (item2) that was recovered from the suspect's car seat could have not been originated from the victim's deck furniture (item1), because of their differences in physical properties and</p>

TABLE 4

WebCode	Conclusions
	chemical compositions. The questioned fiber (item3) that was recovered from the suspect's jacket could have been originated from the victim's deck furniture (item1), because of their similarites in physical properties and chemical compositions.
3HMVDL	The questioned thread recovered from the suspect's car seat(s) (item 2) is different from the threads originating from the known section of fabric (item 1); therefore, it could not have originated from fabric (item 1). The questioned thread recovered from the suspect's jacket (item 3) is consistent with the thread originating from the known section of fabric (item 1) based on all examined features (structure of the thread, fiber type from which the thread is composed). Based on this, it can be clearly stated that the thread recovered from the suspect's jacket (item 3) could have originated from the known section of fabric (item 1).
3JTF2L	Questioned fibers recovered from the suspect's car seat (Item 2) are differentiated from known section fabric from the the victim's deck furniture (Item 1). Fibers from Item 2 don't come from the fabric of the victim's deck furniture (Item 1). Questioned fibers recovered from the suspect's jacket (Item 3) are not differentiated from known section fabric from the victim's deck furniture (Item 1). Polypropylene fibers from Item 3 can come from the fabric of the victim's deck furniture (Item 1) or from another textile material with the same characteristics.
3NQWDF	The known fabric from the complainant's deck furniture, item 1, could not be eliminated as a possible source of the white polypropylene yarns recovered from the suspect's jacket, item 3. As such, the white polypropylene yarns recovered from the suspect's jacket, item 3, either came from the complainant's deck furniture, item 1, or from another source that is indistinguishable with respect to yarn construction, fibre microscopic appearance. and composition. The known fabric from the complainant's deck furniture, item 1, was eliminated as a possible source of the questioned fibres recovered from the suspect's car seat, item 2.
3QE7P2	Item 1 was consistent with delustered polypropylene fibers. Item 2 was consistent with natural cellulose fibers (cotton) and therefore did not come from the same source as Item 1. Item 3 was consistent with delustered polypropylene fibers. The morphology of the fibers was similar to those in Item 1. The fibers from Item 3 shared similar characteristics as those in Item 1. Therefore, it is possible Item 3 may have come from the same source as Item 1.
3Y7LE7	Questioned fibers' fragments recovered from the suspect's jacket (Item 3) and the victim's deck furniture's (Item 1) fibers have the common characteristically features.
47NGTE	The section of fabric from the victim's deck furniture (item 1) contained colourless polypropylene fibres. The questioned fibres recovered from the suspect's car seat (item 2) contained colourless cotton fibres. Therefore, this sample contained different fibres to the fabric from the deck furniture and in my opinion has not come from the deck furniture fabric. The questioned fibres recovered from the suspect's jacket (item 3) contained colourless polypropylene fibres. These fibres were compared to the fibres from the deck furniture by their microscopic appearance, fluorescence properties, and chemical compositions. The chemical compositions were determined using FTIR (Fourier transform infrared) spectroscopy. Using these techniques the fibres from the suspect's jacket could not be excluded as coming from the fabric from the deck furniture. Therefore, in my opinion the colourless polypropylene fibres from the suspect's jacket could have come from the fabric from the deck furniture, or from another source of this type of colourless polypropylene fibres.
47PAN2	Item 1, fabric from the victim's deck furniture, contains manufactured fibers, identified as olefin. Item 2, fibers recovered from suspect's car seat, contains vegetable fibers, identified as cotton. Item 3, fibers recovered from the suspect's jacket, contains manufactured fibers, identified as olefin.
4KLQCE	CONCLUSIONS: The yarns recovered from the "questioned fibers recovered from the subject's jacket" (Item 3) originated from the "known section of fabric from the victim's deck furniture" (Item 1) or another source of textile material possessing fibers with the same distinct microscopic, optical, and chemical characteristics. The yarns recovered from the "questioned fibers recovered from the suspect's car seat" (Item 2) did not originate from "known section of fabric from the victim's deck furniture" (Item 1). RESULTS: The "questioned fibers recovered from the subject's jacket" (Item 3) were examined to determine whether or not they are consistent with the known fabric in item 1. Examination of Item 3

TABLE 4

WebCode	Conclusions
	<p>reveals the presence of 3 colorless yarns composed of olefin. Examination and comparison of the yarns recovered from the "questioned fibers recovered from the subject's jacket" (Item 3) with the "known section of fabric from the victim's deck furniture" (Item 1) reveals they are consistent in construction. Further examination and comparison of the fibers composing the fabric from the "known section of fabric from the victim's deck furniture" (Item 1) with the "questioned fibers recovered from the subject's jacket" (item 3) reveals they are consistent in microscopic, optical, and chemical characteristics. It is therefore concluded the yarns recovered from the "questioned fibers recovered from the subject's jacket" (Item 3) originated from the "known section of fabric from the victim's deck furniture" (Item 1) or another source of textile material possessing the same distinct characteristics. The "questioned fibers recovered from the suspect's car seat" (Item 2) were examined to determine whether or not they are consistent with the "known section of fabric from the victim's deck furniture" (Item 1). Examination of Item 2 reveals the presence of 4 colorless yarns composed of cotton. Examination and comparison of the yarns recovered from "questioned fibers recovered from the suspect's car seat" (Item 2) with known fibers of Item 1 revealed they are inconsistent in microscopic characteristics. It is therefore concluded the yarns recovered from the "questioned fibers recovered from the suspect's car seat" (Item 2) did not originate from the "known section of fabric from the victim's deck furniture" (Item 1). METHODS OF ANALYSIS: Examinations were performed visually, by stereo microscopy, brightfield/polarized light comparison microscopy, fluorescence microscopy, thermal microscopy and Fourier transform infrared microspectroscopy.</p>
4NMU42	<p>The results very strongly support the proposition that the threads in item 1 and item 3 are of the same type. The results strongly support the hypothesis that says item 1 and item 3 are of the same origin, rather than the alternative hypothesis that says that item 1 and item 3 are of different origin.</p>
4Y4GD2	<p>In considering the significance of the findings we have considered the following propositions: - the yarns containing the propylene fibres originate from item 1 - the yarns do not come from item 1 and therefore have come from another source(s) and happen to match by chance. In our opinion, we consider there is moderately strong support for the proposition that the yarns comprising colourless propylene fibres (item 3) recovered from the suspect's jacket originated from the deceased's decking furniture (item 1), rather than the alternative that the recovered yarns came from another source(s) and happen to match by chance.</p>
6BR3UG	<p>No exclusionary differences in microscopic properties, and chemical composition (by Fourier Transform Infrared Spectroscopy) were observed between analyzed colorless olefin fibers from item 1.3 yarns and colorless olefin fibers from the fabric of item 1.1. Therefore, item 1.3 could have originated from item 1.1 or another item exhibiting all of the same analyzed/measured characteristics. Discriminating differences in microscopic properties were observed between analyzed colorless cotton fibers from item 1.2 yarns and colorless olefin fibers from the fabric of item 1.1. Therefore, item 1.2 could not have originated from item 1.1.</p>
74ARH2	<p>White olefin fibers recovered from Item 3 exhibit the same microscopic characteristics and optical properties as the fibers comprising Item 1. Accordingly, these fibers are consistent with originating from Item 1, or another item comprised of fibers that exhibit the same microscopic characteristics and optical properties. White cotton fibers recovered from Item 2 are microscopically dissimilar to the fibers comprising Item 1. Accordingly, these fibers are not consistent with originating from Item 1.</p>
7ADV7E	<p>The yarns from item 2 were comprised of fibers of a different fiber type than the yarns comprising the fabric from item 1; therefore, the yarns recovered from the suspect's car seat (item 2) could not have originated from the victim's deck furniture as represented by the fabric sample from item 1. The yarns from item 3 were similar in all examined characteristics to the yarns comprising the fabric from item 1; therefore, the yarns recovered from the suspect's jacket (item 3) could have originated from the victim's deck furniture, as represented by the fabric sample from item 1, or another fabric of similar manufacturing.</p>
7E9LEB	<p>In my opinion, the results indicate no association between the fibres obtained from the victim's deck furniture (item 1) and the suspect's car seat (item 2). The exhibits were dissimilar in physical properties and chemical composition, and thus they did not originate from the same source. In my opinion, the results provide a level 3 association with respect to a comparison between the fibres from the victim's</p>

TABLE 4

WebCode	Conclusions
	deck furniture (item 1) and the suspect's jacket (item 3). A level 3 association is an association in which 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.
7J4FCC	The Exhibit 3 fibers were compared to the known fabric in Exhibit 1 and found to correspond in color and type (tan, olefin), and microscopic characteristics including two sizes of crimp. In addition, several fibers from within Exhibit 1 and Exhibit 3 were further analyzed and found to be similar in chemical composition and subclass (polypropylene). Therefore, Exhibit 3 could have a common source as Exhibit 1 or another source with the same characteristics (Type III Inclusion). This type of conclusion was reached because other textiles containing fibers made to the same specifications (type, color, microscopic characteristics, etc.) would also be indistinguishable from these fibers. The techniques utilized in this comparative analysis can readily distinguish different fibers. The tan cotton fibers in Exhibit 2 were different in fiber type to the known olefin fibers in Exhibit 1. Therefore, Exhibit 2 can be eliminated as having a common source with Exhibit 1 (Exclusion). See the Appendix of this report for further context regarding the conclusions listed above. The following techniques were used in the examination of one or more of the exhibits described above: visual examination, physical examination, microscopical examinations, Fourier transform infrared spectroscopy (FTIR) and Pyrolysis gas chromatography-mass spectrometry (PGCMS).
7WQNBV	The fibres comprising the threads of Item 3 were found to be microscopically indistinguishable from the constituent fibres of the torn deck furniture at the scene as represented by Item 1 and hence could, in my opinion, have originated from damaged furniture in question. Due to the nature of the provided samples and the information provided with this submission it is not in my view possible to evaluate these findings further. The fibres comprising item 2 were found to be of a different type from the constituent fibres of the torn deck furniture at the scene as represented by Item 1 and hence, in my opinion, could not have originated from damaged furniture in question.
8H4VZX	In my opinion the scientific findings provide very strong support for the assertion that the recovered fibres from the suspect's jacket (Item 3) originated from the victim's deck furniture (Item 1) rather than they did not and the fibres match by chance. In my opinion the fibres recovered from the suspect's car (Item 2) could not have originated from the deck furniture (Item 1). The term "strong support" is selected from a scale of standard terms used to express the relative level of scientific support for a proposition over it alternative, as discussed above. These terms are: Limited, Moderate, Moderately Strong, Strong, Very Strong, Extremely Strong. Additionally, in some instances, a proposition may be conclusively supported, if the findings are such that the alternative can be dismissed. If the findings provide no greater support for one proposition over the other, then the findings are described as inconclusive.
8HNCFZ	The white olefin fibers from Item 3 have the same microscopic characteristics and optical properties as the fibers comprising Item 1. Accordingly, these fibers are consistent with originating from the same source as the Item 1 known sample or from another source comprised of fibers with the same microscopic characteristics and optical properties. The Item 2 fibers are microscopically dissimilar to the fibers comprising Item 1. Accordingly, the Item 2 fibers are not consistent with originating from the same source as the Item 1 known sample. The specimens were examined visually using stereomicroscopy, comparison microscopy, polarized light microscopy, and fluorescence microscopy, and instrumentally using infrared spectroscopy, where appropriate.
92TEQA	Item 1 was opened and found to contain a white piece of fabric. Fiber standards were collected to be used for comparison purposes with Items 2 and 3. Items associated with the suspect Item 3 was opened and found to contain four (4) white yarns. The yarns were macroscopically and microscopically examined and compared with the white yarns comprising the Item 1 standard. These examinations and comparisons revealed that the white yarns from Item 3 are consistent in color, construction, and appearance with the white yarns comprising the Item 1 standard. Detailed examinations of the white yarns revealed they are comprised of colorless polypropylene olefin fibers. Comparative examinations between at least seventy-eight (78) colorless olefin fibers and the colorless polypropylene olefin fibers comprising the Item 1 standard revealed that they are consistent in color, appearance, fiber type, and

TABLE 4

WebCode	Conclusions
	microscopic characteristics. Therefore, at least seventy-eight (78) of the colorless olefin fibers from Item 3 could have originated from the Item 1 standard from the victim's deck furniture. Item 2 was opened and found to contain four (4) white yarns. The yarns were macroscopically and microscopically examined and compared with the white yarns comprising the Item 1 standard. These examinations and comparisons revealed that the white yarns from Item 2 are different in construction from the white yarns comprising the Item 1 standard. Detailed examinations of the white yarns revealed that they are comprised of colorless cotton fibers. Therefore, the white yarns in Item 2 could not have originated from the victim's deck furniture as represented by the Item 1 standard.
98XCZE	The fibers of item-1 and item-3 have the same characteristics. Thus, the questioned fibers recovered from the suspect's jacket (item-3) could have originated from the victim's deck furniture (item-1). The fibers from the suspect's car seat (item-2) were inconsistent with the fibers from the victim's deck furniture (item-1) and could not have the same source.
9G7MRD	The white cotton fibers found from the suspect's car seat (item 2) are not consistent with the white olefin fibers of the victim's deck furniture (item 1). Item 2 could not be originated from item 1. The white olefin fibers found from the suspect's jacket (item 3) are consistent with the white olefin fibers from the victim's deck furniture (item 1). Item 3 could be originated from item 1.
9JD6PA	Fibers recovered from suspect's jacket (Item #3) could have originated from the victim's deck furniture (Item #1).
A6CTUA	The questioned colorless cotton fibers in item 2 were visually and microscopically different from the known colorless polypropylene fibers in item 1 with respect to general composition, optical properties and fluorescence. This indicates that the colorless cotton fibers in item 2 did not originate from the deck furniture fabric in item 1. The questioned colorless polypropylene fibers in item 3 were visually, microscopically and instrumentally consistent with the known colorless polypropylene fibers in item 1. This indicates that the colorless polypropylene fibers in item 3 could have originated from the deck furniture fabric in item 1 or any other fibers/fabric with the same physical and chemical characteristics.
A7MUF9	Two (2) types of white olefin fibers in Item 3 were indistinguishable from the two (2) types of white olefin fibers in Item 1 in color, fiber type, and microscopic characteristics (Type 3 Association). This means that the fibers recovered from the suspect's jacket could have come from the victim's deck furniture. White cotton fibers in Item 2 were different from the white olefin fibers in Item 1 (Elimination). This means that the fibers recovered from the suspect's car seat did not originate from the victim's deck furniture. Trace Interpretation Scale Type 1 Association: Physical Fit—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 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.

TABLE 4

WebCode	Conclusions
A9B4RV	The comparison between the unknown fibers from Item 2 and the exemplar fabric from Item 1 revealed dissimilar class characteristics (fiber type and manufacturing characteristics), therefore, the source of the exemplar fabric in Item 1 is excluded as a possible source of the unknown fibers in Item 2. The comparison between the unknown fibers from Item 3 and the exemplar fabric from Item 1 revealed similar class characteristics (fiber type and manufacturing characteristics), therefore, the source of the exemplar fabric in Item 1 is included as a possible source of the unknown fibers in Item 3. For another exemplar fabric to be considered a possible source of the unknown fibers in Item 3, they would have to share the same fiber type and manufacturing characteristics as the unknown fibers.
ADGZAA	OVERALL CONCLUSIONS Item 1 and 2 - The fibers in item 2 are not of the same construction and do not contain the same optical properties as item 1. The fibers in item 2 are cotton while item 1 are polypropylene. Item 1 is NOT a source of item 2. Item 1 and 3 - The two fibers were indistinguishable from one another in regards to construction of the threads, diameter, optical properties and chemical composition. Item 1 can not be excluded as a possible source of the fibers in item 3.
ANZEDC	Examinations: Visual examination, stereomicroscopy, polarized light microscopy, fluorescence microscopy, infrared spectroscopy (IR), cross-sectioning Information: Light-colored questioned yarns were reportedly collected from the suspect's car seat (Item 2) and jacket (Item 3). A known fabric sample was reportedly collected from the victim's deck furniture (Item 1) for comparison to the questioned yarns. Results: The questioned yarns/fibers from Item 3 were similar in all tests performed to the known yarns/fibers from Item 1. Additionally, Items 1 and 3 were both composed of olefin fibers. In the opinion of the undersigned, the questioned yarns from the suspect's jacket came from either the victim's deck furniture, as represented by Item 1, or another source with similar characteristics (Level 3 – Association). The questioned yarns/fibers from Item 2 were dissimilar in microscopic characteristics to the known yarns/fibers from Item 1 (e.g., fiber type). Item 2 was confirmed to be composed of cotton fibers. The victim's deck furniture, as represented by Item 1, is excluded as a source of the questioned yarns from the suspect's car seat (Elimination). Additional Remarks: Please contact the undersigned if additional knowns are collected for possible further comparisons to Item 2.
ARYP9C	Examinations: visual examination, stereomicroscopy, polarized light microscopy, fluorescence microscopy, infrared spectroscopy, physical cross sectioning Information: Questioned yarns/fibers reportedly recovered from the suspect's car seat and jacket (Item 2 and Item 3) were compared to yarns/fibers of a known section of fabric reportedly from the victim's deck furniture (Item 1) to determine if this deck furniture is a possible source of these questioned yarns/fibers. Results: Stereoscopic examination of Item 2 revealed four strands of pale beige apparent natural yarn. Stereoscopic examination of Item 3 revealed four strands of pale beige apparent synthetic yarn. Item 1, swatch of beige woven fabric material, was comprised of pale beige apparent synthetic yarns. The questioned synthetic yarns/fibers reportedly recovered from the suspect's jacket (Item 3) were similar to the known fibers from the deck furniture (Item 1) based on all examinations performed. These questioned and known yarns/fibers were determined to be olefin. In the opinion of the examiner, these questioned yarns/fibers originated either from the deck furniture as represented by Item 1 or from another indistinguishable source. Because other yarn/fiber sources have been manufactured that would also be indistinguishable from the submitted evidence, an individual source cannot be determined. (Level 3-Association) The questioned natural yarn/fibers reportedly recovered from the suspect's car seat (Item 2) were dissimilar to the known yarn/fibers from the deck furniture (Item 1) based on fiber type and macroscopic characteristics. These questioned yarns/fibers were determined to be cotton. In the opinion of the examiner, these questioned yarns/fibers did not originate from the deck furniture as represented by Item 1. (Elimination)
BJ48AU	Item 1 consisted of a piece of cream coloured fabric, which I understand was sampled from the deckchair. The non-damaged sections of this fabric did not shed its fibres, however, threads of fibres were sampled from the edges and the threads were found to be composed of colourless polyolefin fibres. Item 2, recovered from the suspect's car seat, was found to consist of a few threads composed of colourless cotton fibres. In my opinion, these were different from the fibres comprising the deckchair and thus did not originate from the deckchair. Item 3, recovered from the suspect's jacket, was found to consist of a few threads composed of colourless polyolefin fibres. In my opinion, the threads had the

TABLE 4

WebCode	Conclusions
	<p>same macroscopic appearance as the threads comprising the deckchair and the fibres comprising the threads were also microscopically indistinguishable from the fibres comprising the deckchair. Therefore, in my opinion, these threads could have originated from the deckchair. In my opinion, one possible explanation for the findings is that the suspect was in direct contact with the deckchair as alleged. To evaluate the findings or assess their significance it is necessary to consider an alternative/defence proposition, which at the time of writing is not available given that no account from the suspect has been provided. If an alternative/defence proposition is provided, then it may be possible to evaluate the findings.</p>
BPUGJT	<p>1. Item 2 questioned fibers recovered from suspect's car seat could not have originated from the victim's deck furniture (Item 1). 2. Item 3 questioned fibers recovered from the suspect's jacket could have originated from the victim's deck furniture (Item 1).</p>
BVH6CC	<p>The questioned light tan olefin fibers recovered from the suspect's jacket (item #3) exhibit the same physical, chemical, and optical properties as the known light tan olefin fibers from the victim's deck furniture (item #1) and could have originated from this furniture or another of similar color and composition. It should be noted that individual textile fibers do not possess enough distinct characteristics to be positively identified as originating from a particular textile to the exclusion of all others. The questioned light tan cotton fibers recovered from the suspect's car seat (item #2) exhibit different physical, chemical and optical properties than the known light tan olefin fibers from the victim's deck furniture (item #1) and therefore could not have originated from the furniture.</p>
CDFM28	<p>When the Questioned Item 2; Exhibit 2 was compared to Item 1; Exhibit 1 it was determined that the natural cotton fibers of Exhibit 2 exhibited significant differences in the physical, microscopic, optical and ALS properties. Exhibit 2 could not have originated from the same source represented by the synthetic olefin (polypropylene) fibers from Exhibit 1. When the Questioned Item 3, Exhibit 3 was compared to Item 1; Exhibit 1 it was determined that no significant differences were observed in the physical, microscopic, optical and ALS properties. The questioned fibers of Exhibit 3 could have originated from the same source represented by the fibers of Exhibit 1 or another source of synthetic olefin (polypropylene) fibers with the same physical, microscopic, optical and ALS properties. FTIR was not performed due to the instrument being out of service.</p>
CLQ4BT	<p>Questioned fibers recovered from the suspect's jacket (Item 3) could have originated from the victim's deck furniture (Item 1). Questioned fibers recovered from the suspect's car seat (Item 2) could not have originated from the victim's deck furniture (Item 1).</p>
D4LXJB	<p>Based on microscopic characteristics and chemical composition, a) the control yarns in Item 1 are found to consist of olefin fibres. b) the yarns in Item 3 are found to consist of olefin fibres. Based on microscopic characteristics, the yarns in Item 2 are found to consist of cotton fibres. Based on the comparison of yarn characteristics and microscopic characteristics, fluorescence and chemical composition of the fibres constituting the yarns, the yarns in Item 3 could have originated from Item 1, or other sources containing yarns with similar characteristics. Based on differences in yarn characteristics and microscopic characteristics (morphology) of fibres constituting the yarns, Item 2 did not originate from Item 1.</p>
E9BVNR	<p>[No Conclusions Reported.]</p>
ERMK2P	<p>The white cotton fibers labeled questioned fibers from the suspect's car seat, (item 2), display differences in physical characteristics as compared to the white olefin fibers from the sample labeled known section of fabric from the victim's deck furniture, (item 1). Elimination. The white olefin fibers labeled questioned fibers from the suspect's jacket, (item 3), display differences in physical characteristics as compared to the white olefin fibers from the sample labeled known section of fabric from the victim's deck furniture, (item 1). Elimination.</p>
F8XNX4	<p>Items 1A-1C were examined visually, stereoscopically with white and UV light, microscopically, and instrumentally using Fourier Transform Infrared Spectrometry (FTIR). The fibers from Item 1B were not consistent with the fibers from the fabric from Item 1A. The fibers from 1C were visually, microscopically, and instrumentally consistent with the fibers from the fabric from Item 1A. This indicates the fibers</p>

TABLE 4

WebCode	Conclusions
	recovered from the suspect's jacket (Item 1C) and the fabric from the victim's deck furniture (Item 1A) could share a common 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.
FGJR64	<p>CONCLUSIONS: Questioned yarns identified as recovered from the suspect's jacket (item 3) originated from the victim's deck furniture (item 1) or another source of textile material possessing the same distinct characteristics. Questioned yarns identified as recovered from the suspect's car seat (item 2) did not originate from the portion of the victim's deck furniture represented by item 1. RESULTS: Questioned yarns identified as recovered from the suspect's car seat and jacket (items 2 and 3) were examined for the purpose of determining whether or not they are consistent with the known fabric identified as from the victim's deck furniture (item 1). Examination of item 2 revealed the presence of four white yarns composed of cotton fibers. Examination and comparison of the yarns from item 2 with yarns from the fabric of the victim's deck furniture (item 1) revealed they are inconsistent in construction and fiber composition. It is therefore concluded the yarns from item 2 did not originate from the portion of the victim's deck furniture represented by item 1. Examination of item 3 revealed the presence of four white yarns composed of olefin fibers. Examination and comparison of the yarns from item 3 with yarns from the fabric of the victim's deck furniture (item 1) revealed they are consistent in construction. Further examination and comparison of fibers composing the yarns from item 3 with fibers composing the yarns from item 1 revealed they are consistent in microscopic, optical, and chemical characteristics. It is therefore concluded the yarns from item 3 originated from the victim's deck furniture (item 1) or another source of textile material possessing the same distinct characteristics. METHODS OF ANALYSIS: Examinations were performed visually, by stereo microscopy, brightfield/polarized light comparison microscopy, fluorescence microscopy, thermal microscopy and Fourier transform infrared microspectroscopy.</p>
GNDCMP	<p>After the studies done to the items 1, 2 and 3, we obtained the next results: - Items 1 and 3 have same composition and section. - Items 1 and 2 have different composition and section. - Items 1, 2 and 3 have no delustrant. - Items 1, 2 and 3 are multifilament fibers. Due to these, we can say that: - Item 3 may have as origin item 1. - Item 2 may NO have as origin item 1.</p>
GVXC33	<p>Items 1, 2, and 3 were examined by stereomicroscopy and polarized light microscopy. Items 1 and 3 were additionally examined by comparison polarized light microscopy, fluorescence microscopy, microspectrophotometry, and infrared spectroscopy. The colorless cotton yarns in Item 2 were different from the colorless olefin yarns in Item 1 (Elimination). This means the fibers recovered from the suspect's car seat did not come from the fabric comprising the victim's deck furniture. Two types of colorless olefin yarns in Item 3 were indistinguishable from the two types of colorless olefin yarns in Item 1 (Type 3 Association: Association with Conventional Characteristics). This means the two types of yarn recovered from the suspect's jacket could have come from the fabric comprising the victim's deck furniture. Trace Interpretation Scale Type 1 Association: Physical Fit—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 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</p>

TABLE 4

WebCode	Conclusions
	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.
J44X7M	1. According to the results of microscopic examination, cross-section, FT-IR, PyGC-MS and SEM/EDS, the compositions of Item 3 is similar to those of Item 1. 2. The Item 2 component is dissimilar to Item 1.
J47M9X	Item 1 - Known section of fabric from the victim's deck furniture - contained a swatch of cream coloured woven fabric (approximately 5cm x 5cm in size). The warp and weft of this fabric was found to consist of colourless, lightly delustered, round, olefin fibres. Item 2 - Questioned fibres recovered from the suspect's car - contained four threads of cream coloured fibres approximately 5cm in length. The threads were found to consist of cotton fibres. Item 3 - Questioned fibres recovered from the suspect's jacket - contained four threads of cream coloured fibres approximately 5cm in length. The threads were found to consist of colourless, lightly delustered, round, olefin fibres. In relation to colour, chemical composition, cross section, and crease pattern (i.e. creasing of threads during weaving process) the threads recovered from the suspect's jacket (item 3) were found to be indistinguishable to the warp and weft threads from the fabric from the victim's deck furniture (item 1). Therefore these two fibre samples may share a common origin.
J7UWKK	The off-white cotton fibers observed in item 1-2 are dissimilar to the fibers which compose item 1-1; therefore, no association can be made between items 1-1 and 1-2. The Off-white Olefin fibers observed in Item 1-3 are microscopically similar to the fibers which compose the swatch in item 1-1; therefore, these fibers could have originated from the fabric where the standard from item 1-1 was retrieved.
JAU9FK	The colorless cotton fibers in Item# 1-2 are dissimilar to the olefin fibers in Item# 1-1, therefore the cotton fibers in Item# 1-2 could not have originated from the same source as represented by Item# 1-1. The colorless olefin fibers in Item# 1-3 are similar to the colorless olefin fibers which compose Item# 1-1, therefore the colorless olefin fibers in Item# 1-3 could have originated from the same source as Item# 1-1.
JCVB42	Item 1: One section of fabric standard composed of colorless olefin fibers was analyzed for comparison to Items 2 and 3. Item 2: Four fiber threads composed of colorless cotton fibers were found. In the sample analyzed, the unknown fibers from the "suspect's car seat" and the fiber standard (Item 1) from the "victim's deck furniture" are not the same in physical characteristics. The unknown fibers from the "suspect's car seat" could not have originated from the standard. Item 3: Four fiber threads composed of colorless olefin fibers were found. In the sample analyzed, the unknown fibers from the "suspect's jacket" either originated from the fiber standard (Item 1) or another source of fibers possessing the same distinct physical, chemical, and optical characteristics.
JNPRT3	The material (item 1) from the damaged deck furniture at the scene of the assault was composed of a plain weave (one over/one under) on both the warp and the weft. The threads were composed of bundles of fibres which were not twisted together. The material was composed of Olefin (polypropylene) fibres. Four off-white threads were recovered from the suspect's car seat (item 2). The threads were composed of bundles of fibres which were twisted together in a z-twist. Fibres from each of the four threads were analysed. All of the threads were found to be composed of cotton fibres which did not match the fibres from the material in item 1. Four off-white coloured threads were recovered from the suspect's jacket (item 3). Fibres from each of the four threads were analysed. All of the threads were found to be composed of Olefin (polypropylene) fibres. Some of the fibres from item 3 matched the fibres in the material in item 1. The above findings offer moderate support for the view that some of the fibres in item 3 could have originated from the damaged deck furniture (item 1).
JRAHGL	Examination and testing indicated item 3 Fiber could have originated from item 1 fabric. Both materials were olefin type, consistent with polypropylene.
JUDCX3	Considering the similar morphology, colour, cross-section and behaviour under fluorescence light not significant differences were observed between the fibers composing item 1 (warp and weft) and the

TABLE 4

WebCode	Conclusions
	fibers corresponding to item 3. The analysis performed by FTIR and RAMAN determined that both samples are indistinguishable. Item 3 could have originated from the victim's deck furniture (item 1). Considering the different morphology, cross-section and behaviour under fluorescence light as well the results of the analysis performed by FTIR and RAMAN item 2 could have not originated from the victim's deck furniture (item 1).
K2N8YC	1. Examinations of Exhibits 1 (known fabric) and 3 (questioned fibers) disclosed manufactured olefin fibers. Comparative examinations of the known fibers from Exhibit 1 with the questioned fibers from Exhibit 3 disclosed them to be consistent in their physical and chemical characteristics. As a result of these findings, the fibers from Exhibit 3 could have originated from Exhibit 1, or another source with the same characteristics. A fiber association is not a means of positive identification and the number of possible sources for a specific fiber is unknown. Due to the variability in manufacturing, dying, and consumer use, one would not expect to encounter a suitable fiber selected at random to be consistent with a particular source. 2. Examination of Exhibit 2 (questioned fibers) disclosed natural cotton fibers. Comparative examinations of the known fibers from Exhibit 1 with the questioned fibers from Exhibit 2 disclosed them to be inconsistent in their physical and chemical characteristics. As a result of these findings, the fibers from Exhibit 2 could not have originated from Exhibit 1.
KBWQQL	Fibres from item 1 consist of x 2 synthetic colourless fibres. The fibres are similar in appearance with very slight differences. Comparisons showed that fibres from item 2 do not match fibres from item 1. Fibres from item 3 appear to be microscopically similar to fibres from item 1 in terms of LPM examination only.
KFUATJ	Item. 1 and Item. 3 are manufactured olefin fibers (polypropylene) and have similar components, while Item. 2 is vegetable cotton fiber and has different components from Item. 1 and Item. 3.
KJQVKM	The questioned threads (Item 2) do not come from the fabric of the victim's deck furniture (Item 1). The results support that the questioned threads (Item 3) come from the fabric of the victim's deck furniture (Item 1).
KWEZRJ	Item 1 consist of Olefin fiber. Item 2 consist of Cotton fibers twisted in the Z-direction Item 3 is same as Item 1 in composition and MSP
LRD6EB	1. Examination of Exhibit 1 (known section of fabric from the victim's deck furniture) disclosed the presence of a white piece of woven fabric composed of colorless olefin fibers. 2. Examination of Exhibit 2 (questioned fibers recovered from suspect's car seat) disclosed the presence of colorless cotton fibers. Comparative examinations of the colorless cotton fibers in Exhibit 2 to the colorless fibers that compose the fabric in Exhibit 1 disclosed them to be inconsistent in their physical and chemical compositions. As a result of these findings, these questioned colorless cotton fibers could not have originated from the source of fabric in Exhibit 1. 3. Examination of Exhibit 3 (questioned fibers recovered from the suspect's jacket) disclosed the presence of colorless olefin fibers. Comparative examinations of the colorless olefin fibers in Exhibit 3 to the colorless olefin fibers that compose the fabric in Exhibit 1 disclosed them to be consistent in their physical characteristics and chemical characteristics. As a result of these findings, these questioned colorless olefin fibers could have originated from the source of fabric in Exhibit 1 or another source with the same characteristics. 4. A fiber association is not a means of positive identification and the number of possible sources for a specific fiber is unknown. Due to the variability in manufacturing, dyeing, and consumer use, one would not expect to encounter a suitable fiber selected at random to be consistent with a particular source.
M89V2X	The yarns from item 3 and item 1 were comprised of olefin fibers and had similar construction. Fibers from the yarns in item 3 and item 1 are similar in all examined characteristics. The questioned yarns from item 3 could have originated from the fabric sample in item 1, or another source of similar manufacturing. The yarns in item 2 were comprised of cotton fibers and are excluded as originating from item 1 as represented by the sample submitted.
M974AH	1. The sample received as the "Known section of fabric from the victim's deck furniture" (Item 1) is made by beige olefin fibers. 2. The sample received as the "Questioned fibers recovered from suspect's car seat" (Item 2) is made by beige cotton fibers. 3. The sample received as the "Questioned fibers recovered from the suspect's jacket." (Item 3) is made by beige olefin fibers. 4. According with the

TABLE 4

WebCode	Conclusions
	physical properties evaluated, the questioned fibers received as item 3 are indistinguishable from the sample received as item 1.
N497XW	The fibers analyzed from item 3 were similar in all examined characteristics to the fibers analyzed from item 1. Also, the yarns from item 3 were similar in construction to the yarns from the fabric in item 1. The yarns from item 3, recovered from the suspect's jacket, could have originated from the victim's deck furniture as represented by the fabric submitted in item 1, or from another source of similar manufacturing. The yarns from item 2 were dissimilar in construction and composition to the yarns from the fabric in item 1. The yarns from item 2, recovered from the suspect's car seat, could not have originated from the victim's deck furniture, item 1, as represented by the submitted sample.
N8NEMG	Item 2 was found to be different from item1 by FT-IR. Item1 and item3 produced very similiar FT-IR spectra and microscopic images and they were identified as olefin. And they were not analized by microspectrophotometry because of thier white color. And Item1 and item3 were analyzed by pyrolysis-GC/MS because there are many different types of olefins, then they had a same pyrogram. Finally we have determined that item3 have originated item1.
NYDC2F	item 1 is similar with item 3 not item2.
PA9KKH	The submitted items were examined and analyzed by stereo microscope and polarized light comparison microscope. The white fibers found in Item 1 composed of synthetic fiber, nylon. The white fibers found in Item 2 composed of natural fiber, cotton. The white fibers found in Item 3 composed of synthetic fiber, nylon. The fibers found in Item 2 exhibited different microscopic appearance and physical characteristic as Item 1. Therefore, fibers as Item 2 recovered from the suspect's car seat could not have originated from the victim's deck furniture. The fibers found in Item 3 exhibited similar microscopic appearance and physical characteristic as Item 1. Therefore, fibers as Item 3 recovered from the suspect's jacket could have originated from the victim's deck furniture.
PRTCJH	Off-white olefin fibers recovered from Item 3 exhibit the same microscopic characteristics and optical properties as the off-white olefin fibers comprising Item 1. Accordingly, the off-white olefin fibers from Item 3 are consistent with originating from the source of Item 1, or another item comprised of fibers exhibiting the same microscopic characteristics and optical properties. Off-white fibers recovered from Item 2 are microscopically dissimilar to the fibers comprising Item 1. Accordingly, these fibers are not consistent with originating from the source of Item 1. The specimens were examined using the following methods as appropriate: stereomicroscopy, comparison microscopy, polarized light microscopy, fluorescence microscopy, and microspectrophotometry, and Fourier transform infrared spectroscopy.
Q3MCAR	The questioned fibers (Item 001-2) recovered from the suspect's car seat that were examined did not come from the known section of the victim's deck furniture (Item 001-1). The questioned fibers (Item 001-3) recovered from the suspect's jacket that were examined could have come from the known section of the victim's deck furniture (Item 001-1), or another textile, of the same color and type of fibers, that exhibit the same microscopic properties and chemical composition.
Q6BLLD	Fibers from Item 1 were identified as olefin. Item 2 and 3 were identified as cotton and olefin, respectively. Item 3 were similar microscopic characteristics and chemical compositions with Item 1, measured by FT-IR, Polarized light microspectroscopy (PLM) and pyrolysis gas chromatography-mass spectrometry (Py/GC-MS). Therefore, the questioned fibers recovered from the suspect's jacket (Item 3) have originated from Item 1, the known section of fabric from the victim's deck furniture was wrapped in.
QCABZW	The threads of Item 3 consist of polypropylene fibers. These fibers are similar in microscopic characteristics and chemical composition to the fibers from the swatch of cloth of Item 1. The threads of Item 2 consist of cotton fibers. These fibers are different in microscopic characteristics from the fibers from the swatch of cloth of Item 1. This is an elimination as explained at the end of this report. Analysis performed by polarized light microscopy (PLM) and Fourier transform infrared spectroscopy (FTIR)
QDQ8TW	Item 1 consists of an off-white, square-shaped piece of fabric with a woven construction. A representative sample consisting of one fiber from each weave direction was examined and identified as olefin. Item 2 is composed of four yarns of off-white fibers. One representative fiber was examined and

TABLE 4

WebCode	Conclusions
	<p>identified as cotton. This fiber is dissimilar in microscopic characteristics to the fibers examined from item 1. Therefore, the fibers recovered from the suspect's car seat could not have originated from the victim's deck furniture. Item 3 is composed of four yarns of off-white fibers. Two representative fibers were examined and identified as olefin. These two fibers are similar in microscopic and optical characteristics to the two exemplar fibers examined from item 1. Therefore, the fibers recovered from the suspect's jacket could have come from the victim's deck furniture or another textile with the same class characteristics.</p>
QTWQ4T	<p>01-01-AA: Piece of tannish white fabric from the victim's deck furniture (Item 1) This item was used for comparison purposes. 01-02-AA: Tannish white threads from suspect's car (Item 2) The questioned threads are dissimilar in texture and fiber type to the known fabric from the victim's deck furniture (01-01-AA). It is my opinion that the questioned threads could not have come from the victim's deck furniture (Category 5). No further analysis done. 01-03-AA: Colorless (white) threads from suspect's jacket (Item 3) The questioned threads are similar in visual color and texture to the known fabric from the victim's deck furniture (01-01-AA). A portion of the threads were selected for further analysis and are similar in optical properties, including fluorescence and fiber type to the known fabric from the victim's deck furniture (01-01-AA). It is my opinion that the questioned fibers could have come from the victim's deck furniture of any other furniture with similar fiber characteristics (Category 2B). No analysis was performed on the remaining threads. No further analysis done. Investigative leads: If additional trace evidence analysis is necessary, please contact this analyst. Disposition: The evidence will be retained until the laboratory is notified of the disposition.</p>
RJRXC	<p>Item 1 is composed of warp and weft threads. Both threads, along with Item 3, are made of olefin, and there is no difference in their microscopic morphologies, infrared spectra or polarized light characteristics. Item 2 is made of cotton, so its component differs from both the warp and weft threads components of Item 1.</p>
RKMGEF	<p>Off-white olefin fibers recovered from Item 3 exhibit the same microscopic characteristics and optical properties as fibers comprising Item 1. Accordingly, these fibers are consistent with originating from Item 1, or another item comprised of fibers that exhibit the same microscopic characteristics and optical properties. Fibers found from Item 2 are microscopically dissimilar to the fibers comprising Item 1. Accordingly, these fibers are not consistent with originating from Item 1.</p>
RMZDP6	<p>The questioned fibers recovered from the suspect's jacket (Item 3) were found to be consistent to those of the known section of fabric from the victim's deck furniture (Item 1) in microscopic structures, colour, reaction to UV light, width of fibers and chemical composition (Both Item 1 and Item 3 were identified as Polypropylene, isotactic). Based on the above findings, in my opinion, Item 3 could have come from the the victim's deck furniture (Item 1). The questioned fibers recovered from the suspect's car seat (Item 2) were found to be inconsistent to those of the known section of fabric from the victim's deck furniture (Item 1) in microscopic structures, colour, reaction to UV light, width of fibers and chemical composition (Item 2 was identified as Cotton). Based on the above findings, in my opinion, Item 2 could not have come from the victim's deck furniture (Item 1).</p>
RWW3ZT	<p>The known section of fabric from the victim's deck furniture (Item 1) was used for comparison purposes. The fibers recovered from the suspect's car seat (Item 2) contain several threads. Fibers sampled from these threads are dissimilar in fiber type to the fibers from the known section of fabric from the victim's deck furniture (Item 1). It is my opinion that these fibers did not originate from the known section of fabric from the victim's deck furniture. The fibers recovered from the suspect's jacket (Item 3) contain several threads that are visually similar to threads from the fabric from the victim's deck furniture (Item 1). A portion of the fibers were selected for further analysis and are similar in optical properties, including fluorescence, and fiber type to the known fibers from the section of fabric from the victim's deck furniture. It is my opinion that the questioned fibers could have come from the section of fabric from the victim's deck furniture, or any other textile with a similar fiber characteristics. No analysis was performed on the remaining thread and fibers.</p>
T2PHPR	<p>Item 1 is excluded as a possible source of item 2 as represented by the submitted samples. The analyzed fibers from item 3 and item 1 are similar in all examined characteristics. The four yarns from item 3 also have characteristics that are visually consistent with the yarns of the fabric from item 1. The</p>

TABLE 4

WebCode	Conclusions
	analyzed fibers from item 3 could have come from item 1 or another fabric of similar manufacture.
T3ZKBQ	<p>Items 1, 2, and 3 were examined visually and using stereomicroscopy. Fibers composing Items 1, 2, and 3 were examined using stereomicroscopy, comparison microscopy and polarized light microscopy (PLM). Fibers composing Items 1 and 3 were further examined using fluorescence microscopy, Fourier Transform Infrared Spectrophotometry (FTIR), Microspectrophotometry (MSP), and microchemical tests. The Item 3 off-white yarns and the off-white yarns composing the Item 1 piece of fabric were consistent in color and overall construction and were composed of colorless polypropylene fibers which were consistent in physical, chemical, and optical properties. Based on the fibers and yarns examined, it was concluded that these Item 3 yarns originated from either the source represented by Item 1 or another source composed of fibers and yarns with the same physical, chemical, and optical properties (Level III - Association with Discriminating Characteristics). This type of conclusion was reached because other textiles containing fibers and yarns produced with the same properties (type, color, microscopic characteristics, etc.) would also be indistinguishable from these fibers and yarns. It should be noted that the techniques used in this comparative analysis can typically distinguish different fibers and yarns. Based on the fibers and yarns examined, the Item 2 fibers and yarns could not be associated with the fibers and yarns composing the Item 1 piece of fabric based on differences in yarn construction and fiber type (Exclusion/Elimination). TERMINOLOGY KEY FOR COMPARATIVE EXAMINATIONS: Level I - Physical/Fracture Match: Physical Fit is reached when the items that have been broken, torn, or separated exhibit physical features that correspond/re-align in a manner that is not expected to be replicated. Level II - Association with Highly Discriminating Characteristics: An association in which items could not be differentiated based on the examinations conducted. Therefore, the possibility that the items came from the same source cannot be eliminated. Additionally, the items share unusual characteristics that would rarely be expected to occur in the relevant population. This is the highest degree of association that can be determined in the absence of a Physical Fit. Level III - Association with Discriminating Characteristics: An association in which items could not be differentiated based on the examinations conducted. Therefore, the possibility that the items came from the same source cannot be eliminated. Other items have been manufactured or could occur in nature that would also be indistinguishable from the submitted items and could be encountered in the relevant population. The analytical techniques used in the analysis of these items can provide high levels of discrimination among natural and manufactured materials. This is considered a high degree of association. Level IV - Association with Limitations: An association in which items could not be differentiated based on the examinations conducted. 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, minor variations were observed, or a complete analysis was not performed due to limited characteristics or sample size. Minor variations, for certain types of examinations, could be due to factors such as contamination of the sample(s) or having a sample of insufficient size to adequately assess heterogeneity of the entity from which it was derived. Inconclusive: No conclusion could be reached regarding an association or an elimination between the items. Exclusion with Limitations: The item exhibits differences from the comparison sample that support that it did not originate from the source, as represented by the comparison sample. An Exclusion/Elimination conclusion was not reached due to limiting factors, such as possible natural or manufactured source variations. Exclusion/Elimination: The items exhibit differences that demonstrate the items did not originate from the same source.</p>
TAGWQD	Based on the FTIR analysis, the fibres from item 2 (questioned fibres recovered from the suspects car seat) can be excluded from having originated from item 1 (known section of fabric from the victims deck furniture). However, fibres from item 3 (questioned fibres recovered from the suspects jacket) cannot be excluded from having originated from item 1.
TM7VFU	The questioned fibers from the suspect's jacket (item 3) match in all examined criteria the fibers from the victim's deck furniture (item 1). Therefore it is likely that the recovered fibers are derived from the deck furniture or a textile of the same kind. There is no evidence that the questioned fibers from the suspect's car seat (item 2) originated from the victim's deck furniture.
TTTL3P	On the basis of the items received and the examinations and testing conducted, I have formed the

TABLE 4

WebCode	Conclusions
	<p>following opinions: I am unable to exclude the proposition that the fabric in item 1 could be a source of yarns found in item 3. I am also unable to exclude the proposition that another piece of fabric similar to that provided in item 1 could be a source of the yarns found in item 3. I am able to exclude the proposition that the fabric in item 1 could be a source of the yarns found in item 2.</p>
TTNTRU	<p>Examinations: Visual examination, stereomicroscopy, polarized light microscopy, fluorescence microscopy, microspectrophotometry, infrared spectroscopy, cross-sections Information: Questioned yarns recovered from a car seat (Item 2) and questioned yarns recovered from a jacket (Item 3) were examined and compared to known yarns from a fabric swatch from deck furniture (Item 1). All three items had two sets of yarns for comparison; these sets were based on crimp spacing for the questioned yarns and weave direction for the known yarns. Results: Comparison of Items 1 and 2: The yarns and fibers from Items 1 and 2 differed in physical characteristics, microscopical characteristics, and fiber type (olefin versus cotton, respectively). The questioned yarns from Item 2 did not originate from the deck furniture represented by Item 1. (Elimination) Comparison of Items 1 and 3: The yarns and fibers from Items 1 and 3 corresponded in all examinations performed. The tested yarns and fibers from Item 3 originated either from the deck furniture represented by Item 1 or from another fiber source or combination of sources with indistinguishable yarn and fiber characteristics. Because similar fabrics have been manufactured that would be indistinguishable from the submitted evidence, an individual source cannot be determined. (Level 3 - Association) Additional Remarks: Multiple associations of questioned and known yarns may increase the significance of the fiber evidence.</p>
U8BXTP	<p>Item 1 consists of a white woven fabric swatch composed of olefin (polypropylene) fibers. Item 2 consists of four white threads composed of cotton fibers. Item 3 consists of four white threads composed of olefin (polypropylene) fibers. The polypropylene fibers from Item 1 (Known Fabric from Victim's Deck Furniture) and the cotton fibers from Item 2 (Questioned Threads from Suspect's Car Seat) are dissimilar in macroscopic appearance and microscopic characteristics (PLM). The victim's deck furniture is not the source of the cotton threads from the suspect's car seat. The polypropylene fibers from Item 1 (Known Fabric from Victim's Deck Furniture) and Item 2 (Questioned Threads from Suspect's Jacket) are similar in macroscopic appearance, microscopic characteristics (PLM), and chemical composition (FTIR). The victim's deck furniture or another item composed of the same fabric could be the source of the threads sourced from the suspect's jacket.</p>
URUZQA	<p>Examination Results- Microscopic examination & instrumental analysis of representative warp and weft fibers from Item 1 revealed white olefin fibers. Microscopic examination of representative fibers from Item 2 revealed white cotton fibers. Microscopic examination & instrumental analysis of representative fibers from Item 3 revealed white olefin fibers. Comparison Results- Examination and comparison of representative fibers from Items 1 and 2 were found to be dissimilar in all measured microscopic properties. They could not have come from the same source. Examination and comparison of representative fibers from Items 1 and 3 were found to be similar in all measured microscopic and chemical properties. They could have come from the same source or any other source with the same properties.</p>
VXZV8P	<p>The following methodologies were used in the examination of this case: visual examination, physical examination, microscopy, fluorescence, and FTIR. Examination of Lab Item # 3 (Questioned fibers recovered from suspect's jacket) revealed the presence of four (4) off-white yarns. Two (2) yarns, composed of polypropylene fibers, were found to be consistent in color, construction, and composition with the representative Direction A yarns, composed of polypropylene fibers, comprising the fabric in Lab Item # 1 (Known section of fabric from the victim's deck furniture). Therefore, these yarns in Lab Item # 3 could have originated from the same source as the fabric in Lab Item # 1. The remaining two (2) yarns, composed of polypropylene fibers, were found to be consistent in color, construction, and composition with the representative Direction B yarns, composed of polypropylene fibers, comprising the fabric in Lab Item # 1 (Known section of fabric from the victim's deck furniture). Therefore, these yarns in Lab Item # 3 could have originated from the same source as the fabric in Lab Item # 1. Examination of Lab Item # 2 (Questioned fibers recovered from suspect's car seat) revealed the presence of four (4) off-white yarns that were found to be not consistent in construction with the representative Direction A and B yarns comprising the fabric in Lab Item # 1. Therefore, the yarns in Lab Item # 2 could not have</p>

TABLE 4

WebCode	Conclusions
	<p>originated from the same source as the fabric in Lab Item # 1. According to the Technical Procedure for the Examination of Fibers at this lab, if at any point during the course of examination items are found to be inconsistent with one another, analysis may be halted and a lab report issued stating a negative finding. Therefore, no further analysis to identify the generic fiber class of the fibers in Lab Item # 2 was performed.</p>
WCUZPK	<p>The known section of fabric from the victim's deck furniture (Item 1) comprised colourless olefin fibres. The questioned fibres from the suspect's jacket (Item 3) comprised colourless olefin fibres, agreeing in colour, fibre type and microscopic characteristic under various lighting conditions with those from the known section of fabric from the victim's deck furniture (Item 1), indicating that they could have originated from the same source. The questioned fibres recovered from the suspect's car seat (Item 2) comprised colourless cotton fibres, differing in fibre type from the colourless olefin fibres from the known section of fabric from the victim's deck furniture (Item 1), indicating that they did not originate from the same source. Based on the above laboratory findings, there could have been a contact having occurred between the victim's deck furniture and the suspect's jacket, rendering a transfer of fibre from the victim's deck furniture to the suspect's jacket.</p>
WJFVRA	<p>The known fabric from Item 1 and the questioned fibers from Item 3 both consisted of off-white olefin fibers. The fibers from Item 1 and 3 were consistent in color, diameter, shape, microscopic characteristics and chemical composition and could have originated from the same source (Level III Association). The fibers from Item 2 consisted of cotton fibers and did not originate from the same source as Item 1 (Elimination). Terminology Key for Associative Evidence: The following descriptions are meant to provide context to the levels of opinions reached in this report. Every level of conclusion may not be applicable in every case nor for every material type. Level I Association: A physical match; items physically fit back to one another, indicating that the items were once from the same source. Level II Association: An association in which items are consistent in observed and measured physical properties and/or chemical composition and share atypical characteristic(s) that would not be expected to be readily available in the population of this evidence type. Level III Association: An association in which items are consistent in observed and 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. Level IV Association: An association in which items are consistent in observed and measured physical properties and/or chemical composition and, therefore, could have originated from the same source. As compared to a Level III association, items categorized within a Level IV share characteristics that are more common amongst these kinds of manufactured products. Alternatively, an association between items would be categorized as a Level IV if a limited analysis was performed due to the characteristics or size of the specimen(s). Level V Association: An association in which items are consistent in some, but not all, physical properties and/or chemical composition. Some minor variation(s) exists 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 the 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.</p>
WZZLRA	<p>Item 1 (fabric from the victim's deck furniture) and item 3 (fibers recovered from the suspect's jacket) are best matched and identified as polypropylene fibers (manufactured, olefin). Item 2 (fibers recovered from the suspect's car seat) is identified as cellulose (cotton). Further characterizing item 2 as a natural or synthetic cellulose by utilizing the Omnic software bands finder in FTIR. The sensitivity (100) and threshold (0.06) were set in the peak finder for all peak bands to be assigned. Found characteristic bands for item 2 at 1734, 1431, 1112, 1059, and 1032 cm⁻¹. These bands show high intensity for natural fibers, so it is concluded that item 2 is a natural cellulose (vegetable, cotton).</p>
XLC2L7	<p>Item 3 appears to be derived from item 1. This is because the fiber shapes were similar in microscopic and polarizing observations, and the chemical components were also identical.</p>
XXMB4Q	<p>The known fibers collected from the victim's deck furniture (Item #1) are similar in physical, optical, and</p>

TABLE 4

WebCode	Conclusions
	chemical properties to the light-colored fibers recovered from the suspect's jacket (Item #3). The fibers from the victim's deck furniture (Item #1) or another material with similar fiber characteristics could have been the source of the fibers recovered from the suspect's jacket (Item #3). The known fibers collected from the victim's deck furniture (Item #1) were excluded as a possible source to the light-colored fibers recovered from the suspect's car seat (Item #2). Differences in physical, optical, and chemical properties were observed. Note, additional techniques used to resolve minor color/dye differences were not available at the time of this report that could either support or refute a common source determination
Y329GJ	Item 1 (24F1075 001 - control fabric) comprised a piece of woven, cream-coloured fabric, approximately 5cm by 4.5cm. Both the warp and weft yarns were composed solely of thick, "colourless", delustered polypropylene fibres. Item 2 (24F1075 002 - questioned fibres from suspect's car seat) comprised four cream-coloured yarns. All four yarns were composed solely of colourless cotton fibres. Therefore, the fibres of item 2 could not have originated from the fabric represented by control Item 1. Item 3 (24F1075 003 - questioned fibres from suspect's jacket) comprised four cream-coloured yarns. All four yarns were composed solely of thick, "colourless", delustered polypropylene fibres. The polypropylene fibres from the yarns were indistinguishable in colour, composition and appearance from the polypropylene fibres from the control fabric Item 1. This suggests the four yarns recovered from the suspect's jacket could have originated from the fabric represented by control Item 1.
Y73C8K	The fibers from Item 1 (known fabric from deck furniture) and Item 3 (questioned fibers recovered from jacket) were identified as polypropylene fibers. The fibers from Item 2 (questioned fibers recovered from car seat) were identified as cotton fibers. The polypropylene fibers in Item 3 (questioned fibers recovered from jacket) are similar in physical properties and chemistry when compared to the polypropylene fibers in Item 1 (known fabric from deck furniture) and could have originated from the same source of fibers as Item 1 or another source of polypropylene fibers with similar physical properties and chemistry as Item 1. The cotton fibers in Item 2 (questioned fibers recovered from car seat) are different from the polypropylene fibers in Item 1 (known fabric from deck furniture) and did not originate from the same source of polypropylene fibers as Item 1. Items 1, 2, and 3 were examined visually and using stereomicroscopy, Polarized Light Microscopy (PLM), Fluorescence, Refractive Index (RI), and Fourier-Transform Infrared Spectroscopy (FT-IR).
YJMRAJ	The questioned yarns recovered from the suspect's car seat (Item 2) and jacket (Item 3) were examined and compared to a known section of fabric from the victim's deck furniture (Item 1) to determine if they could have originated from that source. 1 – Known section of off-white fabric from victim's deck furniture. Item 1 was opened and found to contain one (1) section of off-white, woven fabric. Yarns and fibers were collected from the section of fabric to be used for comparison purposes. 2 – Questioned off-white yarns recovered from the suspect's car seat. Examination of Item 2 revealed the presence of four (4) off-white yarns. These off-white yarns were examined and compared to the off-white yarns comprising the section of off-white fabric in Item 1 and were found to be different in construction and appearance. It is therefore concluded that these off-white yarns recovered from the suspect's car seat could not have originated from the section of off-white fabric from the victim's deck furniture. 3 – Questioned off-white yarns recovered from the suspect's jacket. Examination of Item 3 revealed the presence of four (4) off-white yarns. These yarns were examined and compared to the off-white yarns comprising the section of off-white fabric in Item 1 and were found to be consistent in color, construction, size, and appearance. Macroscopic and microscopic examinations and comparisons of at least one-hundred and thirteen (113) colorless olefin fibers comprising the off-white yarns revealed that they are consistent in color, appearance, fiber type and microscopic characteristics with the colorless olefin fibers comprising the off-white fabric (Item 1). It is therefore concluded that these off-white yarns recovered from the suspect's jacket could have originated from the section of off-white fabric from the victim's deck furniture.
YNJD48	Questioned fibers recovered from the suspect's jacket (Item3) were consistent (indistinguishable) with the Known section of fabric from the victim's deck furniture (Item1) in macroscopic, microscopic and infrared (FTIR) characteristics. Therefore the questioned fibers recovered from the suspect's jacket (Item3)

TABLE 4

WebCode	Conclusions
YTDF6L	could have come from the Known section of fabric from the victim's deck furniture (Item1) or another source of fibers with similar macroscopic, microscopic and infrared (FTIR) characteristics. Questioned fibers recovered from suspect's car seat (Item2) were dissimilar (distinguishable) to the fibers of the Known section of fabric from the victim's deck furniture (Item1). Therefore the questioned fibers recovered from suspect's car seat (Item2) could not have come from the Known section of fabric from the victim's deck furniture (Item1).
YV4G9P	The examined fibers from Item 2 did not originate from the same source as the examined fibers in Item 1. Item 2 could not have originated from the same source as Item 1 as represented by the sample provided. The examined fibers in Item 3 are consistent in all evaluated characteristics as the examined fibers in Item 1. Item 3 originated from the same source as Item 1 or a source with similar characteristics.
ZQ2ZBL	The questioned fibers recovered from the suspect's car seat (Item 2) were inconsistent with the fibers of the known section of fabric from the victim's deck furniture (Item 1), and could not have originated from the victim's deck furniture. The questioned fibers recovered from the suspect's jacket (Item 3) were consistent (same characteristics) with the fibers of the known section of fabric from the victim's deck furniture (Item 1), and therefore could have originated from the victim's deck furniture.
ZW9NPM	Item 3 could have originated from the same source as item 1 or another source with the same characteristics of manufacture. Item 2 did not originate from the victim's deck furniture as represented by the fabric in item 1.
	The fibres Item 3 found on the suspects jacket match the fibres Item 1 (victims deck furniture).

Additional Comments

TABLE 5

WebCode	Additional Comments
3HMVDL	Since the thread from item 2 has a completely different structure than the thread originating from fabric (item 1), in a real case, fiber identification of this thread would not be performed. We compare threads, not fibers. The question is incorrectly formulated.
47PAN2	This laboratory does not report fiber comparisons.
6BR3UG	Because textile fibers are mass produced, it is not possible to state that a fiber originated from a particular textile source to the exclusion of all other textile materials composed of fibers that exhibit the same microscopic properties and chemical composition.
7E9LEB	Pyrolysis GC-MS not performed due to instrument being inoperable at time of testing
7WQNBY	Item 1 does not readily shed its constituent fibres unless damaged. If it can be assumed, or information provided that item 3 was in the form of transferred threads rather than representative of individual fibres, then it would be my opinion that there is strong support for the view that the threads have originated from the damaged furniture rather an another similar damaged item as a result of coincidence.
92TEQA	Items 1 and 3 were examined macroscopically, by stereomicroscopy, brightfield microscopy, polarized light microscopy, fluorescence microscopy, and Fourier transform infrared microspectroscopy. Item 2 was examined macroscopically, by stereomicroscopy, brightfield microscopy, and polarized light microscopy. Items 1-3 are being transferred to the Evidence Section for return to your agency, microscope slides created during analysis are being returned with Items 1-3. Questions regarding this report should be addressed to:[email].
A9B4RV	If there is a clear exclusion at the microscopic level (stereomicroscope), our analysis ends without mounting fibers to slides and examining with PLM. Item 2 was clearly excluded based on construction of the fibers (twister -v- crimp and parallel strand alignment). I should have stopped the examination and not mounted fibers to a slide for fiber type. CTS requires a fiber type even though exclusions apply. This is not normal casework.
ANZEDC	Association Scale would be included.
ARYP9C	Association scale would be included.
BJ48AU	I have assumed the swatch of Item 1 fully represents the fabric of the deckchair. More detail re the macroscopic appearance of the warp and weft strands have been included in the casefile.
CDFM28	The FTIR is out of service and the samples could not be distinguished further chemically without using FTIR (Exhibits 1 and 3).
E9BVNR	Item 3 could have been originated from Item 1 Item 2 could not have originated from item 1
F8XNX4	Items 1 (1A) and 3(1C) were both consistent with polypropylene.
J47M9X	Colour comparison is subjective as microspectrometry is not available at this laboratory.
JNPRT3	One of the four threads in item 3 consisted of fibres which showed a more pronounced fluorescence in one channel (515 - 560nm) when compared to the rest of the item. None of the threads sampled from item 1 showed a similar fluorescence although some variation was noted in discrete fibres in the same channel. In a case situation we would sample different areas of the deck chair to see there was a wider variation in the material. This was not possible with the sample provided.
KBWQQL	The fibres are however colourless and would not be evidentially significant in casework.
KJQVKM	We have assumed that Item 1 is a representative sample from the fabric of the victim 's deck furniture. We have considered the structure of the threads to be important in the evaluation of results.

TABLE 5

WebCode	Additional Comments
RKMGEF	<p>Microscopic examination of fibers is accomplished by using one or more analytical techniques including stereomicroscopy, comparison microscopy, polarized light microscopy, fluorescence microscopy, and instrumentally using microspectrophotometry and Fourier transform-infrared spectroscopy. The microscopic characteristics and optical properties determined by these techniques are used for the examination and comparison of fibers. The items were examined visually using stereomicroscopy, comparison microscopy, polarized light microscopy, fluorescence microscopy, UV and visible microspectrophotometry, and Fourier-Transform Infrared Spectroscopy, where appropriate. Fibers can differ as to type (e.g., rayon, cotton), color, shape, size, microscopic features (e.g., delustrant, voids) and optical properties (e.g., refractive index, sign of elongation). These are characteristics that may associate fibers with a group of items, but never to a single item to the exclusion of all others. However, even fibers with many similar properties may be excluded as originating from the same source by using the identified analytical methods. The characteristics and optical properties of the fiber(s) are used as comparison criteria. When the characteristics and optical properties of a recovered fiber(s) are the same as a known sample, the recovered fibers are consistent with originating from the source of the known sample, or from another item comprised of fibers that exhibit the same microscopic characteristics and optical properties. A fiber association is not a means of positive identification and the number of possible sources for a specific fiber is unknown. However, due to the variability in manufacturing, dyeing, and consumer use, one would not expect to encounter a fiber selected at random to be consistent with a particular item. The inability to associate persons/items through a microscopic hair/fiber examination does not necessarily mean the persons/items of interest had no contact. A number of factors can produce this result, including: 1) Hair/fiber evidence may not have transferred. 2) Hairs/fibers that did transfer may have been lost prior to submission to the laboratory. 3) The hairs/fibers transferred or the known sample submitted may not be representative of the source. 4) The hairs/fibers may be from a different source.</p>
TTNTRU	<p>An Association Scale for Trace Evidence would be included in the report.</p>

-End of Report-
(Appendix may follow)

Test No. 25-5439: Fibers Analysis

DATA MUST BE SUBMITTED BY **March 17, 2025, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: TXWVHJ

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 case in which the victim was attacked on her backyard deck. A neighbor witnessed a man running away from the area and alerted police. The suspect was apprehended later that same night, sitting in his car, in the vicinity of the attack. Police recovered fibers that were stuck to the suspect's car seat and from the suspect's jacket, which were similar in color to the victim's torn deck furniture. Police are requesting you to examine the fibers, report their identification(s), and determine if the recovered fibers found on the suspect's car seat or from the suspect's jacket could have originated from the victim's deck furniture.

Items Submitted (Sample Pack FIBR):

Item 1: Known section of fabric from the victim's deck furniture.

Item 2: Questioned fibers recovered from suspect's car seat.

Item 3: Questioned fibers recovered from the suspect's jacket.

1.) Could either of the questioned fibers recovered from the suspect's car seat (Item 2) or the suspect's jacket (Item 3) have originated from the victim's deck furniture (Item 1)?

	Yes	No	Inconclusive
Item 2:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Item 3:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.) Fiber Type Determination.

Please enter the fiber type (Manufactured, Animal, or Vegetable) and generic name in the blank provided for each Item. For Manufactured fibers please use the terminology in the appendix provided. (Example: Item 1 Vegetable, Cotton)

Item 1:

Item 2:

Item 3:

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

Please check all that apply.

<u>Microscopic Exams:</u>	<input type="checkbox"/> Stereo	<input type="checkbox"/> Comparison
	<input type="checkbox"/> Polarized Light	<input type="checkbox"/> Fluorescence

Macroscopic Exam IR/FTIR Microspectrophotometry
 Solubility Tests Cross-Section Melting Point

Other (specify):

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

Note: Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.

5.) Additional Comments

Note: Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.

Appendix: Manufactured Fibers - Names & Definitions

Federal Trade Commission Rules and Regulations Under the Textile Fiber Products Identification Act 16 CFR Part 303

§303.7 Generic Names and Definitions for Manufactured Fibers

Pursuant to the provisions of Section 7(c) of the Act, the Commission hereby establishes the generic names for manufactured fibers, together with their respective definitions, set forth in this section, and the generic names for manufactured fibers, together with their respective definitions, set forth in International Organization for Standardization ISO 2076: 1999(E), "Textiles - Man-made fibres - Generic names."

(a) Acrylic

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85% by weight of acrylonitrile units.

(b) Modacrylic

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of less than 85% but at least 35% by weight of acrylonitrile units, except fibers qualifying under paragraph (j)(2) of this section and fibers qualifying under paragraph (q) of this section.

(c) Polyester

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85% by weight of an ester of a substituted aromatic carboxylic acid, including but not restricted to substituted terephthalate units, and para substituted hydroxy-benzoate units. (1) Where the fiber is formed by the interaction of two or more chemically distinct polymers (of which none exceeds 85% by weight), and contains ester groups as the dominant functional unit (at least 85% by weight of the total polymer content of the fiber), and which, if stretched at least 100%, durably and rapidly reverts substantially to its unstretched length when the tension is removed, the term elasterell-p may be used as a generic description of the fiber. (2) Where the glycol used to form the ester consists of at least ninety mole percent 1,3-propanediol, the term "trixta" may be used as a generic description of the fiber.

(d) Rayon

A manufactured fiber composed of regenerated cellulose, as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 15% of the hydrogens of the hydroxyl groups. Where the fiber is composed of cellulose precipitated from an organic solution in which no substitution of the hydroxyl groups takes place and no chemical intermediates are formed, the term lyocell may be used as a generic description of the fiber.

(e) Acetate

A manufactured fiber in which the fiber-forming substance is cellulose acetate. Where not less than 92% of the hydroxyl groups are acetylated, the term triacetate may be used as a generic description of the fiber.

(f) Saran

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 80% by weight of vinylidene chloride units.

(g) Azlon

A manufactured fiber in which the fiber-forming substance is composed of any regenerated naturally occurring proteins.

(h) Nytril

A manufactured fiber containing at least 85% of a long chain polymer of vinylidene dinitrile where the vinylidene dinitrile content is no less than every other unit in the polymer chain.

(i) Nylon

A manufactured fiber in which the fiber-forming substance is a long chain synthetic polyamide in which less than 85% of the amide linkages are attached directly to two aromatic rings.

(j) Rubber

A manufactured fiber in which the fiber-forming substance is comprised of natural or synthetic rubber, including the following categories: (1) A manufactured fiber in which the fiber-forming substance is a hydrocarbon such as natural rubber, polyisoprene, polybutadiene, copolymers of dienes and hydrocarbons, or amorphous (noncrystalline) polyolefins. (2) A manufactured fiber in which the fiber-forming substance is a copolymer of acrylonitrile and a diene (such as butadiene) composed of not more than 50% but at least 10% by weight of acrylonitrile units. The term lastrile may be used as a generic description for fibers falling within this category. (3) A manufactured fiber in which the fiber-forming substance is a polychloroprene or a copolymer of chloroprene in which at least 35% by weight of the fiber-forming substance is composed of chloroprene units.

(k) Spandex

A manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85% of a segmented polyurethane.

(l) Vinal

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 50% by weight of vinyl alcohol units, and in which the total of the vinyl alcohol units and any one or more of the various acetal units is at least 85% by weight of the fiber.

(m) Olefin

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85% by weight of ethylene, propylene, or other olefin units, except amorphous (noncrystalline) polyolefins qualifying under paragraph (j)(1) of this section. Where the fiber-forming substance is a cross-linked synthetic polymer, with low but significant crystallinity, composed of at least 95% by weight of ethylene and at least one other olefin unit, and the fiber is substantially elastic and heat resistant, the term lastol may be used as a generic description of the fiber.

(n) Vinyon

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85% by weight of vinyl chloride units.

(o) Metallic

A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal.

(p) Glass

A manufactured fiber in which the fiber-forming substance is glass.

(q) Anidex

A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 50% by weight of one or more esters of a monohydric alcohol and acrylic acid.

(r) Novoloid

A manufactured fiber containing at least 85% by weight of a cross-linked novolac.

(s) Aramid

A manufactured fiber in which the fiber-forming substance is a long-chain synthetic polyamide in which at least 85% of the amide linkages are attached directly to two aromatic rings.

(t) Sulfar

A manufactured fiber in which the fiber-forming substance is a long chain synthetic polysulfide in which at least 85% of the sulfide linkages are attached directly to two (2) aromatic rings.

(u) PBI

A manufactured fiber in which the fiber-forming substance is a long chain aromatic polymer having reoccurring imidazole groups as an integral part of the polymer chain.

(v) Elastoeater

A manufactured fiber in which the fiber-forming substance is a long-chain synthetic polymer composed of at least 50% by weight of aliphatic polyether and at least 35% by weight of polyester, as defined in 16 CFR 303.7(c).

(w) Melamine

A manufactured fiber in which the fiber-forming substance is a synthetic polymer composed of at least 50% by weight of a cross-linked melamine polymer.

(x) Fluoropolymer

A manufactured fiber containing at least 95% of a long-chain polymer synthesized from aliphatic fluorocarbonmonomers.

(y) PLA

A manufactured fiber in which the fiber-forming substance is composed of at least 85% by weight of lactic acid ester units derived from naturally occurring sugars.

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 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 ANAB and/or A2LA. (Accreditation Release section below must be completed.)
- This participant's data is not intended for submission to 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.

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety.

Authorized Contact Person and Title

Laboratory Name

Location (City/State)