

Evidence Collection & Submission Handbook

2015 Revision



Texas Department of Insurance
State Fire Marshal's Office
Forensic Arson Laboratory

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www.tdi.texas.gov/fire/fmlab.html

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Arson Evidence: Collection and Submission

Fundamental Concerns

Evidence will be accepted on criminal matters only, from law enforcement and fire services.

In order to be admissible in criminal courts, evidence analysis must be performed by a DPS accredited laboratory. The SFMO laboratory is accredited by the DPS and ASCLD/LAB.

Collecting, Preserving, and Submitting Evidence

I. Containers

A. Essential properties

1. Unused
2. Airtight
3. Clean--no hydrocarbon or other chemical residue
4. Inert--will not break down when in contact with solvents

B. Container types

1. Metal cans - **PREFERRED**

- a. May rust through if unlined--epoxy lined preferred
- b. Can linings other than epoxy are not acceptable
- c. Submit unused control can when an untested lined can is used
 - i. A can may be submitted for an "Evidence Can Quality Check" to serve as a comparison for an entire batch or "lot" of cans. You can download the most current version of the Can Quality Check form from our website: www.tdi.texas.gov/fire/fmlab.html
- d. Cans should not be referred to as "paint cans" on official forms



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B. Container types (continued)

2. KAPAC® polyester bags - **NOT RECOMMENDED**

- a. Care must be taken to avoid puncture
- b. Due to a reformulation by the manufacturer, KAPAC® bags manufactured in 1987 should not be used
- c. Submit unused control KAPAC® bag with sample

C. Unsuitable containers

1. Paper bags
2. Glass jars or vials
3. Plastic containers including plastic cans, cans with plastic lids or gaskets, and plastic bags
4. Previously used containers (such as pickle jars) which could contain traces of contaminating substance
5. Containers which may be contaminated by manufacturing process residues
6. Nylon bags such as SOPLARIL® or Grand River Products

D. Submission/shipping containers

1. Each case should have its own box. **DO NOT put multiple cases in one box.**
2. Use plain boxes
 - a. No labels which could imply positive results or contamination
 - b. No writing which is not specific to the case
 - c. No boxes previously returned by the laboratory
 - d. Use one box per case
 - i. If more than one box is needed, label boxes 1/2, 2/2, etc.



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II. Types of evidence

A. Fire debris evidence – NONLIQUID

1. Amount to use

- a. **DO NOT fill the container more than 1/2 full**
- b. Airspace between the top of the container and the evidence is very important in the analysis

2. Sources of evidence

- a. Lower surfaces where liquids might flow
- b. Protected locations, such as under furniture or in cracks
- c. Porous material, such as carpet and padding, wood, clothing with residue, or upholstery
- d. Materials and locations exhibiting patterns suggestive of a pour (including edge of pour), splash, or trail of flammable liquid
- e. Soil
 - i. Refrigerate or freeze after sample collection to slow down bacterial degradation of any petroleum-based products
- f. Unsealed concrete
 - i. Collect chunks next to cracks or spall in suspected area
 - ii. Spread clean, non-self-rising flour (40-60 mesh ASTM) or calcium carbonate (lime, 40-60 mesh ASTM) over suspected area, let stand for about 30 minutes, then collect and seal flour or lime in container
 - iii. Submit an additional unused flour (or lime) sample as a control
 - iv. Sweeping compound is not recommended
- g. Burned or charred paper
 - i. Pack evidence loosely into metal evidence can
- h. Clothing
 - i. Cut into pieces, if necessary, to keep the can no more than 3/4th full
 - ii. Mark clothing with a biohazard label on outside of container
 - iii. If serological examinations are also desired, refrigerate the evidence in the container and call the Arson Laboratory at (512) 676-6801



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A. Fire debris evidence – NONLIQUID (continued)

3. Methods

- a. Document (by photograph or video) all items **intact** prior to removal from original location in scene
- b. Do not use gas or gas/diesel powered equipment
- c. Ascertain that the evidence contains minimal, if any, water
- d. Avoid contamination by transfer from gloves, shoes, or tools
- e. Cut a cross-section through and outside any pour pattern noted

4. Multiple analyses needed on same evidence

- a. Call the Arson Laboratory promptly for instruction at (512) 676-6801
- b. Generally, evidence will be returned to the investigator after arson analysis for submission elsewhere

B. Fire debris evidence – LIQUID

1. Amount to use

- a. **PREFERRED** – Place several drops of liquid on clean gauze, seal in a metal can
- b. **NOT RECOMMENDED** – Pour **no more than one to two ounces** of liquid directly into metal can and ensure a complete seal to prevent leaks during transportation
 - i. Any liquid submitted that exceeds approximately ½ cup in volume *must be picked up in person*. Due to federal regulations regarding the shipping of a flammable liquid, FAL will not ship the evidence back.

2. Sources of evidence

- a. Cans or bottles with unknown liquid found at scene
- b. Porous items, such as clothing or carpet padding that can be squeezed or wrung out
- c. Sheen on puddles of water
- d. Molotov cocktails



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B. Fire debris evidence – LIQUID (continued)

3. Methods

- a. Document (by photograph or video) all items **intact** prior to removal from original location in scene
- b. Blot a surface with porous paper or gauze, and place in container
- c. Collect the sheen on a water puddle by pulling a sheet of gauze or paper towel (preferably from an unopened roll) across the surface of the puddle, and place in container
- d. Collect transferred samples onto paper or gauze of known origin only, not something found at scene

4. Multiple analyses needed on same evidence

- a. Call the Arson Laboratory promptly for instruction at (512) 676-6801
- b. In some instances, multiple analyses are not possible.
- c. Generally, evidence will be returned to the investigator after arson analysis for submission elsewhere

C. Inclusion of control and exemplar samples during collection

1. Definitions of exemplar, control, and comparison

- a. An exemplar is an uncontaminated representative of the sample in question found at the crime scene.
- b. A control is a sample from outside of the crime scene used/ found in the collection of a sample in question.
- c. A comparison is a sample that is compared to another sample.

NOTE – Comparisons are not applicable since the origins cannot be determined with complete certainty. An analysis by the Arson Laboratory CANNOT determine the origin or manufacturer of an ignitable liquid.

- d. NOTE – The Arson Laboratory **does not** require nor encourage the submission of an exemplar, control, or comparison in any form as defined by your agency.



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C. Inclusion of control and exemplar samples during collection (continued)

2. Note how exemplar samples can become contaminated
 - a. By walking from the suspected area to the exemplar area
 - b. Hands, gloves, or tools used in collection **NOTE – DO NOT place gloves in evidence containers**
 - c. Water run-off
 - d. Vaporized hydrocarbons that may have condensed in the exemplar area
 - e. Exemplar area unknowingly contains ignitable liquid residue from the crime in question
3. Collect the exemplar sample from an area uncontaminated by ignitable liquid residue but otherwise as nearly identical as possible to the evidence collected
4. If using another medium such as gauze, paper towels or flour to collect ignitable liquid residue, include an additional sample of the unused medium as a control
5. Place in container separate from other evidence
6. Include another unused container as a control

D. Explosive and solid ignitables **NOTE – SFMO is not currently accepting explosives evidence**

1. Can be placed in a plastic or paper bag
2. Can be packaged damp
3. For information concerning submission of evidence to the ATF, call your area ATF office
4. For information concerning submission of evidence to other Federal laboratories, please refer to the reference laboratory list



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III. Preservation of integrity of evidence

A. Sealing methods

1. Metal container – RECOMMENDED

- a. Remove any debris from the sealing groove of the can to ensure a good seal
- b. After putting the lid on the can, use a hammer to tap around the entire circumference to obtain a good seal
- c. Tape across the center of the lid, making sure that the tape covers at least two points on the can's seal
 - i. Use tape that sticks tightly and tears easily, such as evidence tape or clear packing tape
- d. Initial and date tape

2. KAPAC® polyester bags – NOT RECOMMENDED

- a. Use an electric heat sealer to seal securely
- b. Initial and date seal

B. Chain of custody precautions

1. Purpose of maintaining chain of custody is to be able to prove the evidence presented in court is the same as the evidence collected from the crime scene
2. Use evidence tape or packing tape that will adhere so well to the surface to which it is attached that it will tear if removal is attempted
 - a. Masking tape should not be used for this purpose
 - b. Duct tape or strapping tape should not be used for this purpose
 - c. Scotch tape should not be used for this purpose
 - d. Tape must show evidence of tampering if attempted
3. Tape across the top seal of the container so that the tape will tear if the seal is broken



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B. Chain of custody precautions (continued)

4. Write your initials (using an indelible marker) across the tape and onto the container in such a manner that part of it is on the tape and the remainder has extended onto the container itself
5. Date across the tape and container as above
6. Write descriptions or adhere labels to body of container, not the lid, as the lid could be switched
7. Each item should be individually sealed, as the seal of the outer container may be inadvertently broken during delivery

C. Identification for submission

1. The Forensic Arson Laboratory Physical Evidence Submission Form SFM-AL-1 must accompany any evidence submitted to the laboratory
 - a. A brief synopsis of the scene information can assist the lab in interpreting whether detected chemicals are normally present
 - b. Informative and accurate completion of the description and origin section is similarly useful to lab analysis, and will also form the basis for the final report
 - c. You can download the most current version of the submission form from our website: <http://www.tdi.texas.gov/fire/fmlab.html>
2. Label evidence can with indelible marker or preprinted labels; descriptions should not vary from those of the submission form
3. Any other pertinent information may be included on the submission form



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C. Identification for submission (continued)

4. Limit descriptions of evidence to known information without implying an ignitable liquid is present
 - a. Liquid ~~suspected to be gasoline~~
 - b. Unknown liquid ~~having an odor similar to gasoline~~
 - c. Liquid removed from can ~~labeled Coleman fuel~~
5. If the evidence possibly includes any blood or other body fluid, even if dried, attach a biohazard sticker on the container holding that item. Note the presence of biohazard items on submission form **NOTE – Samples containing body tissue or decomposition material must be submitted in person and the submitter must remain with evidence until it is analyzed. Please call the Arson Laboratory at (512) 676-6801 with any questions.**
 - a. Clothing
 - b. Syringes--needles removed
 - c. Sharps--do not submit needles
6. If other examinations are to be performed, note the types to be done on the submission form and please call the Arson Laboratory promptly before submitting at (512) 676-6801
7. Specify recipient of report in “send report to” section of submission form
8. Outer containers
 - a. Must be sealed and initialed on top and bottom
 - b. Will be marked and returned as part of the submitted evidence
 - c. Should be retained with evidence for chain of custody link



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D. Shipping evidence

1. Package should be addressed to the attention of the Arson Lab
2. Evidence **CANNOT** be shipped via the U.S. Postal Service
3. Shipping must be through a ground based commercial courier, such as UPS, FedEx or Lone Star Overnight NOTE – Ship only via ground, do not use air based shipping (i.e. Next Day Air)
4. Use of tracking number is recommended

IV. Disposal of analyzed evidence

- A. Negative cases will be destroyed unless otherwise requested on the submission form or in writing
- B. Positive cases
 1. Retained in entirety until returned to the submitting officer or designee
 2. Returned in person or through a courier service
- C. Cases containing suspected biohazards will be returned in entirety.
- D. Cases involving a fatality will be returned in entirety.

V. Reports

A. Recipients

1. Law enforcement official responsible for the investigation as specified on submission form “send report to” section
2. Other intended recipient of report specified in writing on submission form



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V. Reports (continued)

B. Information

1. Released to a party holding a subpoena
2. Released with permission of party holding a subpoena

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REFERENCES:

Washington State Patrol Crime Laboratory, Arson Evidence and Collection Preservation; May, 1991.

John D. De Haan, "Arson Evidence Packaging", Arson Analysis Newsletter, Vol. 2, No. 3; June, 1978.

John F. Nowicki, "Control Samples in Arson Analysis", Arson Analysis Newsletter, Vol. 5, No. 1; January, 1981.

Richard E. Tontarski, "Evaluation of Polyethylene Containers Used to Collect Evidence for Accelerant Detection", Journal of Forensic Sciences; April, 1983.

Texas Department of Public Safety Crime Laboratories, Physical Evidence Handbook; July 2010

State Fire Marshal's Office, Policy and Procedure Manual for Fire and Arson Investigation; August, 1992.

Richard Tontarski, Jr., M.F.S., "Using Absorbents to Collect Hydrocarbon Accelerants from Concrete", Journal of Forensic Science; October, 1985.



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Forensic Arson Laboratory

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<p>Laboratory Phone: (512) 676-6801 Laboratory Fax: (512) 490-1055 Downloadable Submission Form: http://www.tdi.texas.gov/fire/fmlab.html</p>

About the Forensic Arson Laboratory:

In July of 1998, the Forensic Arson Laboratory of the State Fire Marshal's Office, Investigations, relocated to its current Cameron Road location. The laboratory was established in January 1993. Laboratory services are free and the analysis turnaround time averages 6 days.

The Forensic Arson Laboratory achieved international accreditation in 1996 through the American Society of Crime Laboratory Directors (ASCLD) and has also received accreditation from the Texas Department of Public Safety. The laboratory performs specialized forensic work in the chemical analysis of fire debris evidence. This work includes:

- Accepting evidence involving fire investigations in suspected criminal cases submitted by law enforcement or fire service investigators
- Conducting laboratory instrumental analysis
- Classifying, comparing, and identifying ignitable liquid residue
- Documenting, interpreting data, and preparing technical reports of scientific examination results, and
- Testifying as a scientific expert witness in court

The Forensic Arson Laboratory personnel are also responsible for researching and developing new techniques and methodologies, assisting in crime scene investigations, presenting lectures to law enforcement groups, providing a ignitable reference library for other crime laboratories and law enforcement agencies, acting as the liaison for fire service investigators to other crime laboratories, and working closely with multiple arson detection canine programs across the state.



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Fire and Arson Investigation

Headquarters - Austin

Kelly Kistner, Assistant State Fire Marshal

Telephone: (512) 676-6790

Address:

333 Guadalupe, Austin, Texas 78701

P.O.Box 149221, Austin, Texas 78714-9221

TO REQUEST AN INVESTIGATOR OR K-9 TEAM

CALL

(512) 676-6800



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Federal Reference Laboratories For Arson And Explosives Analysis & Information

1. US Army
Criminal Investigation Lab
4930 N. 31st Street
Forest Park, GA 30297-5205
(404) 469-4631
2. Federal Bureau of Investigation
FBI Laboratory
2501 Investigation Pkwy
Quantico, VA 22135
(703) 632-7641

Alcohol, Tobacco, and Firearms Laboratories

(Please note--there are three laboratories covering different regions. Texas is in the California lab jurisdiction; however, permission to submit evidence must be requested by your area ATF office. Please refer to the Texas ATF Offices list.)

4. Alcohol, Tobacco, and Firearms Lab
355 N. Wiget Lane
Walnut Creek, CA 94598
(925) 364-8400
5. Alcohol, Tobacco, and Firearms Lab
2600 Century Parkway NE,
Suite 410
Atlanta, GA 30345
(404) 315-4614
6. Alcohol, Tobacco, and Firearms Lab
99 New York Avenue NE
Washington, DC
Ph: (202) 648-7140



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7. Texas ATF Offices

<u>Dallas</u> (469) 227-4370	<u>McAllen</u> (956) 661-7930
<u>Ft. Worth</u> (817) 862-2800	<u>Corpus Christi</u> (361) 887-2400
<u>Lubbock</u> (806) 783-2700	<u>Houston</u> (281) 372-8260
<u>Tyler</u> (903) 590-1475	<u>San Antonio</u> (210) 805-2727
<u>El Paso</u> (915) 534-6449	<u>Beaumont</u> (409) 981-6670
<u>Austin</u> (512) 231-2880	<u>Waco</u> (254) 741-9900

8. CHEMTREC (Chemical Transportation Emergency Center)
(provides chemical-specific information to emergency services)
Chemical Manufacturers Association
1300 Wilson Boulevard
Arlington, VA 22209
<http://www.chemtrec.org/>
Nonemergency Ph: (800) 262-8200
EMERGENCY ONLY **outside** US (collect accepted) (703) 527-3887
EMERGENCY ONLY US (800)424-9300

9. MSDS (Material Safety Data Sheet) Internet Links

<http://www.msds.com/>
<http://siri.org/msds/index.php>
<http://www.msdssearch.com/>
<http://www.ilpi.com/msds/index.html>
<http://www.msdonline.com/>



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DPS Offices

Abilene (325) 795-4040
Amarillo (806)468-1430
Austin (512) 424-2105
Corpus Christi (361) 698-5641
El Paso (915) 849-4120
Garland (214) 861-2190
Houston (281) 517-1380
Laredo (956) 728-2245
Lubbock (806) 740-8900
Midland (432) 498-2190
Tyler (903) 939-6021
Waco (254) 759-7180
Weslaco (956) 565-7250

The most current copy of the DPS Physical Evidence Handbook can be found at

www.txdps.state.tx.us.



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Lab Identification Results based on ASTM E1618 - 11: IGNITABLE LIQUID CLASSIFICATION SCHEME

Class	Light (C ₄ – C ₉)	Medium (C ₈ -C ₁₃)	Heavy (C ₉ -C ₂₀₊)
Gasoline-all brands, including Gasohol and E85		Fresh gasoline is typically in the range of C ₉ – C ₁₂	
Petroleum Distillates (including De-Aromatized)	Petroleum Ether Some Cigarette Lighter Fluids Some Camping Fuels	Some Charcoal Starters Some Paint Thinners Some Dry Cleaning Solvents	Kerosene Diesel Fuel Some Jet Fuels Some Charcoal Starters
Isoparaffinic Products	Aviation Gas Some Specialty Solvents	Some Charcoal Starters Some Paint Thinners Some Copier Toners	Some Commercial Specialty Solvents
Aromatic Products	Some Paint and Varnish Removers Some Automotive Part Cleaners Xylenes, Toluene-based products	Some Automotive Part Cleaners Some Specialty Cleaning Solvents Some Insecticide Vehicles Fuel Additives	Some Insecticide Vehicles Industrial Cleaning Solvents
Naphthenic-Paraffinic Products	Cyclohexane based solvents/products	Some Charcoal Starters Some Insecticide Vehicles Some Lamp Oils	Some Insecticide Vehicles Some Lamp Oils Industrial Solvents
Normal-Alkane Products	Some Specialty Solvents Pentane Hexane Heptane	Some Candle Oils Some Copier Toners	Some Candle Oils Carbonless Forms Some Copier Toners
Oxygenated Solvents	Alcohols Ketones Some Lacquer Thinners Fuel Additives Surface Preparation Solvents	Some Lacquer Thinners Some Industrial Solvents Metal Cleaners/Gloss Removers	
Others-Miscellaneous	Single Component Products Some Blended Products Some Enamel Products	Turpentine Products Some Blended Products Some Specialty Products	Some Blended Products Some Specialty Products



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Customer Feedback Log

Revision History

Revision Number	Approval Date	Approved by	Revision Notes	Effective Date
00	01/08/2015	Lab Manager	Initial Release	01/09/2015
01				
02				
03				
04				

Prepared by: Emerald Nazareno

Date: 1/05/2015

Reviewed by: Eric Steinberg

Date: 1/08/2015

Approved by: *em nazareno*

Date: 1/08/2015

Revised by: _____

Date: _____

Reviewed by: _____

Date: _____

Approved by: _____

Date: _____