

	TRACE-PM 10.19 Air Bag Analysis	
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	<i>Document Manager: Cheryl Lozen</i>	<i>Approved By: Jeffrey Nye</i>

10.19 Air Bag Analysis

10.19.1 Introduction

Examination of deployed airbags and/or clothing items worn by occupants may be performed to yield possible information or evidence showing contact between the two.

An investigation may also include the examination of occupants from vehicle for possible burn patterns on occupants' arms/hands consistent with the vents and/or air holes in the back of the bag on the driver side (temperatures from 600 to 700 degrees C).

Examination of clothing worn may reveal round shaped burn holes or discolored fabric from the vent(s). Driver side air bags are round in shape usually lined with neoprene (which normally requires a lubricant inside) and passenger side bags are rectangular and not lined with anything.

When the air bag inflates hot gases can be released thru the stitching seams around the bag, possibly creating singe patterns on the occupants clothing. The driver of the vehicle would typically have arched singe patterns while the passenger would have straight line or right angle singe patterns.

Starch (or sometimes talc) or other substances used for lubricants in the bag may also transfer to the occupants clothing.

Fibers or other substances from the occupants clothing can smear/transfer onto the air bag (along with make-up or biological evidence from the occupants).

10.19.2 Safety Considerations

Standard Laboratory Precautions - See FSD Health & Safety Manual

10.19.3 Preparations

Items needed for analysis:

- Air bag in question (preferably all air bags deployed in the vehicle)
- Exterior clothing of occupant of the vehicle (each person's clothing should be packaged separately) – watch out for cross contamination of microscopic evidence (especially starch particles)

10.19.4 Minimum Standards & Controls

Consider all evidence types, such as fibers, biological transfers, cosmetics, etc. when examining and sampling.

Compare to known reference standards or referenced literature when making identifications of particles.

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Comparisons of singe patterns to stitching should include documentation in the case notes such as measurements, and sketches or photographs.

10.19.5 Instrumentation

Standard Laboratory Instrumentation.

10.19.6 Procedure or Analysis

Examine the air bags utilizing bright light and magnification for make-up smears, damaged fibers or other substances from persons clothing that transferred to the bag. Possibly swab areas for Biology (bodily fluids and skin cells). Consult with the Biology Unit if body fluid identification is requested or appropriate.

Determine if the air bag has starch, talc or other lubricating substances inside or on it that could have transferred to the persons in the vehicle.

Tape lift the air bag(s) and the occupants clothing in separate areas to avoid cross contamination.

Examine the tape lifts for starch or other lubricating materials. Also examine for other trace evidence that may have transferred.

Examine clothing articles for any singe patterns (may be helpful to employ both white light and UV or ALS to help visualize). Darker colored fabrics may not appear burnt or discolored.

- arched and/or round singe patterns would indicate contact with the driver side air bag when it was deployed, as that bag is typically round.
- straight line and/or right angle patterns would indicate contact with the driver side air bag when it was deployed

Take comparison quality photographs of any singe patterns and the seams of the air bags.

10.19.7 Report Wording

Indication of the analysis performed should be included, such as tape lifting, swabbing and examination of items for singed areas.

Report shall include that patterns were compared to the known airbag (if available).

Because airbags are mass produced, any associations shall be qualified.

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10.19.8 References

“Forensic Value of Pattern and Particle Transfers from Deployed Automotive Airbag Contact”, Schubert, Journal of Forensic Sciences, November 2005 Vol. 50, No. 6