



<b>ATF-LS-E24</b> <b>Examination of Explosive Components</b>	Published Online: <b>March 2018</b>
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## **Introduction**

The explosives section receives an almost unlimited variety of components associated with explosives investigations. These components range from simple items to highly engineered electronics. Almost any manufactured item could be employed in the making of a device. There is simply no way to delineate all of the exams required in everyday casework for components, but there are standard principles which should be followed. Examinations associated with components can be described as mostly “descriptive” or “characterization” exams. The comparison of components or materials may have different requirements than simple “descriptive” or “characterization” determinations and may include comprehensive chemical analysis (such as comparisons of tape, adhesives, polymers, some metals, etc.)

If an item is associated by the submitting agent, investigator, or any other law enforcement or fire department officer or their proxy with a particular case and/or device, the chemist should, at a minimum, provide a basic description of the component in his/her notes. The level of detail to be recorded in the notes will vary depending on the component type and the requirements of the case. The experience of the examiner and the case particulars will determine whether the component, or fragment thereof, is part of the actual device or case and if so, will subsequently be reported in the final report. There are cases in which investigators will submit everything from the scene and not separate device components from non-device ones. It is not necessary to report on all items in the exhibits submitted if the determination has been made that the item is not part of the device or search. However, the notes of the non-device item should include a general description and a statement as to why the item is not believed to be part of the device (e.g. rusty battery run over by vehicles).

Any components or parts of components that have been determined by the examiner to be part of the destructive or explosive device, or are needed as part of the case by the investigator (such as from a search) will be reported in the final report. Components should be fully exploited and reported if the device is from an unknown source or assailant and/or investigative leads could be realized. Full exploitation may include analytical and/or chemical tests, notation of characteristics including manufacturers’ logos and/or lettering, appropriate measurements of the component and/or parts thereof, internet searches, acquisition of exemplars, et cetera. If an industry standard exists for the classification of the component it should be included in the report if possible and if pertinent to the case (e.g. wire gauge). All relevant information ascertained by these tests, for example, an identification of the component’s origin, manufacturer, source, and/or distributor, and full description of the component should be fully documented and reported. In the cases where the identification of the component or parts therein is not made, a full description of the component should be completed and reported.

### **Appropriate Confirmatory Analysis for Chemical Analysis of Components**

See ATF-LS-E1. The Standard Approach to the Examination of Explosives for a general discussion of confirmatory analysis.

Because describing components is a characterization exam, there are cases, where chemical confirmation is not required (e.g. SEM alone is sufficient on some metal components or sub-components). There are other cases where the simple observation is sufficient based upon known

circumstances (e.g. copper wire may be identified by color and physical properties such as malleability as it is extremely rare to have wires that look like copper wire that are not copper or copper alloyed). Generally, a chemical description of features that distinguish different components from each other (like characterizing a pipe as galvanized or a grey adhesive as an epoxy) doesn't require the same level of confirmatory analysis as when identifying a chemical (like nitroglycerin in a post-blast case).