



## **Investigation Guideline**

**Product :** Cigarette Lighters with Mechanical Failures

**Appendix # :** 135

**Date :** 08/15/2005

### **I. Introduction**

#### **A. Background Information**

In November 2001, the Lighter Association, Inc. (petitioner) petitioned the U.S. Consumer Product Safety Commission (CPSC) to adopt the voluntary "Standard Consumer Safety Specification for Lighters" (ASTM F-400) as a mandatory standard under the Consumer Product Safety Act (CPSA). The ASTM F-400 was published in 1975. The standard establishes requirements for all lighters to ensure a reasonable degree of safety for normal use or reasonably foreseeable misuse by users. ASTM F-400 includes requirements for a maximum flame height, proper flame extinction, maintaining structural integrity when exposed to hot or cold temperatures, maintaining structural integrity after a "drop" test, and requirements for internal pressure and fuel levels. ASTM F-400 also includes safety labeling requirements and instructions for proper use. The petitioner requested that the voluntary standard be adopted as a mandatory rule due to its concern that unreasonable risk of injury is created by the widespread nonconformance of imported lighters.

Based on the most recent data available from the National Fire Incident Reporting System (NFIRS) for the period 1994 -1999, there were an estimated total of 330 residential structure fires that were caused by faulty cigarette lighters. There were an estimated 90 injuries and 10 deaths associated with these fires and the property damage was estimated at almost 3 million dollars over the six-year period. Based on the NEISS data from 1997 – 2002, there were an estimated total of 3,015 injuries. For the same time period, 256 incident reports related to cigarette lighter failures were received; 65% of these cigarette lighter failures resulted in fires, some leading to serious injuries and deaths. While the incident reports provided the most scenario-specific detail, the name of manufacturer was often missing and information on the manufacturer's country of origin was rarely available.

In November 2004, the Commission voted to grant the petition and initiate the process to adopt ASTM F-400 as a mandatory standard. To help with this process, the CPSC staff needs to independently verify the petitioner's claim that most of the failed lighters are imported. To this end, CPSC field staff will investigate and collect information as specified below, and transmit lighter samples to the headquarters over a period of about two years. For the most part, investigations will be assigned from Headquarters. Field may also initiate an investigation, after notifying Headquarters.

This guideline is different from the existing guideline, Appendix 45, which focuses on child-resistance issues in lighters. Here, the primary focus is on mechanical failures of cigarette lighters. Please provide any information that may be deemed relevant for that purpose, even if it may not have been specifically asked for in this guideline.

## **B. Product Descriptions**

As defined in CPSA regulations (16 CFR, Part 1210) a cigarette lighter is a flame-producing product commonly used to light cigarettes, cigars, and pipes. The term “lighter” does not include matches or any other lighting device intended primarily to light materials other than smoking materials. The majority of the cigarette lighters of interest are disposable, non-refillable or inexpensive refillable type.

## **C. Specific Items of Interest**

One of the main purposes for the investigations will be to verify the petitioner’s claim that most imported lighters in the market fail to function safely. As such, it will be crucial to obtain information on the country of origin, manufacturer, and model name of the lighter. If the year of manufacture is available, that information will also be very useful. There are eight different requirements under ASTM F-400 that a cigarette lighter needs to be able to pass. These requirements address the following failure modes:

- Flame control or height adjustment problem
- Sparks or flaring
- Pressure or volumetric displacement problem<sup>1</sup>
- Failure to extinguish
- “Drop test” failure, which means dropping a lighter onto a hard surface results in an explosion, self-ignition, gas escaping, or the lighter’s subsequent safe operation is impaired
- “Burning-time” failure, which means the lighter is incapable of withstanding a burning time of 5 seconds without burning or distorting components leading to a hazardous condition
- Refilling problem: fuel leakage or gas escapes
- Failure to withstand extreme temperature i.e., the lighter explodes when exposed to a temperature of 55 degrees Celsius (or 131 degrees Fahrenheit) for 4 or more hours.

When investigating an incident, provide the information on the failure mode. If unclear on the exact mode, please describe the chain of events as fully as possible. It will be necessary to identify the mode of failure and the subsequent hazard such as fire, explosion, etc., in order to pinpoint the specific requirements of the standard that are particularly problematic.

## **D. Headquarters Contacts**

Risana Chowdhury, EPHA, 301-504-7334, [rchowdhury@cpsc.gov](mailto:rchowdhury@cpsc.gov)  
Back-up: Rik Khanna, ESFS, 301-504-7546, [rkhanna@cpsc.gov](mailto:rkhanna@cpsc.gov)

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<sup>1</sup> Lighter explosions typically occur when the fuel chamber ruptures due to failure to withstand the internal vapor pressure. To reduce the likelihood of explosion, the ASTM F-400 standard requires that the liquid portion of the fuel not exceed 85 percent of the volumetric capacity of the fuel chamber.

## **II. Instructions for Collecting Specific Information**

### **A. Synopsis**

For identification purposes, use the product codes 1604 (Cigarette / Pipe Lighter) or 1687 (Lighter, Not Specified). In the synopsis on Form 182, please use the words **cigarette lighter malfunction** to ease the computer-based data retrieval. As requested on the cover sheet, please provide information on the hazard type, occurrence of deaths or injuries, age of victim(s), and sample collection number if applicable.

### **B. Description of Incident Environment**

Provide a chronological description of the environment and incident. Provide a description of the circumstances that led up to the incident, followed by a description of how the incident unfolded. Include supporting documents whenever available. Include in the narrative a description of the environmental conditions (e.g., prolonged exposure to heat/sun, presence of flammables, etc.), injuries, deaths, type of treatment administered, and extent of property damage.

### **C. Description of Interaction between Injured Person(s) and Product**

Describe any experience or knowledge the victim(s) had of the lighter and the hazards involved. Indicate whether any competence reducing factors such as impaired vision, physical handicaps, medication, alcohol/drugs, etc. were present at the time of the incident. Indicate the age and sex of the victim(s), and the severity of each injury (death, hospitalization, etc.).

### **D. Description of Product**

Please provide information regarding the product on the attached Data Record Sheet.

## **III. Photographs/ Diagrams of Incident Scene**

Good photographs of the product and /or the incident scene are always useful.

## **IV. Obtaining samples and documents related to the investigation**

If the involved product is available, please collect and place in a plastic bag with the assignment task number on the bag as well as the sample collection report. If the sample is not available or has been destroyed, attempt to collect an identical exemplar from a retailer, based on information from the consumer. Ideally, 10 exemplars would allow staff at Headquarters/Lab to review the product thoroughly and possibly identify the exact mode of failure. Since HAZMAT regulations apply for transporting cigarette lighters, please refer to Appendix A at the end of this guideline for specific instructions. Forward the sample(s) to Risana Chowdhury, EPHA, at Headquarters.

Please keep in mind that the information on manufacturer and country of origin are critical. If that information is not visible on the product, try to obtain the information from the retailer if possible. Obtain all official documents available that are pertinent to the incident. This includes any fire department reports (incident report or casualty report), medical records documenting the injuries or deaths (doctor's office or hospital), and any police or insurance reports documenting the incident.



**DATA RECORD SHEET**  
**Investigation Guideline**

**PRODUCT: Cigarette Lighter**

Task Number \_\_\_\_\_ Incident Date \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Sample No \_\_\_\_\_

Type of lighter: Cigarette / Cigar / Pipe / Other (specify) \_\_\_\_\_

Manufacturer \_\_\_\_\_

Country of origin \_\_\_\_\_

Manufacture date \_\_\_\_\_

Purchase date \_\_\_\_\_

Safety labels on lighter \_\_\_\_\_

General physical description (for example, metal flip top, plastic case with metal top, shape of a toy, etc.) \_\_\_\_\_

Fuel level at time of incident: Full / Nearly Full / Halfway / Nearly Empty / Empty / Unknown

Is the lighter refillable (has refill port)? Yes / No / Unknown

If refillable, i. when was it last refilled? \_\_\_\_\_

ii. with what type of fuel? \_\_\_\_\_

Ignition mechanism:

- a. Spark wheel & push button
- b. Push button only
- c. Spark wheel only
- d. Other (describe) \_\_\_\_\_
- e. Unknown

Approximate purchase price \$ \_\_\_\_\_

Briefly describe the pre-incident environmental conditions (location of the lighter, surrounding temperature, etc) \_\_\_\_\_

\_\_\_\_\_

Describe the sequence of events: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Was the description above witnessed? Yes / No

The incident occurred while (circle one):

- f. Lighter was in use
- g. Lighter not in use, but used a short while before
- h. Lighter not used for a while
- i. Other (explain) \_\_\_\_\_
- j. Unknown

Injuries: Yes / No / Unknown

If yes, then provide the following information on the victim (s):

a. Age \_\_\_\_\_

b. Sex \_\_\_\_\_

c. Description of injury (include the body part(s) injured) \_\_\_\_\_

\_\_\_\_\_

d. Treatment sought \_\_\_\_\_

Estimated property damage \$ \_\_\_\_\_



## **Appendix A**

### **Shipping Instructions for Cigarette Lighters**

#### **Packing:**

Approval number T-0407 has been granted to CPSC, allowing us to ship a maximum of 30 lighters per package by aircraft. These must be packaged either in blister packs, glued to a cardboard backing, or loose. If packaged loose, each lighter must be individually wrapped in a Zip-loc bag and then wrapped in newspaper. The inside of the box must be cushioned with rolled newspaper. Be sure to pack the contents tightly. The lighters must be packaged in UN-specification 4G fiberboard boxes with a gross weight of no more than 33 pounds.

#### **Marking/Labeling:**

Required markings on the outside packaging include "Lighters, UN1057, Flammable Gas" and Approval number T-0407 must be marked on the outside of each container and all shipping papers. Please list the SCR number and sub numbers on the outside of the box and if there is more than one box, write Box 1 of 2 and so forth. In addition, the Flammable Gas (hazard class 2) sticker must be on the package and the Danger – Do not ship on passenger aircraft label as well. Handling labels (arrows) should be used where appropriate.

#### **Overnite:**

If possible, the recommendation is that the shipper uses Overnite Freight in order to ship the lighter samples. A Bill of Lading is the only required documentation when shipping with Overnite. On the Bill of Lading, the shipper is required to complete boxes 3, 8, 10, 20 (CPSC tender number, 5610). Box 16 is the number of cases of that specific item. Box 17 should be checked yes because the shipment is hazardous materials. Box 18 should include the device name, the manufacturer item number if known, the EX number, the UNO number, and the classification of 2.1, Flammable Liquid. Remember to include the Emergency Response number on the Bill of Lading as 1-800-424-9300, Chemtrek. A list of the Overnite service centers is available at <http://www.overnite.com/>. To arrange an Overnite shipment, call their Government Services Group at 1-800-730-5151. Explain that you are with CPSC and wish to schedule a pick-up of Cigarette Lighters. The CPSC Customer Number is 28483000 and the Tender number is 5610. You will need to provide Overnite with the To and From address as well as an approximate weight of the shipment. Make sure that you are provided an estimate with the government discount. For additional information concerning shipments with Overnite, please view the following document: <https://em.cpsc.gov/CPSCPRIV/drb/HazMat/overniteshipping.pdf>.

#### **FEDEX:**

For shipper's using FEDEX, a Shipper's Declaration is required in addition to the Air Waybill. The Shipper's Declaration must list the proper shipping name (Lighters), the UN number (UN1057), the hazard class (2.1), the packing group (II), quantity and type of packaging (quantity determined by shipper and the type is 4G fiberboard boxes), the packing instruction (201), and the authorization (T-0407). Please remember to clearly denote that this shipment is for Cargo Aircraft Only. Also, be aware that the Emergency Response number must be on the Shipper's

Declaration as 1-800-424-9300. This is the number for Chemtrek. In addition, be sure that the statement "I declare that all of the applicable air transport requirements have been met" appears on the Declaration. Three signed copies of this document must be handed to the FEDEX operator and a copy of the Shipper's Declaration must be retained by the shipper for 375 days, whether scanned or in hard copy.