



**iPhone 6s**

**iPhone 6s Plus**

# Apple Recycler Guide

June 2023

# Contents

3	<a href="#">About This Guide</a>
4	<a href="#">Identification</a>
5	<a href="#">Directive 2012/19/EU Annex VII Components</a>
6	<a href="#">Safety Considerations</a>
8	<a href="#">Recommended Tools</a>
9	<a href="#">Disassembly Instructions</a>
28	<a href="#">Material Categorization of Output Fractions</a>

# About This Guide

Apple Recycler Guides provide guidance for electronics recyclers on how to disassemble products to maximize recovery of resources. The guides provide step-by-step disassembly instructions and information on the material composition to help recyclers direct fractions to the appropriate material recycler.

To conserve important resources, we work to reduce the materials we use and aim to one day source only recycled or renewable materials in our products. A key path to reaching that goal is resource recovery from end-of-life electronics.

Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to laws relating to the management, handling, shipping, and disposal of the outputs of this work as waste and laws in place to ensure the health and safety of all employees who support this work.

For questions or feedback about this guide, email [contactesci@apple.com](mailto:contactesci@apple.com).

**Note:** This guide may show images from other similar models, but the procedures are the same.

# Identification

You can find the model number on the back of the iPhone.



*Model numbers:*

*A1633, A1634, A1687, A1688, A1691, A1699, A1700*

# Directive 2012/19/EU Annex VII Components

Directive 2012/19/EU Annex VII requirements apply to the following substances and components.

<b>Substance/Component</b>	<b>Apple Part Name</b>	<b>Removal Instructions</b>
Printed circuit board if the surface is greater than 10 square centimeters	Main logic board	Follow steps 1–15
External electric cables	Power adapter	Follow step 1
Battery	Lithium-ion polymer battery	Follow steps 1–9
Cover glass and liquid crystal display (LCD) cell if the surface is greater than 100 square centimeters	LCD cell	Follow steps 1–8
No further substances or components as listed in Annex VII		

# Safety Considerations

The recycler is responsible for independently evaluating all activities undertaken by its employees to perform or support the work and ensuring compliance with all applicable health and safety laws related to the work. These include but are not limited to laws relating to the health and safety of all employees who perform or support this work. The recycler is also responsible for evaluating the workspace and ensuring that the area in which the work is to be undertaken is designed using ergonomic best practices and meets all ergonomic requirements to ensure the protection of its employees.

## Personal Protective Equipment

Personal protective equipment should be worn during the entire recycling process.



Wear hand protection



Wear protective clothing



Wear eye protection



Wear foot protection

## Battery Safety

This product uses a lithium-ion polymer battery. Before beginning any disassembly work, ensure that a safe working procedure for handling lithium-ion batteries has been established, which could include discharging the batteries so that they can be more safely managed. The following considerations may also be included:

- Remove anything from your person that could conduct energy, such as jewelry and watches, to avoid electric shock to yourself or the logic board.
- To avoid the potential for thermal runaway and the release of potentially noxious fumes, don't puncture, strike, or crush lithium-ion polymer batteries or devices powered by them.
- Don't throw, drop, or bend the battery.
- Don't expose the battery to excessive heat or sunlight.
- Don't use tools that are sharp or conduct electricity.
- Keep your workspace clear of foreign objects and sharp materials.
- Dispose of batteries according to local environmental laws and guidelines.

## Workspace safety guidelines

- Use heat-resistant gloves and safety glasses.
- Keep a sand dispenser within arm's reach (2 feet or 0.6 m) on one side of the workstation, not above the workstation. The dispenser should be a wide-mouthed, quick-pour metal container with a flip-top lid or tray that contains 8–10 cups (1.9–2.4 L) of clean, dry, untreated sand.
- Keep the battery at least 2 feet (0.6 m) from paper and other combustible materials.
- Work in an area with adequate ventilation.

## Handling a thermal runaway

If you notice any of the following signs, a thermal runaway is likely underway, and you should act immediately:

- The lithium-ion polymer battery or a device containing one begins to smoke or emit sparks or soot.
- The battery pouch suddenly and quickly puffs out.
- You hear hissing or popping sounds.

**Don't** use water or an ABC/CO<sub>2</sub> fire extinguisher on a thermal runaway battery or a device containing one. Water and ABC/CO<sub>2</sub> fire extinguishers will not stop the reaction.

**Do** smother the battery or device immediately with plenty of clean, dry sand, dumped all at once. Timing is critical; the faster you pour all the sand, the faster the thermal runaway will stop.

**Do** leave the room for 30 minutes if the thermal runaway causes any irritation.

**Do** wait 30 minutes before touching the battery. Wear heat-resistant gloves and safety glasses to remove the battery from the sand, or use a touchless thermometer to measure the battery temperature. Only touch the battery when the event has finished.

**Do** dispose of the damaged battery or device (including any debris removed from the sand) according to local environmental laws and guidelines.

## Hazard Warnings



Broken glass hazard



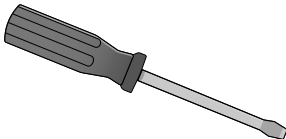
Rechargeable battery hazard



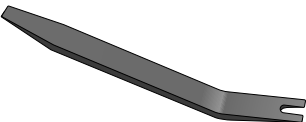
Chemical exposure hazard

# Recommended Tools

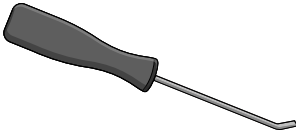
Flat-blade screwdriver



Miniature plastic pry bar



Miniature pry bar



Tweezers

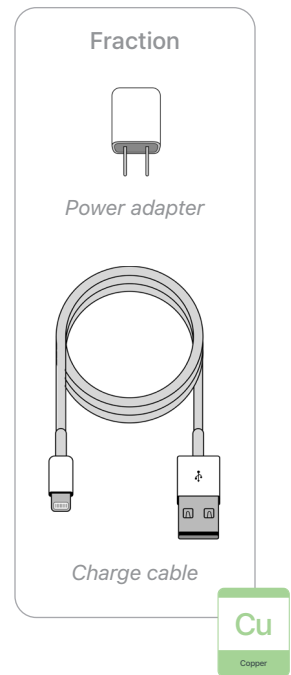




# Disassembly Instructions

## 1. Remove the power adapter and the charge cable.

- » *Ensure that the iPhone is turned off.*
- » *Unplug the power adapter. Disconnect both ends of the charge cable.*



## 2. Remove the display.

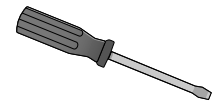


Broken glass hazard

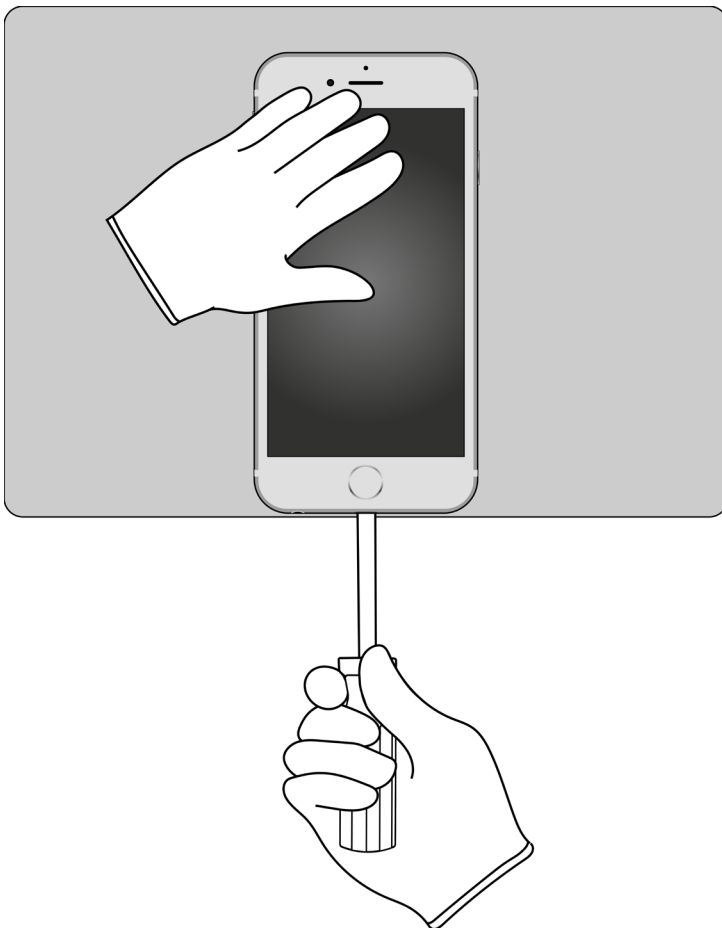


Chemical exposure hazard

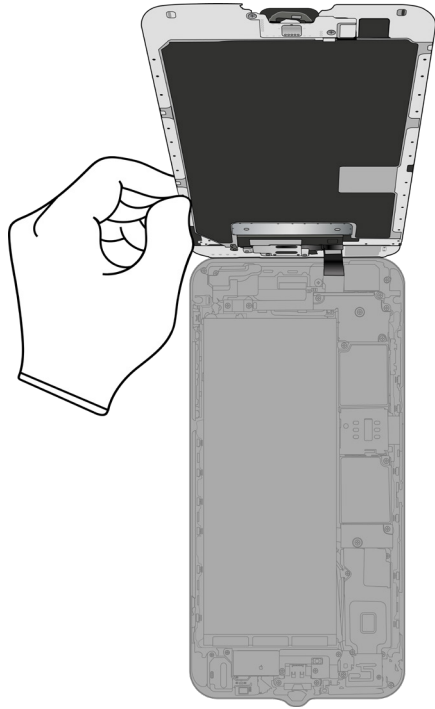
### Tools Used



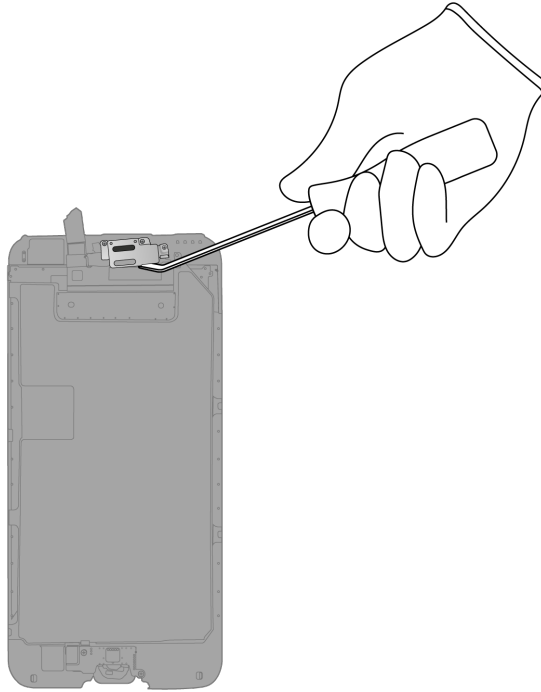
- » *Hold the iPhone at the edge of a counter with the display face up and the Lightning connector toward the counter edge.*
- » *Insert the tool tip into the Lightning connector. Push the handle down to pry the display from the enclosure.*



» Remove the display by hand. Set the enclosure aside.



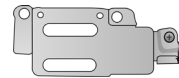
- 3.** With the display facing down, pry off the front camera cover.



Tools Used



Fraction



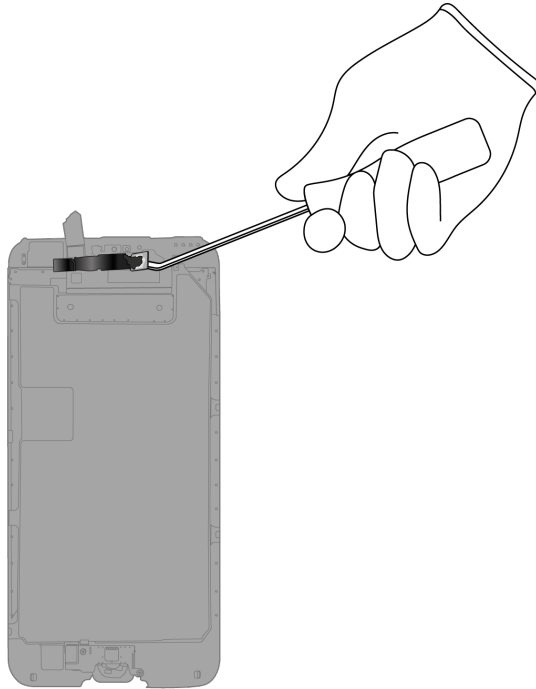
Front camera cover

Fe

Ferrous

## 4. Remove the front camera and the receiver.

» *Pry off the front camera and the receiver.*



### Tools Used



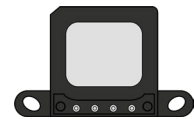
### Fraction



Front camera

**PMs**  
Precious Metals

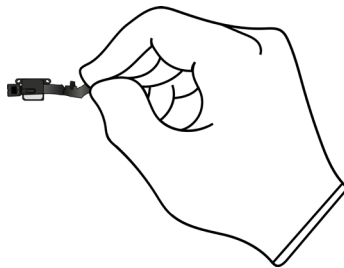
### Fraction



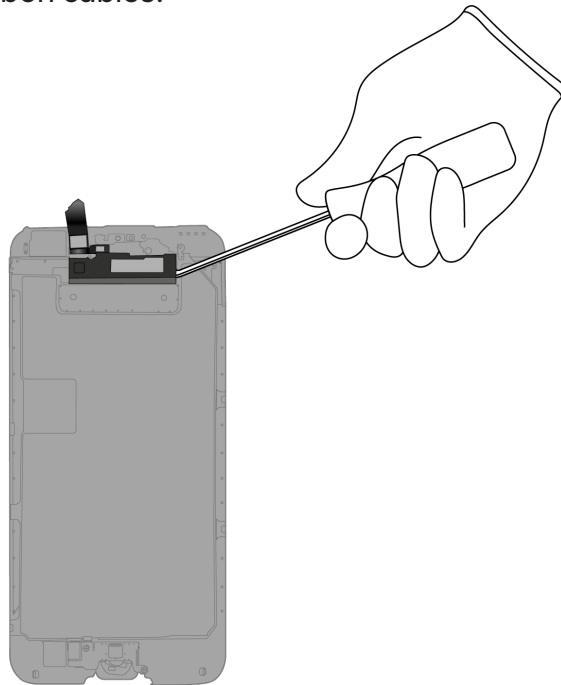
Receiver

**REE**  
Rare Earth Elements

» *Separate the front camera from the receiver by hand.*



**5.** Pry off the ribbon cables.



Tools Used



Fraction

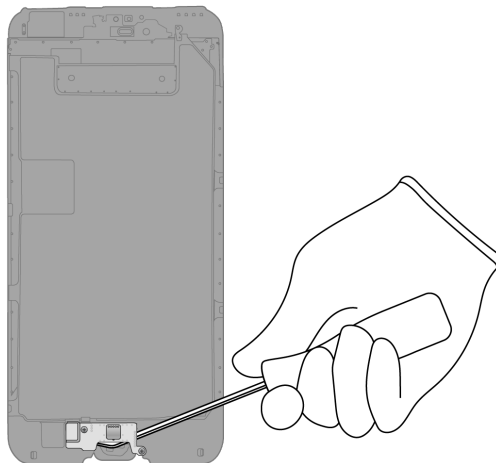


Ribbon cables

Cu

Copper

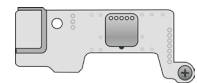
**6.** Pry off the Home button/Touch ID sensor cover.



Tools Used



Fraction

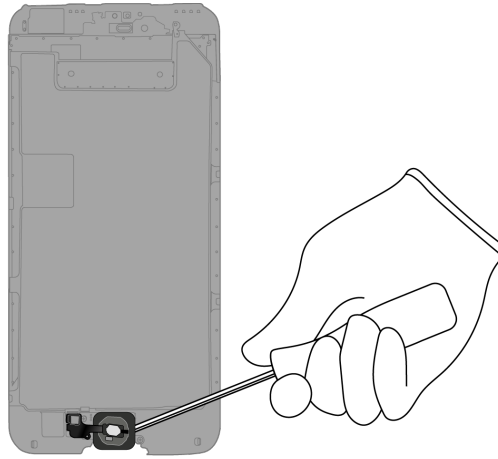


Home button/  
Touch ID sensor cover

Fe

Ferrous

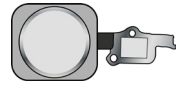
7. Pry off the Home button/Touch ID sensor.



Tools Used



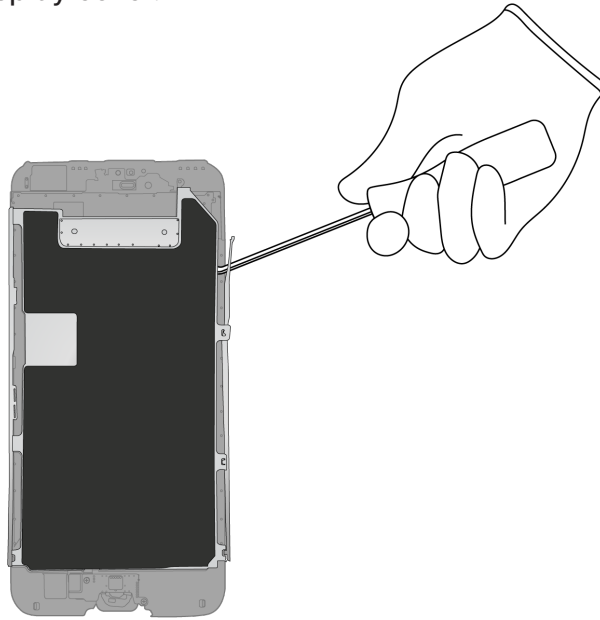
Fraction



Home button/  
Touch ID sensor

Cu  
Copper

8. Pry off the display cover.



Tools Used



Fraction



Display cover

Fe

Ferrous

Fraction



LCD cell

GL

Glass

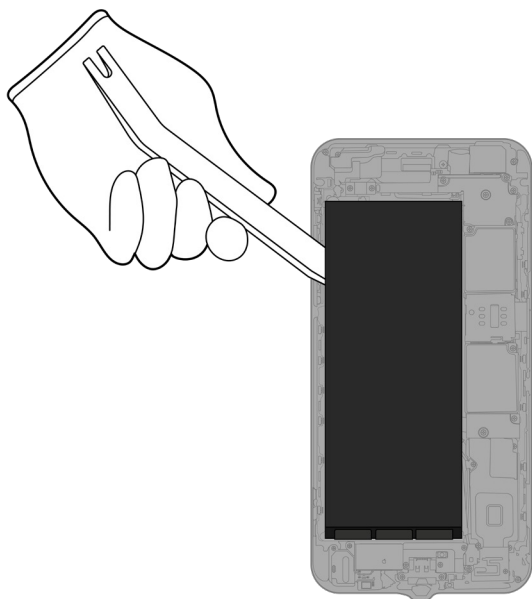


9. Inside the enclosure, carefully remove the lithium-ion polymer battery.



Rechargeable battery hazard

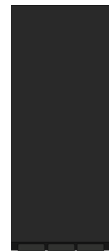
- » *Using tweezers, gently peel one of the black battery adhesive tabs away from the battery.*
- » *Twist the tab around the tweezers until white adhesive appears. Continue twisting until the entire adhesive strip is removed.*
- » *Repeat this process for the remaining battery tabs. Continue with the miniature plastic pry bar if needed.*



Tools Used



Fraction

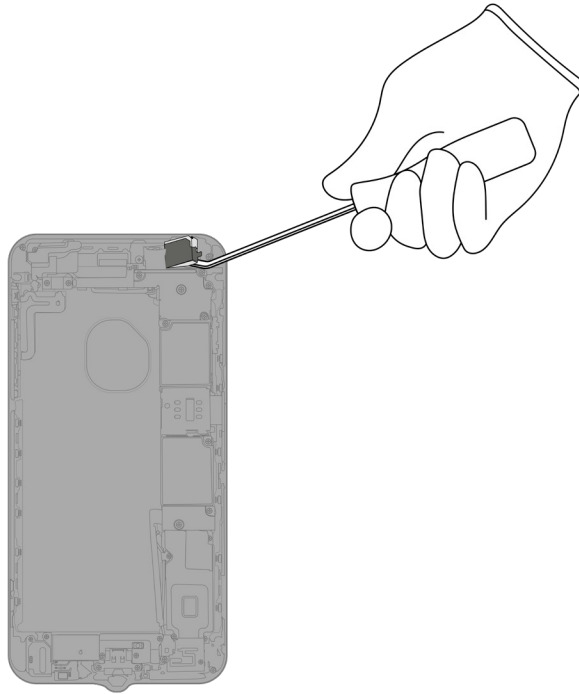


Lithium-ion polymer battery

BT

Battery

# 10. Pry off the rear camera.



## Tools Used



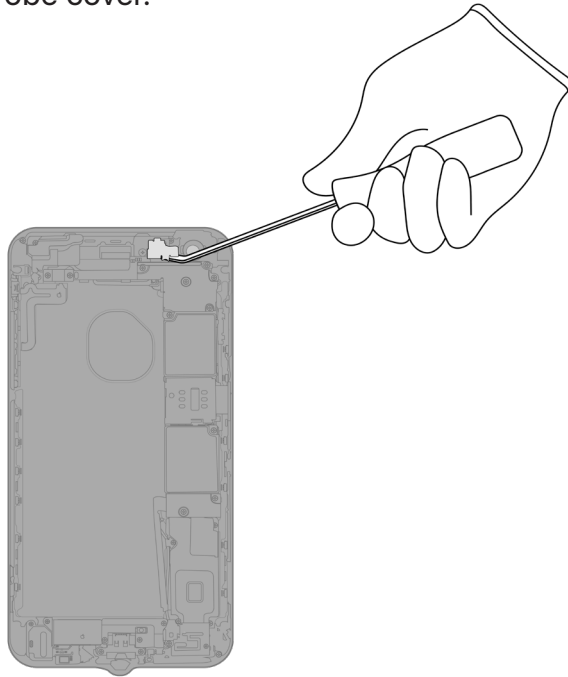
## Fraction



Rear camera



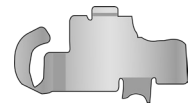
# 11. Pry off the strobe cover.



## Tools Used



## Fraction

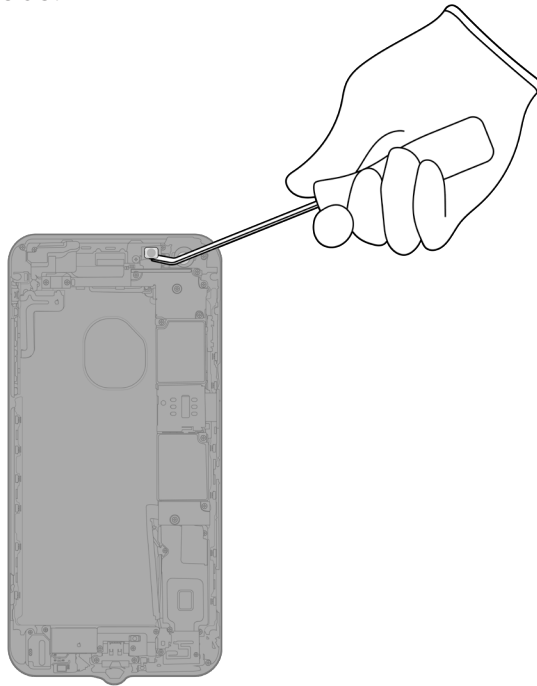


Strobe cover

Fe

Ferrous

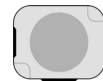
## 12. Pry off the strobe.



### Tools Used



### Fraction

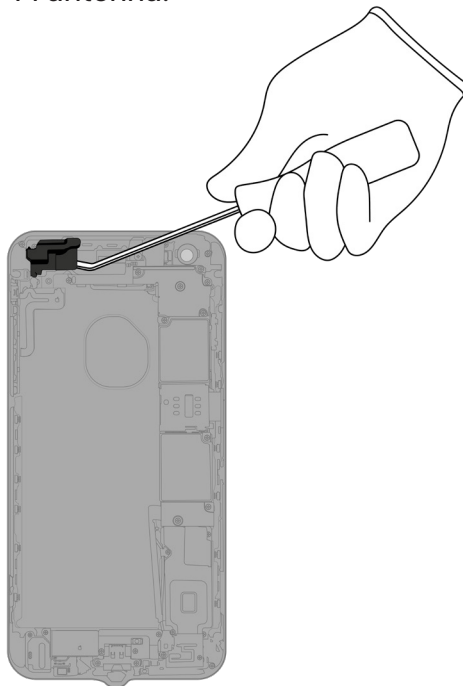


Strobe

Cu

Copper

## 13. Pry off the Wi-Fi antenna.



### Tools Used



### Fraction

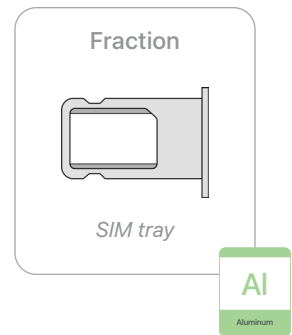
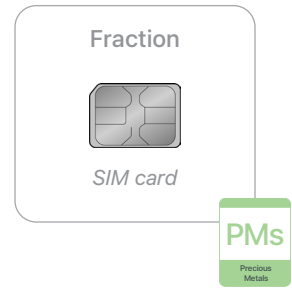
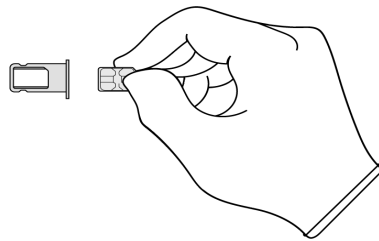
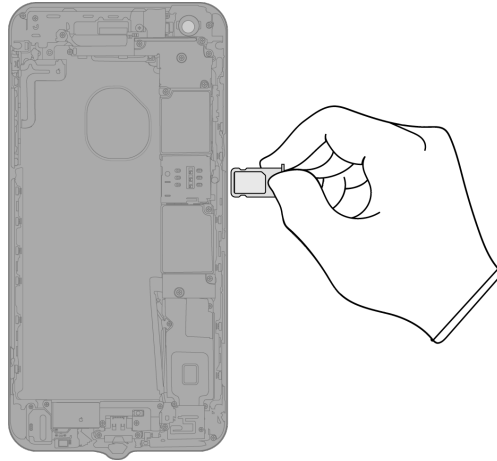


Wi-Fi antenna

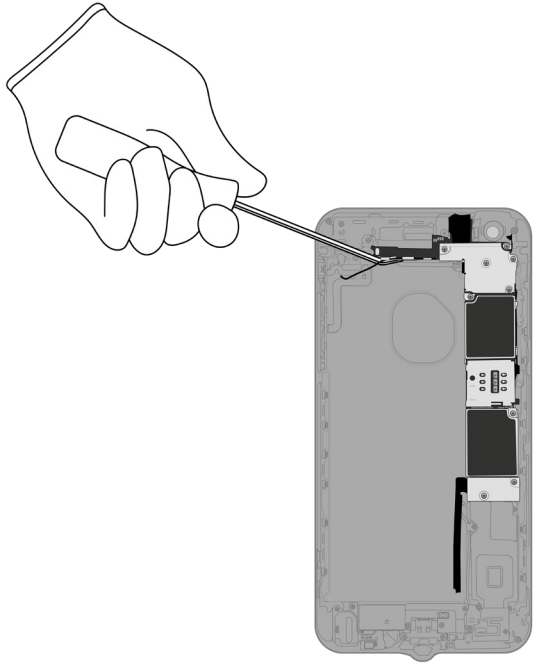
Cu

Copper

- 14.** Remove the SIM tray. Separate the SIM card from the SIM tray.



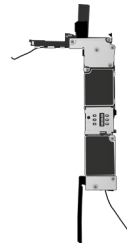
# 15. Pry off the main logic board.



## Tools Used



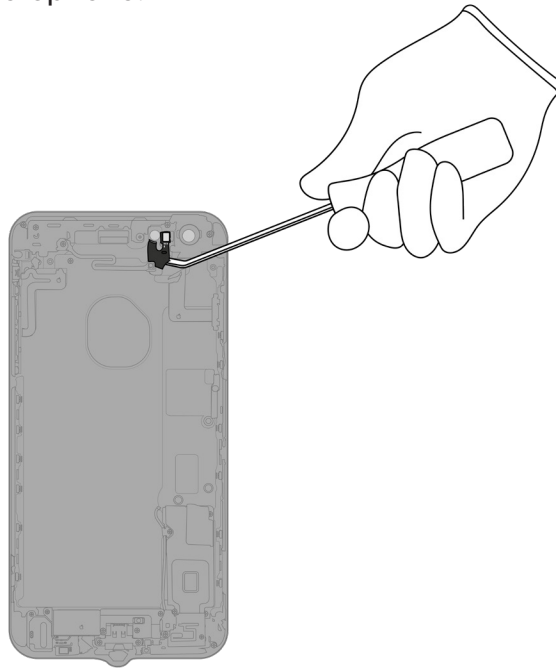
## Fraction



Main logic board



## 16. Pry off the microphone.



### Tools Used



### Fraction

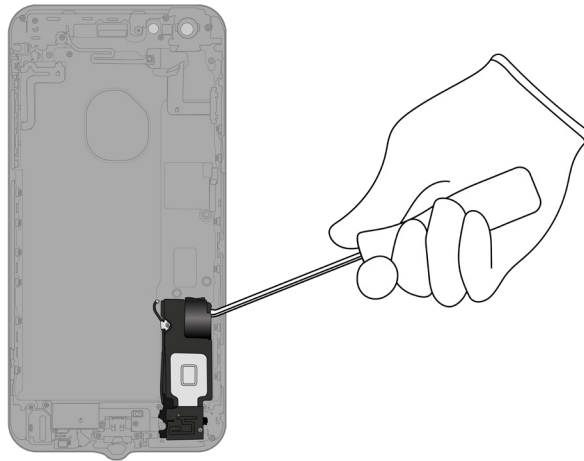


*Microphone*

**Cu**

Copper

**17.** Pry off the speaker.



Tools Used



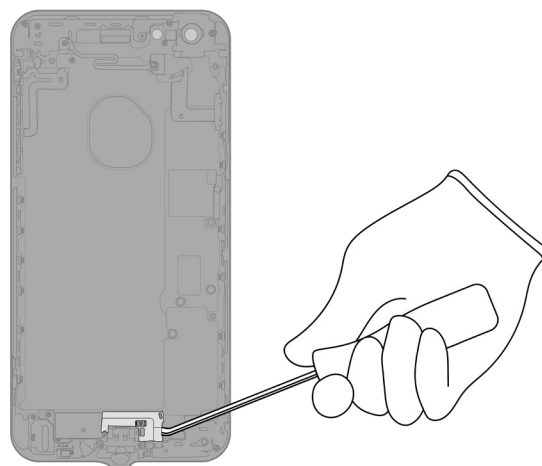
Fraction



*Speaker*

**REE**  
Rare Earth  
Elements

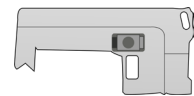
**18.** Pry off the Lightning connector cover.



Tools Used



Fraction

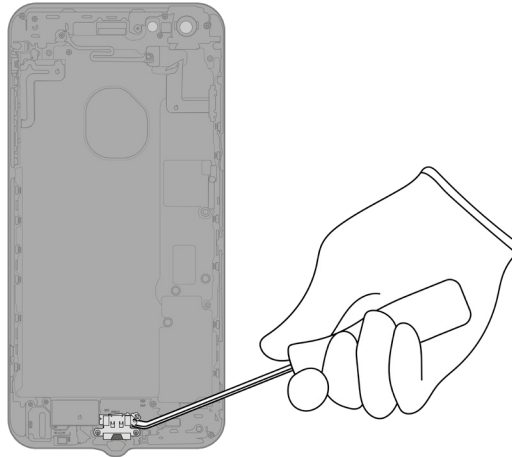


*Lightning connector  
cover*

**Fe**  
Ferrous



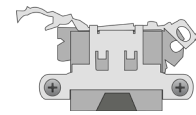
## 19. Pry off the Lightning connector.



### Tools Used



### Fraction

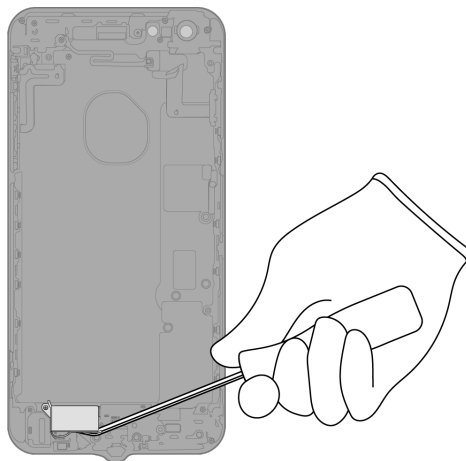


Lightning connector

Cu

Copper

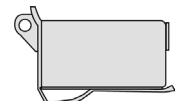
## 20. Pry off the Taptic Engine.



### Tools Used



### Fraction

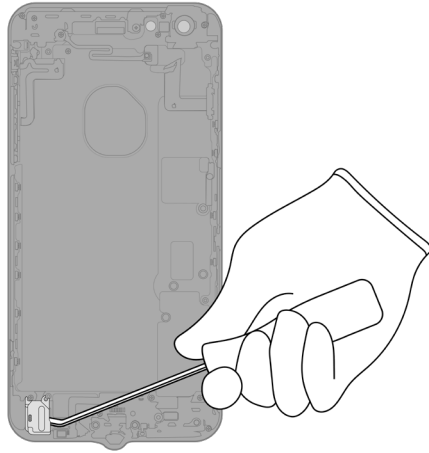


Taptic Engine

REE

Rare Earth Elements

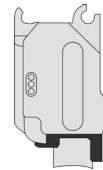
## 21. Pry off the headphone jack.



### Tools Used



### Fraction

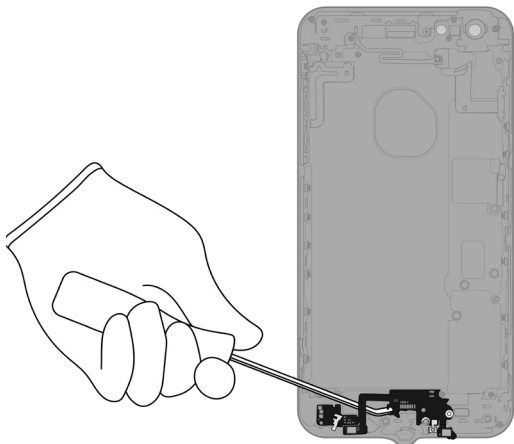


Headphone jack

Cu

Copper

## 22. Pry off the microphone array.



### Tools Used



### Fraction



Microphone array


Cu

Copper

### 23. Pull off the remaining ribbon cables.



Fraction



Ribbon cables

Cu  
Copper

A diagram showing the fraction of copper in ribbon cables. It features a rounded rectangular box containing the word "Fraction" at the top, an illustration of two black ribbon cables in the center, and the word "Ribbon cables" at the bottom. To the right of the box is a green square containing the chemical symbol "Cu" and the word "Copper" below it.

Fraction



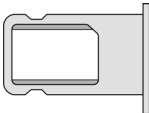
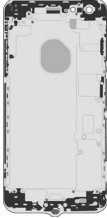



Enclosure



Al  
Aluminum

A diagram showing the fraction of aluminum in the enclosure. It features a rounded rectangular box containing the word "Fraction" at the top, an illustration of a gray iPhone enclosure in the center, and the word "Enclosure" at the bottom. To the right of the box is a green square containing the chemical symbol "Al" and the word "Aluminum" below it.

# Material Categorization of Output Fractions

All outputs from this process must be managed, handled, and disposed of in accordance with applicable waste laws and regulations, including but not limited to the Waste Framework Directive and its national enactments in Europe.

Fraction	Downstream Processing
<p data-bbox="435 604 568 636"><b>Aluminum</b></p>  <p data-bbox="459 810 542 835"><i>SIM tray</i></p>  <p data-bbox="451 1115 550 1140"><i>Enclosure</i></p>	<p data-bbox="964 604 1276 636"><b>Primary Target Material</b></p>  <p data-bbox="925 856 1317 888"><b>Potential Additional Materials</b></p>  

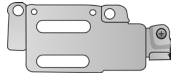
<p data-bbox="440 1234 563 1266"><b>Batteries</b></p>  <p data-bbox="365 1570 634 1596"><i>Lithium-ion polymer battery</i></p>	<p data-bbox="964 1234 1276 1266"><b>Primary Target Material</b></p> 
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**Fraction**

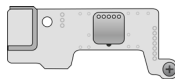
**Downstream Processing**

**Ferrous**

**Primary Target Material**



*Front camera cover*



*Home button/Touch ID sensor cover*



*Display cover*



*Strobe cover*



*Lightning connector cover*

**Glass**

**Primary Target Material**



*LCD cell*



**Potential Additional Materials**



## Fraction

## Downstream Processing

### Logic Boards



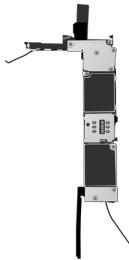
*Front camera*



*Rear camera*



*SIM card*



*Main logic board*

### Primary Target Material



### Potential Additional Materials



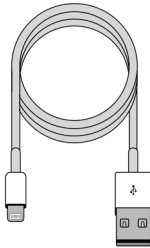
**Fraction**

**Downstream Processing**

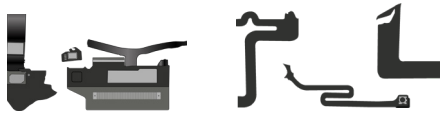
**Mixed Electronics**



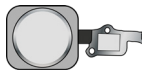
*Power adapter*



*Charge cable*



*Ribbon cables*



*Home button/Touch ID sensor*



*Strobe*



*Wi-Fi antenna*

**Primary Target Material**



**Potential Additional Materials**



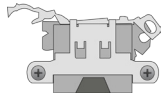
**Fraction**

**Downstream Processing**

**Mixed Electronics (cont.)**



*Microphone*



*Lightning connector*



*Headphone jack*



*Microphone array*

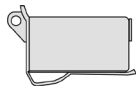
**Rare Earth Magnets**



*Receiver*



*Speaker*



*Taptic Engine*

**Primary Target Material**



Rare Earth Elements

**Potential Additional Materials**



Copper



Ferrous



Plastics



Tungsten