



**iPad mini (4th generation) Wi-Fi**

**iPad mini (4th generation) Wi-Fi + Cellular**

**iPad mini (5th generation) Wi-Fi**

**iPad mini (5th generation) Wi-Fi + Cellular**

## **Apple Recycler Guide**

May 2023

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# 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 iPad mini.



*Model numbers:*

*(Wi-Fi) A1538, A2133*

*(Wi-Fi + Cellular) A1550, A2124, A2125, A2126*

# Directive 2012/19/EU Annex VII Components

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

Substance/Component	Apple Part Name	Removal Instructions
Printed circuit board if the surface is greater than 10 square centimeters	Display logic board, main logic board	Follow steps 1–14
External electric cables	Power adapter, charge cable	Follow step 1
Battery	Lithium-ion polymer battery	Follow steps 1–5
Cover glass and liquid crystal display (LCD) cell if the surface is greater than 100 square centimeters	LCD cell	Follow steps 1–4
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 eye protection



Wear protective clothing



Wear hand 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



Chemical exposure hazard

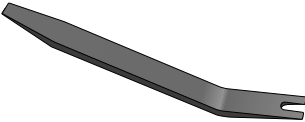


Rechargeable battery hazard

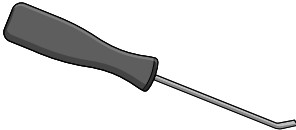


# Recommended Tools

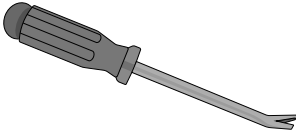
Miniature plastic pry bar



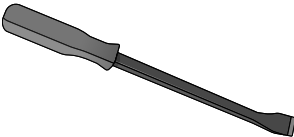
Miniature pry bar



Nail-pulling screwdriver



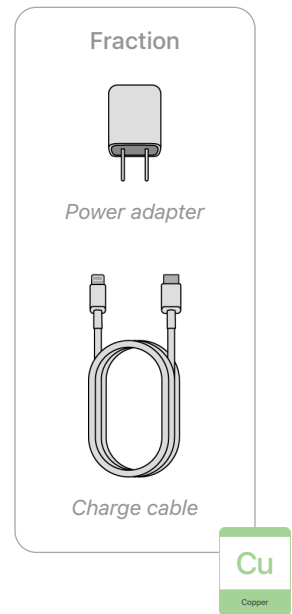
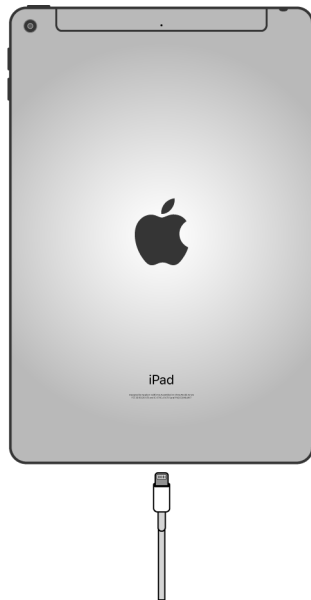
Screwdriver-handle pry bar



# Disassembly Instructions

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

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



## 2. Remove the display.

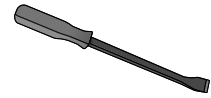


Broken glass hazard

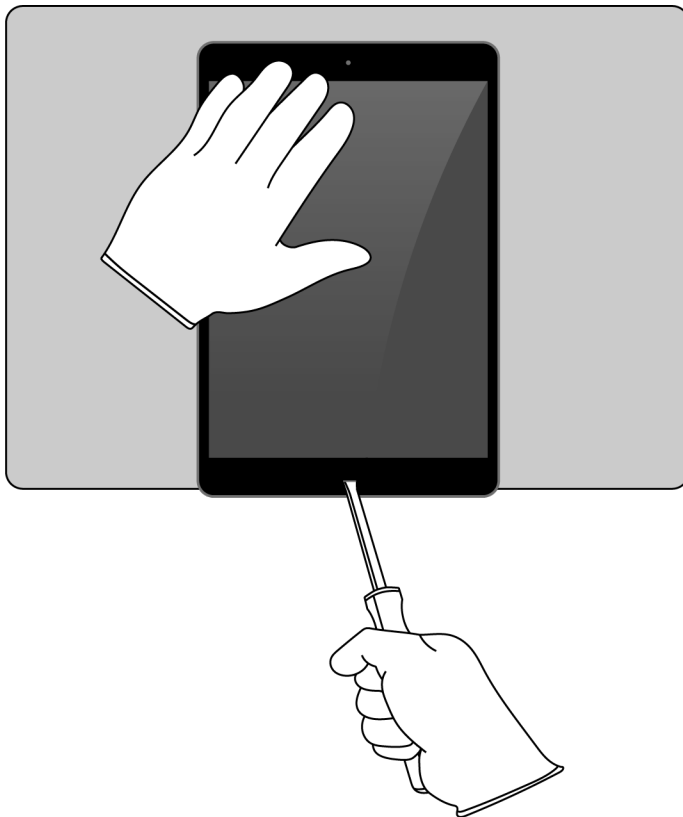


Chemical exposure hazard

### Tools Used

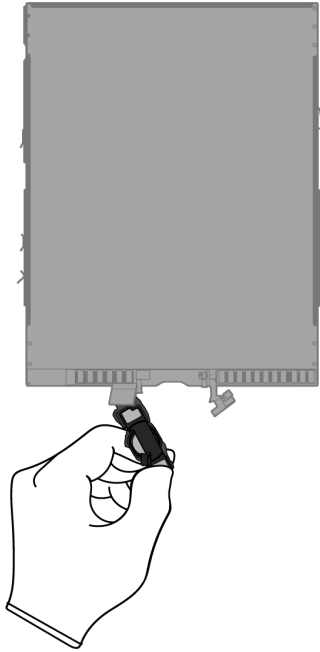


- » *Hold the iPad at the edge of a counter with the display facing up.*
- » *Place the tool tip into the Home button/Touch ID sensor. Push the handle down to pry the display from the enclosure.*




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

3. With the display facing down, pull off the Home button/Touch ID sensor.



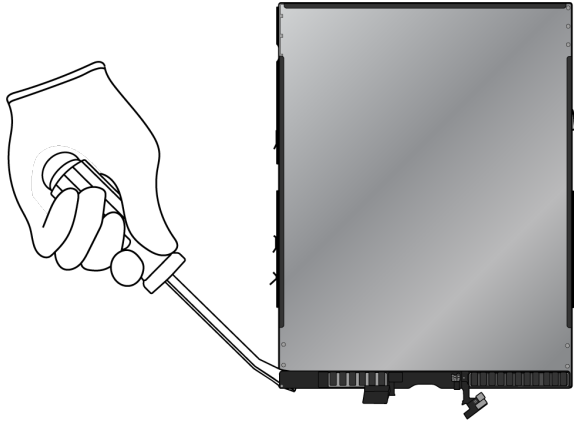
Fraction



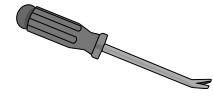
Home button/  
Touch ID sensor

Cu  
Copper

#### 4. Pry off the display logic board.



##### Tools Used



##### Fraction



*Display logic board*



##### Fraction



*LCD cell*

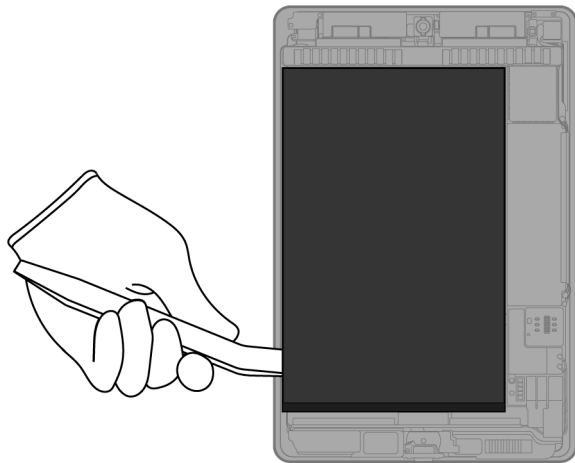


5. From the enclosure, carefully remove the lithium-ion polymer battery. Set the enclosure aside.

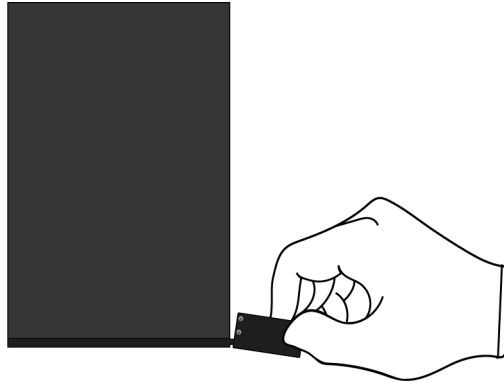


Rechargeable battery hazard


Tool Used



6. Remove the display cable cover from the battery.




Fraction



Display cable cover

Fe  
Ferrous

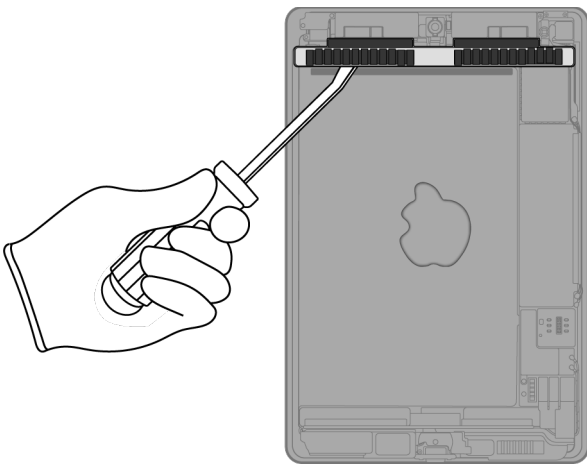
Fraction



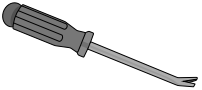
Lithium-ion polymer battery

BT  
Battery


7. From the enclosure, pry off the thermal shield.



Tools Used



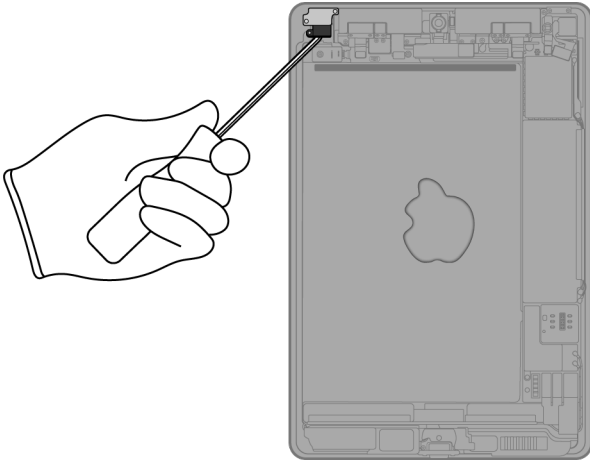
Fraction



Thermal shield

Fe  
Ferrous

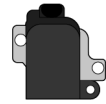
8. Pry off the headphone jack.



Tools Used



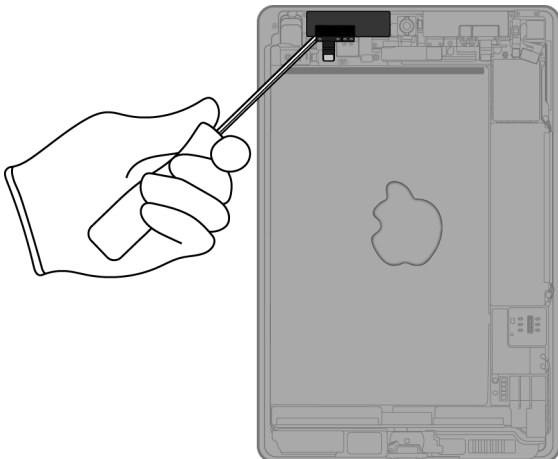
Fraction



Headphone jack

Cu  
Copper

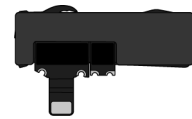
9. Pry off the left antenna.



Tools Used



Fraction

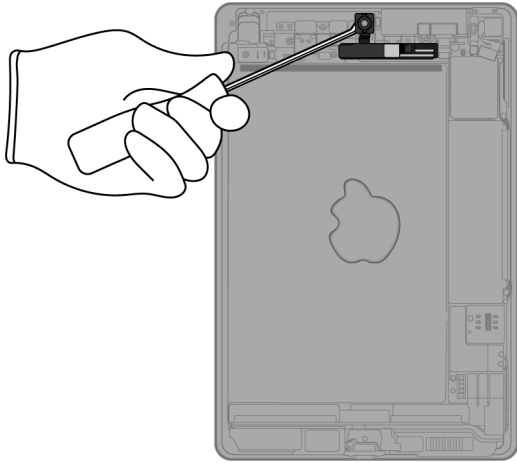


Left antenna

Cu  
Copper



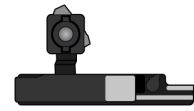
## 10. Pry off the front camera.



### Tools Used



### Fraction

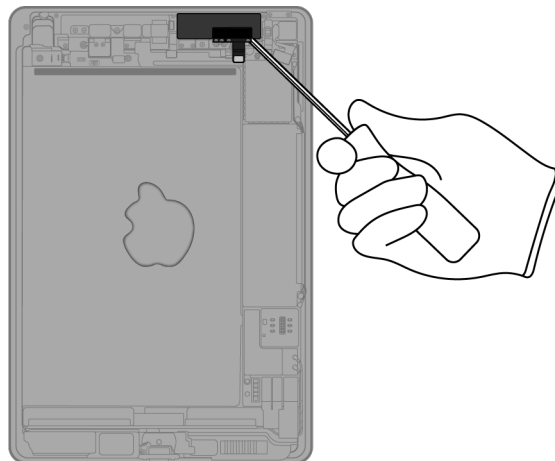


Front camera

PMs

Precious Metals

## 11. Pry off the right antenna.



### Tools Used



### Fraction

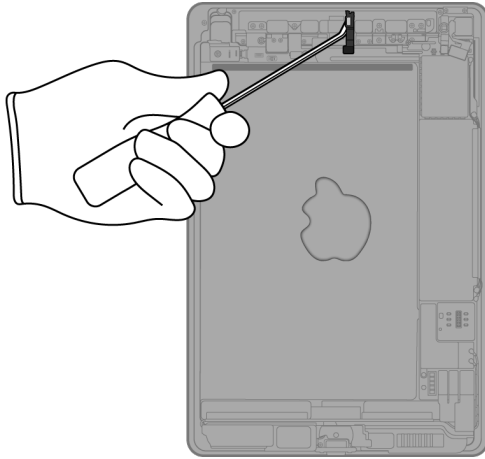


Right antenna

Cu

Copper

## 12. Pry off the microphone.



### Tools Used



### Fraction

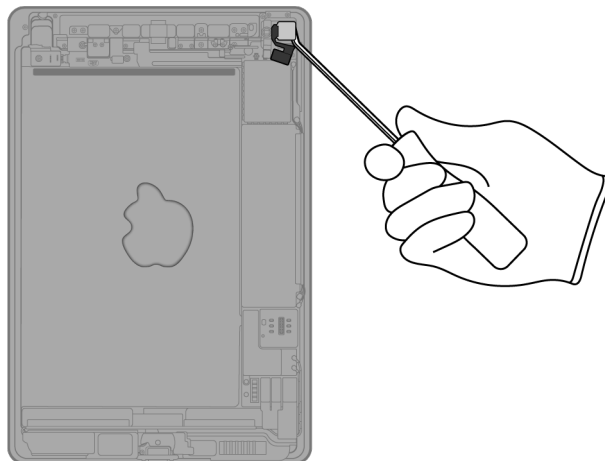


Microphone

Cu

Copper

## 13. Pry off the rear camera.



### Tools Used



### Fraction

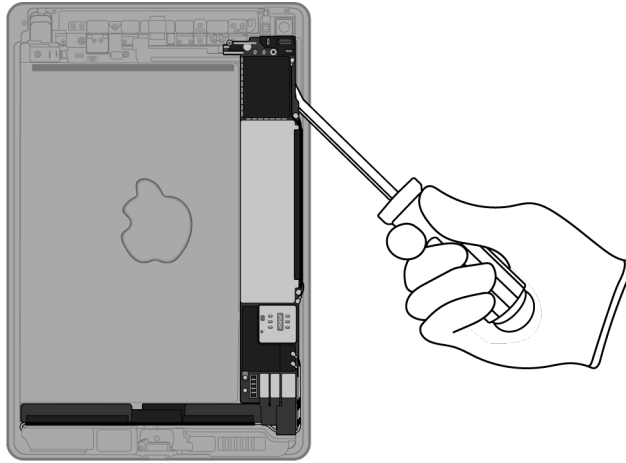


Rear camera

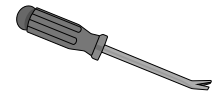
PMs

Precious Metals

# 14. Pry off the main logic board.



## Tools Used



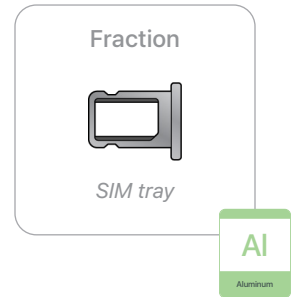
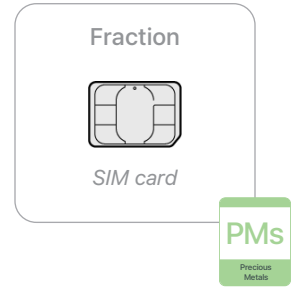
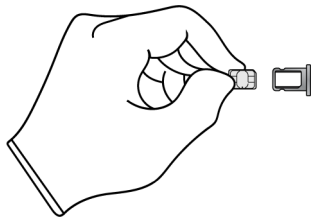
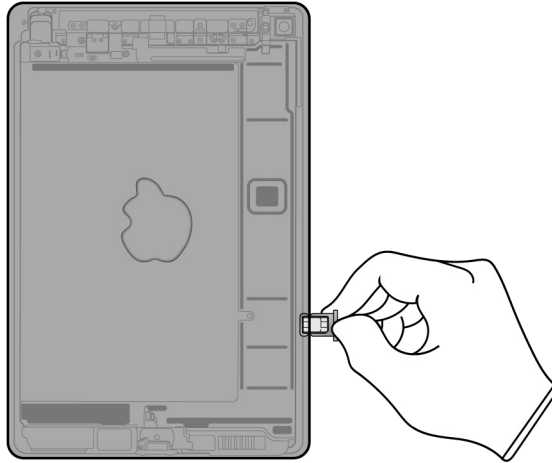
## Fraction



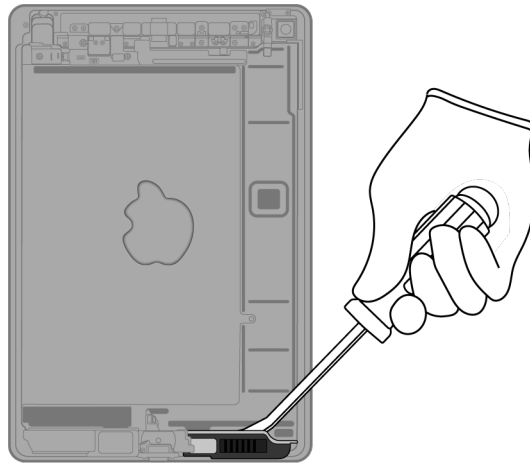
Main logic board



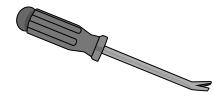
- 15.** (Cellular models only) Remove the SIM tray. Separate the SIM card from the SIM tray.



## 16. Pry off the right speaker.



### Tools Used



### Fraction

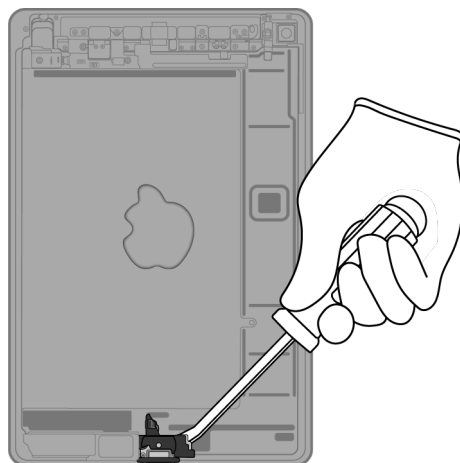


*Right speaker*

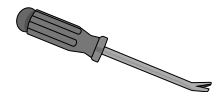
**REE**

Rare Earth  
Elements

## 17. Pry off the Lightning connector.



### Tools Used



### Fraction

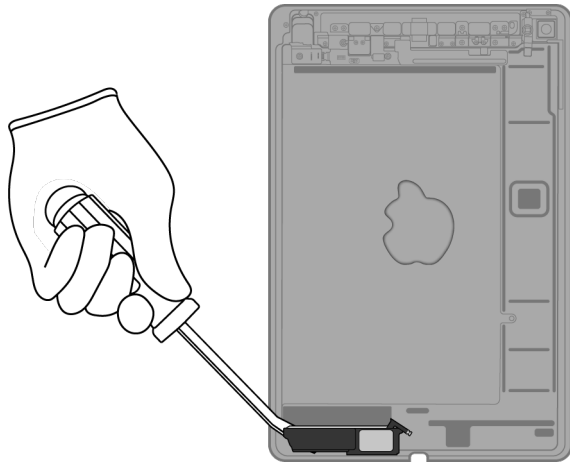


*Lightning connector*

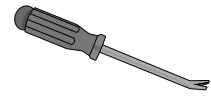
**Cu**

Copper

## 18. Pry off the left speaker.



### Tools Used



### Fraction

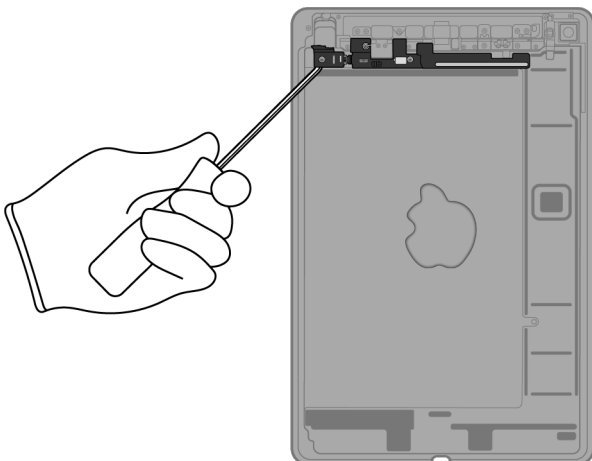


*Left speaker*

REE

Rare Earth  
Elements

## 19. Pry off the ribbon cables.



### Tools Used



### Fraction

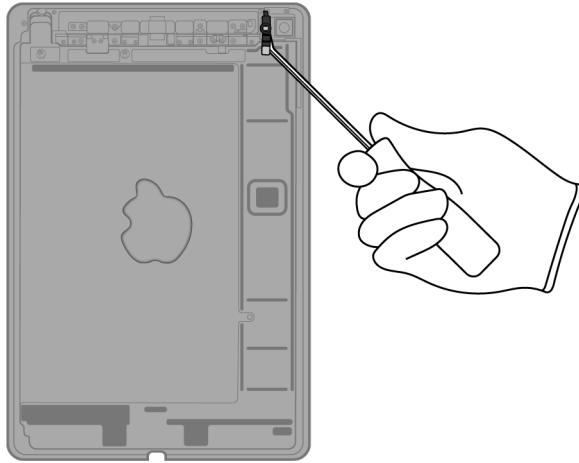


*Ribbon cables*

Cu

Copper

**20.** Pry off the light sensor.



Tools Used



Fraction

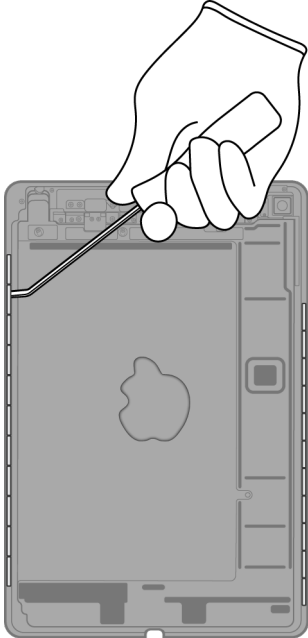


*Light sensor*

**Cu**

Copper

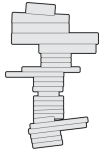
**21.** Pry the 24 magnets off the enclosure.



Tools Used




Fraction



Magnets (x24)

REE  
Rare Earth  
Elements

Fraction








Enclosure



Al  
Aluminum



# 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><b>Aluminum</b></p>  <p><i>SIM tray</i></p>  <p><i>Enclosure</i></p>	<p><b>Primary Target Material</b></p>  <p><b>Potential Additional Materials</b></p>  

<p><b>Batteries</b></p>  <p><i>Lithium-ion polymer battery</i></p>	<p><b>Primary Target Material</b></p> 
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**Fraction**

**Downstream Processing**

**Ferrous**



*Display cable cover*



*Thermal shield*

**Primary Target Material**



**Glass**



*LCD cell*

**Primary Target Material**



**Potential Additional Materials**



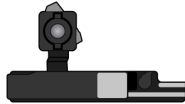
## Fraction

## Downstream Processing

### Logic Boards



Display logic board



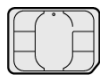
Front camera



Rear camera



Main logic board



SIM card

### Primary Target Material



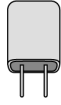
### Potential Additional Materials



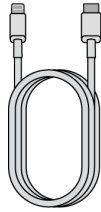
**Fraction**

**Downstream Processing**

**Mixed Electronics**



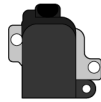
*Power adapter*



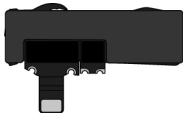
*Charge cable*



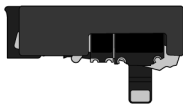
*Home button/Touch ID sensor*



*Headphone jack*



*Left antenna*



*Right antenna*



*Microphone*

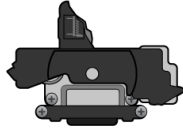
**Primary Target Material**



**Potential Additional Materials**



**Mixed Electronics (cont.)**



*Lightning connector*



*Ribbon cables*



*Light sensor*

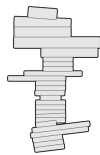
**Rare Earth Magnets**



*Right speaker*



*Left speaker*



*Magnets (x24)*

**Primary Target Material**



**Potential Additional Materials**

