



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

**iPad Air (4th 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.

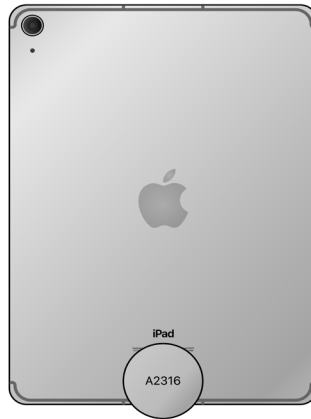
Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to 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.



*Model numbers:*  
*(Wi-Fi) A2316*  
*(Wi-Fi + Cellular) A2072, A2324, A2325*

# 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	Display logic board, main logic board	Follow steps 1–10
External electric cables	Power adapter, charge cable	Follow step 1
Battery	Lithium-ion polymer batteries	Follow steps 1–6
Cover glass and liquid crystal display (LCD) cell if the surface is greater than 100 square centimeters	LCD cell	Follow steps 1–5
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



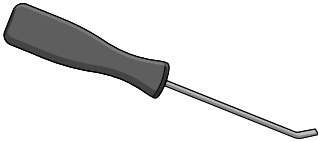
Rechargeable battery hazard



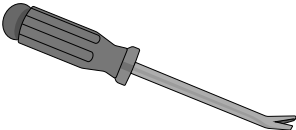
Chemical exposure hazard

# Recommended Tools

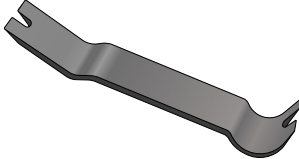
Miniature pry bar



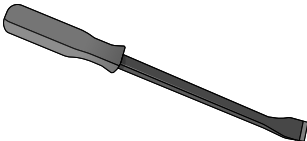
Nail-pulling screwdriver



Plastic pry bar



Screwdriver-handle pry bar

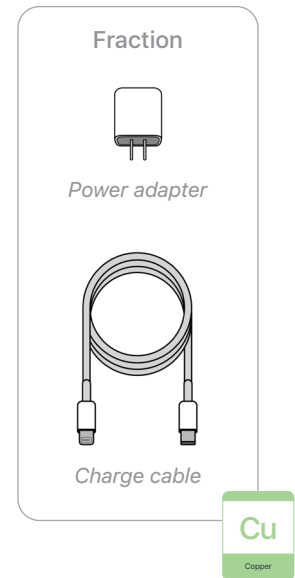




# Disassembly Instructions

## 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.



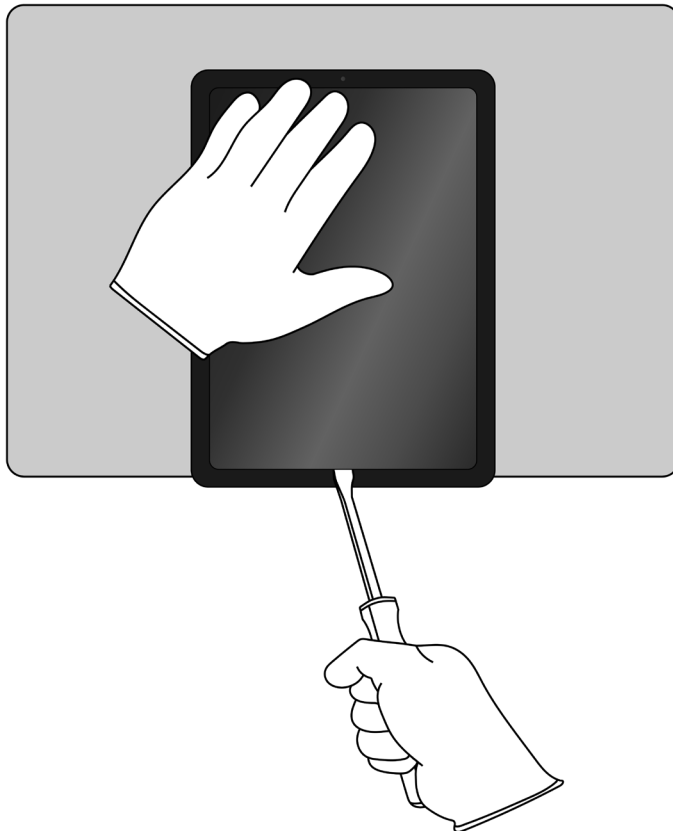
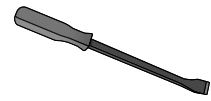
Broken glass hazard



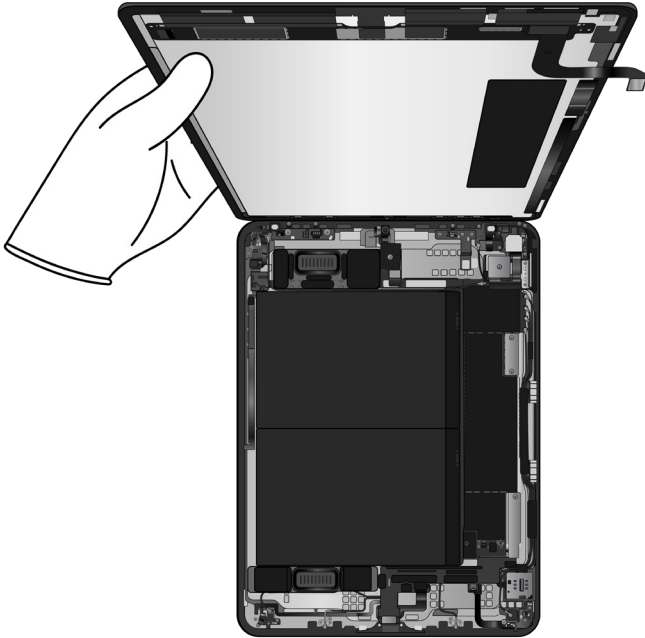
Chemical exposure hazard

- » *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.*

### Tools Used

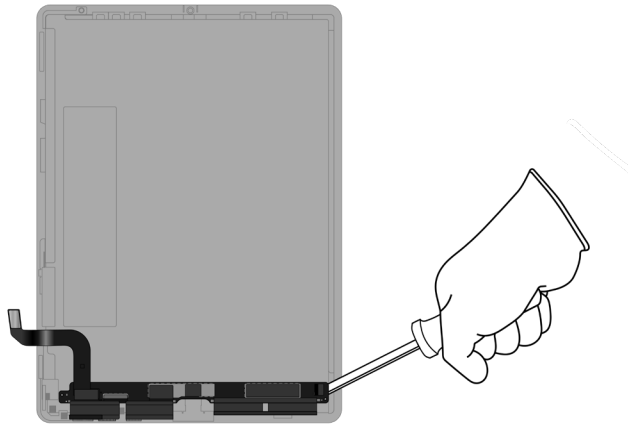


» Remove the display by hand. Set the enclosure aside.

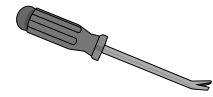


### 3. Remove the display logic board.

- » Lay the display facedown.
- » Pry off the display logic board.



#### Tools Used



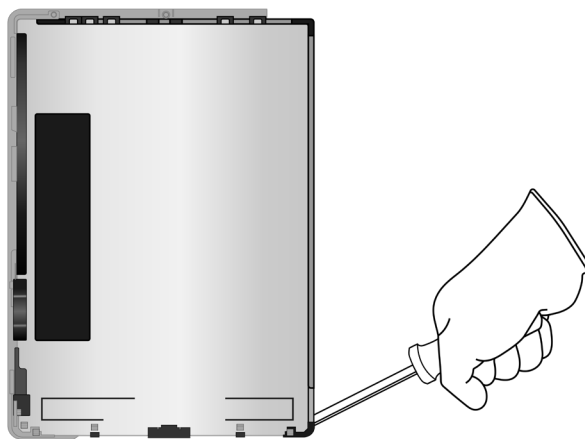
#### Fraction



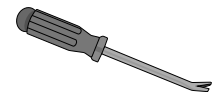
Display logic board

PMs  
Precious Metals

### 4. Pry off the display cover.



#### Tools Used



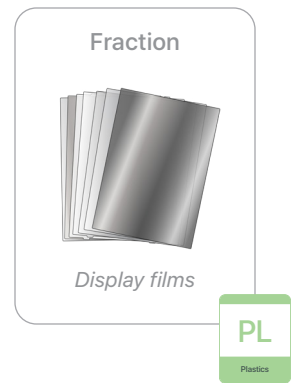
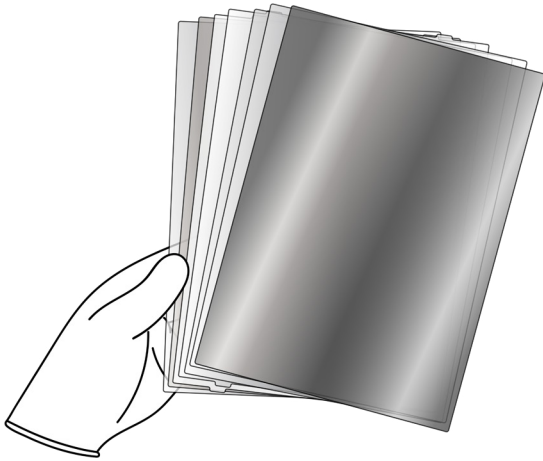
#### Fraction




Display cover

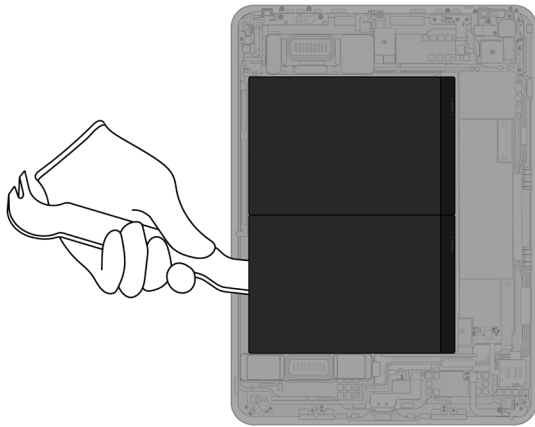
Fe  
Ferrous

**5.** Remove the display films from the LCD cell.



6. From the enclosure, carefully remove both lithium-ion polymer batteries.

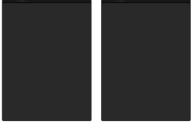
 Rechargeable battery hazard



Tools Used



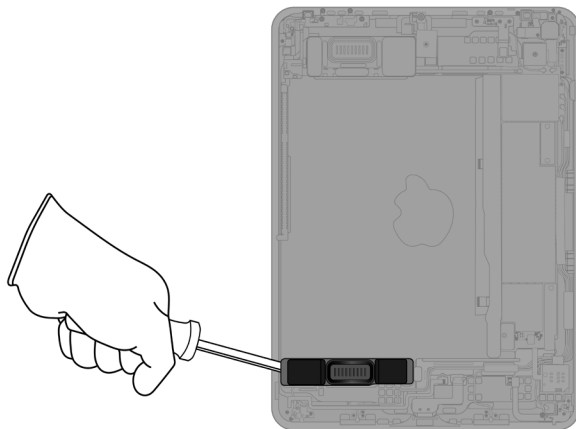
Fraction



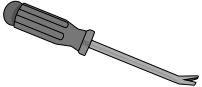
Lithium-ion polymer batteries

**BT**  
Battery


7. Pry off the lower speaker.



Tools Used



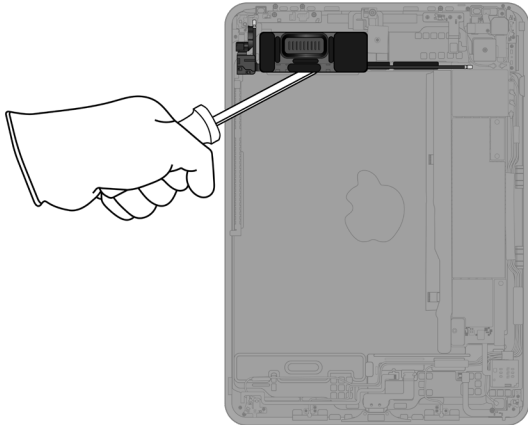
Fraction



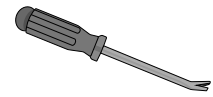
Lower speaker

**REE**  
Rare Earth Elements

**8.** Pry off the upper speaker.



Tools Used



Fraction

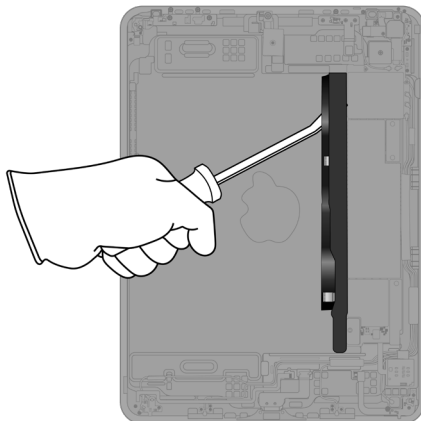


*Upper speaker*

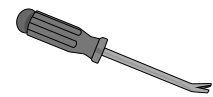


**9.** Remove the power supply logic board.

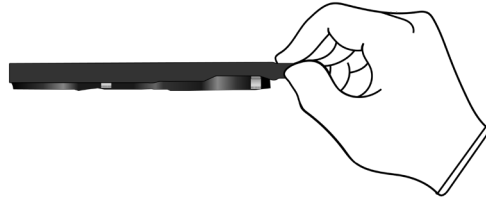
» *Pry off the power supply logic board.*



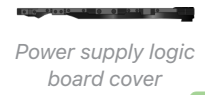
Tools Used



» Pull off the power supply logic board cover by hand.



Fraction



Power supply logic board cover

PL

Plastics

Fraction

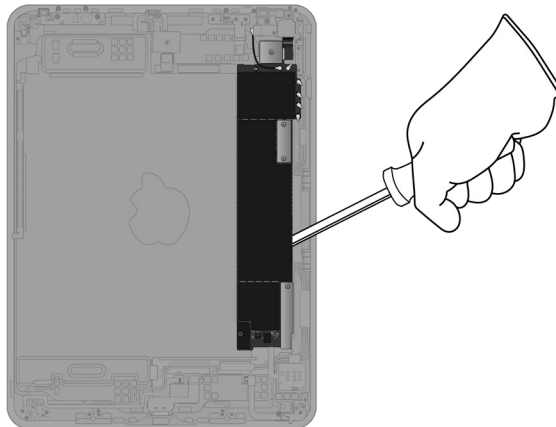


Power supply logic board

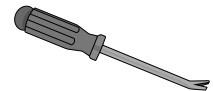
PMs

Precious Metals

## 10. Pry off the main logic board.



Tools Used



Fraction



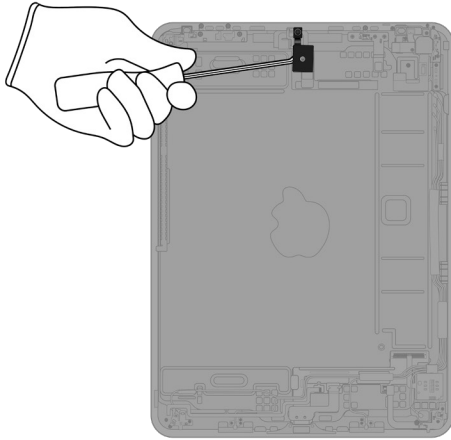
Main logic board

PMs

Precious Metals



## 11. Pry off the front camera.



### Tools Used



### Fraction

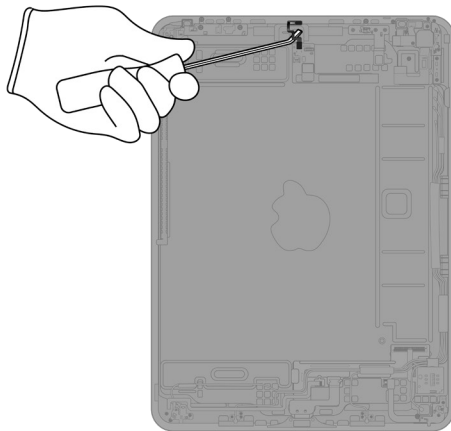


Front camera

PMs

Precious Metals

## 12. Pry off the center microphone.



### Tools Used



### Fraction

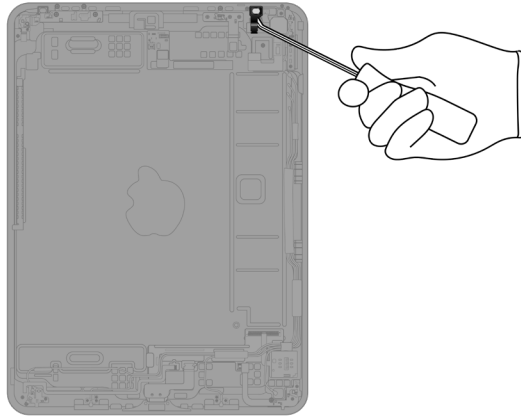


Center microphone

Cu

Copper

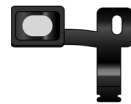
### 13. Pry off the right light sensor.



#### Tools Used



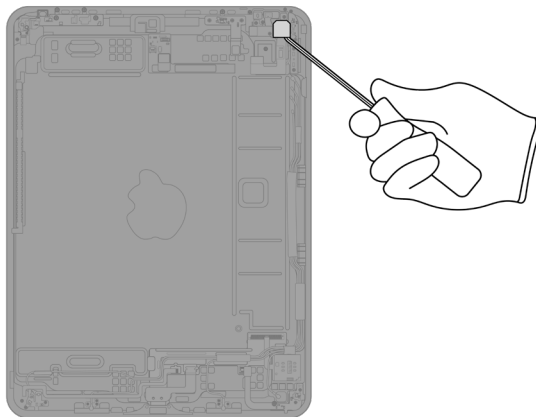
#### Fraction



*Right light sensor*

**Cu**  
Copper

### 14. Pry off the rear camera.



#### Tools Used



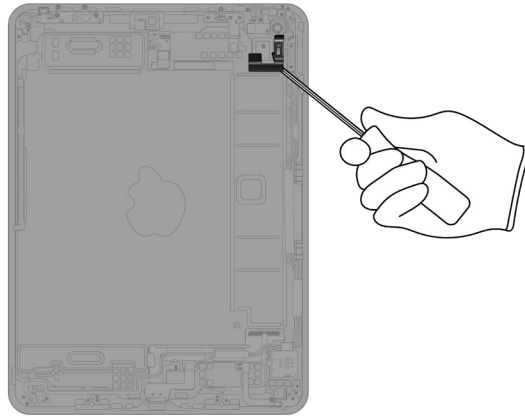
#### Fraction



*Rear camera*

**PMs**  
Precious Metals

## 15. Pry off the right microphone.



### Tools Used



### Fraction

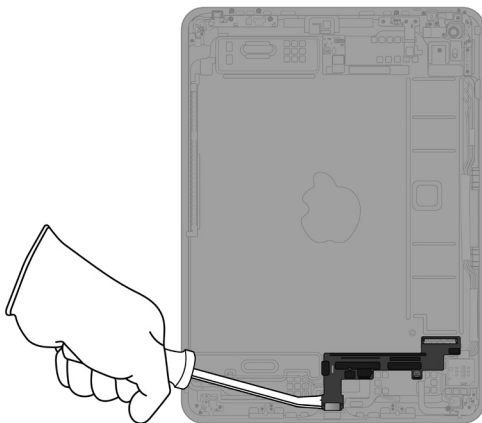


*Right microphone*

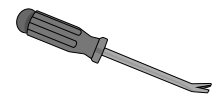
Cu

Copper

## 16. Pry off the Lightning connector assembly.



### Tools Used



### Fraction

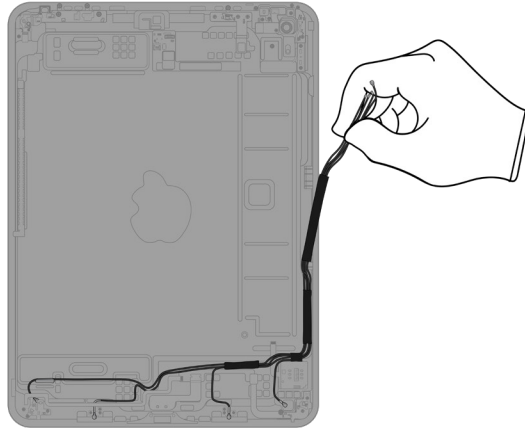


*Lightning connector assembly*

Cu

Copper

**17.** Pull off the wires.



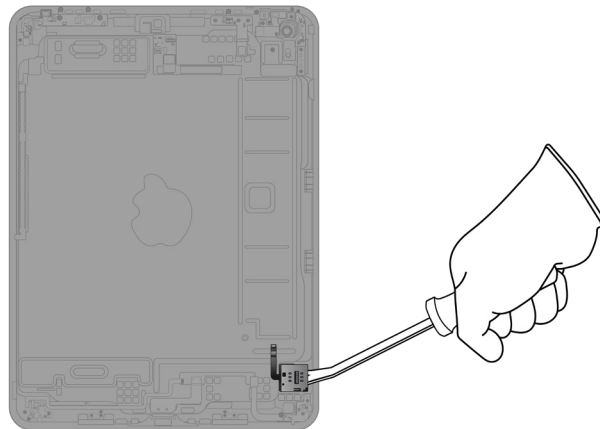
Fraction

Wires

**Cu**  
Copper

A diagram showing a thick black cable with several thin wires branching off from it. The diagram is enclosed in a rounded rectangle. Below the diagram is a green box with the chemical symbol 'Cu' and the word 'Copper' underneath.

**18.** (Cellular models only) Pry off the SIM reader.



Tools Used

A diagram of a screwdriver with a handle and a flat tip. The diagram is enclosed in a rounded rectangle.

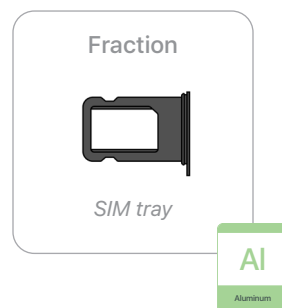
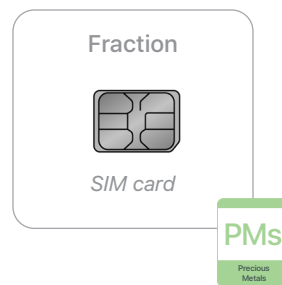
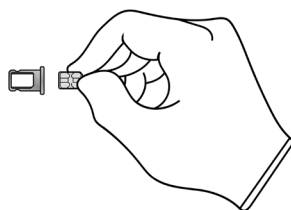
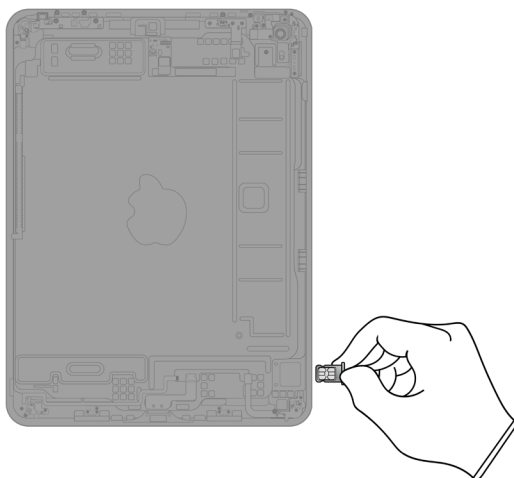
Fraction

SIM reader

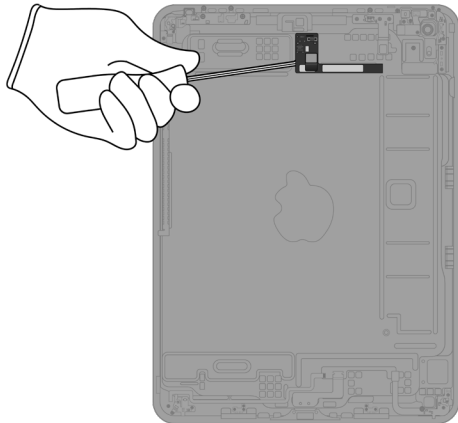
**Cu**  
Copper

A diagram showing a SIM reader component. The diagram is enclosed in a rounded rectangle. Below the diagram is a green box with the chemical symbol 'Cu' and the word 'Copper' underneath.

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



**20.** Pry off the ribbon cable.



Tools Used



Fraction

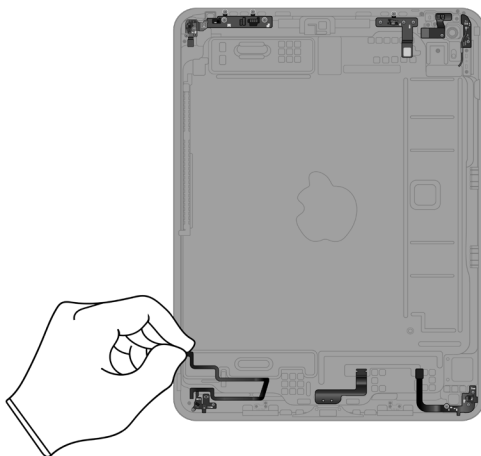


Ribbon cable

Cu

Copper

**21.** Pull off the remaining ribbon cables by hand.



Fraction

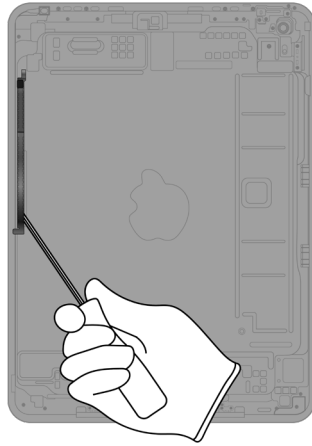


Ribbon cables

Cu

Copper

## 22. Pry off the Apple Pencil charging coil.



### Tools Used



### Fraction

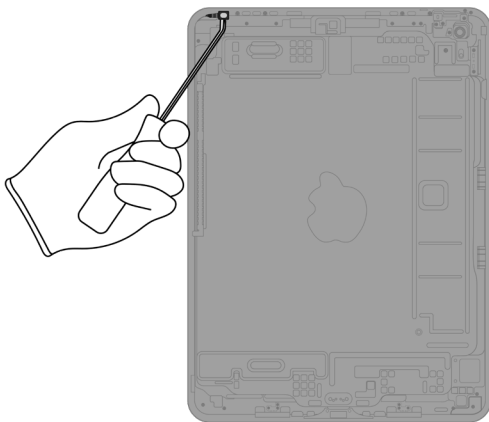


*Apple Pencil  
charging coil*

**Cu**

Copper

## 23. Pry off the left light sensor.



### Tools Used



### Fraction

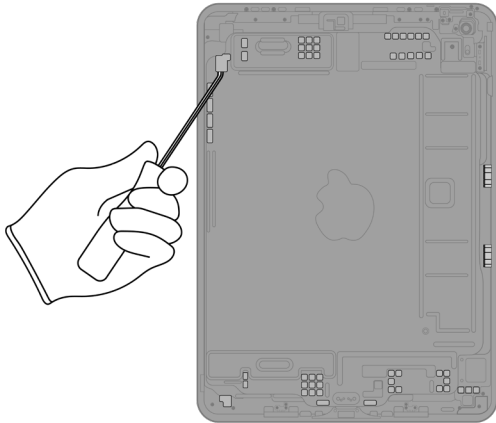


*Left light  
sensor*

**Cu**

Copper

## 24. Pry the 56 magnets off the enclosure.



### Tools Used



### Fraction



Magnets (x56)

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 data-bbox="435 554 570 579"><b>Aluminum</b></p>  <p data-bbox="461 722 544 747"><i>SIM tray</i></p>  <p data-bbox="451 982 553 1008"><i>Enclosure</i></p>	<p data-bbox="964 554 1276 579"><b>Primary Target Material</b></p> 
<p data-bbox="440 1106 565 1131"><b>Batteries</b></p>  <p data-bbox="358 1325 646 1350"><i>Lithium-ion polymer batteries</i></p>	<p data-bbox="964 1106 1276 1131"><b>Primary Target Material</b></p> 
<p data-bbox="448 1449 557 1474"><b>Ferrous</b></p>  <p data-bbox="435 1707 570 1732"><i>Display cover</i></p>	<p data-bbox="964 1449 1276 1474"><b>Primary Target Material</b></p> 

**Fraction**

**Downstream Processing**

**Glass**



*LCD cell*

**Primary Target Material**



**Potential Additional Materials**



**Logic Boards**



*Display logic board*



*Power supply logic board*

**Primary Target Material**



**Potential Additional Materials**



**Logic Boards (cont.)**



*Main logic board*



*Front camera*



*Rear camera*



*SIM card*

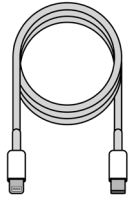
**Fraction**

**Downstream Processing**

**Mixed Electronics**



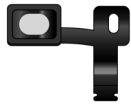
*Power adapter*



*Charge cable*



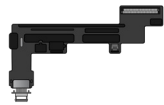
*Center microphone*



*Right light sensor*



*Right microphone*



*Lightning connector assembly*

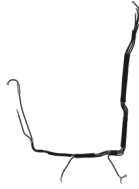
**Primary Target Material**



**Potential Additional Materials**



Mixed Electronics (cont.)



*Wires*



*SIM reader*



*Ribbon cables*



*Apple Pencil charging coil*



*Left light sensor*

**Fraction**

**Downstream Processing**

**Mixed Plastics**



*Display films*



*Power supply logic board cover*

**Primary Target Material**



**Rare Earth Magnets**



*Lower speaker*



*Upper speaker*



*Magnets (x56)*

**Primary Target Material**



**Potential Additional Materials**

