



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.

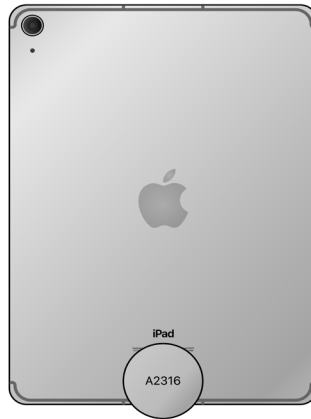
Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to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

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.

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 1–10
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/CO₂ fire extinguisher on a thermal runaway battery or a device containing one. Water and ABC/CO₂ 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



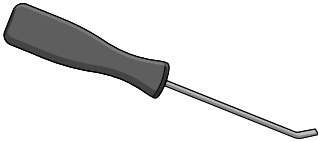
Rechargeable battery hazard



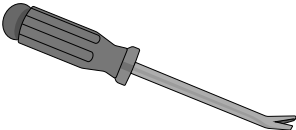
Chemical exposure hazard

Recommended Tools

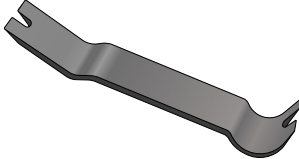
Miniature pry bar



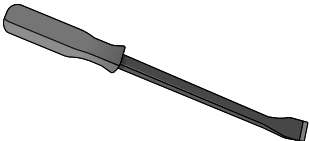
Nail-pulling screwdriver



Plastic pry bar



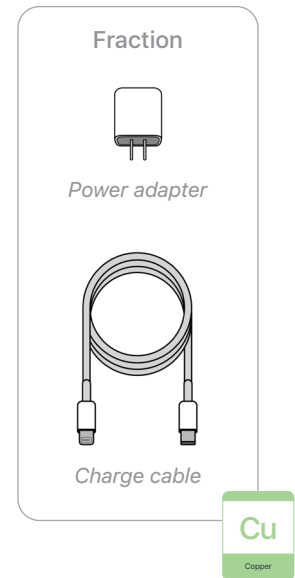
Screwdriver-handle pry bar



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.



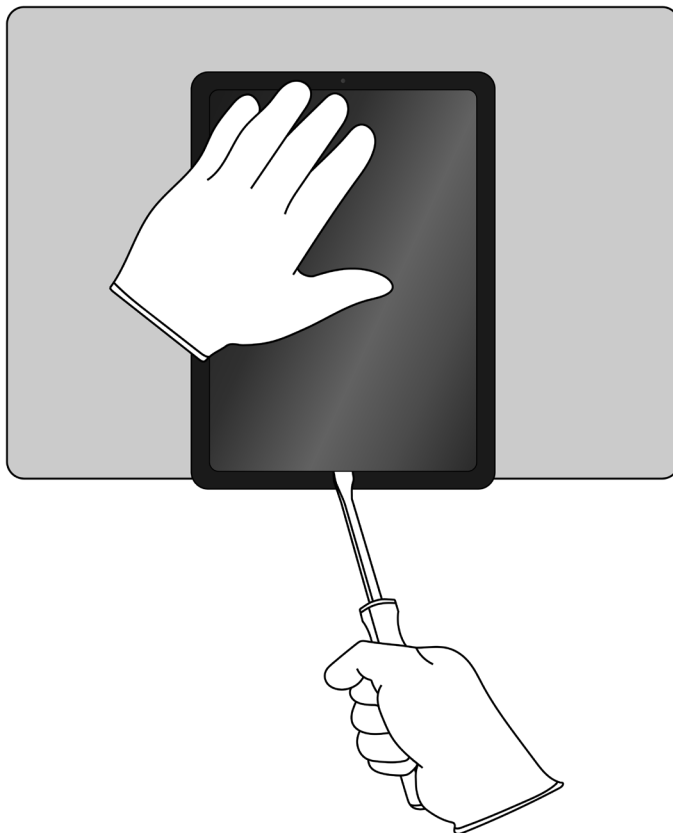
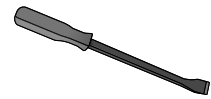
Broken glass hazard



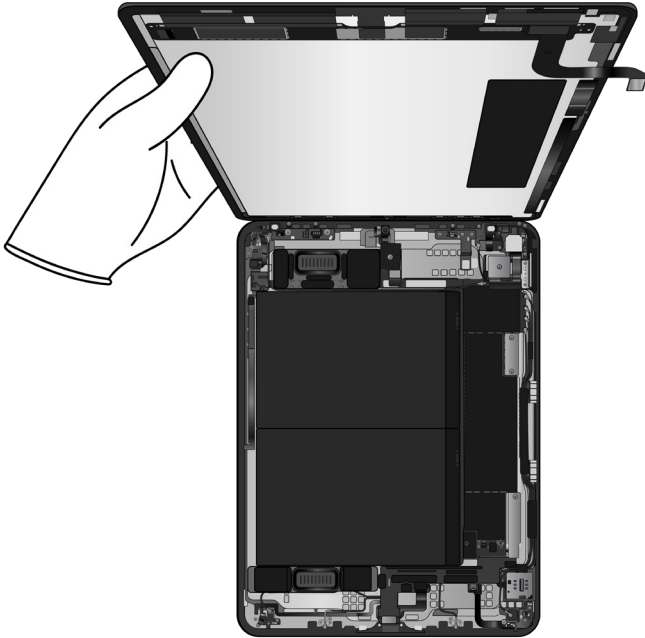
Chemical exposure hazard

- » *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

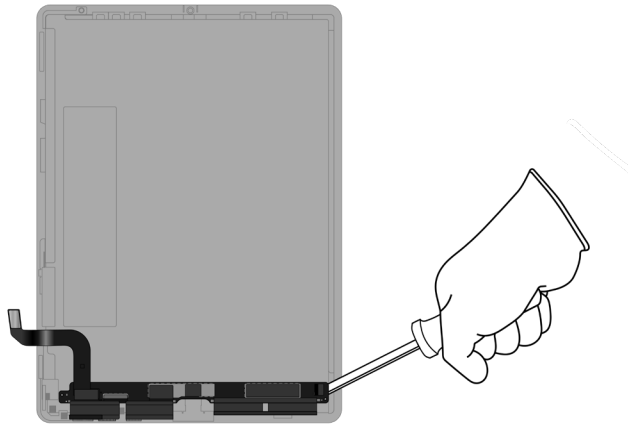


» Remove the display by hand. Set the enclosure aside.

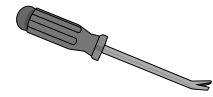


3. Remove the display logic board.

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



Tools Used



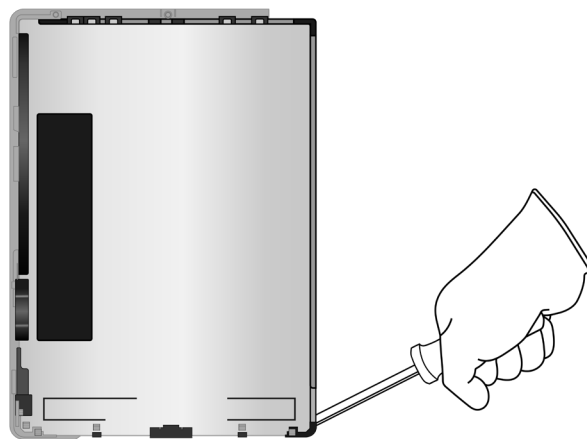
Fraction



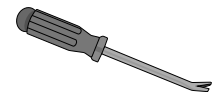
Display logic board

PMs
Precious Metals

4. Pry off the display cover.



Tools Used



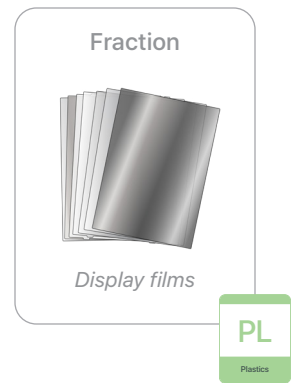
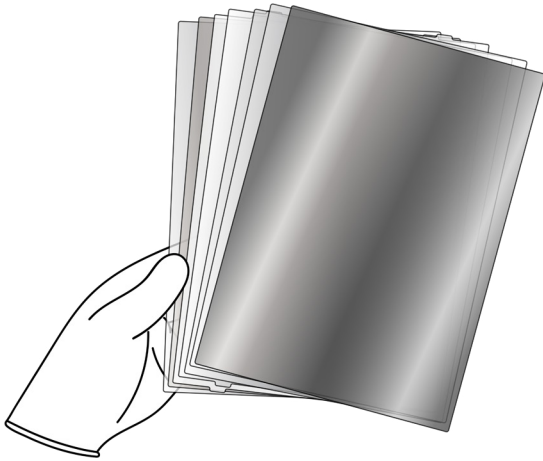
Fraction




Display cover

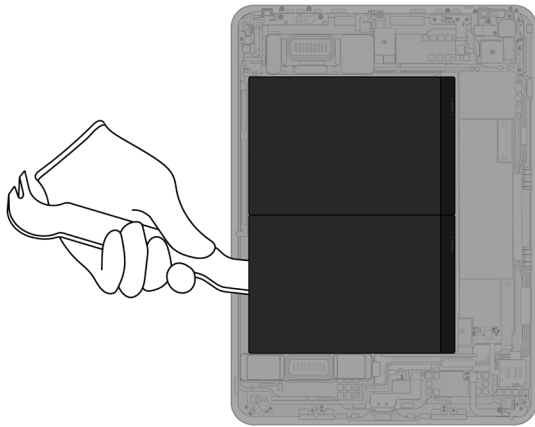
Fe
Ferrous

5. Remove the display films from the LCD cell.



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

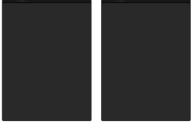
 Rechargeable battery hazard



Tools Used



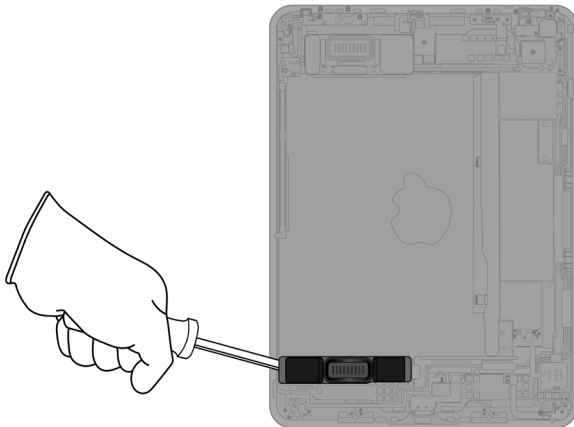
Fraction



Lithium-ion polymer batteries

BT
Battery


7. Pry off the lower speaker.



Tools Used



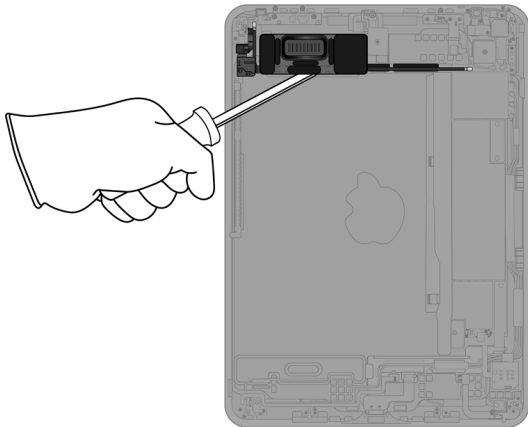
Fraction



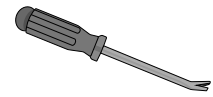
Lower speaker

REE
Rare Earth Elements

8. Pry off the upper speaker.



Tools Used



Fraction

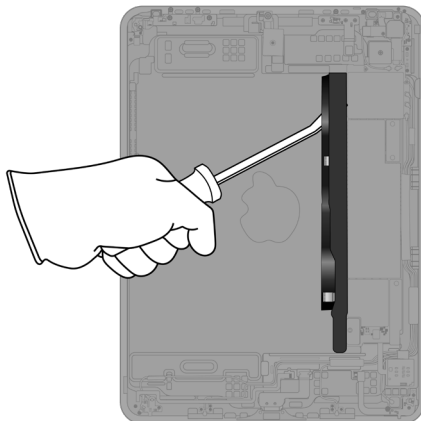


Upper speaker

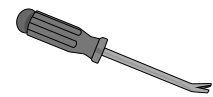


9. Remove the power supply logic board.

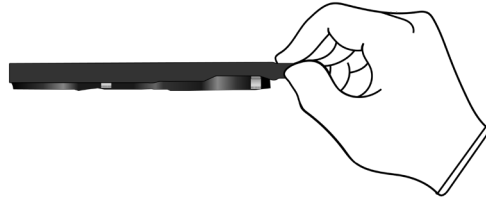
» *Pry off the power supply logic board.*




Tools Used



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



Fraction


Power supply logic
board cover

PL

Plastics

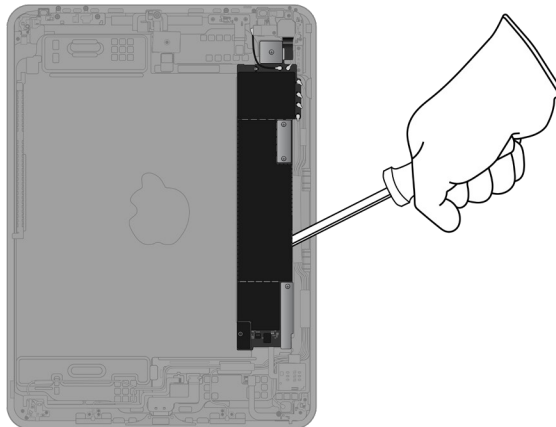
Fraction


Power supply logic
board

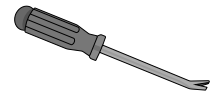
PMs

Precious
Metals

10. Pry off the main logic board.



Tools Used



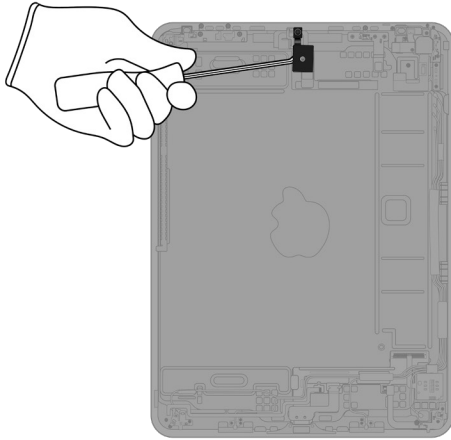
Fraction


Main logic board

PMs

Precious
Metals

11. Pry off the front camera.



Tools Used



Fraction

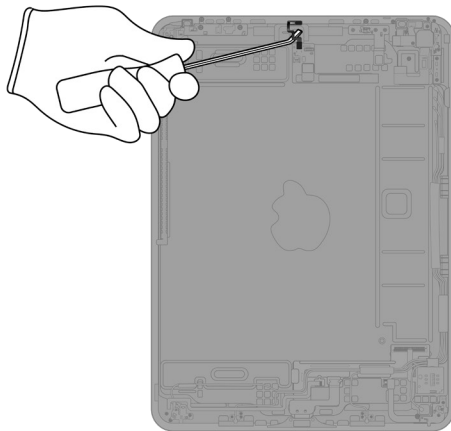


Front camera

PMs

Precious Metals

12. Pry off the center microphone.



Tools Used



Fraction

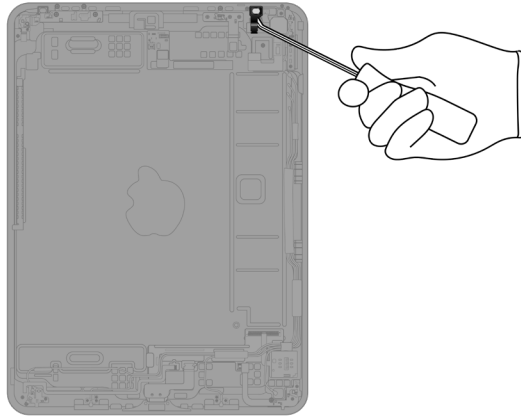


Center microphone

Cu

Copper

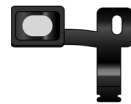
13. Pry off the right light sensor.



Tools Used



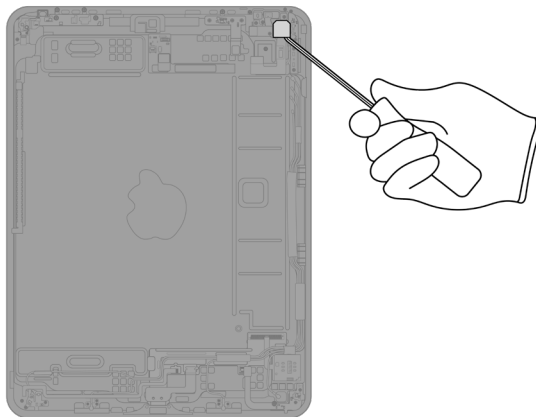
Fraction



Right light sensor

Cu
Copper

14. Pry off the rear camera.



Tools Used



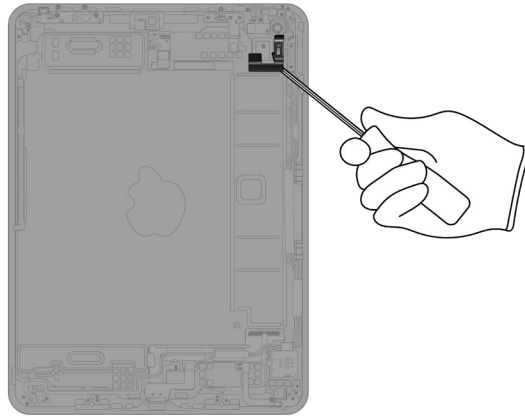
Fraction



Rear camera

PMs
Precious Metals

15. Pry off the right microphone.



Tools Used



Fraction

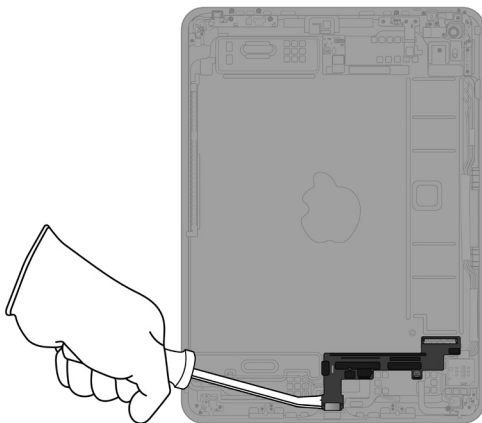


Right microphone

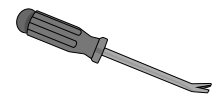
Cu

Copper

16. Pry off the Lightning connector assembly.



Tools Used



Fraction

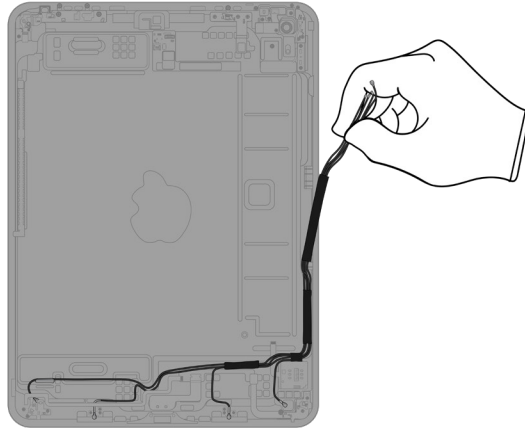


Lightning connector assembly


Cu

Copper

17. Pull off the wires.



Fraction

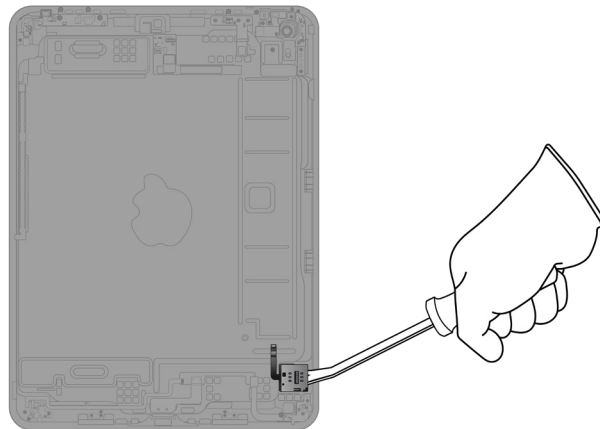


Wires

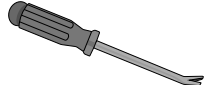
Cu
Copper

A diagram showing a thick black cable with several thin wires branching off from it. The diagram is labeled "Wires". To the right of the diagram is a green box containing the chemical symbol "Cu" and the word "Copper".

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




Tools Used

A diagram of a screwdriver with a handle and a flat tip.

Tools Used

Fraction

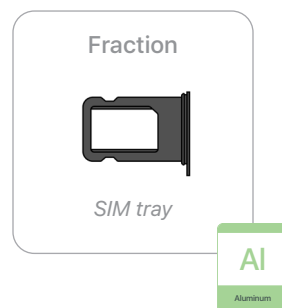
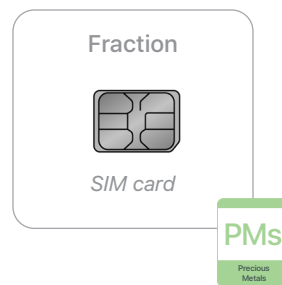
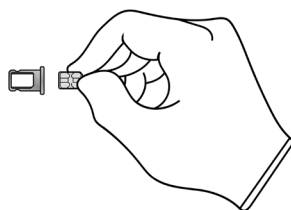
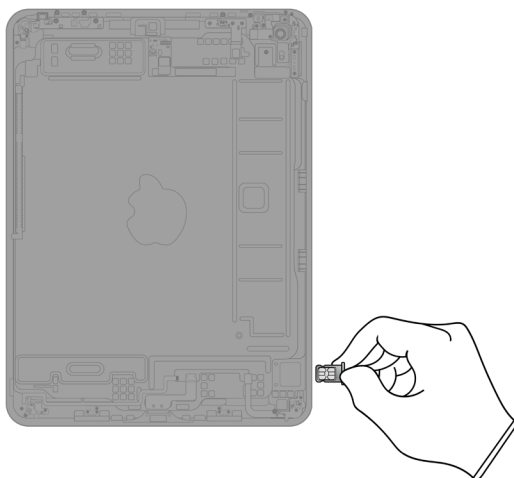


SIM reader

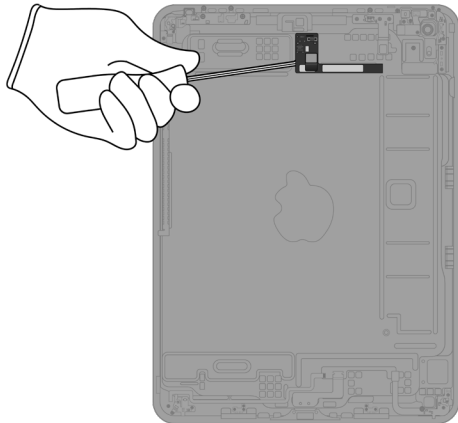
Cu
Copper

A diagram of a SIM reader. The diagram is labeled "SIM reader". To the right of the diagram is a green box containing the chemical symbol "Cu" and the word "Copper".

- 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

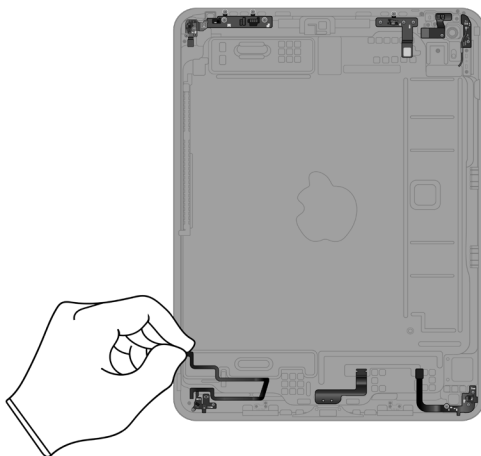


Ribbon cable

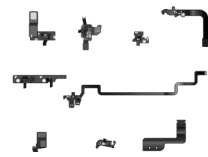
Cu

Copper

21. Pull off the remaining ribbon cables by hand.



Fraction

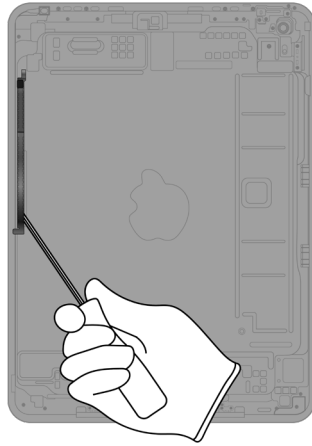


Ribbon cables

Cu

Copper

22. Pry off the Apple Pencil charging coil.



Tools Used



Fraction

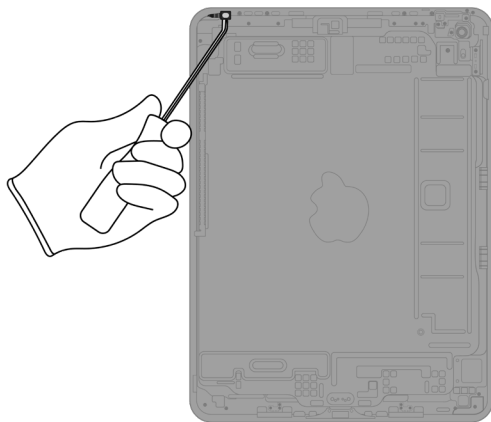


*Apple Pencil
charging coil*

Cu

Copper

23. Pry off the left light sensor.



Tools Used



Fraction

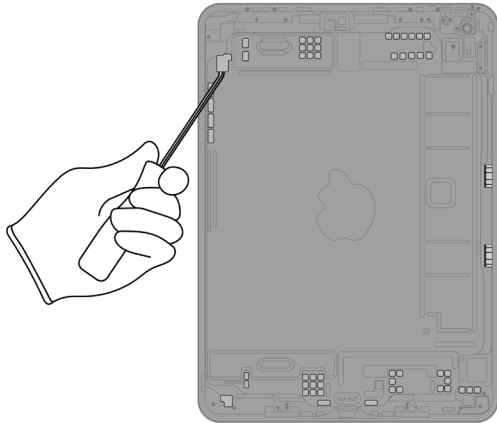


*Left light
sensor*

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">Aluminum</p>  <p data-bbox="461 722 544 747"><i>SIM tray</i></p>  <p data-bbox="451 984 553 1010"><i>Enclosure</i></p>	<p data-bbox="964 554 1276 579">Primary Target Material</p>  <p data-bbox="1101 646 1133 672">Al</p> <p data-bbox="1101 693 1140 709">Aluminum</p>
<p data-bbox="440 1106 565 1131">Batteries</p>  <p data-bbox="358 1325 646 1350"><i>Lithium-ion polymer batteries</i></p>	<p data-bbox="964 1106 1276 1131">Primary Target Material</p>  <p data-bbox="1101 1199 1133 1224">BT</p> <p data-bbox="1101 1245 1140 1262">Battery</p>
<p data-bbox="448 1449 557 1474">Ferrous</p>  <p data-bbox="435 1709 570 1734"><i>Display cover</i></p>	<p data-bbox="964 1449 1276 1474">Primary Target Material</p>  <p data-bbox="1101 1541 1133 1566">Fe</p> <p data-bbox="1101 1587 1140 1604">Ferrous</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

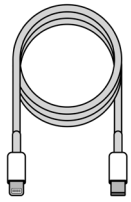
Fraction

Downstream Processing

Mixed Electronics



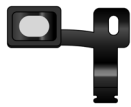
Power adapter



Charge cable



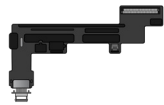
Center microphone



Right light sensor



Right microphone



Lightning connector assembly

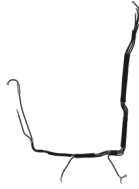
Primary Target Material



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

