



**iPad Air (3rd generation) Wi-Fi**

**iPad Air (3rd generation) Wi-Fi + Cellular**

# Apple Recycler Guide

May 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>
9	<a href="#">Recommended Tools</a>
10	<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.

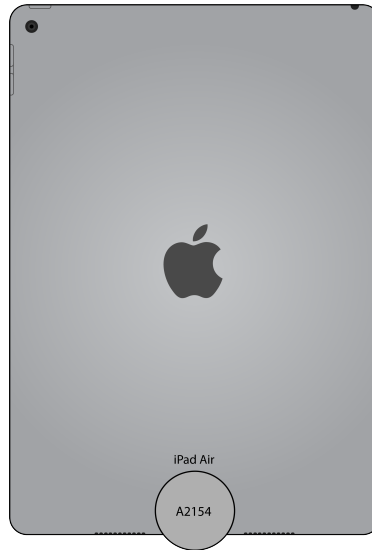
Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to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



*Model numbers:*

*(Wi-Fi) A2152*

*(Wi-Fi + Cellular) A2123, A2153, A2154*

# 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, light-emitting diode (LED) 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 1–8
Cover glass and liquid crystal display (LCD) cell if the surface is greater than 100 square centimeters	LCD cell	Follow steps 1–7
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 foot protection



Wear eye protection



Wear a mask



Wear protective clothing

## 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.

## LED Safety

Broken LEDs must be handled properly to ensure the safety of your employees and mitigate any hazards. Package broken LEDs in an appropriate container to properly manage the hazards associated with the materials and store only with compatible materials. All waste must be properly classified, packaged, and labeled in accordance with all relevant laws and regulations.

## Hazard Warnings



Broken glass hazard



Chemical inhalation hazard



Chemical exposure hazard

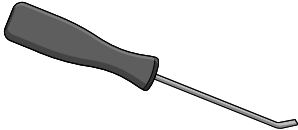


Rechargeable battery hazard

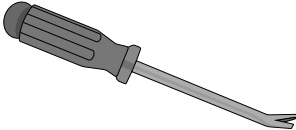


# Recommended Tools

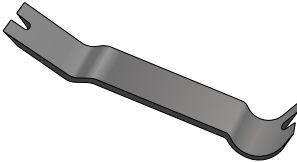
Miniature pry bar



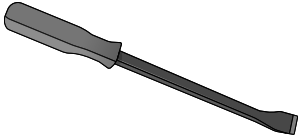
Nail-pulling screwdriver



Plastic pry bar



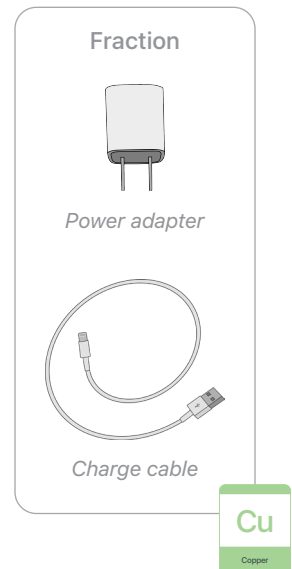
Screwdriver-handle pry bar



# 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.



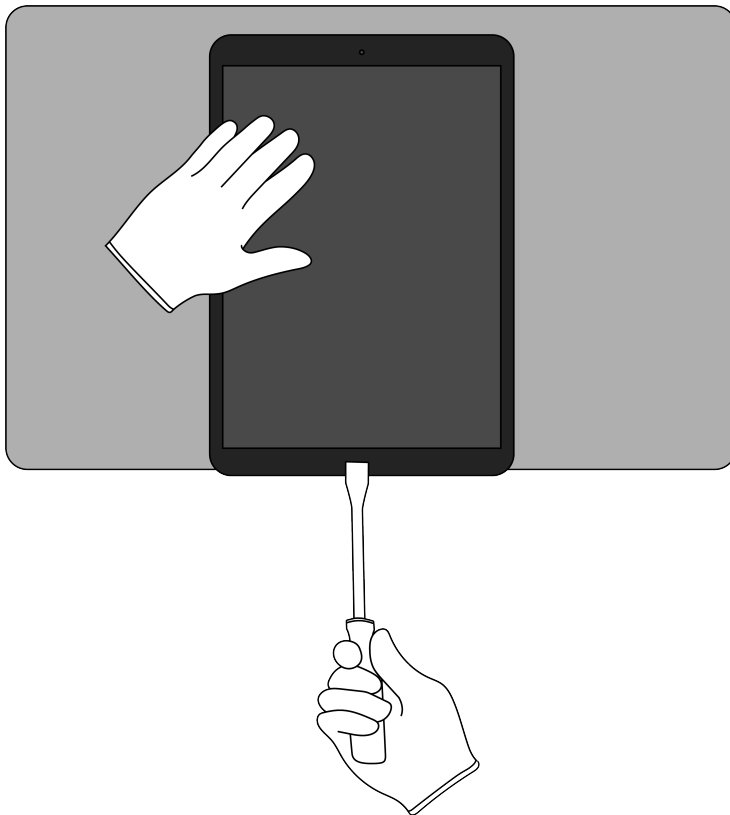
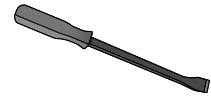
Broken glass hazard



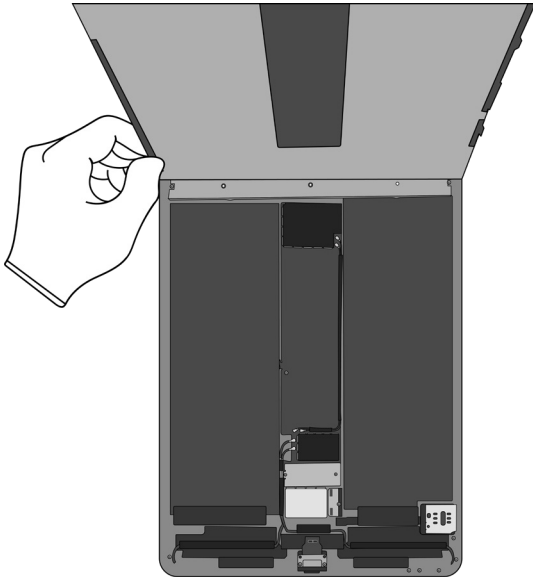
Chemical exposure hazard

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

### Tools Used

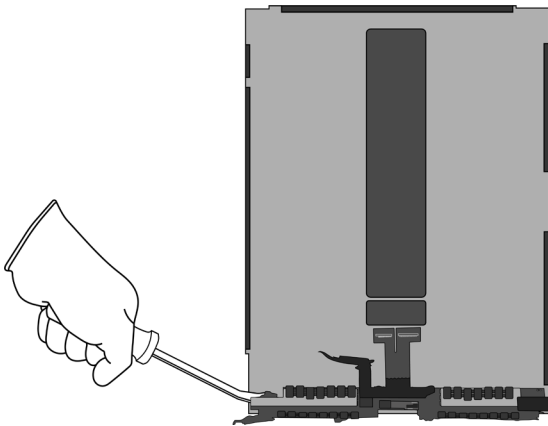


» Remove the display by hand. Set the enclosure aside.

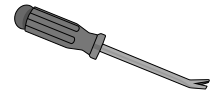


### 3. Remove the display logic board.

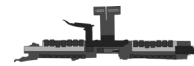
- » Lay the display facedown.
- » Pry off the display logic board.



#### Tools Used



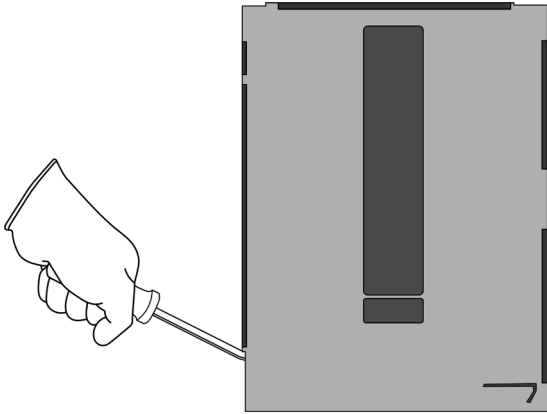
#### Fraction



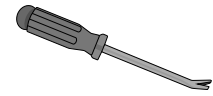
Display logic board

PMs  
Precious Metals

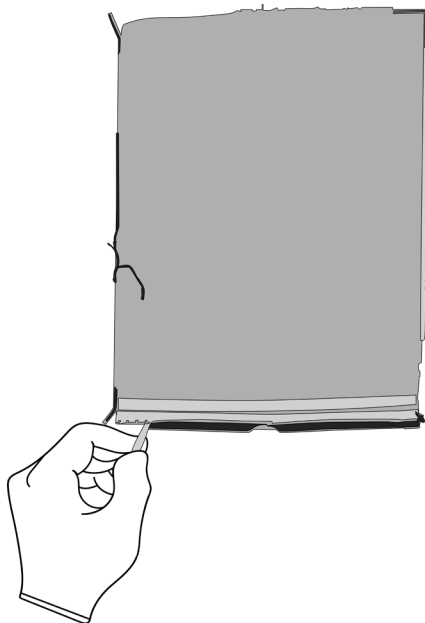
4. Pry off the display cover. Set the LCD cell aside.



Tools Used



5. On the display cover, pull off the data board assembly.



Fraction



Data board assembly

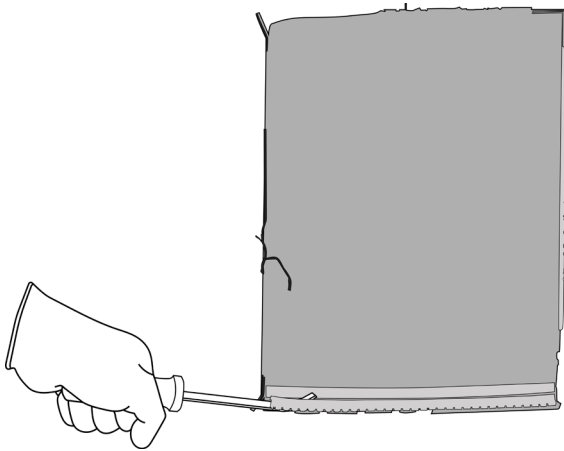
Cu

Copper

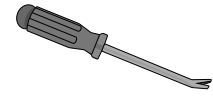
## 6. Pry off the LED logic board.



Chemical inhalation hazard



### Tools Used



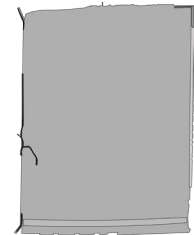
### Fraction



LED logic board

PMs  
Precious Metals

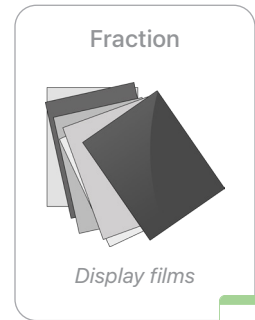
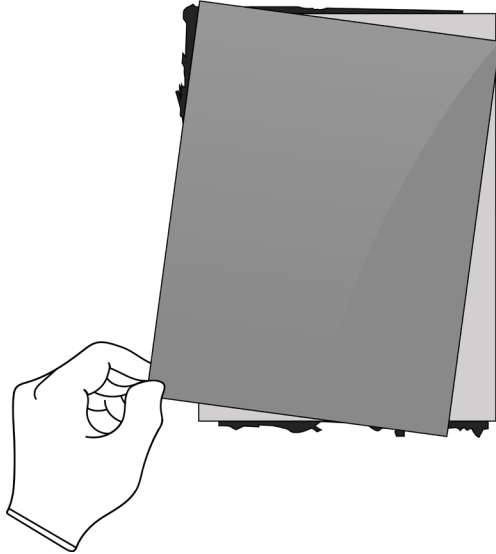
### Fraction



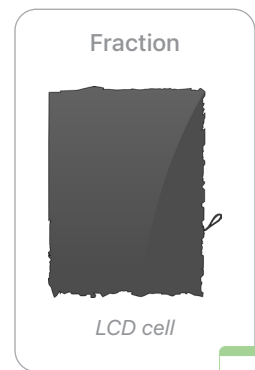
Display cover

Fe  
Ferrous

7. From the LCD cell, remove the display.




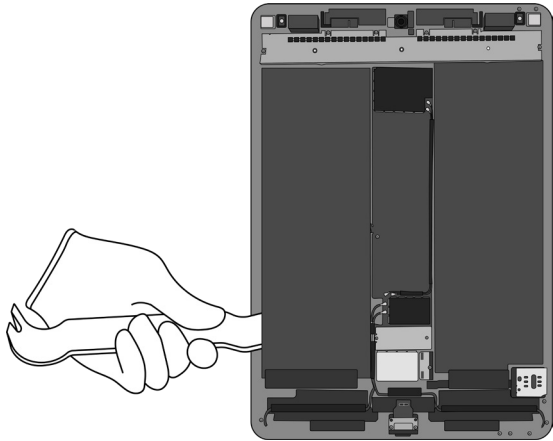
PL  
Plastics



GL  
Glass

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


 Rechargeable battery hazard



Tools Used



Fraction

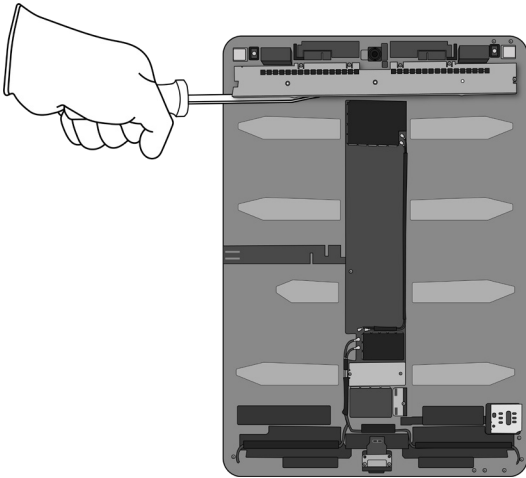


Lithium-ion polymer batteries

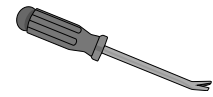




**9.** Pry off the logic board cover.



Tools Used



Fraction

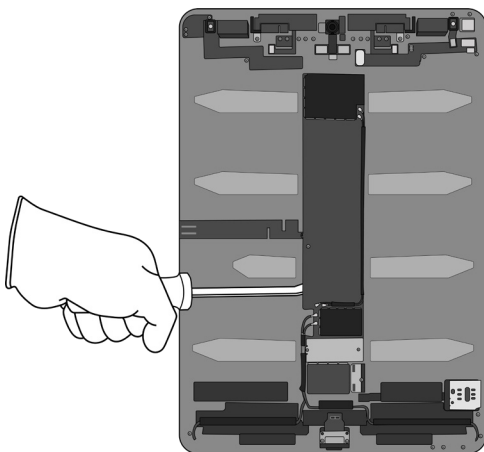


*Logic board cover*

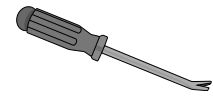
Fe

Ferrous

**10.** Pry off the main logic board.



Tools Used



Fraction

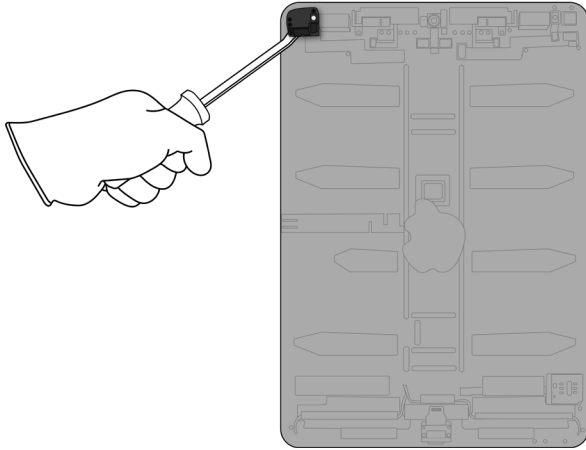


*Main logic board*

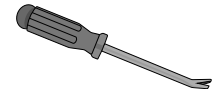
PMs

Precious Metals

## 11. Pry off the headphone jack.



### Tools Used



### Fraction

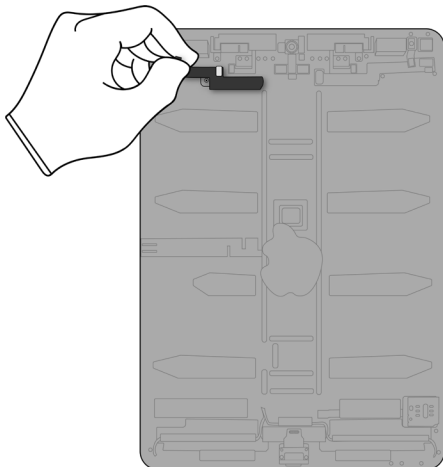


Headphone jack

Cu

Copper

## 12. Pull off the ribbon cable.



### Fraction

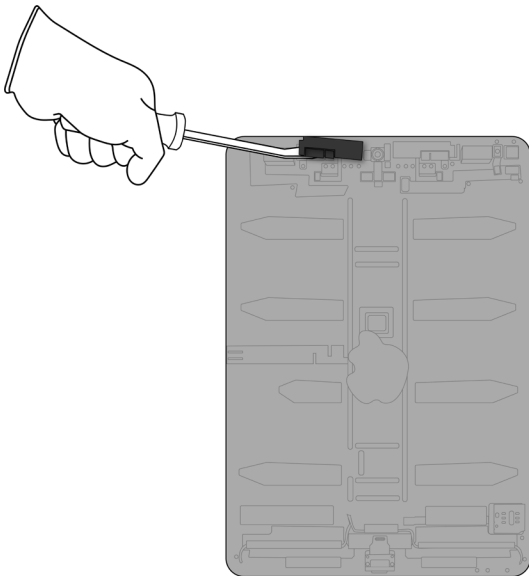


Ribbon cable

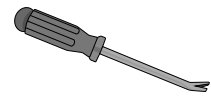
Cu

Copper

### 13. Pry off the left antenna.



#### Tools Used



#### Fraction

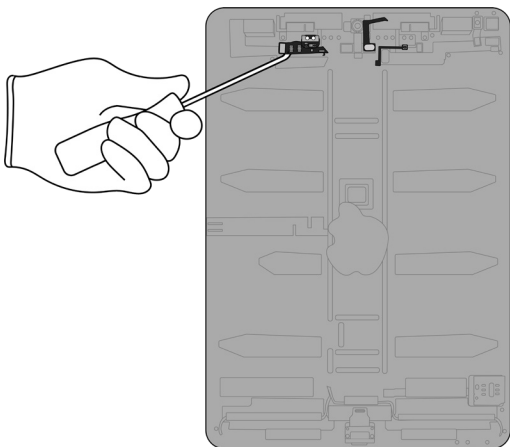


Left antenna

Cu

Copper

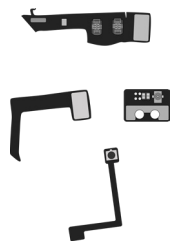
### 14. Pry off the ribbon cables.



#### Tools Used



#### Fraction

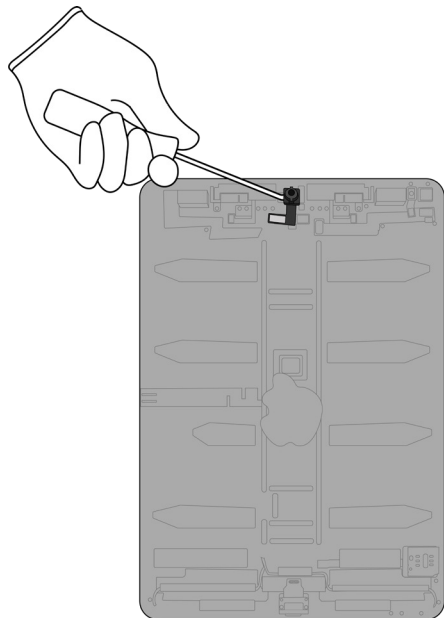


Ribbon cables

Cu

Copper

## 15. Pry off the front camera.



### Tools Used



### Fraction

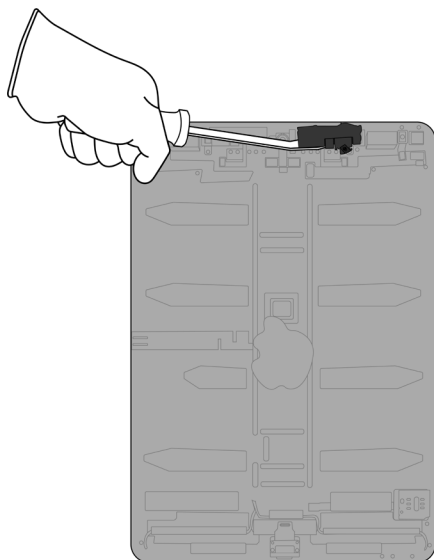


Front camera

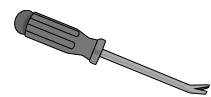
PMs

Precious  
Metals

## 16. Pry off the right antenna.



### Tools Used



### Fraction

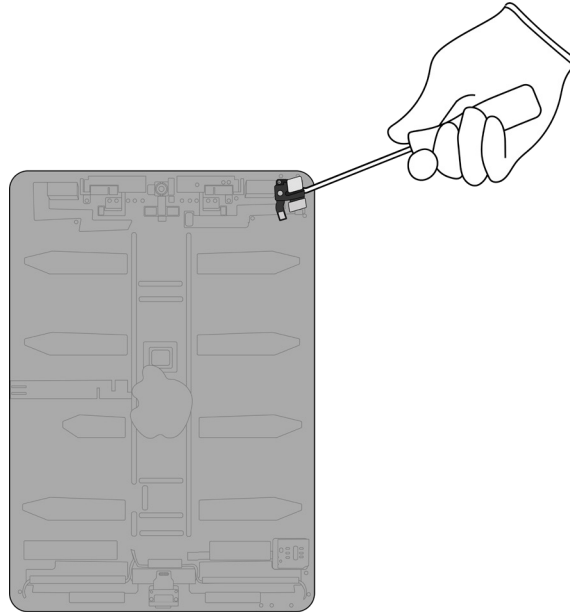


Right antenna

Cu

Copper

17. Pry off both the rear camera and light sensor together.



Tools Used



Fraction



Rear camera

PMs

Precious Metals

Fraction

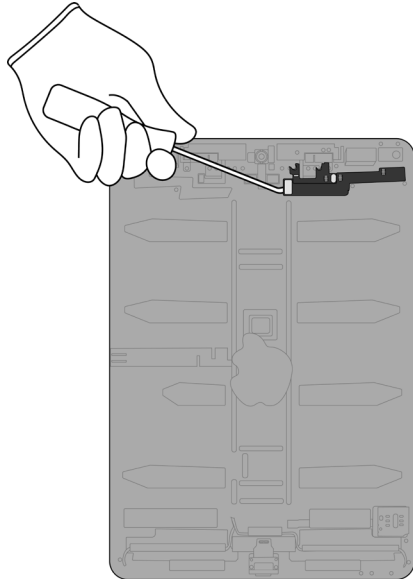


Light sensor

Cu

Copper

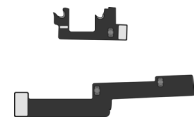
**18.** Pry off the ribbon cables.



Tools Used



Fraction

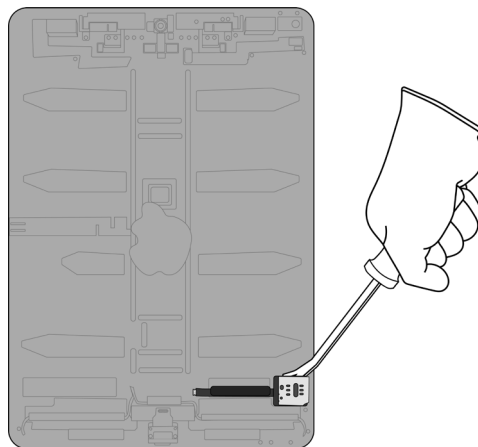


Ribbon cables

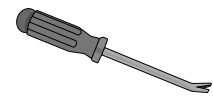
Cu

Copper

**19.** (Wi-Fi + Cellular models only) Pry off the SIM reader.



Tools Used



Fraction

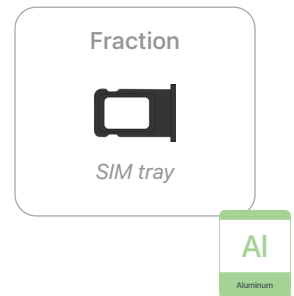
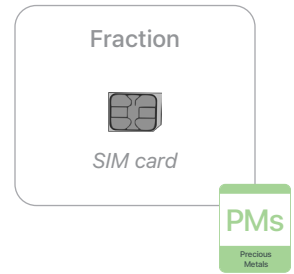
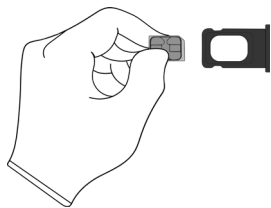
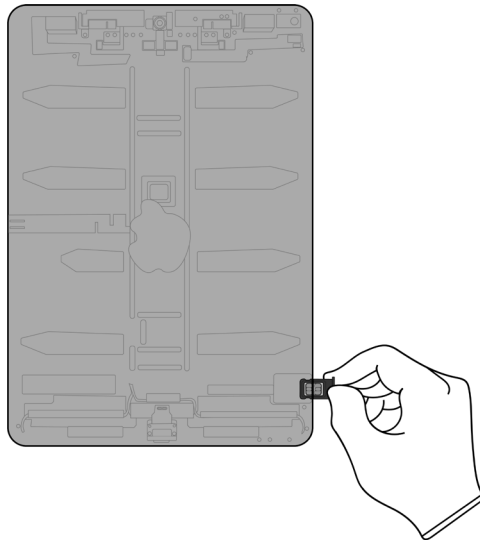


SIM reader

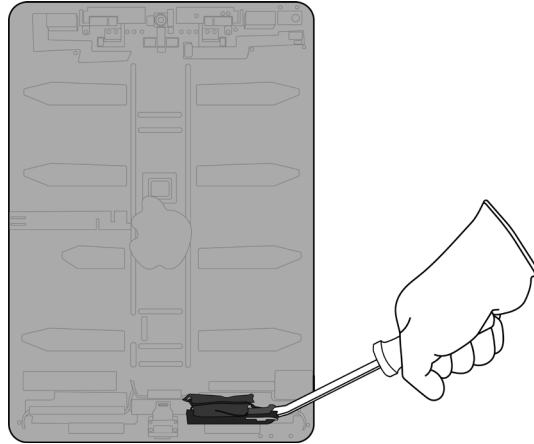
Cu

Copper

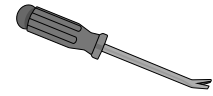
20. (Wi-Fi + Cellular models only) Remove the SIM card and SIM tray by hand. Separate the SIM card from the SIM tray.



## 21. Pry off the right speaker.



### Tools Used



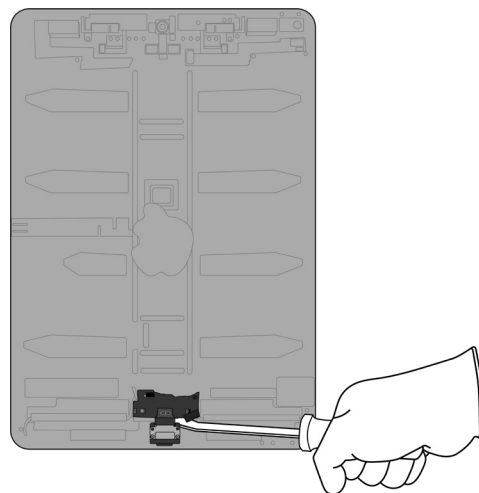
### Fraction



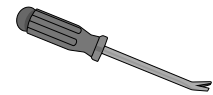
*Right speaker*



## 22. Pry off the Lightning connector.



### Tools Used



### Fraction

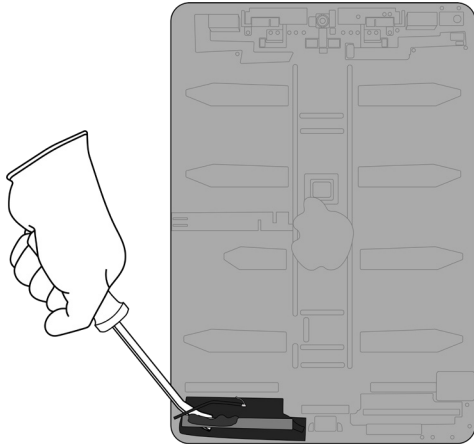


*Lightning connector*

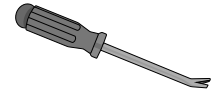




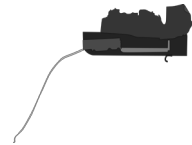
### 23. Pry off the left speaker.



#### Tools Used



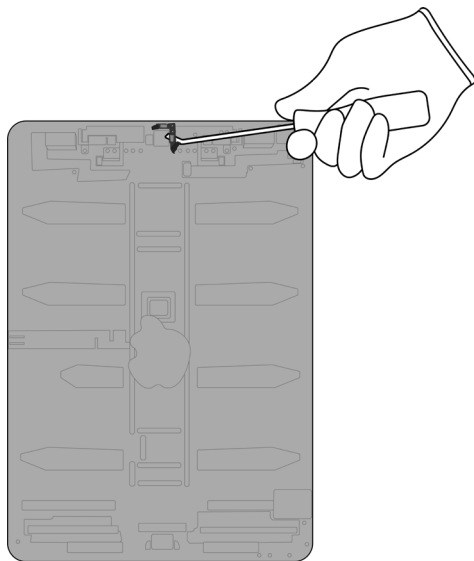
#### Fraction



Left speaker

**REE**  
Rare Earth  
Elements

### 24. Pry off the microphone array.



#### Tools Used



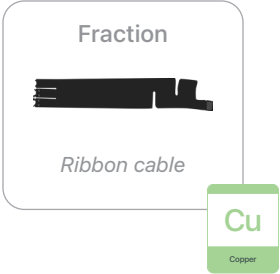
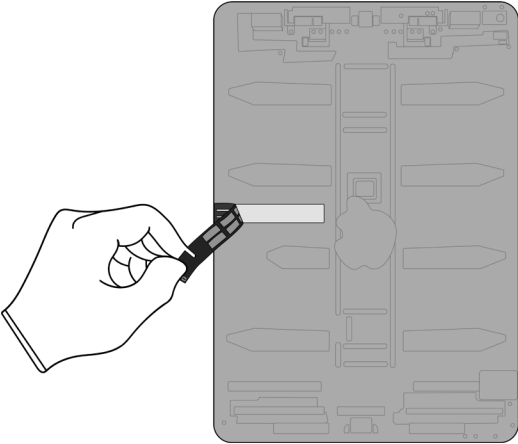
#### Fraction



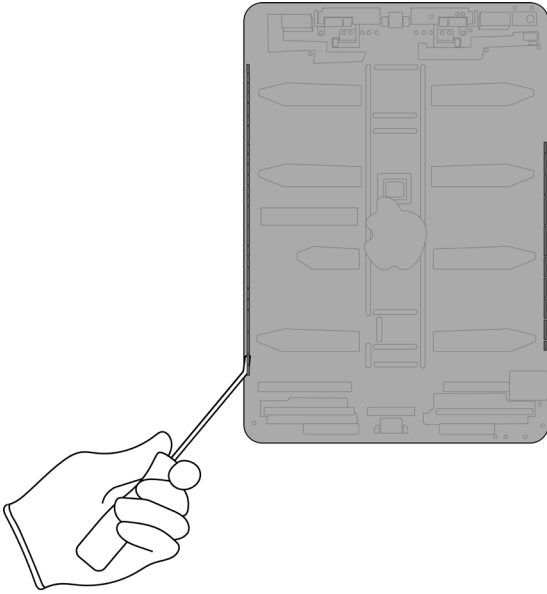
Microphone array

**Cu**  
Copper

**25.** Pull off the remaining ribbon cable.



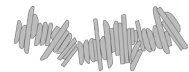
**26.** Pry off the 34 magnets along both sides of the enclosure.



Tools Used



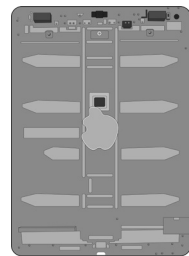
Fraction



Magnets (x34)

REE  
Rare Earth  
Elements

Fraction



Enclosure

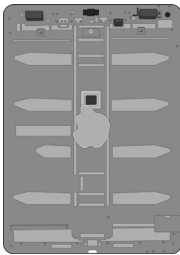
Al  
Aluminum

# 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
----------	-----------------------

### Aluminum



*Enclosure*



*SIM tray*

### Primary Target Material



### Batteries



*Lithium-ion polymer batteries*

### Primary Target Material

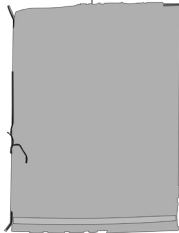


**Fraction**

**Downstream Processing**

**Ferrous**

**Primary Target Material**



*Display cover*



*Logic board cover*



**Glass**

**Primary Target Material**



*LCD cell*



**Potential Additional Materials**



## Fraction

## Downstream Processing

### Logic Boards



Display logic board



LED logic board



Main logic board



Front camera



Rear camera



SIM card

### Primary Target Material



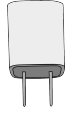
### Potential Additional Materials



**Fraction**

**Downstream Processing**

**Mixed Electronics**



*Power adapter*



*Charge cable*



*Data board assembly*



*Headphone jack*



*Left antenna*



*Right antenna*

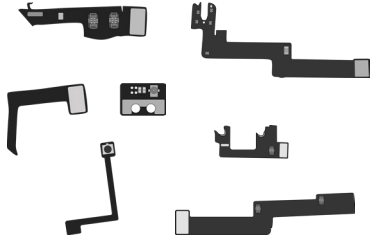
**Primary Target Material**



**Potential Additional Materials**



Mixed Electronics (cont.)



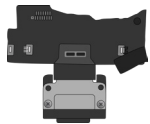
*Ribbon cables*



*Light sensor*



*SIM reader*



*Lightning connector*



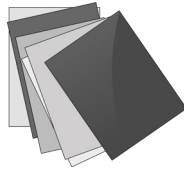
*Microphone array*



**Fraction**

**Downstream Processing**

**Mixed Plastics**



*Display films*

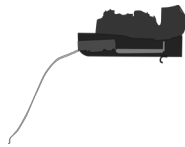
**Primary Target Material**



**Rare Earth Magnets**



*Right speaker*



*Left speaker*



*Magnets (x34)*

**Primary Target Material**



**Potential Additional Materials**

