



iPad Pro 12.9-inch (4th generation) Wi-Fi

iPad Pro 12.9-inch (4th generation) Wi-Fi + Cellular

Apple Recycler Guide

June 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.

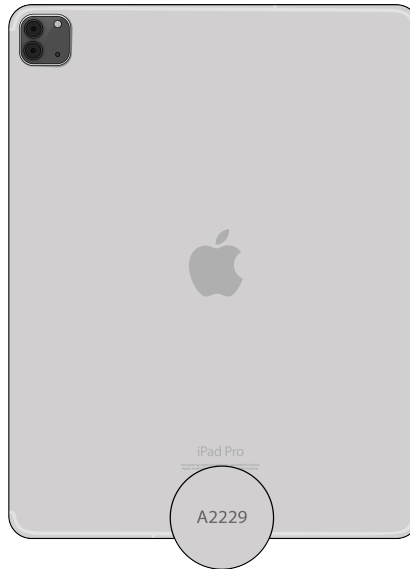
Disassembly procedures are intended to be performed only by trained electronics recycling professionals. The recycler is responsible for independently evaluating and ensuring compliance with all applicable environmental, health, and safety laws related to the work. These include but are not limited to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



Model numbers:
(Wi-Fi) A2229
(Wi-Fi + Cellular) A2069, A2232, A2233

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 1–17
External electric cables	Power adapter, charge cable	Follow step 1
Battery	Lithium-ion polymer battery	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 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/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



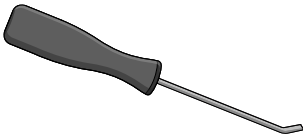
Rechargeable battery hazard



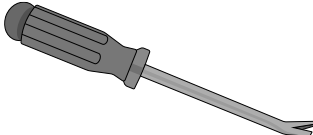
Chemical exposure hazard

Recommended Tools

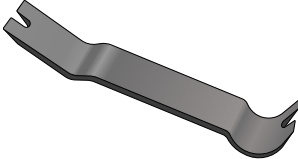
Miniature pry bar



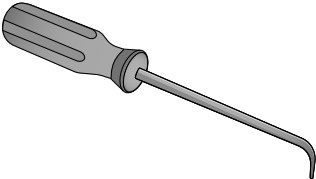
Nail-pulling screwdriver



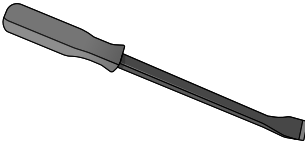
Plastic pry bar



Precision pick



Screwdriver-handle pry bar



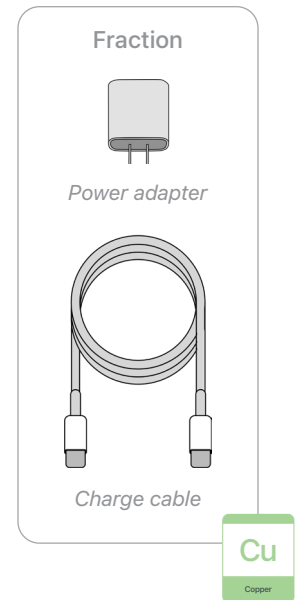
Tweezers



Disassembly Instructions

1. Remove the power adapter and charge cable.

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



2. Remove the display.

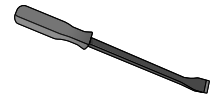


Broken glass hazard

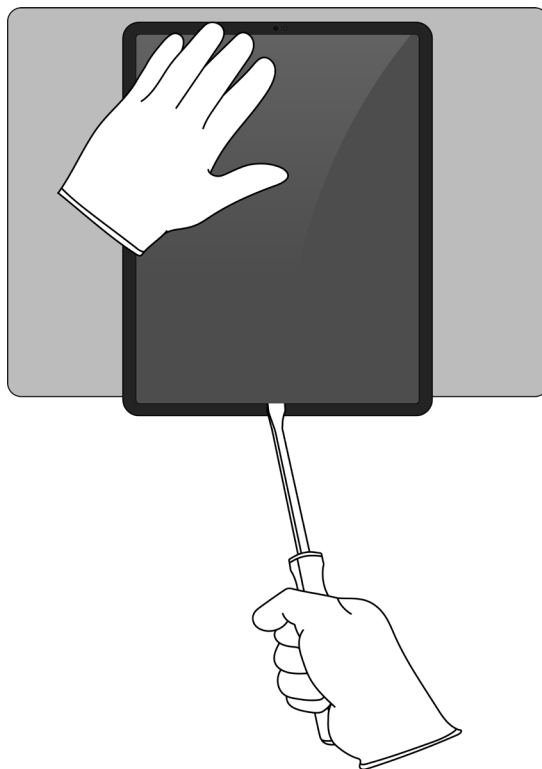


Chemical exposure hazard

Tools Used



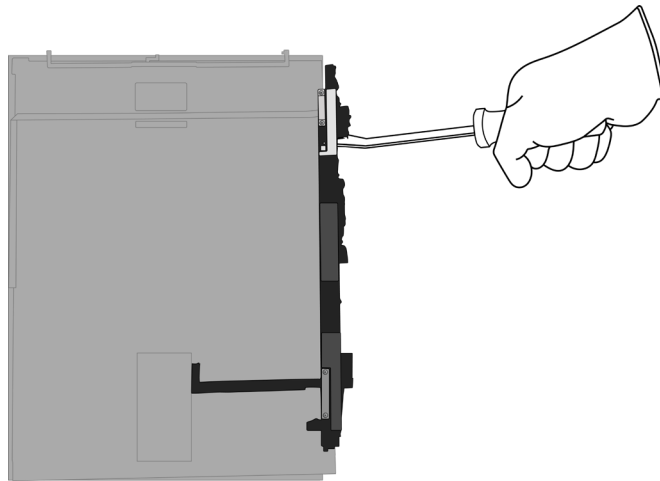
- » *Hold the iPad at the edge of a counter with the display facing up.*
- » *Insert the tool tip into the bottom of the display. Push the handle down to pry the display from the enclosure.*



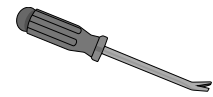
- » *Remove the display by hand. Set the enclosure aside.*

3. Remove the display logic board.

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



Tools Used



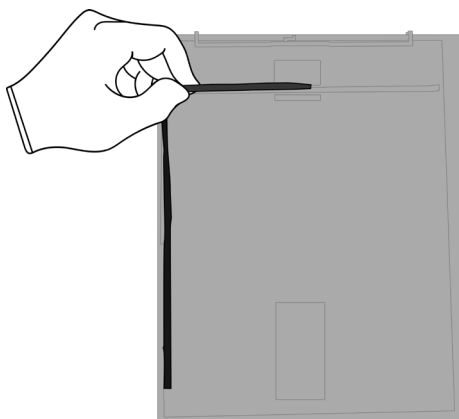
Fraction



Display logic board

PMs
Precious
Metals

4. Pull off the ribbon cable.



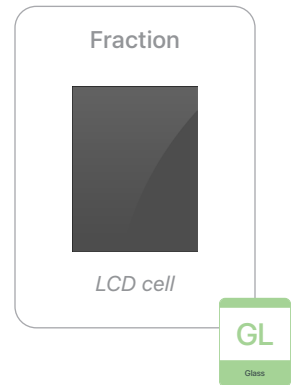
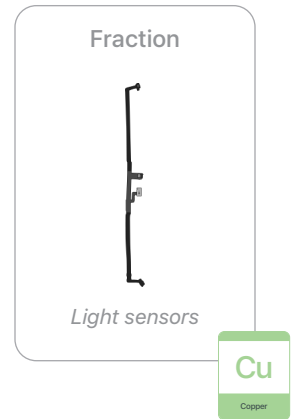
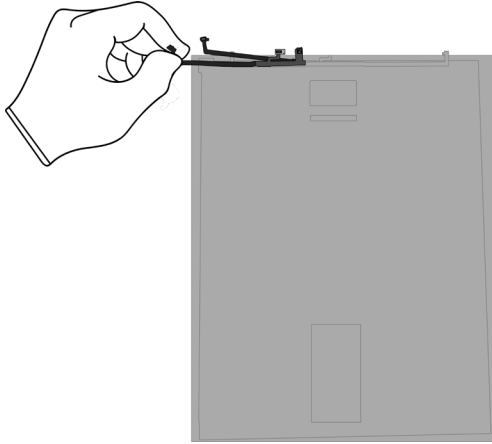
Fraction




Ribbon cable

Cu
Copper

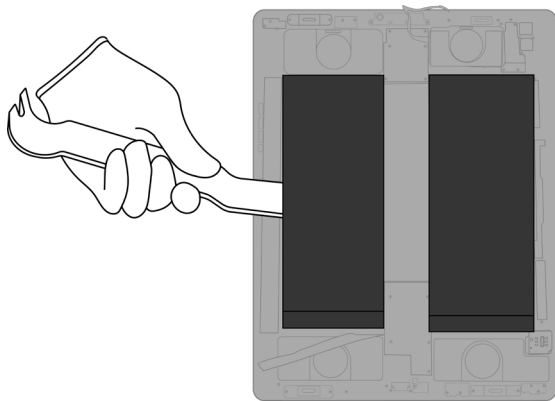
5. Pull off the light sensors.




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

 Rechargeable battery hazard


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



Tools Used

An illustration of a pair of tweezers and a plastic pry bar, both shown in a dark gray color.

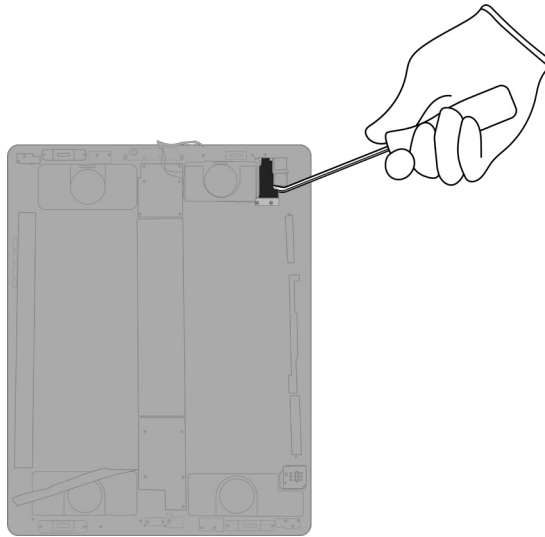
Fraction

A solid black rectangular shape representing a lithium-ion polymer battery.

Lithium-ion polymer batteries (x2)



7. Pry off the rear camera cover.



Tools Used



Fraction

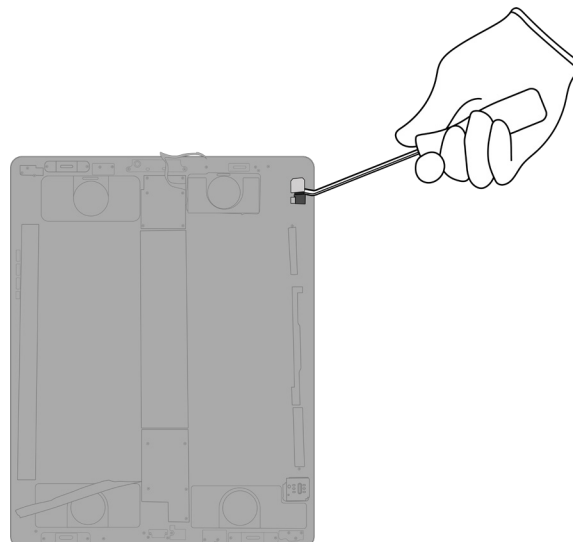


Rear camera cover

Fe

Ferrous

8. Pry off the lower rear camera.



Tools Used



Fraction

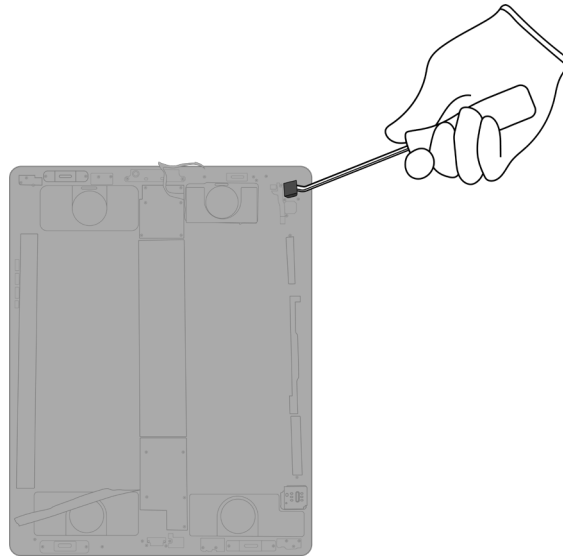


Lower rear camera

PMs

Precious Metals

9. Pry off the upper rear camera.



Tools Used



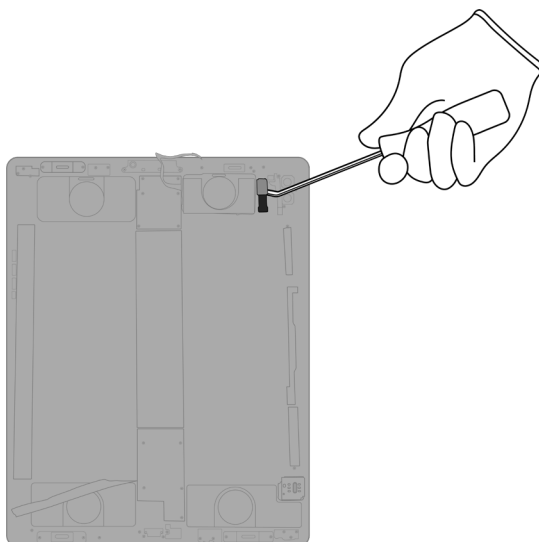
Fraction



Upper rear camera



10. Pry off the LiDAR Scanner.



Tools Used



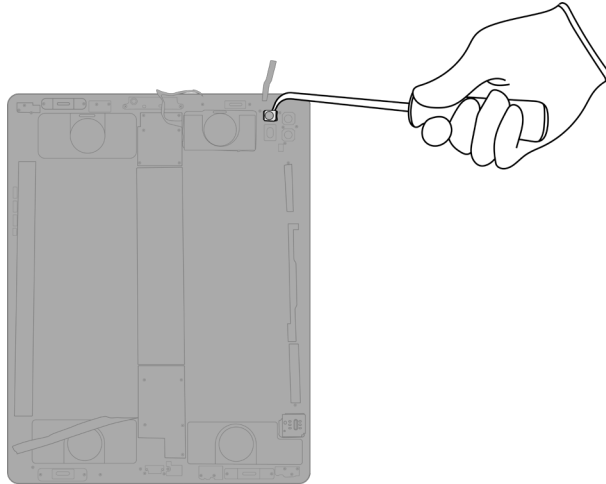
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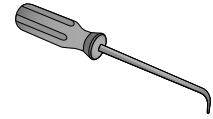
LiDAR Scanner



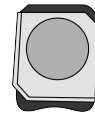
11. Pry off the strobe.



Tools Used



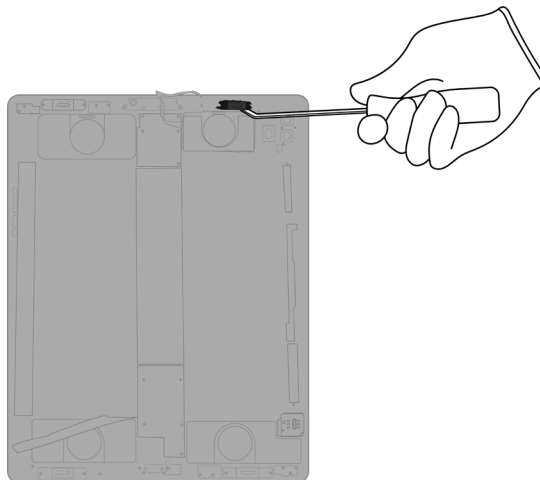
Fraction



Strobe

Cu
Copper

12. Pry off the upper right tweeter.



Tools Used



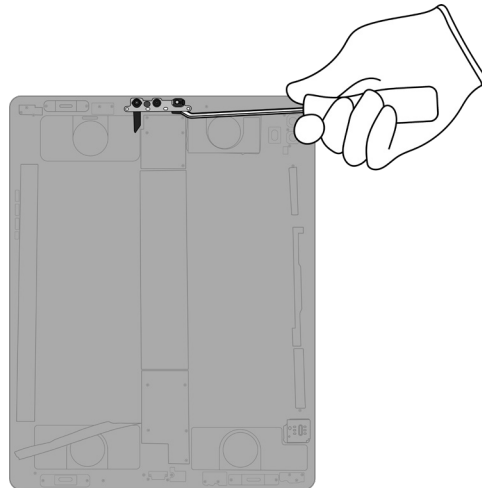
Fraction



Upper right tweeter

REE
Rare Earth
Elements

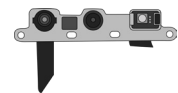
13. Pry off the front camera.



Tools Used



Fraction

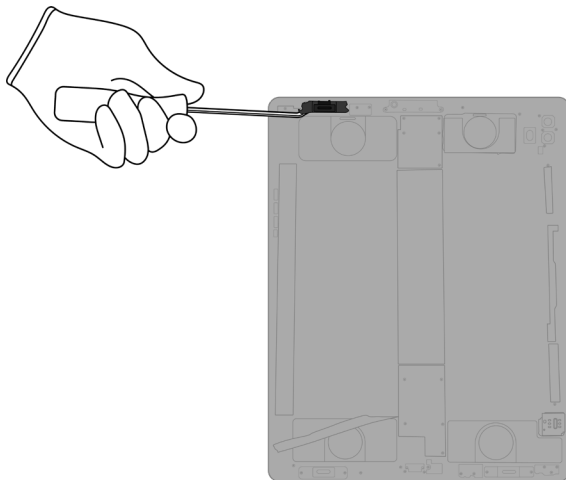


Front camera

PMs

Precious Metals

14. Pry off the upper left tweeter.



Tools Used



Fraction

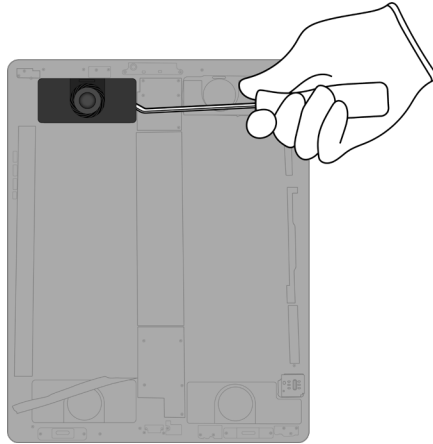


Upper left tweeter

REE

Rare Earth Elements

15. Pry off the upper left woofer.



Tools Used



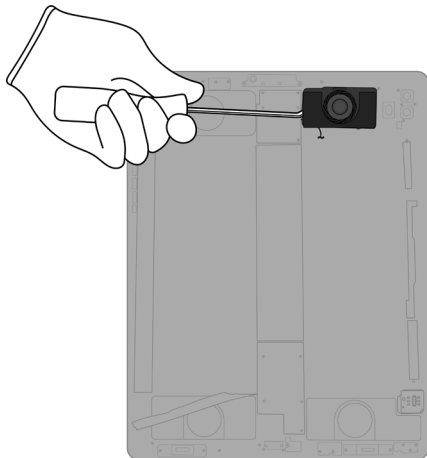
Fraction



Upper left woofer



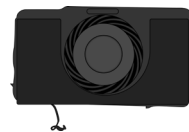
16. Pry off the upper right woofer.



Tools Used



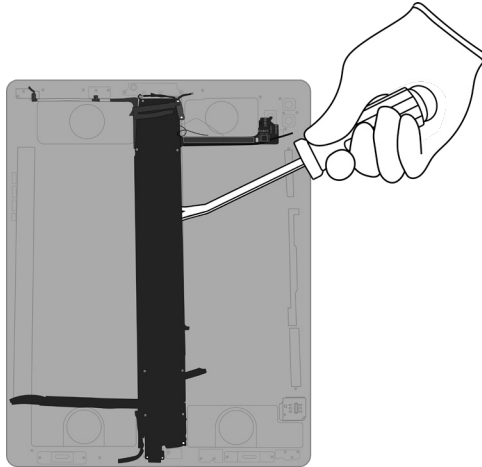
Fraction



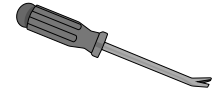
Upper right woofer



17. Pry off the main logic board.



Tools Used



Fraction

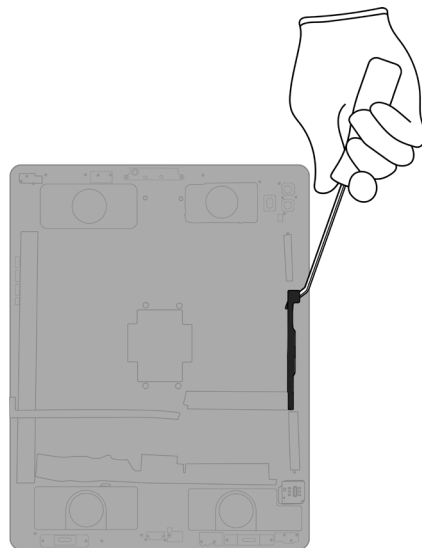


Main logic board

PMs

Precious Metals

18. Pry off the Apple Pencil magnetic connector.



Tools Used



Fraction

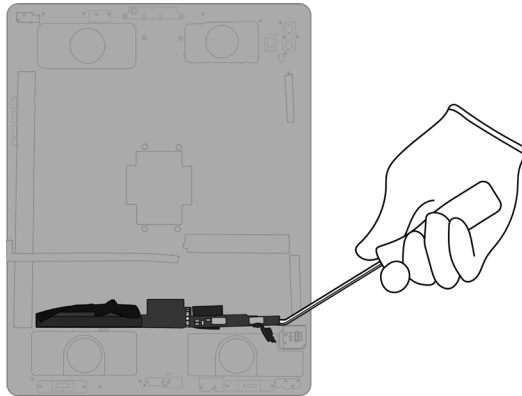


Apple Pencil magnetic connector

Cu

Copper

19. Pry off the power supply logic board.



Tools Used



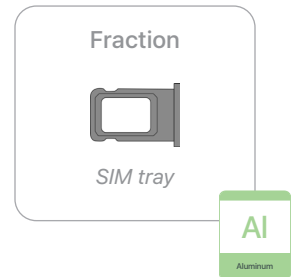
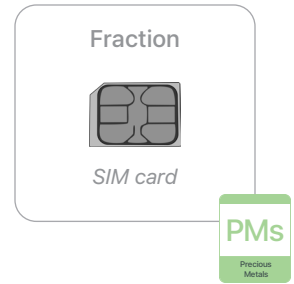
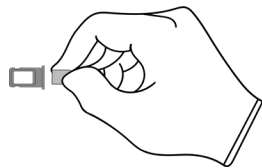
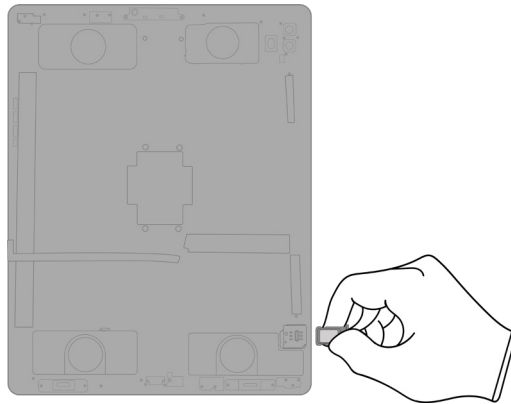
Fraction



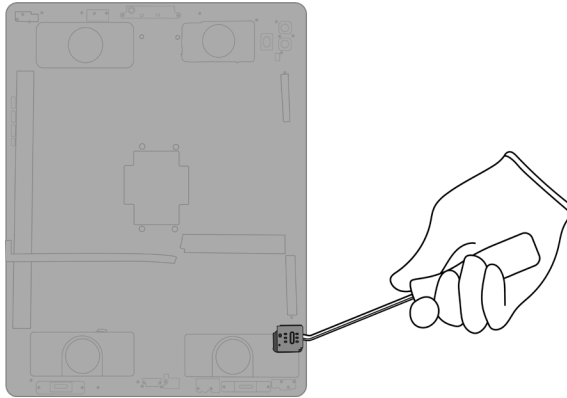
Power supply
logic board

PMs
Precious
Metals

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



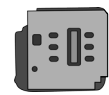
21. (Wi-Fi + Cellular models only) Pry off the SIM reader.



Tools Used



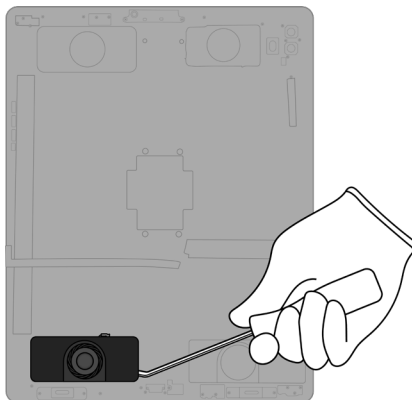
Fraction



SIM reader



22. Pry off the lower left woofer.



Tools Used



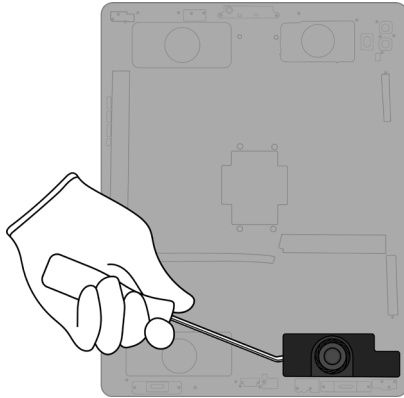
Fraction



Lower left woofer



23. Pry off the lower right woofer.



Tools Used



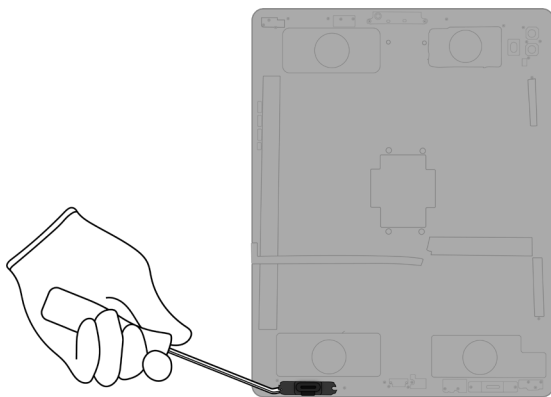
Fraction



Lower right woofer



24. Pry off the lower left tweeter.



Tools Used



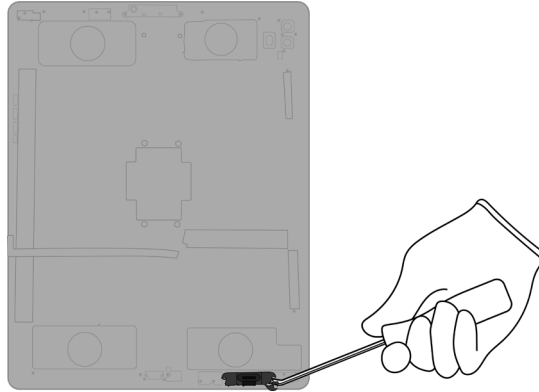
Fraction



Lower left tweeter



25. Pry off the lower right tweeter.



Tools Used



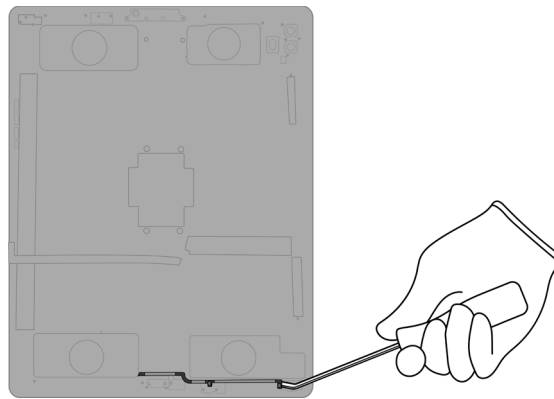
Fraction



Lower right tweeter

REE
Rare Earth
Elements

26. Pry off the connector cable.



Tools Used



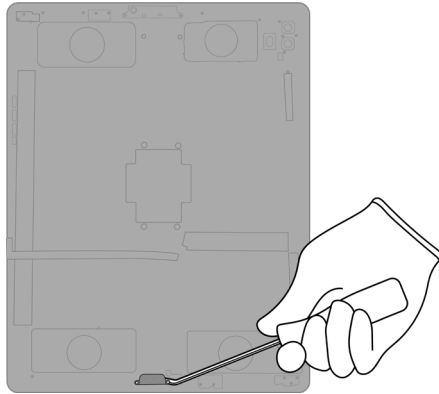
Fraction



Cable

Cu
Copper

27. Pry off the USB-C cover.



Tools Used



Fraction

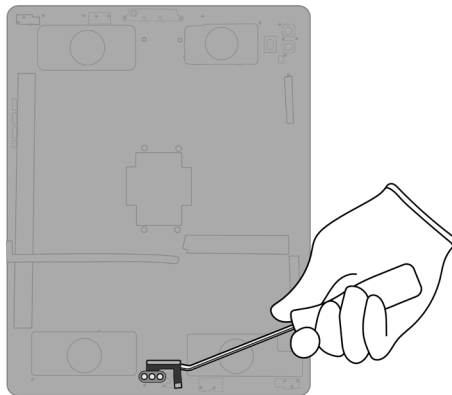


USB-C cover

Fe

Ferrous

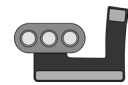
28. Pry off the Smart Connector.



Tools Used



Fraction

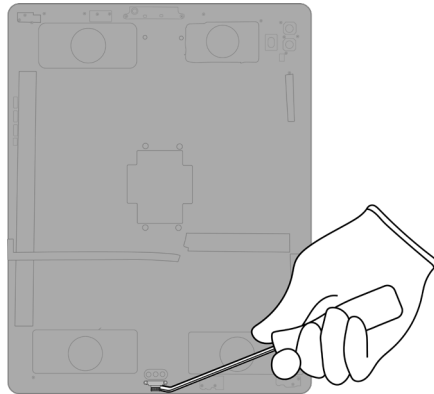


Smart Connector

Cu

Copper

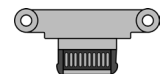
29. Pry off the USB-C port.



Tools Used



Fraction

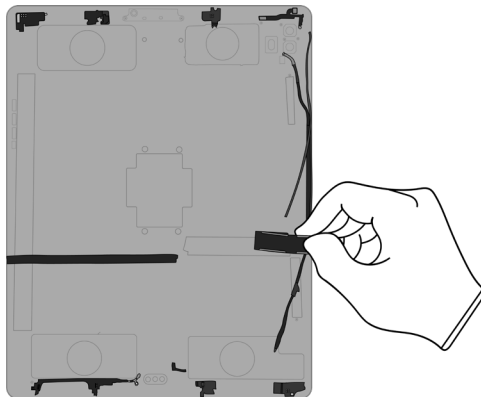


USB-C port

Cu

Copper

30. Pull off the ribbon cables and wires.



Fraction

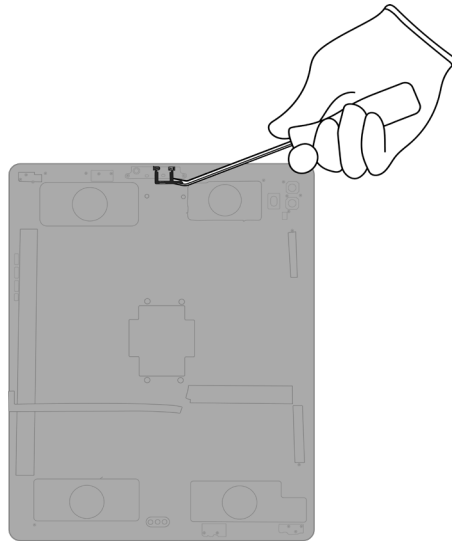


Ribbon cables
and wires

Cu

Copper

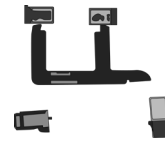
31. Pry off the microphones.



Tools Used



Fraction

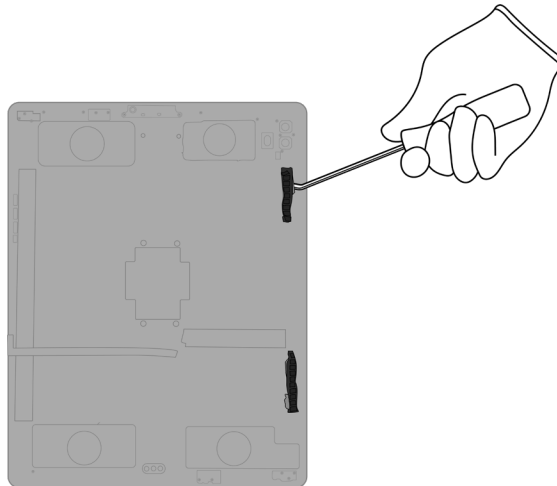


Microphones

Cu

Copper

32. Pry the ribbon cables off the side of the enclosure.



Tools Used



Fraction

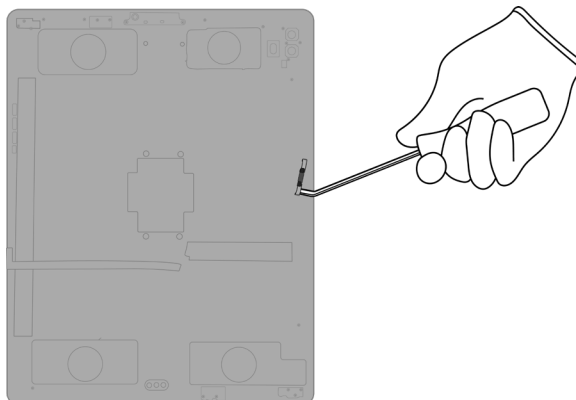


Ribbon cables

Cu

Copper

33. Pry off the Apple Pencil charging coil.



Tools Used



Fraction

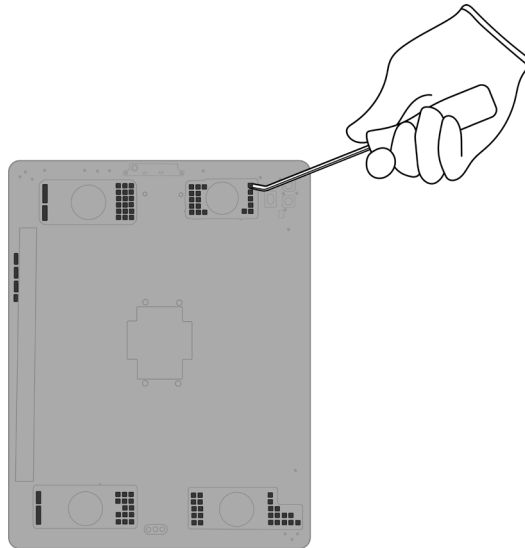


Apple Pencil
charging coil

Cu

Copper

34. Pry the 108 magnets off the enclosure.



Tools Used



Fraction

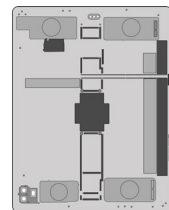


Magnets (x108)

REE

Rare Earth
Elements

Fraction




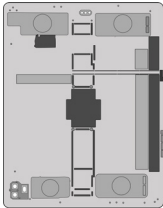



Enclosure



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> <div data-bbox="456 617 548 680">  </div> <p data-bbox="461 697 542 722"><i>SIM tray</i></p> <div data-bbox="420 762 581 968">  </div> <p data-bbox="451 984 550 1010"><i>Enclosure</i></p>	<p data-bbox="964 554 1276 579">Primary Target Material</p> <div data-bbox="1081 623 1156 714">  </div> <p data-bbox="927 751 1315 777">Potential Additional Materials</p> <div data-bbox="1029 825 1102 913">  </div> <div data-bbox="1135 825 1208 913">  </div>

<p data-bbox="440 1121 563 1146">Batteries</p> <div data-bbox="470 1190 531 1335">  </div> <p data-bbox="337 1348 664 1373"><i>Lithium-ion polymer batteries (x2)</i></p>	<p data-bbox="964 1121 1276 1146">Primary Target Material</p> <div data-bbox="1081 1190 1156 1281">  </div>
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Fraction

Downstream Processing

Ferrous



Rear camera cover



USB-C cover

Primary Target Material



Glass



LCD cell

Primary Target Material



Potential Additional Materials



Fraction

Downstream Processing

Logic Boards



Display logic board



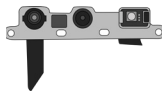
Lower rear camera



Upper rear camera



LIDAR Scanner



Front camera



Main logic board

Primary Target Material



Potential Additional Materials



Fraction

Downstream Processing

Logic Boards (cont.)



Power supply logic board

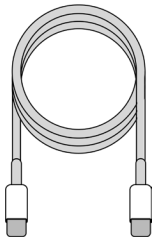


SIM card

Mixed Electronics



Power adapter



Charge cable



Ribbon cables and wires

Primary Target Material



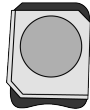
Potential Additional Materials



Mixed Electronics (cont.)



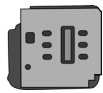
Light sensors



Strobe



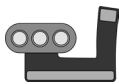
Apple Pencil magnetic connector



SIM reader

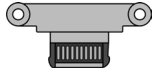


Cable



Smart Connector

Mixed Electronics (cont.)



USB-C port



Microphones



Apple Pencil charging coil

Rare Earth Magnets



Upper right tweeter



Upper left tweeter



Upper left woofer

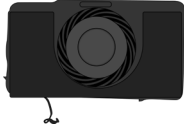
Primary Target Material



Potential Additional Materials



Rare Earth Magnets (cont.)



Upper right woofer



Lower left woofer



Lower right woofer



Lower left tweeter



Lower right tweeter



Magnets (x108)