Apple Pty Ltd

Australian Packaging Covenant Annual Plan

March 2011 – March 2016

Apple Pty Ltd is a signatory to the Australian Packaging Covenant ("APC"). Apple Pty Ltd is a wholly owned subsidiary of Apple Incorporated (Apple Inc). Globally, Apple is committed to the principle of shared responsibility for the effective environmental management of packaging and product throughout its life cycle.

Apple is committed to protecting the environment, as well as the health and safety of our employees, customers and the global communities where we work and live. We recognise that by integrating sound environmental, health, and safety management practices into all aspects of our business, we can offer technologically innovative products and services while conserving and enhancing resources for future generations.

We know that the most important thing we can do to reduce our impact on the environment is to improve our products. That's why we design them to use less material, ship with smaller packaging, be free of many toxic substances and be as energy efficient and recyclable as possible. With every new product, we continue our progress toward minimising our environmental impact.

All packaging for Apple products is designed to maintain the integrity of the product, assure consumer safety, and comply with all legal and regulatory requirements.

Apple's product and packaging designs lead the industry in material efficiency. Continuing improvements in design lead to a reduction in the material footprint of a product. This maximises shipping efficiency, reduces the amount of energy consumed during production and minimises the waste generated at end of life.

For the past two years, Apple has used a comprehensive life cycle analysis to determine the makeup of its carbon footprint. This means adding up the emissions generated from the manufacturing, transportation, use and recycling of our products (including their packaging), as well as the emissions generated by our facilities.

Apple has a number of programs in place to reduce its impact on the environment. For more information, see www.apple.com.au/environment. Apple's product recycling goal from 2010 is to recycle 70% of the weight of the product it sold seven years prior. Australia significantly contributes to this goal, running large scale community collection events and offering recycling programs for mobile phones, iPods and batteries.

Apple is committed to supporting the APC goals and intents.

Tony King
Managing Director

1.0 Company Background

Apple's Australian Operation
Product Types

Apple's Australian Operation

Apple Inc. designs, manufactures and markets Apple branded personal computer products and mobile devices for use in consumer, education and enterprise market places. Its product line includes desktop and laptop computers, iPhone, iPod and iPad. Apple conducts business in more than 120 countries around the world. Apple's manufacturing in China and major OEMs are certified to the international environmental standard ISO 14001. Apple in Australia is a Quality Assured company accredited in compliance with international standard AS/NZS ISO 9001:2008. Apple's Australian operations are conducted in accordance with applicable sections of Apple's comprehensive environmental policies and procedures.

Apple Pty Ltd is a wholly owned subsidiary of Apple Inc and has operated in Australia since 1982. IDC ranks Apple Pty Ltd within the top ten computer manufacturers in Australia. Apple Pty Ltd imports fully assembled finished goods and additional service parts from its various manufacturing sites. Apple also imports and distributes small quantities of third party electronic goods. There is no Apple manufacturing or design facilities in Australia.

Product Types

Apple sells finished products to customers directly via its online store, directly via its network of Apple Retail Stores, and indirectly via a reseller (dealer) network. Spare parts are sold to authorised service providers and resellers who in turn provide a repair service to customers.

All Apple Finished Goods and Service Parts are packaged to Apple's international packaging and handling specifications. These packaging specifications were developed by Apple to address its growing environmental commitments, stricter environmental packaging laws and community concerns. During the packaging design process important aspects of the CEN International Packaging Standards are incorporated into Apple packaging (so called "essential requirements"). Specific focus is given to the reduction of material used, material recycling, hazardous substances content and energy recovery. These elements are incorporated in the "Design for Environment Checklist" (ADEC) which is the intended tool for review of packaging under the APC.

Finished Goods

Apple imports and distributes a range of different types of products manufactured overseas at Apple approved manufacturing sites. All Apple Finished Goods are imported fully assembled and pre-packaged, ready for retail distribution. Apple's Australian operation applies address labels and in some instances, packs single units into multi pack cardboard boxes. Apple's Australian operation requires its accredited service providers to re-use packaging when returning Finished Goods to Apple.

Service Parts

Apple imports and distributes thousands of different Apple Service Parts to authorised Apple service centers. Some of these are imported pre-packaged ready for individual distribution while others are imported in bulk packaging and then packaged locally for individual distribution. No additional packaging (other than address labels) is added by Apple Australia during the storage, handling and distribution of these parts. Spare parts are only provided to authorised Service providers and not directly to end customers.

Apple Service providers return used Apple Service Parts requiring repair to the Apple service warehouse in Australia. Apple Australian operation requires its Apple accredited service providers to re-use packaging when sending Service Parts to Apple.

Third Party Products

Apple provides distribution services for different electronic products manufactured overseas by third parties. Third party products distributed by Apple in Australia are usually imported fully assembled and pre-packaged in accordance with the products owner's requirements ready for retail distribution. Apple's Australian operation generally does not apply any secondary packaging other than address labels, prior to distributing the product.

Operations in Australia include distribution warehousing, support sites and multiple retail store locations. It has facilities in Sydney, Melbourne, Perth, Brisbane and Adelaide with the majority of employees based at the head office in Sydney. The Australian warehouse facilities are also located in Sydney.

2.0 Packaging Materials and Formats

Apple selects its packaging materials in accordance with its "Design for Environment" philosophy and is actively working to continually improve its packaging.

The main packaging types include paper (corrugated cardboard and paperboard), molded fibre and high impact polystyrene. Small quantities of other plastics are also utilised. Expanded polystyrene and polyethylene are used in the iMac, Mac Pro, and Apple display packaging. Polycarbonate is major component of in the iPod range.

Currently the corrugated cardboard used contains at least 25% post consumer recycled content and in some cases is as much as 50%. The molded fibre is made entirely from post-consumer recycled content.

iPhone packaging is almost entirely recyclable. Its retail box is made primarily from bio-based materials, including fibreboard containing 90% post consumer recycled content. The paper foam is tapioca based.

Apple produces Product Environment Reports for each of its products. See http://www.apple.com/au/environment/reports/

These reports detail the carbon footprint of each product. The reports also details energy consumption in off, sleep and idle modes and packaging is broken down by type and weight for each product. Apple reports the breakdown of packaging weights for both the retail box configuration and any enclosing shipping box.

A summary of packaging used in 2011 for major product lines is provided in Appendix B.

3.0 Australian Packaging Covenant's Sustainable Packaging Guidelines (SPG) and Apple's 'Design for Environment Checklist' (ADEC) and Philosophy

The products Apple produces are the result of careful and considered design. Apple seeks to minimise the environmental impact of products. Packaging is no exception.

Apple's Design for Environment criteria includes the following elements:

- Protect the finished product
- Reduced toxicity/reduced environmental impact
- Use of environmentally preferable materials
- Life cycle assessment and reduction of energy use, carbon emissions and water use
- Materials from responsible suppliers
- Recyclability of Packaging Materials & Designs
- Packaging efficiency
- Other considerations associated with packaging regulatory compliance (e.g. litter reduction, consumer accessibility, California RPPC law, etc.)

Apple's packaging design review process has incorporated these guidelines for many years now.

Having undertaken a high level comparison of the two frameworks, Apple believes its 'Design for Environment Checklist' and philosophy compares favourably with the SPG. Both frameworks target a very similar outcome. Apple intends to build on the work already done in this area by its dedicated team. It will perform a gap analysis of the two frameworks with the intent that any gaps can be accommodated.

For reasons of confidentiality, the specifics of 'Apple's Design for Environment Checklist' will not be published. Apple believes its products demonstrate the application of rigorous evaluation of environmental considerations.

4.0 Packaging Review

Apple will prioritise its review of packaging by starting with high volume major product lines such as laptops, iPod, iPhone and iPad. Beyond its major product lines, Apple will evaluate the appropriateness of reviewing smaller, lower volume items.

Apple intends to utlise the existing "Design for Environment Checklist" for applicable reviews. Any gaps between it and the SPG framework will be addressed.

5.0 Reporting

This plan has been developed by Apple in Australia in consultation with representatives from Apple Inc. Vicki Hawthorne, Environment and Compliance Manager is responsible for the coordination and production of this plan and ongoing annual reports.

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6.0 Actions

Specific actions in support of the APC's goals and KPIs are detailed in Table 1 as follows.

Apple KPI 1

Intergrate packaging review utilising Apple's Design for Environment Checklist / SPG into Australian operations

Action	Responsibility	Timeframe	Target
Formalise APC team members	Environment and Compliance Mgr (E&C Mgr)	May-11	Team Formed
Perform a gap analysis of Apple's Design for Environment Checklist (ADEC) and the Sustainable Packaging Guidelines (SPG)	E&C Mgr and US Design team representatives	Sept-11	Identify any gaps and work with the US to have areas incorporated in ADEC
Explore evidence available of the application of the ADEC in the design of products	E&C Mgr and US Design team representatives	Sept-11	Understand US design and review process
Finalise packaging grouping structure to address the product as a whole whilst identifying commonly used packaging components	APC Team and US Design team representatives	Jun-11	Table groupings and identify common components
Develop a system to capture ADEC review data (including data from other KPIs)	E&C Mgr	Sep-11	Develop local system to reflect US data and accommodate local information
Perform review of packaging for new major product lines against ADEC	APC Team	Within 12 months of introduction	Complete review documentation
Perform review of packaging for any existing products which have not be revised (treated as new products) inside of two years	APC Team	Mar-13	Complete review documentation
Identify any unique Apple Retail Store items which require review under the locally applied packaging category	APC Team and Retail Rep	Jun-12	Add to locally applied packaging for review
Review existing locally applied packaging against the ADEC	APC Team	Jun-12	Complete review documentation
Review new locally applied packaging against the ADEC	APC Team	As introduced	Complete review documentation
Identify small peripheral product lines for review and review against ADEC	APC Team	Jun-14	Complete review documentation

Relates to Australia Packaging Covenant KPI 1	**Proportion of signatories in the supply chain implementing the Sustainable Packaging Guidelines for design or procurement of packaging.**

Apple KPI 2

On-site packaging recovery

Action	Responsibility	Timeframe	Target
Review existing on site recycling data collection methodology and evaluate appropriateness of third party waste audit for corporate facilities **	APC Team including Facilities	Dec-11	Engage third party waste audit if necessary
Combine Retail store and corporate waste data to determine new baseline **	APC Team and Retail Rep	Jun-12	Combined reporting of onsite waste

Relates to Australia Packaging Covenant KPI 2/3	**National recycling rate for packaging / Proportion of signatories with on-site recovery systems for recycling used packaging**

Apple KPI 3

Buy Recycled Policy

Action	Responsibility	Timeframe	Target
Implement Buy Recycled policy	E&C Mgr and Procurement	Jun-12	Policy statement determined and communicated to staff
Educate staff	APC Team	Jun-12	Communication delivered to staff regarding policy expectations

Relates to Australia Packaging Covenant KPI 4/5	**Proportion of signatories with a policy to buy products made from recycled packaging / Additional tonnes of material reprocessed in primary and secondary markets as a result of Covenant -funded projects**

Apple KPI 4

Product Stewardship

Action	Responsibility	Timeframe	Target
Investigate ability of local suppliers to takeback unwanted packaging	E&C Mgr and supplier owners	Jun-12	Meet with 2-3 local suppliers to determine takeback opportunities
Investigate polystyrene recycling capability in Australia	E&C Mgr	Jun-12	Identify facility/s and conduct audit of processes and environmental outcomes

Relates to Australia Packaging Covenant KPI 6/7	**Proportion of signatories that have formal processes for working with others to improve design and recycling or packaging / Proportion of signatories demonstrating other product stewardship outcomes**

Apple KPI 5

Litter Reduction*

Action	Responsibility	Timeframe	Target
Survey Apple customers to see how they dispose of our packaging **	E&C Mgr	Dec-12	Information regarding Apple packaging fate

Relates to Australia Packaging Covenant KPI 8	**Reduction in the number of packaging item in the litter stream**

* Most Apple products are opened at home or in a work place. Apple does not believe its products significantly contribute to the public litter stream. Generally the recycling available to homes and business cater for this adequately. Apple also contributes to litter reduction projects funded through the fees payable to the Covenant.

** Data collected in 2011 will form the new baseline

APPENDIX A

APC Goals

Goal 1 Design

Outcomes:
Packaging designed to:

- avoid or minimise the use of materials and other resources
- optimise recyclability and recycled content
- reduce litter impacts.

KPI 1: Proportion of signatories in the supply chain implementing the Sustainable Packaging Guidelines for design or procurement of packaging.

Goal 2 Recycling

The efficient collection and recycling of packaging

Outcomes:

- A contribution to improved recovery of packaging from households and away-from-home sources.
- Increased secondary markets for recovered packaging materials.

KPI 2: National recycling rate for packaging
KPI 3: Proportion of signatories with on-site recovery systems for recycling used packaging
KPI 4: Proportion of signatories with a policy to buy products made from recycled packaging.
KPI 5: Additional tonnes of material reprocessed in primary and secondary markets as a result of Covenant-funded projects.

Goal 3 Product Stewardship – a demonstrated commitment to product stewardship by the supply chain and other signatories

Outcomes

- Signatories in the supply chain working with others to improve design and recycling of packaging.
- Reduction in litter.

KPI 6: Proportion of signatories that have formal processes for working with others to improve design and recycling of packaging.
KPI 7: Proportion of signatories demonstrating other product stewardship outcomes.
KPI 8: Reduction in the number of packaging items in the litter stream.

APPENDIX B

Packaging summary
Major product lines as at 15 March 2011

See Product Environment Reports for more detail http://www.apple.com/au/environment/reports/

21.5-inch iMac

The packaging for the 21.5-inch iMac is almost entirely recyclable and its retail box is made with a minimum of 25 percent post-consumer recycled content. In addition, its packaging is extremely material efficient, allowing more units to ship per pallet. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	1550g	2850g
Expanded polystyrene	400g	400g
Polypropylene (film, fabric)	53g	53g
Other plastics	31g	31g

27-inch iMac

The packaging for the 27-inch iMac is almost entirely recyclable and its retail box is made with a minimum of 25 percent post-consumer recycled content. In addition, its packaging is extremely material efficient, allowing more units to ship per pallet. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard	2320g	4120g
Expanded polystyrene	570g	570g
Polypropylene (film, fabric)	79g	79g
Other plastics	31g	31g

Mac mini (U.S. Configurations)

The corrugate and paperboard packaging for Mac mini is made from at least 50 percent recycled content, derived primarily from post-consumer sources. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard, molded fibre)	214g	655g
Other plastics	9G	9g

Mac Pro (U.S. Configurations)

The packaging for Mac Pro is almost entirely recyclable and is made with a minimum of 35 percent post-consumer recycled content. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	2700g	2700g
Expanded polystyrene	970g	970g
Other plastics	80g	80g

13-inch MacBook Pro (U.S. Configurations)

The packaging for the 13-inch MacBook Pro uses corrugated cardboard made from a minimum of 25 percent post-consumer recycled content and molded fibre made entirely from post-consumer recycled content. In addition, the retail packaging is extremely material efficient, consuming 41 percent less volume than the original MacBook, allowing up to 50 percent more units to fit per shipping container. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	368g	778g
Molded fibre	—	248g
High-impact polystyrene	168g	168g
Other plastics	45g	61g

15-inch MacBook Pro (U.S. Configurations)

The packaging for the 15-inch MacBook Pro uses corrugated cardboard made from a minimum of 25 percent post-consumer recycled content and molded fibre made entirely from post-consumer recycled content. In addition, the packaging is extremely material efficient, consuming 37 percent less volume than the original 15-inch MacBook Pro. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	424g	887g
Molded fibre	—	248g
High-impact polystyrene	202g	202g
Other plastics	54g	72g

17-inch MacBook Pro (U.S. Configurations)

The packaging for the 17-inch MacBook Pro uses corrugated cardboard made from a minimum of 25 percent post-consumer recycled content and molded fibre made entirely from post-consumer recycled content. In addition, the packaging is extremely material efficient, consuming 34 percent less volume than the original 17-inch MacBook Pro. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	502g	1007g
Molded fibre	—	248g
High-impact polystyrene	230g	230g
Other plastics	57g	79g

11-inch MacBook Air (U.S. Configurations)

The packaging for the 11-inch MacBook Air uses corrugated cardboard made from over 30 percent post-consumer recycled content and molded fibre made entirely from post- consumer recycled content. In addition, the packaging is extremely material efficient, allowing at least 15 percent more units to fit per shipping container than the original MacBook Air. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	337g	635g
Molded fibre	—	187g
High-impact polystyrene	136g	136g
Other plastics	23g	23g

13-inch MacBook Air (U.S. Configurations)

The packaging for the 13-inch MacBook Air uses corrugated cardboard made from over 30 percent post-consumer recycled content and molded fibre made entirely from post- consumer recycled content. In addition, the packaging is extremely material efficient, allowing at least 15 percent more units to fit per shipping container than the original MacBook Air. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	385g	723g
Molded fibre	—	189g
High-impact polystyrene	150g	150g
Other plastics	27g	27g

MacBook (U.S. Configurations)

The packaging for MacBook uses corrugate cardboard made from a minimum of 25 percent post-consumer recycled content, and it is free of expanded polystyrene (EPS). In addition, the retail packaging is extremely material efficient, consuming up to 53 percent less volume than the original MacBook. This allows up to 80 percent more units to fit per shipping container. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, molded fibre)	343g	969g
High-impact polystyrene	131g	131g
Other plastics	30g	45g

24-inch Apple LED Cinema Display

The packaging for the LED Cinema Display is almost entirely recyclable and its retail box is made with a minimum of 25 percent post-consumer recycled content. In addition, its packaging is extremely material efficient, allowing more units to ship per pallet. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, fibreboard)	1190g	2230g
Expanded polystyrene	420g	420g
Polypropylene	30g	30g
Other plastics	25g	25g

27-inch Apple LED Cinema Display

Packaging for the 27-inch LED Cinema Display uses corrugated cardboard made from a minimum of 35 percent post-consumer recycled content. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	2360g	3890g
Expanded polystyrene	660g	660g
Polypropylene (film, fabric)	65g	65g
Other plastics	16g	16g

Mac Mini with Snow Leopard Server (U.S. Configurations)

The corrugate and paperboard packaging for Mac mini with Snow Leopard Server is made from at least 50 percent recycled content, derived primarily from post-consumer sources. The following table details the materials used in its packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard, molded fibre)	285g	762g
Other plastics	9g	9g

iPad (U.S. Configurations)

The packaging for iPad is almost entirely recyclable and uses corrugate cardboard made from a minimum of 33 percent post-consumer recycled content. In addition, its packaging is extremely material effcient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPad packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, molded fibre)	246g	631g
High-impact polystyrene	79g	79g
Other plastics	10g	10g

iPhone 4 (U.S. Configurations)

The packaging for iPhone 4 is almost entirely recyclable, and its retail box is made primarily from bio-based materials, including fibreboard containing 90 percent post- consumer recycled content. In addition, the iPhone 4 packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPhone 4 packaging.

Material	Retail box
Paper (fibreboard, paperboard, paperfoam)	120g
Thermoformed polystyrene	11g
Other plastics	2g

iPhone 3GS (U.S. Configurations)

The packaging for iPhone 3GS is almost entirely recyclable, and its retail box is made primarily from bio-based materials, including fibreboard containing 90 percent post- consumer recycled content. In addition, its packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPhone 3GS packaging.

Material	Retail box
Paper (fibreboard, paperboard, paper foam)	136g
Thermoformed polystyrene	17g
Other plastics	3g

iPod touch

iPod touch packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPod touch packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	6g	115g
Polycarbonate	59g	59g
Other plastics	2g	

iPod classic

The packaging design of iPod classic uses paperboard made from 100 percent post- consumer recycled content. In addition, the packaging is extremely material efficient, consuming 85 percent less volume and weighing 68 percent less than the original iPod. This allows over three times more units to be transported in a single shipping container. The following table details the materials used in iPod classic packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	120g	205g
Polystyrene	15g	15g
Other plastics	2.5g	2.5g

iPod nano

iPod nano packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPod nano packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	3g	148g
Polycarbonate	27g	27g
Other plastics	1g	1g

iPod shuffle

iPod shuffle packaging is extremely material efficient, allowing more units to be transported in a single shipping container. The following table details the materials used in iPod shuffle packaging.

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	3g	125g
Polycarbonate	21g	21g
Other plastics	0.3g	0.3g

15-inch MacBook Pro

Environmental Report

Model MC721, MC723

Date introduced

February 24, 2011

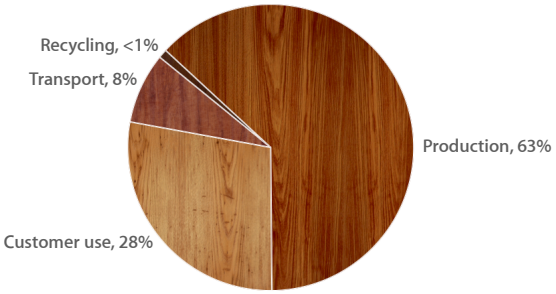
Apple and the Environment

Apple believes that improving the environmental performance of our business starts with our products. The careful environmental management of our products throughout their life cycles includes controlling the quantity and type of materials used in their manufacture, improving their energy efficiency, and designing them for better recyclability. The information below details the environmental performance of the 15-inch MacBook Pro as it relates to climate change, energy efficiency, material efficiency, and restricted substances.

Climate Change

Greenhouse gas emissions have an impact on the planet's balance of land, ocean, and air temperature. Most of Apple's corporate greenhouse gas emissions come from the production, transport, use, and recycling of its products. Apple seeks to minimize greenhouse gas emissions by setting stringent design-related goals for material and energy efficiency. The chart below provides the estimated greenhouse gas emissions for the 15-inch MacBook Pro over its life cycle.

Greenhouse Gas Emissions for 15-inch MacBook Pro



Total greenhouse gas emissions: 460 kg CO_2e

Energy Efficiency

Because one of the largest portions of product-related greenhouse gas emissions results from its use, energy efficiency is a key part of each product's design. Apple products use power-efficient components and software that intelligently powers them down during periods of inactivity. The result is that the MacBook Pro is energy efficient right out of the box.

The 15-inch MacBook Pro outperforms the stringent requirements of the ENERGY STAR Program Requirements for Computers Version 5.2. Designed to be even more efficient than previous models, it consumes 46 percent less energy than the original 15-inch MacBook Pro. The following table details the power consumed in different use modes:

Power Consumption for 15-inch MacBook Pro

Mode	100V	115V	230V
Power adapter, no-load	0.005W	0.009W	0.027W
Off	0.30W	0.30W	0.35W
Sleep	1.22W	1.22W	1.30W
Idle—Display off / on	8.7W / 15.7W	8.8W / 15.8W	9.0W / 16.0W
Power adapter efficiency	89.6%	89.9%	89.7%

Environmental Status Report

The 15-inch MacBook Pro is designed with the following features to reduce environmental impact:

- Arsenic-free display glass
- Brominated flame retardant–free
- Energy Efficient Ethernet enabled[1]
- Highly recyclable aluminum and glass enclosure
- Mercury-free LED-backlit display
- PVC-free[2]

Meets ENERGY STAR® Version 5.2 requirements

15-inch MacBook Pro achieved a Gold rating from EPEAT[3]

Battery Chemistry

System battery: lithium-ion polymer, 77.5 Whr

Free of lead, cadmium, and mercury

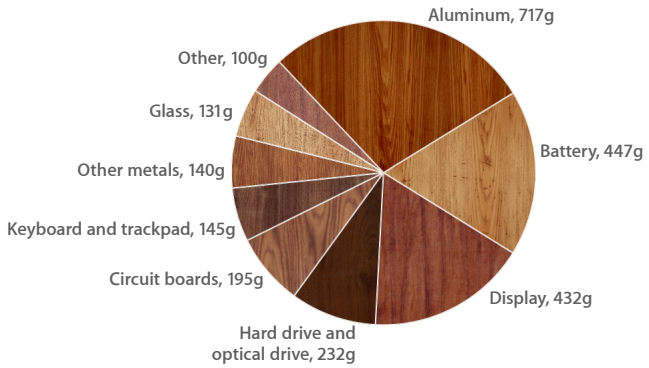
Battery Design

The 15-inch MacBook Pro features a breakthrough battery design that dramatically improves its lifespan—up to five years. So it uses just one battery in the same time a typical notebook uses three.

Material Efficiency

Apple's ultracompact product and packaging designs lead the industry in material efficiency. Reducing the material footprint of a product helps maximize shipping efficiency. It also helps reduce energy consumed during production and material waste generated at the end of the product's life. Waste is further minimized through the use of batteries that last up to three times longer than typical notebook batteries. The 15-inch MacBook Pro is made of aluminum and other materials highly desired by recyclers. The chart below details the materials used in this model.

Material Use for 15-inch MacBook Pro



The 15-inch MacBook Pro retail packaging consumes 37 percent less volume than the original 15-inch MacBook Pro. Its retail and shipping packaging contain three times as much post-consumer recycled content as the original 15-inch MacBook Pro.

Packaging

The packaging for the 15-inch MacBook Pro uses corrugated cardboard made from a minimum of 25 percent post-consumer recycled content and molded fiber made entirely from post-consumer recycled content. In addition, the packaging is extremely material efficient, consuming 37 percent less volume than the original 15-inch MacBook Pro. The following table details the materials used in its packaging.

Packaging Breakdown for 15-inch MacBook Pro (U.S. Configurations)

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	424g	887g
Molded fiber	—	248g
High-impact polystyrene	202g	202g
Other plastics	54g	72g

Restricted Substances

Apple has long taken the lead in restricting harmful substances from its products and packaging. As part of this strategy, all Apple products comply with the strict European Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, also known as the RoHS Directive. Examples of materials restricted by RoHS include lead, mercury, cadmium, hexavalent chromium, and the brominated flame retardants (BFRs) PBB and PBDE. The 15-inch MacBook Pro goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

- Mercury-free display
- Arsenic-free display glass
- BFR-free
- Polyvinyl chloride (PVC)–free internal cables and power adapter DC cable
- PVC-free AC power cord for United States, Canada, Mexico, Colombia, El Salvador, Guatemala, Panama, Peru, Puerto Rico, U.S. Virgin Islands, and Venezuela

Recycling

Through ultra-efficient design and use of highly recyclable materials, Apple has minimized material waste at the product's end of life. In addition, Apple offers and participates in various product take-back and recycling programs in 95 percent of the regions where Apple products are sold. All products are processed in the country or region in which they are collected. For more information on how to take advantage of these programs, visit www.apple.com/recycling/.

Definitions

Electronic Product Environmental Assessment Tool (EPEAT): A program that ranks computers and displays based on environmental attributes in accordance with IEEE 1680. For more information, visit www.epeat.net.

Greenhouse gas emissions: Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. Calculation includes emissions from the following life-cycle phases contributing to Global Warming Potential (GWP 100 years) in CO_2 equivalency factors (CO_2e):

- **Production:** Includes the extraction, production, and transport of raw materials and the manufacture of the product, as well as product packaging.
- **Transport:** Includes air and sea transportation of the finished product and its associated packaging from the manufacturing site to continental distribution hubs. Transport of products from distribution hubs to the end customer is not included.
- **Use:** User power consumption assumes a four-year period. Consumption patterns are modeled according to European Commission and U.S. Environmental Protection Agency computer eco-design studies. Geographic differences in the power grid mix have been accounted for at a continental level.
- **Recycling:** Includes transportation from collection hubs to recycling centers and the energy used in mechanical separation and shredding of parts.

Energy efficiency terms: The energy values in this report are based on the ENERGY STAR Program Requirements for Computers Version 5.2 and/or ENERGY STAR Program Requirements for Single Voltage External AC-DC and AC-AC Power Supplies Version 2.0. For more information, visit www.energystar.gov.

- **Off:** Lowest power mode of the system when the battery is fully charged and the system is shut down. Also referred to as Standby.
- **Idle—Display on:** System is on and has completed loading Mac OS X; the display is set to its full brightness.
- **Idle—Display off:** System is on and has completed loading Mac OS X; the display is set to sleep.
- **Sleep:** Low power state that is entered automatically after 10 minutes of inactivity (default), or by selecting Sleep from the Apple menu. Wake-on-LAN is enabled.
- **Power adapter, no-load:** Condition in which the power adapter is connected to AC power, but not connected to the system.
- **Power adapter efficiency:** Average of the power adapter's measured efficiency when tested at 100 percent, 75 percent, 50 percent, and 25 percent of the power adapter's rated current.

Restricted substances: Apple defines a material as BFR-free and PVC-free if it contains less than 900 parts per million (ppm) of bromine and of chlorine.

1. Energy Efficient Ethernet requires a compliant switch to enter low-power mode.
2. PVC-free AC power cord available in the United States, Canada, Mexico, Colombia, El Salvador, Guatemala, Panama, Peru, Puerto Rico, U.S. Virgin Islands, and Venezuela.
3. 15-inch MacBook Pro achieved a Gold rating from EPEAT in the United States and Canada.