# **Telephone LCA**

#### Online tool used: Greenfly

# **ME221**

LCA Rough Assign. II 3/13/09

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## Product Life = 5 years

- Functional Unit = One telephone over product lifetime
- Raw materials acquisition, manufacturing, transportation, System Boundary = use, and waste management for a single corded telephone

#### Assumptions: 600 min. of calling time per month, 0.6W energy consumption during calls and 0.1W during standby

#### Summary:

The Greenfly Report results indicate Manufacturing and Use as being the top two contributors to Global Warming and Energy Demand for this product. In order to reduce the impact of the telephone, we would suggest the following improvements:

Dematerialization – Considering current handset size, we recommend a change in the form factor to reduce the physical footprint in all dimensions without affecting the functionality. This would also improve the end stage waste from this product.

Low Impact Materials - The majority of the phone is made from ABS plastic. Since this product does not require high mechanical, hygienic, tolerance or aesthetic requirements, it could be replaced with recycled plastic material.

Design for Durability - Although this product is designed for several decades of use, we estimated the lifecycle to be 5 years based on typical user habits in replacing household appliances. Two options are available to us: Re-design the product to match its durability with user habits (materials that breakdown faster) or to influence user behavior with respect to preserving vs. replacing their appliance.

Reduced Impact Use - The largest contributor to telephone energy use came from the seemingly small standby power consumption over the 5 year life span. Finding a way to reduce or eliminate this through circuit redesign would be the most effective way to reduce the phone's energy footprint.

**Global Warming** 

Pert Handset Front Handset Back Base Front Base Back Volume slider Volume Slider (ringer) Logo screw cap Weight		Medecal ABS ABS ABS ABS ABS ABS	Process	Amount 0.0494 kg 0.0358 kg 0.064 kg 0.0779 kg 0.0009 kg 0.0004 kg 0.0004	Costing           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0           \$0	Certified	
Handset Front Handset Back Back Back Bace Front Base Back Volume Slider (ringer) Logo screw cap Weight Weight		ABS ABS ABS ABS ABS		0.0494 kg 0.0358 kg 0.064 kg 0.0779 kg 0.0009 kg 0.0004 kg	\$0 \$0 \$0 \$0 \$0 \$0 \$0		x x x x
Handset Back Back Back Back Back Store Sto		ABS ABS ABS ABS ABS		0.0358 kg 0.064 kg 0.0779 kg 0.0009 kg 0.0004 kg	\$0 \$0 \$0 \$0 \$0 \$0		
Base Front Base Back Volume Silder (speaker) Volume Silder (speaker) Logo screw cap Volume Silder (speaker) Volume Silder (speaker) Volume Silder (speaker) Volume Silder (speaker) Silder (speak		ABS ABS ABS ABS ABS		0.064 kg 0.0779 kg 0.0009 kg 0.0004 kg 0.0002	\$0 \$0 \$0 \$0		
Base Back Volume Slider (inger) Volume Slider (inger) Logo screw cap Velight		ABS ABS ABS		0.0779 kg 0.0009 kg 0.0004 kg	\$0 \$0 \$0		x
Volume slider (speaker) Volume Slider (ringer) Logo screw cap Weight		ABS ABS		0.0009 kg 0.0004 kg 0.0002	\$0 \$0		x
Volume Slider (ringer) Logo screw cap Weight	•	ABS		0.0004 kg	\$0		×
Logo screw cap Weight	•	ABS		0.0002			
Weight	•			kg	\$0		x
		Steel		0.0383 kg	\$0		×
Base Screws (x4)	÷	Steel		0.0018 kg	\$0		x
Rubber Feet		Natural Rubber		0.0008 kg	\$0		×
Phone Cord Plastic	•	Ethylene vinyl acetate		0.0297 kg	\$0		×
Touchpad		Natural Rubber		0.0078 kg	\$0		×
Microphone encasing	•	Natural Rubber	•	0.001 kg	\$0		x
Microphone	•	Aluminium rolled		0.0009 kg	\$0		×
Headphone gasket	•	Natural Rubber	•	0.0012 kg	\$0		×
Earphone	•	Integrated Circuits	•	0.0363 kg	\$0		×
Handset screws	•	Steel		0.0008 kg	\$0		×
Handset disk		Zinc		0.0015 kg	\$0		×
Large Circuit Board	•	Printed Circuit Board	•	0.0299 kg	\$0		×
Keypad Circuit Board	•	Printed Circuit Board		0.0054 kg	\$0		×

How is your product used?	Back Next
These questions relate to how the product is utilised	i during its use-phase, i.e. after the product is installed or purchased.
Resource consumption	Product life

#### **Energy Demand**



### **Total Impact**

Select End of Life Destinations

Totals	Solid Waste	Water Use	Global Warming	Energy Demand
Manufacturing	28.42 kg	2.44 KL	82.08 kg CO2 eq	1,400.6 MJ LHV
Transport	0 kg	0 KL	0.05 kg CO2 eq	0.67 MJ LHV
Use	0.18 kg	0.01 KL	4.59 kg CO2 eq	47.9 MJ LHV
End of Life	0.39 kg	<u>0</u> kL	0.07 kg CO2 eq	0.05 MJ LHV

New Assembly						
Part	Material i	Process #	lmount	Destination	Solid Waste	
Handset Front	ABS	C	).0494 kg	Landfill Plastics		
landset Back	ABS	C	0.0358 kg	Landfill Plastics		
Base Front	ABS	C	0.064 kg	Landfill Plastics		
Jase Back	ABS	C	0.0779 kg	Landfill Plastics		
/olume slider (speaker)	ABS	C	0.0009 kg	Landfill Plastics		
/olume Slider (ringer)	ABS	C	0.0004 kg	Landfill Plastics		1
.ogo screw cap	ABS	0	0.0002 kg	Landfill Plastics	End of Life	
Veight	Steel	C	0.0383 kg	Landfill Ferrous Metal	Global Warming	
3ase Screws (x4)	Steel	C	0.0018 kg	Landfill Ferrous Metal		
Rubber Feet	Natural Rubber	C	0.0008 kg	Landfill starch based biodegradable polymer		
Phone Cord Plastic	Ethylene vinyl acetate	0	.0297 kg	Landfill Composites		
Touchpad	Natural Rubber	0	.0078 kg	Landfill starch based biodegradable polymer		
Microphone encasing	Natural Rubber	0	.001 kg	Landfill starch based biodegradable polymer		
Microphone	Aluminium rolled	0	.0009 kg	Landfill Non-Ferrous Metal	Copper	
Headphone gasket	Natural Rubber	0	.0012 kg	Landfill starch based biodegradable polymer	<ul> <li>Copper</li> <li>Printed Circuit Board</li> </ul>	
Earphone	Integrated Circuits	0	.0363 kg	Landfill Composites	<ul> <li>Printed Circuit Board</li> <li>Zinc</li> </ul>	
Handset screws	Steel	0	.0008 kg	Landfill Ferrous Metal	Steel	
Handset disk	Zinc	0	.0015 kg	Landfill Non-Ferrous Metal	Natural Rubber	
_arge Circuit Board	Printed Circuit Board	0	.0299 kg	Landfill Composites	Aluminium rolled Natural Rubber	
Keypad Circuit Board	Printed Circuit Board	0	.0054 kg	Landfill Composites	<ul> <li>Natural Rubber</li> <li>Ethylene vinyl acetate</li> </ul>	
Wiring - Phone cord	Copper	0	.0297 kg	Landfill Ferrous Metal	Natural Rubber	
Wiring - Other wires	Copper	0	.0022	Landfill Ferrous Metal	Steel	
			кg		ADC	

Yes 💌		5 years	
Consumables			🔹 Back 💦 💦 Next 🕨
Your Description	Consumable	Amount Consumed	
Energy Usage	Australian Energy Mix	4.68 KWh x	

Define the steps your product will take to reach its destination. Click below to begin, you may add as many steps as required

Description	Tranport Mode	Distance		
Taiwanese Factory to Kaohsiung Port	Truck	0.0549 tkm		
Kaohsiung Port to San Francisco Port	Container Ship	5.8386 tkm		
SF Port to Wholesaler	Truck	0.00878 tkm		
Wholesaler to Retailer	Truck	0.0165 tkm		
Retailer to Home	Car	0.00274 km		

- Taiwanese Factory to Kaohsiung Port (Truck)
- Kaohsiung Port to San Francisco Port (Container Ship)
- SF Port to Wholesaler (Truck)
- Wholesaler to Retailer (Truck)
- Retailer to Home (Car)

