Life cycle impact assessment table

Notes:

The table shows eco-indicator values estimated for various materials and processes. For any material or process a higher value indicates a greater potential damage to the environment. Three kinds of damage to the environment have been considered in compiling these eco-indicator values: human health, ecosystem quality, and depletion of resources.

The values given are based on those given in *The Eco-indicator 99 Manual for Designers* (second edition April 2000) written by M Goedkoop, S Effting and M Collignon. The eco-indicator values given in the manual are in milliPoints which are dimensionless quantities. The main purpose of the values is to allow comparisons between alternative materials or processes when designing a product or a system. In the manual the absolute value of each point is stated to be representative of one thousandth of the yearly environmental load of one average European inhabitant. The point values are estimated from European studies and may not be applicable to Australian settings. Values for timber, water and electricity are especially uncertain.

The milliPoint values listed in the manual have been restated as point values to simplify calculations for students. Fractional values have been rounded to the nearest point. Negative values indicate a potential overall benefit to the environment when materials are recycled thus saving on virgin materials and avoiding the damage associated with production of these.

Material or process	points
cast iron	240 / kg
mild steel (20% scrap)	86 / kg
high alloy (stainless) steel	910 / kg
aluminium	780 / kg
aluminium (recycled)	60 / kg
copper	1400 / kg
lead	640 / kg
pressing, cold rolling	20 / kg
extrusion (aluminium)	72 / kg
hot galvanising	3300 / m2
spot welding	3 / weld
ABS granulate	400 / kg
HDPE granulate	330 / kg
LDPE granulate	360 / kg
PC granulate	510 / kg
PET granulate	380 / kg
PP granulate	330 / kg
PS granulate	370 / kg
PUR foam granulate	480 / kg
PVC granulate	280 / kg
vulcanised rubber (EPDM)	360 / kg
injection moulding PE, PP, PS, ABS	21 / kg
injection moulding PVC, PC	44 / kg
pressure forming	6 / kg
vacuum forming	9 / kg
paper (65% recycled)	96 / kg
cardboard packaging	69 / kg
portland cement	20 / kg
bricks and tiles	28 / kg
concrete (not reinforced)	4 / kg
glass (float)	49 / kg
sand, gravel	1 / kg
mineral wool (insulation)	61 / kg
timber (sawn local hardwood)	39 / kg
timber (sawn local softwood)*	20 / kg
water	10 / kl
heat from coal	4 / MJ
heat from gas	5 / MJ
heat from wood	2 / MJ
electricity from PV roof system	7 / kWh
electricity from mains supply*	37 / kWh
plastics to landfill	4 / kg
paper, cardboard to landfill	4 / kg
metals, glass to landfill	1 / kg
plastics recycling	-240 / kg
paper recycling	-1 / kg
cardboard recycling	-8 / kg
glass recycling	-15 / kg
aluminium recycling	-720 / kg
steel recycling	-70 / kg
transport by rail	4 / km.tonne
transport by delivery van	140 / km.tonne
transport by 16t truck	34 / km.tonne
transport by 28t truck	22 / km.tonne
transport by freighter	1 / km.tonne
transport by domestic flight	120 / km.tonne
transport by overseas flight	80 / km.tonne
transport by 4-cylinder car	29/ km

Source: M Goedkoop, S Effting & M Collignon, *The Eco-indicator 99 Manual for Designers* (second edition April 2000)

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