



Recycled plastic in IT-products

Imagine if all computer displays would contain 65% post consumer recycled plastic. Five years from now, the industry would have reduced emissions by approximately 860 million kg CO2 and saved energy corresponding to that used to fuel 280 000 European cars a year.

One of today's major environmental challenges is changing our consumption and production patterns. One way of dealing with this is by closing material loops – reusing or recycling materials to save resources, emissions and energy. Close to 1,7 million pc's will be sold over the next five years, many of which will end up in landfills. This means that most of the resources contained in the product is lost. It also means that virgin resources, with the energy, transport and other environmental impacts associated with that, are needed to continue producing products. Using recycled plastics to a larger extent can not only help reduce the world's demand for crude oil and other fossil fuels, but it will also reduce the impact on the environment caused by the exploration, mining, reprocessing and transportation of these resources.

Plastic in IT products

Making new plastic requires fossil fuels. Around 8% of the world's oil supply, 4% for feedstock and 4% for manufacturing, is used to make the millions of plastic products, including computers and other IT-products, people use every day. Some of these products are only used for product protection before becoming discarded, like plastics packaging, others are used for decades, like flooring or furniture. Computers are typically used for 3-5 years before they are replaced. What happens to all these IT-products?

End of life handling of IT products today

Some countries in the world has legal requirements on product take-back systems for It equipment, like the countries in the European Union, Japan, Korea and some states in the US. But even for countries with legal requirements, much of the discarded products are not collected. In 2007 about 25% of the volumes of electrical and electronic products put on the market were collected by the take back systems in Europe [1].

The world's annual consumption of plastic materials is increasing every year and is nearly 100 million tonnes today [2]. Much of this plastic quickly goes to landfills in the form of discarded products and packaging, adding to the huge waste-problem we have in the world today. The disposal of plastics products contributes significantly to their environmental impact. Because most plastics are non-degradable, they take a long time to break down, possibly up to hundreds of years - although no-one knows for certain as plastics haven't existed for long enough - when they are landfilled. With more and more plastics products being disposed of soon after their purchase, the landfill space required by plastics waste is a growing concern.

Plastic products which are not landfilled are often burned, also much of the plastic in the electrical and electronic waste collected through take back systems. This means that most of the resources contained in the product is lost. When obsolete materials are not recycled, raw materials have to be processed to make new products. This represents a significant loss of resources as the energy, transport and environmental damage caused by these processes is large.

In 1998 it was estimated that of the 6 million tonnes of electrical equipment waste arising in Europe the potential loss of resources was

- 2.4 million tonnes of ferrous metal



- 1.2 million tonnes of plastic
- 652,000 tonnes of copper
- 336,000 tonnes of aluminium
- 336,000 tonnes of glass

This was in addition to the loss of heavy metals, lead, mercury, flame retardants and other environmentally hazardous substances [2]. The production of these raw materials and the goods made from them entails environmental damage through mining, transport, water and energy use. For example, according to a UN study from 2003, the manufacture of a new computer and monitor uses 240kg of fossil fuels, 22kg of chemicals and 1500 litres of water [3]. This is about as much materials that are used when manufacturing an average car.

Post consumer vs post industrial recycled plastic

Post-consumer plastic can be described as plastic material arising from products that have undergone a first full service life prior to being recovered, like plastic bottles, food containers or the plastic in computers or plastic pens. This differs from post-industrial material or “process scrap” from industry, i.e. polymers left over from the production of plastics. Process scrap is relatively simple and economical to recycle, as there is a regular and reliable source and the material is relatively uncontaminated. In the UK for example, approximately 95% of this is recycled [6]. Post-consumer plastic, on the other hand, is more diverse with many different plastic-types and products used all over the world. This makes recycling of post-consumer plastics more difficult, but equally important.

Environmental benefits of recycling

When manufacturers use recycled plastics, not only do they conserve the oil and natural gas that would otherwise be used to make virgin plastics, they also save energy - 88% less energy is used to make recycled plastic than to make plastic out of virgin resources [4].

Using the plastic in discharged products again also minimizes the use of landfill space. Every tonne of recycled plastic saves about 5,5 cubic metres of landfill space [5].

TCO Certified Edge criteria and potential benefits

The TCO Certified Edge criteria on minimum 65% post consumer recycled plastic has the potential to influence the impact the IT-industry has on the environment today. Over 880 million computer displays will be sold over the next five years, until 2013 [7]. Recycling a ton of plastic saves around 1,5 tonnes of CO₂ emissions [8] and about as much energy as is stored in 750 litres of gasoline [9]. The total plastic content of a display weighs about 1 kg. This means that if all computer displays would contain 65% post consumer recycled plastic, the following five years the industry would reduce their emissions by approximately 860 million kg CO₂ as well as energy corresponding to that used by 280 000 European cars during a year [10].

The oil captured in plastic products offers an opportunity to reuse that carbon-based content again, unlike for example motor vehicle fuels that are burned and emitted. Let's use that. Approximately 1,7 million pc's will be sold worldwide over the next five years, until 2013 [11]. Just imagine if the whole IT industry decided to start reusing the plastic in their discharged products to a larger extent!



- [1] The WEEE Forum – European association of electrical and electronic waste take back systems
www.weee-forum.org
- [2] Waste Online UK www.wasteonline.org.uk
- [3] “Computers and the Environment: Understanding and Managing their Impacts,” R. Kuehr, J, Velasquez and E. Williams, 2003
- [4] Mississippi Department of Environmental Quality
- [5] Earth 911 www.earth911.com
- [6] Waste Online UK www.wasteonline.org.uk
- [7] Display Search
- [8] Recoup www.recoup.org
- [9] Ohio Department of Natural Resources
- [10] An average European car needs 1litre of gasoline per10 km and is driven 15 000 km per year.
- [11] Display Monitor