



**Backgrounder:**

**Post Consumer Recycled Plastics  
in IT products**

TCO Development, Stockholm, Sweden, April 2014  
[www.tcodevelopment.com](http://www.tcodevelopment.com)

# Plastic in IT products – challenges and opportunities

An overview of the challenges and opportunities of including recycled plastic in IT products.

## Plastic is included in almost all IT products

Housings, covers and other components have typically consisted of “virgin oil” plastics, produced from petrochemicals, and chemical additives such as flame retardants. In addition to being resource intensive, manufacturing virgin plastics also requires large amounts of energy and releases relatively high levels of CO<sub>2</sub> emissions in the process.

## Sustainability challenges

Faster product replacement cycles have led to a growing e-waste crisis as discarded products are in need of environmentally responsible recycling solutions. While recycling has increased, plastics and other components are still incinerated and exported to poor regions of the world, exposing local communities to health and environmental risks.

## Benefits of using recycled plastic

TCO Development has long advocated for more responsible material use in electronics. Due to improvements in recycling technology, rising prices of raw materials and an increasing sustainability demands, progress is being made as several brands have begun to include recycled content in new products.

## E-waste – the world’s fastest growing waste stream

E-waste is currently the fastest growing waste stream. It is hazardous, complex and expensive to treat in an environmentally sound manner, and there is a general lack of legislation or enforcement surrounding it. Today, most e-waste is being discarded in the general waste stream. Of the e-waste in developed countries that is sent for recycling, a large amount ends up being shipped (often illegally) to developing countries to be recycled by informal workers.

Recycling rates of computer devices are showing some improvement, particularly in the EU (eg Germany recycles computers at a rate of around 84 percent - Eurostat). However, rates in countries such as the US are still very low, with computers at around a 40 percent recycle rate and mobile products at only around 11 percent. Reports from the ILO and TCO Development further discuss the challenge of e-waste.

### Every year:

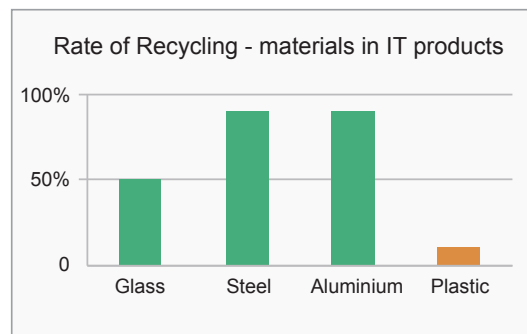
- an estimated 50 million tons of e-waste is generated globally
- over 100 million mobile phones are discarded in the EU
- more than 30 million computers are discarded in the US (US EPA)

# What's the problem with plastics?

There are several challenges to increasing recycled plastic content in IT products:

## Lack of plastics recycling

Recovery and recycling systems for metals and glass have been in place for many years, with average recycling rates of between 50 and 90 percent. The same is not the case for higher grade plastics from durable goods, of which only about 10 percent is recycled. The result is a stockpile of plastics from IT products needing environmentally responsible handling, causing a lack of adequate supply available to industry.



## Lack of knowledge about hazardous substance content

Until the mid-1990's, most plastics from durable goods, including IT products, contained hazardous flame retardants and other halogens that are proven risks to human health and the environment. Substances such PBB and PBDE as well as heavy metals like lead, mercury and cadmium are hazardous substances targeted for reduction, beginning with TCO certification in 1995 and followed by the EU RoHS and REACH initiatives.

However there is still much work to be done. Recycled plastics containing these substances are problematic when included in new products as they are less likely to meet today's stricter sustainability demands. These demands are set to increase as regulatory and voluntary initiatives seek further proof that plastics used do not contain hazardous substances.

## Need for controlled recycling infrastructure

Recycled plastics need to meet the manufacturer's requirements for product performance and they must come from controlled, verifiable recycling sources, which have been scarce until recently. Being able to verify the content and properties of the recycled material is critical.

## Sustainability benefits of recycled plastics in IT products

Buying IT products that contain recycled plastics offers many sustainability benefits:

- ✓ Producing recycled plastics can use up to 80 percent less energy than manufacturing plastics from virgin materials.
- ✓ Reduced carbon footprint. Every ton of recycled plastic produced can result in up to 1-3 tons of CO<sub>2</sub> savings, compared to virgin plastics
- ✓ Less raw materials required
- ✓ Less materials entering the waste stream.
- ✓ Lower environmental risk and pollution

## What is industry doing about it?

Among brands that are introducing recycled plastics in their products, the estimated average percentage of recycled plastics used (by total weight) varies from as low as 5 percent up to around 50 percent. Some brands are now able to reach levels of 80 percent and above, mainly through their own recycling initiatives, new material mixes and proprietary processes.

Examples include:

- In-house closed loop recycling – recovering products at end of life and re-using those materials for new products.
- Development of more effective flame retardants that lower the need for additives in recycled plastics – therefore allowing for a greater percentage of recycled material used.
- Development of more durable recycled plastics – reducing the need to include oil-based virgin materials in the mix.
- Development of more effective, automated sorting processes at recycling plants, which makes it easier to produce secondary plastics of a higher quality.

### Plastics found in IT products

- Virgin – “new” virgin plastics made from petrochemicals. Resource intensive to produce.
- PCC – post consumer content plastics are materials derived from used consumer products, often packaging, bottles, durable goods incl IT-products. Difficult to recycle.
- PIC – post industrial content – materials derived from manufacturing processes. Easy to recycle.

## What you, the user, can do.

IT buyers have a powerful voice in advancing a more sustainable life cycle for IT products. TCO Certified is a tool that helps you communicate your demands to the IT industry. You can ask your computer brand or vendor to do more by selecting only those products that contain recycled materials. Requesting products that meet TCO Certified Edge for recycled plastic content is one way to do this. By you making these demands, the IT industry is more likely to make it a reality. Ask for TCO Certified products in your next IT hardware purchase.

## What is TCO Development doing?

Beginning in 1995, TCO Certified has included requirements banning the use of all halogenated flame retardants in plastic parts over 25 grams in all certified IT products. This has contributed to a reduction in the contamination of plastics. Another important outcome is a reduction in hazardous substance exposure which can happen during recycling in uncontrolled environments – made possible when plastics are melted at low temperatures, causing the production of highly toxic dioxins and furans. Even non-halogenated substances can pose risks to the environment and human health. TCO Development is contributing to phase-out efforts in this area.

Also in 1999, the TCO certification introduced a requirement that plastics and metals could not be soldered together, making separation and recycling of those materials easier.

In 2009 TCO Development offered the first certifications for displays that contained a minimum of 65 percent post-consumer recycled plastic. In 2014 we have been able to raise this threshold to 85 percent in TCO Certified Edge Displays. Another step to facilitating the recycling process was made in 2010 when we offered the first certified displays that were completely halogen free.

From manufacturing to use and recycling, the criteria in TCO Certified are designed to influence material selection for minimal impact on the environment. This includes recycled plastic content, which is covered in the TCO Certified Edge certification for best in class products.

Through the TCO Certified program we are continually working with our international stakeholders to improve the sustainability of IT products throughout the product life cycle.

For more information, go to [www.tcodevelopment.com](http://www.tcodevelopment.com)

Sources: US EPA, MBA Polymers, Eurostat, Electronics Takeback Coalition, Plastics Technology, ILO, Royal Institute of Technology.