

Summary of criteria in

# TCO Certified generation 8



# This document provides a summary of criteria in TCO Certified

This document offers purchasing organizations, brand owners and others a summary of all criteria for all product categories available in TCO Certified. These are displays, notebooks, tablets, smartphones, desktops, all-in-one PCs, projectors and headsets. A number of criteria are common for all products, with the addition of product-specific criteria where relevant.

Criteria in TCO Certified are divided into eight chapters. These are reflected in this document for easy transition to full criteria documents. For complete criteria, including backgrounds, definitions, mandates, clarifications and verification methods - see full criteria documents.

## Please note

This document does not replace the criteria documents. It is not possible to apply for certification products or ask for TCO Certified in purchasing according to this document.

## Criteria overview



### **Socially responsible manufacturing**

- Code of conduct: compliance and corrective actions independently verified
- Focused monitoring of progress and corrective actions at high risk factories
- Responsible mineral sourcing, conflict minerals, cobalt
- Reduced worker exposure to hazardous chemicals used in manufacturing

### **Environmentally responsible manufacturing**

- Reduced effects of manufacturing processes: management system, energy consumption

### **User health and safety\***

- Electrical safety and emissions

### **Product performance\***

- Ergonomic design: image quality, keyboard, adjustability
- Product energy efficiency: Energy Star® or equivalent



### **Product lifetime extension\***

- Product durability: drop and temperature resistance
- Battery life and replaceability
- Availability of replacement parts and service manuals
- Secure data removal
- Standardized connectors



### **Reduction of hazardous substances**

- Reduction or elimination of heavy metals and hazardous substances (beyond RoHS)
- Only flame retardants and plasticizers independently assessed as safer are accepted in products

### **Material recovery**

- Brand owner offers product take back at end of life
- All packaging is recyclable

### **Sustainability performance indicators\***

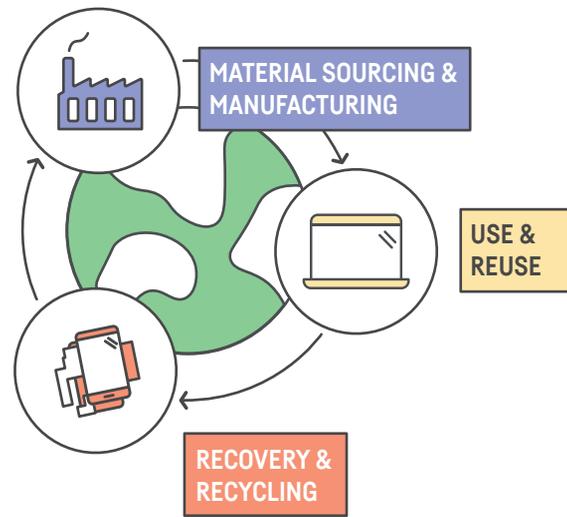
- Indicators provided on product energy consumption, weight and recycled plastic content, helping purchasing organizations measure sustainability impact of IT products.

\* Criteria are specific to each product category

## Criteria in TCO Certified are designed for driving sustainable development

The criteria in TCO Certified cover both social and environmental sustainability during the product's full life cycle and go beyond industry standards and legislation. To meet the most pressing sustainability challenges and drive faster change, criteria are updated every three years. This makes TCO Certified the tool of choice for any organization wanting to build a leadership position in its approach to sustainability and IT products.

TCO Certified supports the development of the circular economy through criteria for product durability and performance, making products easier to repair and recycle. The certification also focuses on solutions that contribute to a number of the UN Sustainable Development Goals.

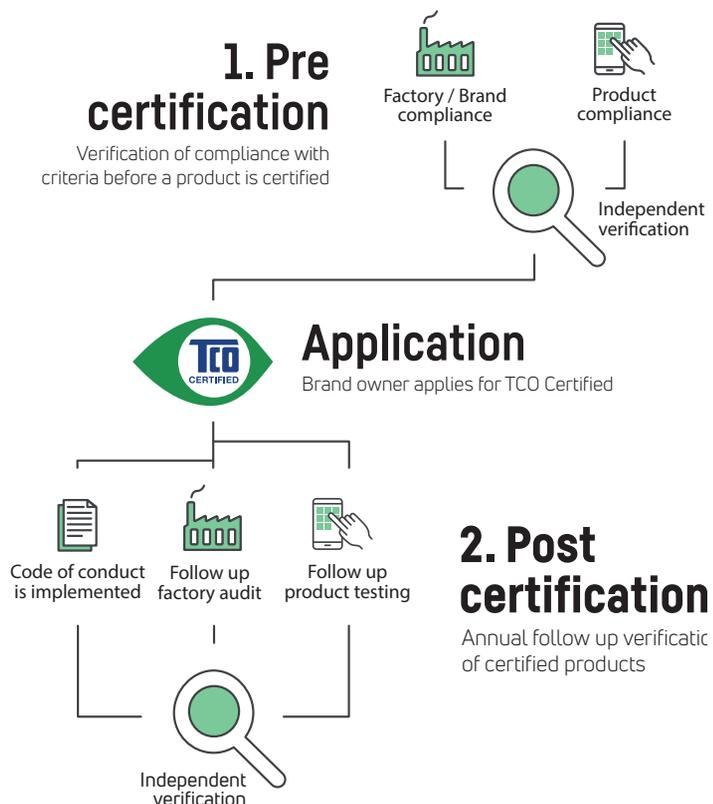


## Independent verification is key to progress

The only way to make sure that criteria are being met is to assess factory conditions and products themselves, which requires both extensive resources and a high level of expertise. TCO Certified includes a comprehensive system of independent verification in accordance with ISO standards, both pre and post certification. Accredited verification organizations carry out product testing, verify factory audits and corrective actions as well as assess environmental compliance.

### Compliance throughout the certificate's lifespan

The brand owner is accountable for ensuring that certified products, and the factories where they are made, comply with the criteria in TCO Certified during the certificate's full validity period. Products, factories and brand owners are followed up based on risk assessments.



# Socially responsible manufacturing

Chapter 2 in the criteria documents

## Social responsibility – a challenge in the IT product supply chain

Social responsibility is a continuing challenge throughout the IT supply chain. From raw materials extraction to final assembly, working hours, health and safety and forced labor are examples of industry-wide issues.

## Our approach

Criteria in TCO Certified are designed to increase supply chain transparency and accountability and drive improvements in areas such as working conditions, anti-corruption, hazardous substances, and conflict minerals.

To support continuous and systematic improvements, TCO Certified includes a framework that encourages proactive work and helps brand owners structure their work with sustainability. We drive change where it's needed the most by intensifying our monitoring of high-risk factories and ensuring that any identified non-conformities are corrected and closed.

### Criteria

#### Supply chain responsibility

All product categories

Code of conduct compliance and corrective actions independently verified, covering working hours, labor laws, ILO's core conventions and United Nations Convention on the Rights of the Child.

#### Supply chain transparency

All product categories

Intensified monitoring of progress and corrective actions at high-risk factories.

#### Anti-corruption management system

All product categories

Global, independently verified management system governing anti-corruption and whistleblowing in all business practices.

#### Process chemicals

All product categories

Reduced worker exposure to hazardous chemicals used in manufacturing.

#### Responsibly sourced minerals

All product categories

Global policy required, covering conflict minerals (3TG) and cobalt.

See chapter 2 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- A verified way for buyers to directly influence social responsibility in IT product supply chains.
- Brand owner accountability for implementing a Code of Conduct throughout the supply chain.
- Industry progress and corrective actions are monitored in facilities manufacturing certified products.
- Independent verification of socially responsible manufacturing has proven to be an efficient way to improve supply chain sustainability.

# Environmentally responsible manufacturing

Chapter 3 in the criteria documents

## Environmental hazards of IT manufacturing

There are several environmental hazards throughout the IT product life cycle. Many of these occur in the manufacturing phase. For example, life cycle assessments confirm that a typical IT product consumes more energy during manufacture than in its entire usable life. Other problems include the extensive use of natural resources required to manufacture IT products, risk of soil, water and air pollution as well as greenhouse gas emissions.

## Our approach

With TCO Certified, the brand owner must have an environmental management system in place, allowing them to work systematically with continuous improvement in environmental performance. We also require that energy efficiency is measured in final assembly factories.

### Criteria

#### Environmental management system

All product categories

Each final assembly factory manufacturing certified products must be certified in accordance with ISO 14001, or EMAS registered.

#### Energy efficiency indicators

All product categories

Energy consumption and percentage of renewable energy used must be reported for all final assembly factories manufacturing certified products.

See chapter 3 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- Using TCO Certified allows IT purchasers a way to drive more responsibility around environmental factors in product manufacturing without having direct access to these processes themselves.
- Some examples are lowered use of resources per delivered benefit and a lowered amount of waste per delivered benefit resulting in lowered cost for the waste disposal and increased share of renewable resources.

# User health and safety

Chapter 4 in the criteria documents

## User health and safety – essential for IT product sustainability

Product safety and functionality is fundamental to longer product use and user satisfaction.

Examples of identified safety hazards:

- Product overheating, leading to increased fire risk.
- Battery volatility, risk of burning or explosion.
- Poor electrical safety design that may increase the risk of fire or electric shock.
- Acoustic shock, or “sound spikes” connected with a sudden increase in volume.

## Our approach

An IT product must be safe to use and should provide the user with the necessary function and comfort for the intended use. In addition, an ergonomically designed IT product is better positioned to meet the user’s needs longer which makes it a more sustainable product choice. Our criteria focus on product and electrical safety as well as ergonomic design, and user health.

### Criteria

#### Electrical safety

All product categories

Electrical insulation and other arrangements must be in place to prevent the user from touching live components.

#### Alternating electric and magnetic fields

Displays, desktops, all-in-one PCs, projectors

Reduction of electromagnetic fields

#### Material characteristics

Smartphones

The product must not release nickel, a common allergen associated with skin irritation.

#### SAR measurements

Headsets

Reduced SAR values to minimize electromagnetic energy absorption into human tissue.

#### Acoustic impulse test

Headsets

Protection against high sound levels and sound spikes.

See chapter 4 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- IT purchasers can be confident that certified product models comply with criteria for product safety.



# Product performance

Chapter 5 in the criteria documents

## Product performance impacts both user productivity and sustainability

Product performance is essential for user satisfaction and productivity. It also has an impact on sustainability, since a poorly performing product is more likely to have a shorter usable life and be replaced or discarded prematurely.

## Our approach

Product performance, user satisfaction and the shift toward a more circular approach to IT products are inter-connected. A well-designed product delivers the performance we need and is more likely to be used longer.

### Criteria

#### Energy efficiency

Displays, notebooks, desktops, all-in-one PCs, projectors

Energy Star® or equivalent.

#### Energy efficiency – external power supply

Tablets, smartphones, projectors, headsets

International Efficiency Marking Protocol level VI or equivalent.

#### Display resolution, color, luminance, contrast

Displays, notebooks, tablets, smartphones, all-in-one PCs, projectors

Criteria for display performance.

#### Easily accessible connections

Desktops

Easy access to connection points for common external devices.

#### Vertical tilt and height

Displays, all-in-one PCs

Adjustability for optimal comfort and visual ergonomics.

#### Keyboard, keyboard gloss

Notebooks

Ergonomic design and reduction of unwanted surface reflection.

#### Individual adjustment and adaptation

Headsets

Adjustability and adaptability for user comfort.

#### Acoustic noise

Displays, notebooks, tablets, desktops, all-in-one PCs, projectors

Limited acoustic noise levels.

#### Sound quality test, volume control

Headsets

User comfort, adjustability and reduced risk for sound spikes.

See chapter 5 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- A product that delivers good performance can likely be used longer before being replaced, leading to cost savings and reduced environmental impact.
- Maintaining product performance over time can also be valuable for product reuse, further extending its usable life.
- A high performing product may also improve user productivity and reduce the risk of health and safety issues, such as eyestrain, headache and repetitive strain injuries.

# Product lifetime extension

Chapter 6 in the criteria documents

## Moving from a linear to a circular approach

Today, the common approach to the IT product life cycle is linear. Natural resources are extracted to make new products from virgin materials which are used and then discarded, only to be replaced by more new products.

This linear “take, make, use, dispose” model isn’t sustainable. It depletes the earth’s natural resources, adding to the global e-waste problem. Too many IT products are discarded prematurely because of performance issues that could be solved by better repairability or component replaceability. We need to move to a more circular approach to the life cycle, one that designs out waste and keeps products and materials in use longer.

## Our approach

The best way to begin taking a more circular approach to the production and consumption of IT products, is by extending their usable life. This means longer use, as well as reuse, which is also more resource efficient than remanufacturing and recycling. Products must be built to last - durable, repairable and recyclable.

### Criteria

#### Warranty

All product categories

The brand owner must provide a product warranty for at least one year, covering all markets where the product is sold.

#### Secure data removal from products

Notebooks, tablets, smartphones, desktops, all-in-one PCs

Allows users to securely remove data, making reuse easier.

#### Replaceable components

All product categories

Availability of replacement parts and service manuals for easier product repair and enabling a longer usable life.

#### Standardized connectors

Notebooks, tablets, smartphones, desktops, all-in-one PCs

Allows easier reuse of cables and chargers and lowers resource use.

#### Product durability

Notebooks, tablets, smartphones

Drop and temperature resistance for greater product resilience.

#### Battery longevity, battery replaceability

Notebooks, tablets, smartphones, headsets

For longer product life, making reuse easier.

#### Cable pull and flexing, head and ear attachment flex test, microphone attachment flex test

Headsets

For greater product resilience.

See chapter 6 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- Reduction in e-waste, use of virgin materials and associated environmental, human and societal impacts.
- Saves costs and supports a more circular approach to IT products.



# Reduction of hazardous substances

Chapter 7 in the criteria documents

## Hazardous substances – a human health and environmental risk

Chemicals and heavy metals used in IT products present a wide variety of human health and environmental hazards. Products may release dioxins, halogens and other toxins, which can persist in the natural environment and human body. Hazardous substances include flame retardants and plasticizers contained in plastics and cables.

While some hazardous substances have been phased out through legislation or voluntary initiatives, too little is known about what's being used to replace them. Only a small percentage of chemicals in use today have been evaluated for their environmental and human health risk. Better knowledge and transparency around these chemicals is needed, along with pathways for making safer substitutions.

Also, from a circularity perspective, contaminated materials cannot responsibly be reused in future products, and therefore risk being incinerated or discarded directly into the waste stream.

## Our approach

Criteria in TCO Certified restrict the use of hazardous substances and drive a shift towards greater transparency and use of safer alternatives. Criteria go beyond RoHS and cover heavy metals, halogens, non-halogenated flame retardants and plasticizers.

In chapter 2 you can learn more about how we work to protect workers from hazardous process chemicals.

### Criteria

#### Heavy metals, halogens

All product categories

The product must not contain cadmium, mercury, lead and hexavalent chromium. The use of halogens is restricted.

#### Hazardous substances in product packaging

All product categories

The use of hazardous substances is restricted.

#### Non-halogenated substances, plasticizers

All product categories

Substances are independently assessed in accordance with GreenScreen® for Safer Chemicals. Only flame retardants and plasticizers independently verified as safer are accepted.

See chapter 7 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- TCO Certified includes a progressive approach to driving safer substitutions, bringing new transparency to chemical content in IT products.
- Flame retardants and plasticizers included in certified products are independently assessed as safer alternatives and published on our Accepted Substance List, available at [www.tcocertified.com](http://www.tcocertified.com).
- By specifying TCO Certified, purchasers can be confident that the substances included in the products they buy have been independently assessed as safer alternatives.

# Material recovery

Chapter 8 in the criteria documents

## The growing e-waste problem and Earth's limited natural resources.

According to the United Nations University, electronic waste is the fastest growing waste stream in the world, with nearly 50 million metric tons generated every year\*. Today, a large share of e-waste ... ends up in scrap heaps, is illegally exported or incinerated, causing pollution, human health hazards and the loss of valuable resources such as copper, gold and rare earth metals.

The amount of e-waste can be reduced if IT products are used longer, and once usage options are exhausted, recovered at their end of life. Product and material recovery should be made easier for three main reasons: to conserve natural resources, to reduce negative environmental and social impacts, and to encourage impact and to encourage material reuse.

## Our approach

Taking back used products and recovering their materials supports a more sustainable, circular approach to the product life cycle. To do so, products and their packaging must be designed in a way that enables reuse, remanufacturing and recycling. To be effective, this approach also requires that products are made using safer materials, that are more viable for reuse.

### Criteria

#### Take back system

All product categories

The brand owner is responsible for offering take-back options for used products.

#### Product packaging

All product categories

Product packaging must be recyclable.

#### Material coding of plastics

All product categories

For easier disassembly at recycling facilities.

See chapter 8 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- Recovering used products directly helps reduce the amount of e-waste.
- Material recovery also contributes to a more circular approach to IT products, by keeping products and their materials in circulation longer.

\* The Global E-waste Monitor 2017

# Product and sustainability information

## Chapter 1 in the criteria documents

Organizations working with sustainable procurement need sustainability related data and information to determine the benefits for their organization and to track this over time. Manufacturers and brand owners use the data to verify their performance in various sustainability areas, and compare with their peers.

TCO Development needs data for the continuous development of TCO Certified. It is used to ensure that criteria are set at reasonable levels and that the most relevant sustainability challenges are being addressed, throughout the product's life cycle.

## Our approach

To measure the impact of TCO Certified and the sustainability benefits of certified products, TCO Development continually collects data based on the use of the certification.

With TCO Certified, you get access to three sustainability performance indicators which can be used in sustainability reporting or to set and follow up on goals. For each certified product model, the following data is provided on the certificate: energy consumption, product weight, recycled plastic content (in percent).

### Criteria

#### Information to end users

All product categories

An information document must accompany certified products, helping end users identify which products are certified and what sustainability features the product fulfills.

#### Product specification

All product categories

A product specification and marking label must be provided for the product.

#### Sustainability performance

All product categories

Each year, the brand owner must submit information covering a number of sustainability performance indicators to TCO Development.

See chapter 1 in the product specific criteria document for complete details.

## Benefits for the purchasing organization

- The sustainability performance indicators can be used to help determine the sustainability benefits that the certified products create, and track this over time.
- The data help you set goals for energy saving and reducing e-waste.
- Supports progress toward the UN Sustainable Development Goals and your own goals.
- The information can be used in sustainability reporting and, for example, implement climate compensation or other measures connected to the sustainability impact of the product.
- Makes it easier to calculate the total life cycle cost and return on investment.

# Contact us

Contact us for more information about the criteria in TCO Certified. Our Purchaser Engagement group can help guide you on how to use TCO Certified as part of a sustainable IT procurement process. For the IT industry, contact our Certification team for help in certifying your products.

[tcocertified.com](https://tcocertified.com)