TCO DEVELOPMENT

TCO Certified Edge Displays 2.0

2 April 2014

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Introduction

TCO Certified Edge is a first of its kind certification program for IT products that offer truly cutting edge sustainable IT solutions. TCO Certified Edge offers the IT industry a way to advance sustainable IT through third party certification of best in class products that show leading edge attributes in a specific area.

All products achieving TCO Certified Edge certification are also verified to meet all criteria in TCO Certified, including requirements for environmental and social responsibility.

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Stockholm 2 April 2014

TCO Development

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Criteria Development Manager

A Criteria

To comply with TCO Certified Edge Displays the product model is required to fulfil at least **one** of the following TCO Certified Edge criteria. It is also necessary that the product be certified according to the regular TCO Certified requirements for the relevant product category.

The three criteria options for TCO Certified Edge Displays are:

A.1. Minimum 85% recycled plastic content

A.2. Halogen free display

A.3. Full Function Ergonomic display stand

A.1. Minimum 85% recycled plastic content

Background

Overconsumption of natural resources and the generation of large volumes of electronic waste are two of today's most pressing sustainability challenges. When materials such as plastics are recycled and re-used, the environmental impact is significantly reduced when compared with using new production virgin materials. Recycling conserves our natural resources, saves landfill space, conserves energy, and reduces water pollution, air pollution and the greenhouse gas emissions that cause global warming.

Definitions

Recycled plastic is post-consumer recycled plastic that has already been used in existing products.

Plastic parts are all product parts made out of plastic except panels, electronic components, cables, connectors, PWBs, insulating mylar sheets and labels. These exclusions are due to a general lack of available alternative materials for use in these components in IT products. This also means that the weight of these items is not included when calculating the total weight of the plastic in the product in this requirement.

Mandate A.1:

The product shall contain a minimum of 85% *recycled plastic* by weight of the total weight of *plastic parts* in the product.

The following information shall be submitted to an approved verifier:

1. **Documentation of process flow from material supplier**
2. **The table below shall be completed and signed by responsible person at the applicant company**

See also the clarification under B.1

TCO Development has the option to:

1. Require the following information from brand owner during the time period when the certificate is valid

A. **Specifications/receipts of ordered plastic from recycled plastic supplier**

B. **Information on the number of *plastic parts* described in the declaration below produced at the production facility during a certain time period**

2. Visit the manufacturer that produces the recycled plastic parts used in the product

The following information shall be submitted with the application to TCO Development:

A copy of a verification report from a verifier approved by TCO Development.

We hereby guarantee that the above mandate is fulfilled.

……..
Product brand name and model name

.....	.....
Signature	Name and title in block capitals
.....	.....
Date	Company

Total weight of *plastic parts* in the product in grams……

The following table must be completed for all *plastic parts* weighing over 5 grams:

Name of plastic part	Weight in grams	Type of plastic	Plastic manufacturer name	Plastic model name	Content of *recycled plastic* in percent

We hereby guarantee that the above mandate is fulfilled.

……..
Product brand name and model name

....
Signature Name and title in block capitals

....
Date Company

A.2. Halogen free display

Background

Halogenated substances, especially chlorinated and brominated compounds, have been used as an inexpensive and simple fire retardant in electronics, textiles and other everyday products for many years. They are also commonly used as a "plasticizer" in many products, giving the product a softer, pliable character. The environmental and health problems with halogens lie in their stability and persistence. If incinerated at substandard conditions at end-of-life waste management, certain brominated and chlorinated compounds may form toxic dioxins and furans. These toxic substances do not break down when disposed of but are actually shown to persist in plants, animals and humans, for example within fat and breast milk. It has also been shown to adversely affect hormonal function, potentially causing fertility problems.

The waste stream of electronic products is rapidly increasing due to the demand for new and improved models, which in turn means that products go to end-of-life management before their "expiry date". Due to the growing volumes of e-waste (electronic waste) it is important to limit the use of potentially harmful substances used in the manufacture of IT products.

Definitions

Display includes the FPD, external power supply and all peripherals.

Electronic component is an electronic element on the printed circuit board.

Peripherals are all external cables & electrical devices delivered with the Display.

Plastic is any group of synthetic or natural organic compounds produced by polymerization, optionally combined with additives (organic or inorganic fillers, modifiers etc) into a homogenous material capable of being moulded, extruded, coated, printed or cast into various shapes and films.

Mandate A.2:

1. **The *plastic* in the *Display* shall not contain flame retardants or plasticizers that contain organically bound bromine or chlorine. The requirement applies to plastic parts in all assemblies and sub-assemblies.**
2. **The *plastic* in the *Display* shall not contain chlorine or bromine as a part of the polymer.**

Included are all types of *plastic* in for example panels, internal and external cables, connectors, printed wiring board and substrate laminates, insulating mylar sheets and labels.

The allowable maximum concentration limit is set to 900 ppm by weight for chlorine and bromine individually (maximum 1500 ppm for chlorine + bromine) derived from flame retardant/plasticizer/PVC (including PVC copolymer)/plastic (polymeric) material.

For *electronic components* other than printed wiring board and substrate laminates each plastic within the component must contain < 1000 ppm (0.1%) of bromine and < 1000 ppm (0.1%) of chlorine by weight in homogenous materials (maximum 1500 ppm for chlorine + bromine) derived from flame retardant/plasticizer/PVC (including PVC copolymer)/plastic (polymeric) material.

See also the clarifications under B.2

The following information shall be submitted to an approved verifier:

1. **Copy of manufacturer's halogen-free implementation specification or similar.**
2. **A written guarantee that the above mandate is fulfilled. The guarantee shall be signed by the responsible person at the applicant company.**

TCO Development has the option to:

Require that the product is tested for halogen content at an independent test laboratory during the time period when the certificate is valid.

The following information shall be submitted with the application to TCO Development:

A copy of a verification report from a verifier approved by TCO Development.

We hereby guarantee that the above mandate is fulfilled.

……..
Product brand name and model name

.....	.....
Signature	Name and title in block capitals
.....	.....
Date	Company

A.3. Full Function Ergonomic display stand

Background

To maintain the best possible conditions for physical variation, a full function ergonomic stand can allow display users the possibility to maintain good posture and visual comfort. Work load ergonomics refers to the adaptation of the task, tools, work place and physical environment where the product will be used.

Definitions

Height adjustment is the maximum distance the stand can raise and lower the display in the vertical plane

Tilt range is the minimal angle the stand shall slope the display between two defined points and is measured in degrees

Swivel adjustment is the extent the stand can rotate the display in a horizontal plane. The *swivel* range is measured in degrees

Pivot is the ability of the stand to rotate the display to a landscape or portrait position

Mandate A.3:

The following criteria are to be fulfilled.

1- The FPD shall have a *height adjustment* of ≥ 13 cm.

2- The FPD shall have a backwards *tilt* range of at least 0 to 30 degrees and remain stable.

3- The FPD shall have a *swivel adjustment* of ≥ 90 degrees left and also ≥ 90 degrees right.

4- The FPD shall have a *pivot* function.

5- The FPD stand shall have a cable cover or an integrated cable holder for cable management.

See also clarifications under B.3.

The following information shall be submitted to the verifier at the test laboratory: A written guarantee that the above mandate is fulfilled. The guarantee shall be signed by the responsible person at the applicant company.

The following information shall be submitted with the application to TCO Development: A copy of a verification report from a test laboratory approved by TCO Development.

We hereby guarantee that the above mandate is fulfilled.

……..
Product brand name and model name

.....	.....
Signature	Name and title in block capitals
.....	.....
Date	Company

B Clarifications

General clarifications to the mandates in the Criteria section of this document

B.1. Minimum 85% recycled plastic content

TCO Development may choose to require the optional information in the mandate if given any reason to question whether the submitted information is correct. In case of plant visits, the costs related to this will be at the expense of the brand owner.

B.2. Halogen free display

The limit value of 900 ppm as the maximum content of chlorine or bromine contained in the resin (or 1500 ppm for chlorine + bromine) has been chosen to harmonize with the IEC 61249-2-21 and IPC 4101B standards.

The limit value for electronic components (< 1000 ppm (0.1%) of bromine and < 1000 ppm (0.1%) of chlorine by weight in homogenous materials derived from flame retardant/plasticizer/PVC (including PVC copolymer)/plastic (polymeric) material) has been chosen to harmonize with the *iNEMI Definition of "Low-Halogen" Electronics*.

A "manufacturers halogen-free implementation specification or similar" is for example an implementation plan on how and when the brand owner is shifting towards halogen-free alternatives and for which products.

TCO Development will require the optional information in the mandate if given any reason to question whether the submitted information is correct. In case of the need for laboratory verification, the costs related to the tests will be at the expense of the brand owner.

To avoid concern about whether the requirement poses an increased fire safety risk, it is clearly stated that the display must fulfil all requirements, including the relevant electrical safety standards (section A.5), as described in the criteria document TCO Certified Displays.

B.3. Full Function Ergonomic display stand

The following points are definitions that shall be considered as guidelines when declaring the Display stand fulfils the mandate's five criteria

- The *height adjustment* is the distance between the display's minimum and maximum height position. This shall be taken with the display standing directly on a flat surface.

- The *tilt* measurement requires the display stand to achieve a tilt range of 0 to 30 degrees backwards in the vertical plane. 0 degrees is the starting position and +30 degrees is the minimal backwards tilt required.
  We allow 1° test tolerance of the required tilt range. This is a tolerance for test set up and not for the test sample.

- The measurement of *Swivel* ≥ 90 degrees left and ≥ 90 degrees right shall have a starting position of 0 degrees facing forward.
  We allow 1° test tolerance of the required Swivel range. This is a tolerance for test set up and not for the test sample.

- It shall be possible to set the FPD in a Landscape or Portrait position by rotating the display 90 degrees.

- To help secure all cables running to the FPD it shall be possible to secure them by a cable holder or cover. The cover shall conceal and bind the cables, whereas the holder will only bind the cables to the stand. Both solutions shall be an incorporated part of the FPD stand.