



DANTES

DEMONSTRATE AND ASSESS NEW TOOLS
FOR ENVIRONMENTAL SUSTAINABILITY

State of the art sustainability marketing tools

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CHALMERS



ABSTRACT

This report belongs to the DANTES project that is supported by the EU Life Environment Program. Examination of how customers and sellers understand the information in an Environmental Product Declaration (EPD), is one aspect of the project that will be used as input to the Tool Integration and demonstration plan.

The Green Paper on Integrated Product Policy (IPP), published by the European Commission, has an overarching goal to stimulate demand for greener products through easily accessible, understandable and credible information. A possible tool to achieve this is Environmental Product Declarations (EPDs).

ABB's strategy for high sustainability performance is in-line with this policy since the strategy includes enhanced marketing and sales communications through the production of EPDs for core products.

The drawback of EPDs is that they are very time- and resource consuming and that they still do not provide all of the information requested. General opinion is that there is a need to develop more convenient marketing tools.

As a starting point an inventory of sustainability marketing tools has been conducted. This report shows the result, i.e. a state of the art marketing tools.

The main part of the studied declarations is not LCA-based and there are no environmental impact assessments presented. But they do contain more information about working environment and operational issues than an EPD does. There is also a focus on structured information about end-of-life and packaging materials.

There is seldom any manufacturing data, either from their own sites or suppliers' sites. A content of materials is in most cases lacking. With the experience of the inventory an alternative EPD has been drafted. A further step will be to evaluate this alternative from the perspective of a tool that is easy to understand and use.

TABLE OF CONTENT

ABSTRACT	2
1. INTRODUCTION	5
2. ENVIRONMENTAL LABELS AND DECLARATIONS	5
2.1. ISO 14021 series standard	5
2.2. EPD	6
3. EXAMPLES OF MARKETING TOOLS - ALTERNATIVES TO EPD	6
3.1. Building sector	6
3.1.1. Comparison between Building sector declarations and EPDs	6
3.2. Fortum Kraft	7
3.2.1. Comment	7
3.3. IBM.....	7
3.3.1. Comparison between IBM declarations and EPDs	8
3.4. IT.....	8
3.4.1. Comparison between IT Eco declarations and EPDs.....	9
3.5. NorDan	9
3.5.1. Comparison between NorDan environmental declarations and EPDs:.....	10
3.6. Philips	10
3.6.1. Comment	11
3.7. Siemens.....	11
3.7.1. Comparison between Siemens environmental product declarations and EPDs.....	11
3.8. Sony Ericsson.....	12
3.8.1. Comparison between Sony Ericsson declarations and EPDs.....	12
3.9. Volvo.....	12
3.9.1. Comment	13
4. CONCLUSIONS.....	13
5. DISCUSSION.....	14
6. ALTERNATIVE TO AN EPD	14

7. REFERENCES.....	18
APPENDIX 1 BUILDING SECTOR	19
APPENDIX 2 FORTUM KRAFT	20
APPENDIX 3 IBM	21
APPENDIX 4 IT.....	22
APPENDIX 5 NORDAN	23
APPENDIX 6 PHILIPS.....	24
APPENDIX 7 SIEMENS.....	25
APPENDIX 8 SONY ERICSSON.....	26
APPENDIX 9 VOLVO	27

1. INTRODUCTION

This report belongs to the DANTES project which is supported by the EU Life Environment Program. Examination of how customers and sellers understand the information in an EPD is one part of the project that will be used as input to the Tool Integration and demonstration plan.

In February 2001, the European Commission published the Green Paper on Integrated Product Policy (IPP). One of the overarching goals of IPP is to stimulate demand for greener products through easily accessible, understandable and credible information. A possible tool to achieve this is Environmental Product Declarations (EPDs).

ABB's strategy for high sustainability performance is in-line with this policy since the strategy includes enhanced marketing and sales communications through the production of EPDs for core products.

The drawback of EPDs is that they are very time and resource consuming and that they still do not provide all of the information requested.

The cost of EPDs is often mentioned as a barrier for companies to start using this information tool. The dominating part of this cost is made up by the LCA study. Another barrier is the need for a high level of competence in LCA that many companies lack today. EPDs are still at the beginning of their development. At the present time there are not many EPDs from ABBs competitors.

General opinion is that there is a need to develop more convenient and "easy to understand and use" marketing tools.

As a starting point an inventory of sustainability marketing tools has been conducted. This report shows the result, i.e state of the art marketing tools. With the experience of the inventory, an alternative to EPD has been drafted. A further step will be to evaluate this alternative from the perspective of whether it is easy to understand and use.

2. ENVIRONMENTAL LABELS AND DECLARATIONS

2.1. ISO 14021 series standard

The ISO 14020 series standards, Environmental Labels and Declaration, give the principles and defines a minimum quality level for communication tools that convey information on environmental aspects of a product or service to the market. Three different types of environmental labels and declarations are currently in use. They include:

Type I environmental labeling
Type II self-declared environmental claims

Type III environmental declaration

EPD is a type III declaration.

2.2. EPD

EPD is an LCA based tool to communicate the environmental performance of a product or system. EPD is an excellent instrument to promote life cycle thinking and to present information along the product supply chain.

An EPD has, beside the mandatory aspects, also the potential to declare additional information. Since an EPD is a way of communicating with customers, other relevant information that is not normally part of an LCA, such as risk assessments, or whether the company has an environmental management system, is seen as very useful. Also information regarding end-of-life scenarios such as recycling or re-use options can be necessary for decision-making and should be part of an EPD.

Swedish industry has initiated and established the EPD system based on ISO TR 14025 - a technical report or “pre-standard” in the ISO 14000 series. The EPD system is applicable worldwide for all interested companies and organizations. Currently companies and organizations in seven countries have joined the EPD system in various stages.

3. EXAMPLES OF MARKETING TOOLS - ALTERNATIVES TO EPD

State of the art marketing tools are illustrated by examples from different sectors, companies etc. The character of the tools differ in the way that they show environmental information and also in the way that they show additional information, i.e. information that is not strictly environmental. The latter could be data about conformation to laws or data about potential risks.

The following examples are not always assigned to any of the three types (according to ISO) of environmental declarations.

They are presented in alphabetical order.

3.1. Building sector

In Sweden the Ecocycle Council for the Building Sector (Kretsloppsrådet) have carried out environmental declarations for building materials. These documents describe the components of a product from an environmental point of view including energy, emissions and end-of-life. The declarations also consider the work environment.

Ecocycle Council for the Building Sector
[\[http://www.kretsloppsradet.com\]](http://www.kretsloppsradet.com)

See appendix 1.

3.1.1. Comparison between Building sector declarations and EPDs

Information which is included in the building sector declarations but is not common in EPDs:

- structured information about rest products; whether they will be reused or will go to material/energy recycling
- working environment
- information about emissions to air/water expressed as CO₂, NO_x etc.

Information which is included in EPDs but not in building sector declarations:

- information about resources (e.g. iron ore)
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP)

3.2. Fortum Kraft

In the environmental report 1999-2001 the environmental impact is clearly described from water resource to electrical energy in three phases “IN”, “OPERATION” and “OUT”.

Life cycle phase “IN” considers renewable water resource and the influence on the eco system.

Life cycle phase “OPERATION” considers chemicals, transports and energy consumption.

Life cycle phase “OUT” considers electrical energy, emissions to ground and water and rest products.

For each phase the associated environmental aspects and environmental goals are presented. The plan and time for achieving the goals are declared.

Fortum Kraft
[\[http://www.fortum.se\]](http://www.fortum.se)

Appendix 3 shows the “IN”-phase of the lifecycle of generating electric energy from hydropower (in Swedish).

3.2.1. Comment

The Fortum Kraft document is not primarily a declaration but can be considered as a comprehensible way to organize environmental information. An advantage is that the environmental goals have a given place. The information is not LCA-based and not quantified. But by combining the structure of the document with quantified information a more complete declaration could be developed.

3.3. IBM

IBM uses environmental attributes and associated measurement methods related to the use of information and communication technology and

consumer electronic products. These are according to known standards, guidelines and currently accepted practices.

The environmental attributes include:

- power consumption
- emissions
- data on materials
- packaging data

(Technical Report TR70).

In Declaration of Product Related Environmental Attributes it is stated that the products conform to specified laws, standards, regulations and directives. "Operational data" includes energy consumption, emissions and sound level. "Materials" describes the substances that the product does not contain. There is no content of materials.

The only quantified information is weight, dimension and some operational data.

IBM

[\[http://www.pc.ibm.com\]](http://www.pc.ibm.com).

Appendix 4 shows page 2 of the declaration for Color Monitor 2122.

3.3.1. Comparison between IBM declarations and EPDs

Information which is included in IBM declarations but is not common in EPDs:

- conformation to laws, standards, regulations and directives
- sound levels
- upgradability, e.g. spare parts are available x years after end of production
- information about take back and recycling services

Information which is included in EPDs but not in IBM declarations:

- information about environmental management system
- content of materials
- information about resources (e.g. iron ore)
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP)

3.4. IT

The Association of the Swedish IT and Telecom Industry (former SITO) in Sweden, IKT in Norway and IT-BrancheForeningen (ITB) in Denmark have jointly developed a form for ECO declaration in order to simplify comparison between different IT-products. The ECO declaration is adjusted to the document "Product-related Environmental Attributes", issued by the European Association for Standardizing Information and Communication Systems (ECMAS), TR/70, second edition, June 1999.

The ECO declarations have three types of requirements:

- Response required (O)
- Response required by law (O(\$))
- Voluntary information (V)

The legal requirements can be found in Danish, Norwegian and Swedish laws and ordinances. Non-legal requirements are based on international and/or industry standards, de facto standards or market requirements.

Environmental construction, energy consumption, sound properties, emissions, safety, materials of consumption, packaging and recycling are included in the IT Ecodeclaration.

There is no content of materials. Instead it declares which hazardous substances the product does not contain.

The declaration is carried out by responding to the different requirements by answering yes or no. Quantified information is required for energy consumption, sound levels, emissions and weight of packaging materials.

IT Eco Declaration

[\[http://www.itecodeclaration.org\]](http://www.itecodeclaration.org)

Appendix 5 shows page 1 of an ECO declaration for IT-products (in Swedish).

3.4.1. Comparison between IT Eco declarations and EPDs

Information which is included in IT Eco declarations but is not common in EPDs:

- thorough information about environmental construction (e.g. marking of plastic parts)
- sound levels
- emissions of dust, ozone and styrene from the product
- electrical safety
- consumable materials (for copiers, printers, faxes, multifunction products)
- ergonomics
- thorough information about packaging materials
- information about reuse and recycling services

Information which is included in EPDs but not in IT Eco declarations:

- content of materials
- information about resources (e.g. iron ore)
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP)

3.5. NorDan

NorDan have produced an environmental declaration leaflet detailing the environmental impact of their production processes for windows. The declaration has the structure of an EPD.

The product is presented by an inventory of materials and packaging materials. The contribution to global warming and energy use is illustrated in circle diagrams for the production. Also usage and recycling are covered. An environmental profile starting from raw materials and ending with finished windows shows emissions and resource consumption.

There is a life cycle assessment for the entire production.

NorDan

<http://www.nordan.co.uk/features/declaration.htm>

Appendix 6 shows part of the declaration for a security window.

3.5.1. Comparison between NorDan environmental declarations and EPDs:

Information which is included in NorDan environmental declarations but is not common in EPDs:

- thorough information about recycling

Information which is included in EPDs but not in NorDan environmental declarations:

- information about environmental management system
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP) ¹⁾

¹⁾ Exception is GWP for production.

3.6. Philips

Philips works with EcoDesign requirements and every stage of a product's life cycle, from raw material extraction to manufacture, use and final disposal, is analyzed. Products that are environmentally superior are identified as Green Flagships. A Green Flagship offers better environmental performance than its predecessors or competitors in one or more of the five Green Focal Areas:

- weight
- hazardous substances
- energy consumption
- recycling and disposal
- packaging

Philips

[\[http://philips.com\]](http://philips.com).

Appendix 7 shows the five Green Focal Areas.

3.6.1. Comment

The environmental benefit of products is expressed as a percentage number of the products that are classified as Green Flagship.

One reason for including the Philips concept in this study was to point out five critical aspects important to communicate to the customers; weight, hazardous substances, energy consumption, recycling/disposal and packaging.

3.7. Siemens

The Siemens environmental product declarations aim to give the user detailed environmental information of the product.

“Company information” includes information about environmental management system, environmental policy, environmental tools and guidelines etc.

Under “Product environmental performance” it is declared whether there are any emissions or environmental impacts e.g. during operation. However, the kind of emissions and impact on the environment is not specified which makes it impossible to translate to impact categories like global warming. On the other hand there is information about recommended method of fire fighting, packaging materials etc.

“End of life” gives some hints about disassembly.

“Content declaration” presents the content of components with comments like “halogen free” or “no fibre glass”. There is also a list of environmental harmful substances.

Siemens

[\[http://search.siemens.com\]](http://search.siemens.com).

Appendix 8 shows part of the environmental product declaration for a fan coil controller.

3.7.1. Comparison between Siemens environmental product declarations and EPDs

Information which is included in Siemens environmental product declarations but is not common in EPDs:

- thorough environmental information about the company (environmental management systems, tools, guidelines etc.)
- thorough information about operation/maintenance/service (e.g. battery types, regular maintenance)
- environmental risks in case of fire
- thorough information about packaging materials
- indoor environment
- thorough information about end-of-life (removal, disassembly, recycling, disposal)

Information which is included in EPDs but not in Siemens environmental product declarations:

- content of materials ¹⁾
- information about resources (e.g. iron ore) and raw materials
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP)

¹⁾There is a list of components

3.8. Sony Ericsson

Sony Ericsson have an online collection of environmental product declarations for the main part of the mobile phones. Environmental management system, environmental conscious design, batteries, energy consumption, safety, packaging and recycling are included in the declarations.

There is no content of materials. Instead it declares which hazardous substances the product does not contain.

The declaration is carried out by responding to different requirements by answering yes or no. Quantified information is required for energy consumption.

The structure is that of the IT declaration, see 3.5.

Sony Ericsson

[\[http://www.sonyericsson.com\]](http://www.sonyericsson.com).

Appendix 9 shows an example of a label for mobile phone R600.

3.8.1. Comparison between Sony Ericsson declarations and EPDs

Information which is included in Sony Ericsson declarations but is not common in EPDs:

- electrical safety
- thorough information about packaging materials
- information about take back and recycling services

Information which is included in EPDs but not in Sony Ericsson declarations:

- content of materials
- information about resources (e.g. iron ore)
- information about emissions to air/water expressed as environmental impact categories (e.g. GWP)

3.9. Volvo

“EPD calculation” - a web based tool for calculation of environmental impact from extraction of raw materials to recycling - is available on the net.

As well as providing general information, the tool enables you to calculate the environmental impact of a vehicle based on own operating experience.

The results are presented in two ways:

- As an inventory of resources and emission data.
- As a summary of environmental effects.

Volvo

[\[http://www1.volvo.com\]](http://www1.volvo.com).

Appendix 10 shows the online EPD calculation tool for trucks.

3.9.1. Comment

This tool gives the idea to develop some kind of online declaration with the possibility of a customer specific calculation of environmental impact.

4. CONCLUSIONS

The studied declarations have different characters.

The only one that is similar to an EPD is the declaration from NorDan.

The other declarations are not LCA-based and there is no environmental impact assessment presented. But they contain more information about working environment and operational issues than an EPD does.

In the group of non LCA-based declarations those from the building sector, IT, Siemens and Sony Ericsson are the most substantial. Fortum Kraft and Volvo give the ideas of structuring and presenting environmental issues in other formats not resembling an ordinary declaration.

The comparison between the studied declarations (except Fortum Kraft and Volvo) and EPD is summarized in tables 1 and 2.

Information - not common in EPDs - included in studied declarations	Number of declarations
Introduction - company	
Information about conformation to laws, standards, regulations and directives	1
Thorough environmental information about environmental management systems, tools, guidelines etc	1
Introduction - product	
Thorough information about environmental construction	1
Thorough information about packaging materials	3
Use phase - working environment	
Working environment, e.g. electromagnetic compatibility/fields, electrical safety, sound levels, emissions, fire, ergonomics	5
Use phase - operation	
Thorough information about operation, upgradability, consumable materials etc	3

Disposal phase	
Structured information about recycling & take back	6

Table 1. Number of declarations studied (except Fortum Kraft and Volvo) with information not common in EPDs.

They mostly focus on working environment issues and structured information about end-of-life. Also packaging materials and operational directions are considered to be important.

Information included in EPDs, but not in studied declarations	Number of declarations
Information about environmental management system	2
Content of materials	4
Manufacturing data - own site	4
Manufacturing data - suppliers' sites	5
Inventory data expressed as resources (e.g. iron ore)	5
Emissions to air/water expressed as environmental impact categories (e.g. GWP)	6

Table 2. Number of declarations studied (except Fortum Kraft and Volvo) that lack EPD-information.

In the studied declarations there is seldom any manufacturing data either from their own sites or suppliers' sites. A content of materials is in most cases lacking. There is no information about resources, like iron ore, and there is no environmental impact assessment.

5. DISCUSSION

In order to develop a more convenient marketing tool that is easier to carry out and easier to interpret than an EPD, it would seem natural to not use LCA as a base for the declaration.

Then the question will arise "What kind of information can be achieved without doing an LCA?". Two things will not be achieved:

- information about resources
- environmental impact assessment expressed as e.g. global warming potential, GWP.

By using the ABB LCALight tool it is possible to have environmental impact assessment expressed as e.g. global warming potential, but not resources. LCALight is for screening LCA and is easy to use. It is powerful and reliable since it contains the same database as the EcoLab tool, however it has a limited amount of data compared to EcoLab.

6. ALTERNATIVE TO AN EPD

An alternative to an EPD would be to structure all information according to the different life cycle phases and gather all the relevant information

under each phase. LCALight tool could be used to get an environmental assessment, expressed as e.g. GWP.

An environmental declaration in electronic form makes it possible to use a calculation tool for calculating environmental impact for different scenarios like:

- losses during operation (different electricity mixes)
- transports
- recycling rates

On the following two pages a draft for an alternative EPD is presented.

A further step will be to evaluate this alternative from the perspective of an easy to understand and use tool.

Environmental impact assessment

<i>Environmental impact</i>	<i>Manufacturing</i>	<i>Use</i>	<i>End-of-life</i>
<i>Acidification (mol H⁺)</i>			
<i>Global warming (kg CO₂ equiv.)</i>			
<i>Eutrophication (kg O₂)</i>			
<i>Ozone depletion (kg CFC-11 equiv.)</i>			
<i>Photochemical ozone creation potential (kg ethene equiv.)</i>			

Manufacturing

Inventory data for manufacturing of product xxx at company

Materials/components:

steel (kg)

copper (kg)

PVC (kg)

Printed circuit board (m²)

etc.

Energy:

Electricity (kWh)

Oil (kg)

Emissions:

CO₂ (g)

SO₂ (g)

NO_x (g)

etc.

Recycling/waste:

Material for recycling (kg)

Hazardous waste (kg)

Industrial waste (kg)

etc.

Packaging materials:

Paper

Wood

etc.

Transport:

Mean of transport

Use

Lifetime:

Energy losses:

Regular maintenance:

oil

spare parts

etc.

Electromagnetic field:

The product meets.... regarding electromagnetic compatibility

Electrical safety:

The product meets.... regarding electrical safety

Fire risks:

Toxic emissions

Sound levels:

End-of-life

Disassembly:

Reuse:

Recycling:

Energy recovery:

Landfill:

Take back service

Additional information

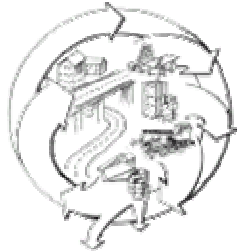
.....

7. REFERENCES

1. Sustainability Tools for product development and marketing
[\[http://inside.abb.com. Tools & Services/Project Management/Sustainability Toolbox\]](http://inside.abb.com/Tools%20&%20Services/Project%20Management/Sustainability%20Toolbox)
2. Sustainability Affairs
[\[http://inside.abb.com. Organization/Group functions/Sustainability Affairs\]](http://inside.abb.com/Organization/Group%20functions/Sustainability%20Affairs)
3. Swedish Environmental Management Council
[\[http://www.environdec.com\]](http://www.environdec.com)
4. Best Practices of ISO 14021. Self-declared environmental claims. Ministry of Commerce, Industry and energy. Republic of Korea.
[\[http://inside.abb.com. Tools & Services/Project Management/Sustainability Toolbox\]](http://inside.abb.com/Tools%20&%20Services/Project%20Management/Sustainability%20Toolbox). Product marketing/Marketing tools/Env. labelling.
5. Evaluation of Environmental Product Declaration Schemes. European Commission DG Environment.
[\[http://europa.eu.int/comm/environment/ipp/epdstudy.pdf\]](http://europa.eu.int/comm/environment/ipp/epdstudy.pdf)
6. Danish Environmental Protection Agency
[\[http://www.mst.dk/homepage/\]](http://www.mst.dk/homepage/)

APPENDIX 1 BUILDING SECTOR

Building Declaration



Contents

Company information

Product information

Environment

1. Materials included in the product
2. Production of materials
3. Distribution of finished building materials
4. Building phase
5. Use phase
6. Demolition
7. Rest products
8. Waste

Working environment

Considers hazardous materials, building process, emissions, operation, maintenance, sound level, electric and magnetic fields etc.

APPENDIX 2 FORTUM KRAFT

Extract from environmental report 1999-2001.

Från vatten till elenergi

IN

Förnyelsebar råvara

Vattenkraft är egentligen solenergi. Solens värme får ytvattnet i hav, sjöar och vattendrag att avkyla. Vattenångan stiger, kondenserar och bildar moln, som förs in över land i form av snö och regn. Regn och smältvattnet rinner genom bäckar, åar och sjöar ner till årarna som för vattnet den sista biten ut i havet. Naturens kretslopp är fullbordat. På vägen kan vattnet sparas och samlas i reglermagasin för att i efterhand användas i kraftstationerna. Den energi som kan utvinna ur en vattenkraftstation står i direkt förhållande till fullhöjd och vattenmängd.

Vattenkraft reglerar hur vattnet i våra vattendrag får användas. En vattendam innebär tillstånd för oss att driva kraftstationerna under vissa villkor. I vattendomarna bestäms också hur våra magasin får utnyttjas. Över- och underkänning kan ge erosions- och materiala skador samt även förändra den lokala biotopen (se påverkan 2a, översikt 2c).

Påverkan på ekosystem

Vid allt byggande av vattenkraftstationer eller reglermagasin sker förändringar i ekosystemen. Vid utfyllnad kan stora arealer av mark dönnas över och områden med stora vattenståndsförändringar sakna växttäckningar. När myrmark döms över kan metylkvicksilver frigöras (se påverkan 2a, översikt 2d).

Mikroflora och mikrofauna ändrar karaktär och livsbetingelserna för högre ståndse djur påverkas. Även den biologiska mångfalden kan påverkas. Speciellt påverkas störfisket såsom lax, öring, harr och sik av att deras naturliga vandringvägar blockeras (se påverkan 2a, b, översikt 2e).

MILJÖMÅL

Succesivt öka tillgången på förnyelsebar elenergi så att vi 2010 och med 2011 kan producera 125 GWh mer per år

Genom att:
genomföra kraftstationsbyggnad vid befintliga dammar för att tillvarata vattenets energipotential samt genomföra kraftstationsombyggnad för att öka utnyttjningsgraden

Målsuppfyllelse 2001

Category	Percentage
Goal fulfilled	24%
Goal not fulfilled	76%

From water to electric energy

IN

Renewable resource, environmental goals, impact on eco system

OPERATION

Chemicals, environmental goals, transports, energy consumption

OUT

Electrical energy, emissions to ground and water, environmental goals, rest products

Eco declaration for color monitor

IBM 2122



Operational data:

Energy consumption:

operation mode:	90 W maximum
energy saving mode I:	60 W
energy saving mode II:	5 W
soft OFF mode:	<5 W

Physical emission:

declared sound power level		sound pressure level	
operational mode:	n/a bel	operational mode:	n/a dB(A)
energy saving mode I:	n/a bel	energy saving mode I:	n/a dB(A)

Materials:

The above described product does not contain:

- asbestos
 - cadmium in (CRT; plastic materials, packaging or inks)
 - ozone depleting substances as listed in the Montreal protocol
 - chloroparaffins with chain length 10-13 atoms, chlorination greater than 50% contained in mechanical plastic parts heavier than 25 g
 - lead in mechanical plastic parts heavier than 25 g
 - mercury
 - PCB or PCT
 - polybrominated biphenyls, their oxides and their ethers in mechanical plastics heavier than 25 g
- in concentrations exceeding natural background levels.**

The shipment packaging contains corrugated cardboard, plastic bag and polystyrene.

The following system components contain materials which may be considered hazardous or of environmental concern based on prevailing practices and/or regulations of a particular geographical region(s) or country.

No known components identified at this time.

Upgradability/Extendibility:

spare parts are available: 3 years after end of production
service is available: 3 years after end of production

The above system is designed for **easy assembly and disassembly:**

only common tools need be used for disassembly.

End-Of-Life:

IBM offers product take back and recycling services in many locations throughout the world, including Europe, the United States and Japan. Customers are advised to contact their IBM representatives for additional information.

Somers, NY, USA

April 06, 1998

page 2 of 2

Contents

General data

Operational data


Materials

Upgradability/extendibility


APPENDIX 4 IT

IT declaration


Nordic Information Technology Organisation's



IT-Förretagen
Svenska IT-förretagens Övergripande All-
svenska Förbundet av Miljödeklarationer
Sverige



IKT NORGE
IT-förretagens Informationsorganisasjon
www.ikt-norge.no
Norge



IT-Dansk
IT-förretagens Korker & Dala
www.it.dk
Danmark

Miljödeklaration
Informationsteknologi (IT) produkter
Juli 2000

Den här deklARATION lÄcker nedslÄttande produkter (med specifik produktID (P-ID), typ-modellnummer. VÄrde markerat produktkatalogen eller identifieras av)

<input type="checkbox"/> Systemenhet (CPU)	<input type="checkbox"/> BildskÄrm	<input type="checkbox"/> LCD-skÄrm	<input type="checkbox"/> Tangentbrett	<input type="checkbox"/> Mobiltelefon/dator
<input type="checkbox"/> Server	<input type="checkbox"/> Kopiator*	<input type="checkbox"/> Laser skrivare**	<input type="checkbox"/> Multifunktions skrivare**	<input type="checkbox"/> MÄlningsskrivare**
<input type="checkbox"/> Fax*	<input type="checkbox"/> Skrivare**	<input type="checkbox"/> Multifunktionsprodukt**		
* AnvÄndningshÄtt, specifikationer				
** sidor per minut				
Modelltyp/Varianterna: _____				

För telekommunikationsutrustning anvÄndas direkt 2000/12 MiljÖdeklaration.

Votarie:		_____	
Företagets representant:		_____	
Produktion:		_____	_____
Telefon:		_____	
Fax:		E-postadress eller adress	
Dokumentation			

VILLKOR FÖR ANVÄNDNING AV MILJÖDEKLARATIONEN
(Utdrag ur kompletta villkoren, se "ECO Declaration Guidelines")

Företag som vill använda denna deklARATION måste uppfylla följande krav:

- anslutna till IKT-förbundet och betala en serviceavgift;
- påskilda överenskomna specifika krav uppfylls endast om detta kan verifieras genom certifikat, testrapporter eller andra dokumentation;
- produkter som inte fyller enligt givna instruktioner (se ECO Declaration Guidelines);
- behålla alla tekniska krav som är markerade med O eller OX) och tillämpa för den deklarerade produktkategorin (P-ID) tillämpningsförfarandet;
- tillåta att information bli led, korrigera om nödvändigt den utfärdade deklARATIONEN och radda koder; och
- meddela om ändring av de nordiska IT-organisationerna så snart, har utgått produkter Företaget deklarerat.

Verni ord/Varianter: _____ Sidor (1/4) _____ Modell: _____
Den här miljödeklaration för IT-produkter får endast användas av leverantör eller avtal med någon av de nordiska IT-organisationerna IT-Förretagen, Sverige, IKT, Danmark eller IKT-Norge.

Contents

- 1. Environmental policy & Environmental management**
- 2. Environmental conscious design**
- 3. Batteries**
- 4. Energy consumption**
- 5. Noise characteristics**
- 6. Emissions**
- 7. Electrical safety, EMC and connection to the telephone network**
- 8. Consumable materials (copiers, printers, faxes, multifunction products)**
- 9. Ergonomics**
- 10. Packaging and documentation**
- 11. Recycling**
- 12. Additional information**

APPENDIX 5 NORDAN

Environmental declaration for security window.

ENVIRONMENTAL DECLARATION Nordic timber industry Nr. 3101812 Norwegian Institute of Wood Technology		NorDan FA Fixed light																						
MANUFACTURER	PRODUCTION	Life Cycle of timber products																						
<p>NorDan AS N-4480 Moi Telephone: (+47) 51 40 40 00 Fax: (+47) 51 40 17 72 Contact: Steinar Holm Steinar.Holm@nor-dan.com</p> <p>Environmental information NorDan AS aims at using only FSC or PEFC-certified wood in their production.</p>	<p>Wood Sawn pine is mostly obtained from Nordic forests. All production timber is procured from sustainable forests. The wood is sawn and dried to approx. 12 % before it is delivered to NorDan.</p> <p>Glass The main raw material of glass comes from rich natural resources. Apart from the environmental impact related to energy use, process-related wastes arise from raw materials used in the glass. Glass arrives at NorDan in large sheets, which is cut to production sizes.</p> <p>Factory At the factory the wood is profiled and prepared. Then windows are vacuum impregnated, finished and finally assembled. The factory produce their own sealed units, which are inserted into products immediately before the final stage of packaging.</p> <p>NorDan has changed from using wet- to drybox-systems for painting of products. This contributes to less degassing and a reduction of hazardous waste, both environmental profits for NorDan.</p>	<p>Atmosphere</p> <p>NORDIC FORESTS</p> <p>Contribution to Energy use</p> <p>Contribution to global warming, GWP 100</p> <p>In-data in environmental profile</p>																						
<p>PRODUCT An environmental audit has been carried out on a NorDan M12-M12 Fixed light. It has double glazing with argon gas insulation, vacuum impregnated sash and is factory pre-finished.</p> <p>Technical properties Technical property details and cross section drawings are available in NorDan's technical manual.</p>	<p>USE</p> <p>Lifetime The lifetime of the window depends on the quality of installation and detail, the degree of exposure, humidity controls in the building and maintenance. Life expectancy for the window is minimum 30 years. NorDan provides a 10-year guarantee.</p> <p>Energy in the household U-value describes the window insulation properties. Lower U-values offer better utilization of energy. The energy flux through a window and the method of energy generation has the biggest environmental impacts if the total life cycle of the product is considered.</p>																							
<p>Inventory kg/window</p> <table border="1"> <tr><td>Glass</td><td>20.0</td></tr> <tr><td>Pine, impregnated</td><td></td></tr> <tr><td>Profile</td><td>0.5</td></tr> <tr><td>Aluminium</td><td>0.9</td></tr> <tr><td>Steel</td><td>0.01</td></tr> <tr><td>PVAC glue</td><td>0.015</td></tr> <tr><td>Polystyrene</td><td>0.055</td></tr> <tr><td>Surface finish**</td><td>0.60</td></tr> <tr><td>EPDM</td><td>0.14</td></tr> <tr><td>Gaskets</td><td>0.04</td></tr> <tr><td>Polyisobutylene**</td><td>0.25</td></tr> </table>	Glass	20.0	Pine, impregnated		Profile	0.5	Aluminium	0.9	Steel	0.01	PVAC glue	0.015	Polystyrene	0.055	Surface finish**	0.60	EPDM	0.14	Gaskets	0.04	Polyisobutylene**	0.25		
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<p>Packaging, kg/window</p> <table border="1"> <tr><td>NCS</td><td>1.2</td></tr> <tr><td>Steel</td><td>0.12</td></tr> <tr><td>Stretch plastic</td><td>0.05</td></tr> </table> <p> <small> ** Gori vac TH 102 ** US-GRUNDIGUS a-55 NCS 99502Y ** PDM ** Tencel 998 R50, 2 komp. </small> </p>	NCS	1.2	Steel	0.12	Stretch plastic	0.05																		
NCS	1.2																							
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- Contents
- Manufacturer
- Product
- Production
- Use
- Recycling
- Environmental profile
- Additional information

APPENDIX 6 PHILIPS

Green Focal Areas



Weight



Hazardous substances



Energy consumption



Recycling and disposal



Packaging

Environmental product declaration for fan coil controller



Siemens Building Technologies

Environmental Product Declaration

This environmental product declaration aims to give the buyer/owner detailed environmental information on the purchased product. Environmentally harmful substances are defined in accordance to the Siemens Standard SN 36350-2, which can be ordered through the contact person.

1 General Information

1.1 Product Information

Product name: **Standalone Fan Coil Controller**
 Designation (item/version/model): **ACR12.240/STF**
 Function of product: Controlling room temperature in individual rooms, which are heated and cooled by fan coil.
 Product conforms with the requirements of the directive: 89/336/EEC (Electromagn. Compatibility) 73/23/EEC (Low Voltage)
 The product has a clear and durable labelling (manufacturer, product name, number):
 The labelling is referred to technical documentation (identification of product):
 Recommended area of application shown in technical documentation:



not relevant
 not relevant
 Yes No
 Yes No
 Yes No

1.2 Company Information


Company name, address, phone, fax: **Siemens Building Technologies Landis & Staefa Division**
 Gubelstrasse 22
 6031 Zug/Switzerland
 Contact person, phone, email: Stefan Bräuer, Environmental Co-ordinator
 Tel. +41 41-724 27 70
 brauers@ch.sibt.com
 Quality Management System certified: ISO 9001 other: since: 7/1986
 Environmental Management System certified: ISO 14001 other: since: 10/1998
 The company has adopted an environmental policy: Yes No
 Information on use of resources (energy, water, material) is available: Yes No
 Information on environmental impact (emissions, waste water, waste) is available: Yes No

Contents

- 1. General information
 - 1.1 Product information
 - 1.2 Company information
 - 1.3 Author
- 2. Product environmental performance
 - 2.1 Operation/maintenance/service
 - 2.2 Risks arising from malfunction/misuse
 - 2.3 Environmental risk in case of fire
 - 2.4 Packaging
 - 2.5 Logistic/distribution
 - 2.6 Indoor environment
- 3. End of life
 - 3.1 Removal from installation
 - 3.2 Disassembly
 - 3.3 Recycling/disposal
- 4. Content declaration
 - 4.1 List of contents
 - 4.2 List of environmentally harmful substances

APPENDIX 8 SONY ERICSSON

Environmental declaration for mobile phone



Environmental Declaration

Mobile phone R600

Sony Ericsson considers sustainable development as one of the most important challenges for the future. Therefore, Sony Ericsson wants to provide environmental information to our customers. The Sony Ericsson Environmental Declarations give information on the most relevant environmental aspects of mobile phones.

The requirements in the declaration are based on the standard TR/70 issued by the European Association for Standardization Information and Communication Systems (ECMA), legal requirements and market requirements.

More information on Sony Ericsson and the Environment can be found on the Internet site www.sonyericssonmobile.com

Mobile Phone R600

Size
95 x 45 x 20 mm

Weight
87 grams

Environmental Declaration for Mobile Phone R600		Requirement Fulfilled	
		Yes	No
1 Environmental Policy and Management System			
1.1	The company has a documented environmental policy approved by the management.	✓	
1.2	The company has, at production sites for mobile phones, environmental management systems according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> EMAS and/or <input checked="" type="checkbox"/> internal system.	✓	
1.3	The company regularly publishes an environmental report.	✓	
1.4	The company markets the products in accordance with environmental rules in appl cable marketing legislation.	✓	
1.5	The company has environmental requirements on suppliers and subcontractors.	✓	
1.6	The company regularly trains employees in environmental management.	✓	
2 Environmentally Conscious Design			
2.1	CFCs or HCFCs are not present in the product.	✓	
2.2	Asbestos, PCB and PCT are not present in the product.	✓	
2.3	Mercury is not present in the product.	✓	
2.4	Brominated flame retardants PBB and PBDE are not present in the product.	✓	
2.5	Cadmium is not present in the product.	✓	
2.6	Lead is not present in plastic parts.	✓	
2.7	Chloroparaffins with chain length 10-13 C atoms, chlorinated greater than 50%, are not present in the product.	✓	
2.8	Beryllium oxide is not present in the product.	✓	

Contents

- 1. Environmental Policy and Management System**
- 2. Environmental Conscious Design**
- 3. Batteries**
- 4. Energy Consumption**
- 5. Electrical Safety, EMC and RF Exposure**
- 6. Packaging and Documentation**
- 7. Product Recycling**

APPENDIX 9 VOLVO

Volvo online EPD calculator

EPD Calculator

Online calculation

Complete the form to obtain an online calculation of the environmental impact of a specific transport operation or the complete life cycle of a Volvo FH or FM truck. Position the cursor over the titles for further information.

Materials and Production	Fuel and Exhaust Emissions Use Phase	Maintenance Use Phase	End of Life
Distribute over life-cycle distance <input type="checkbox"/> Yes	■ Emission level <input type="text" value="Euro 1"/>		Distribute over life-cycle distance Yes
Life-cycle distance [km] <input type="text"/>	■ Type of engine <input type="text" value="Volvo"/>		Life-cycle distance [km]
	■ Type of fuel <input type="text" value="Cert. fuel"/>		
	■ Exhaust filter <input type="text" value="No"/>		
	■ Distance [km] <input type="text" value="150"/>		
	■ Fuel consumption [litre/100km] <input type="text" value="10"/>		

Calculate

Compare two alternatives