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Environmental information for products and services

Requirements – Instruments – Examples

Imprint

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Environmental information for products and services

Requirements – Instruments – Examples

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FOREWORD

Whether it is food, technical appliances or clothing – the manufacture, use, consumption and disposal of consumer goods impact on the environment. Our aim is to minimise that impact. But how can we achieve that goal? First of all, we have to understand the environmental impact of a product as precisely as possible: what chemical substances are released during the manufacturing process and what materials remain after disposal? To answer these questions we need standardised and comparable procedures. Step number two involves clear and understandable communication. I would like to see information about the environmental impact of products being delivered in a far clearer, more credible and understandable form than has been the case in the past – to consumers, suppliers and customers, the workforce of the companies themselves and, last but not least, to policymakers.

Consumers are increasingly willing to base their purchasing decisions on environmental considerations. The Blue Angel – Germany's most well-known ecolabel, which was launched back in 1978 and has to date been awarded to over 12,000 products and services – has done pioneering work in this respect. And yet environmentally aware shopping is still not that easy. There are more and more product labels, and consumers who know what they all signify are few and far between. I therefore very strongly advocate that we do not use just any label but only recognised, credible labels such as the Type I labels defined in the ISO 14024 Standard.

It is also crucial that the environmental impacts of a product are fully identified. We must not focus on the manufacturing stage alone. It is crucial that we consider the entire life cycle of a product, starting with extraction of the raw materials and ending with waste disposal. And that is perfectly feasible: the life cycle assessment series of standards – ISO 14040/14044 – established for many years now, describes internationally standardised procedures. Any new approaches to assessment should be based on this standard.

This brochure – "Environmental information for products and services" – is primarily addressed to interested companies. Only companies that analyse their production processes from environmental and economic points of view and ultimately build a precise picture of the impact their products have on the environment will be in a position to develop products that are kinder to the environment and will attract new groups of customers. But the brochure is also worth reading for consumers because it helps to understand the differences between the different assessment approaches and also the quality of the different labels.

In publishing this brochure, the Federal Environment Ministry, Federal Environment Agency and Federation of German Industries are seeking to provide an overview of the available types of information and standards to help people make the right decision for the particular use in question. This edition has been comprehensively updated to reflect new developments in environmental assessment and the communication of environmental impacts. New sections include reports on product carbon footprinting and the EU Commission's product environmental footprinting proposal. A great deal of information about standards and trends – all designed to encourage companies to make even greater use of product labelling. Why? Because it's worth it!

Dr. Barbara Hendricks
Federal Minister for the Environment, Nature Conservation, Building and Nuclear Safety

FOREWORD

Consumers – and also national and European legislators – are becoming increasingly interested in the environmental impact of products and services. Their interest is directed at the entire life cycle of a product – from the consumption of resources and the production stages right through to the use and disposal or recycling stages. Integrated policies such as the European action plan for sustainable consumption and production (SCP), chemicals policy, and resource and recycling strategies at national and European level reflect these developments, as does the environmental legislation drafted in recent years and decades, such as the European Ecodesign Directive, which comprehensively regulates environmental requirements for products and services. At the same time, calls for extensive publicly accessible information about the environmental performance of companies are also becoming louder.

Against this backdrop, companies have to address a two-fold challenge: to satisfy the growing environmental demands of consumers and legislators, while continually improving the environmental and economic performance of their products and services. Companies have a wealth of environmental product information tools to choose from. They can use them to systematically ascertain the environmentally relevant characteristics of their products on the basis of conclusive, well founded information.

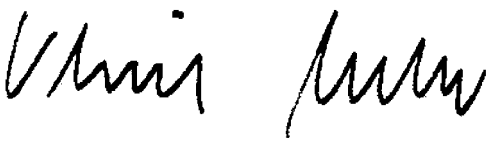
It is not always easy for consumers to find their way around the diverse range of environmental information and labels on products and to draw the conclusions they need to make their purchasing decisions. For

example, there are general labels such as the Blue Angel, which identifies products with particularly positive environmental performance. There are also sector-specific labels, such as OEKO-TEX® Standard 100, which certifies that textile products comply with certain environmental standards. The Biosiegel performs this function for food, although it must be said that the environmental superiority assumed is not always beyond doubt. Energy consumption labelling is mandatory for certain product groups, making it possible for consumers to choose between products within a particular category, such as large household appliances, with higher or lower energy consumption.

Calculating and communicating product carbon footprints (PCF) has been energetically advanced in some countries in recent years. However, this tool has serious shortcomings in terms of consumer information. PCFs take into account only the CO_2 emissions caused by a product, ignoring other – possibly more important – impacts. To address this deficit, the European Commission is currently piloting the use of product environmental footprints (PEFs). They are designed to help consumers compare the overall environmental performance of products. In view of the methodological problems involved in calculating and communicating PEFs, industry is actively monitoring this project during the current testing stage. This is the only way to ensure there is a chance that PEFs will develop into an informative tool for consumers.

This brochure seeks to help small and medium-sized enterprises in particular in choosing the right tool. It gives judgement-free guidance on the basics of environmental product information, along with news of the latest policy developments, and would like to help companies to continue to shoulder responsibility for protecting the environment and the climate.

I wish readers every success in putting these tools into practice in their companies.



Ulrich Grillo
President of the Federation of German Industries (BDI)

1 INTRODUCTION

When can products be described as recyclable and when can it be claimed that they save water? How can the environmental benefits of a product be used for marketing purposes? What stipulations must be observed for the environmental labelling of a product? Public attention is increasingly focusing on the environmental impact of products. At the same time, companies are having to comply with increasingly stringent environmental product regulations. This increases the importance of environmental product information.

This brochure aims to:

- provide an overview of the options and tools that are available for environmental product information;
- draw attention to the relationship between environmental product information, on the one hand, and corporate environmental protection instruments, on the other, with a particular focus on environmental management systems and life cycle assessments;
- describe the fundamental requirements imposed by the standardisation process and the statutory regulations for environmental product information.

The environmental policy debate is changing at both German and European level. While production processes were the centre of attention just a few years ago, interest is now gradually shifting to issues related to disposal and the handling of individual substances. Attention is now increasingly being concentrated on products and all the phases in a product's life cycle are being considered, i.e. the extraction of natural resources, the production process, use of the product and its final disposal or recycling. At European level, this trend is reflected in current policies on materials and chemicals, in the strategies on natural resources and recycling that are being developed and in the Ecodesign Directive, which is part of the EU Commission's Integrated Product Policy. They all focus on limiting the environmental impact of products throughout their entire life cycles. The current discussion on limiting climate change is reinforcing this trend.

Environmental product information is therefore becoming increasingly important, not only for companies, but also for consumers and the government. A number of environmental product information specifications that companies have to comply with, such as the construction products regulations, already exist. In addition to that there is also a considerable number of national and international standards. Companies can use these to comply voluntarily with environmental requirements imposed by customers and the general public, and to present the environmental performance of their products in a transparent manner.

Against this backdrop, the fundamental significance of environmental product information will grow over the next few years and will become an important element in achieving sustainability.

For companies, environmental product information is an important tool for improving relationships with customers, suppliers and other stakeholders. Positive labels and high-quality information enable companies to increase their credibility and provide documentary evidence of their environmentally responsible ethos. This information can be regarded as contributing towards better environmental and product quality.

Companies can benefit from environmental product information in many respects:

- → to respond to consumer enquiries;
- → to meet their major customers' need for information, e.g. on issues related to waste disposal, energy consumption, components such as solvents, or the product's contribution to climate change;
- → in communications with retailing firms, who often request information concerning the environmental aspects of products;
- → to create a sound basis for their marketing activities;

Infobox 1

As part of a mix of policy instruments, environmental labels can identify front runners and boost demand for more environmentally sound products.

- in sales and marketing to meet the public procurement requirements of federal, regional and local government agencies, who can then provide evidence that they have purchased environmentally sound products;
- for the smooth flow of information within the supply chain; suppliers are asked to provide increasingly detailed information concerning the environmental aspects of products, components, materials and substances for reasons of legal security;
- to prepare for the growing demands for information by government agencies;
- to better satisfy non-government organisations' need for information.

Infobox 2

The provision and use of environmental product information can help companies to be successful on the market and prepare for developments in environmental policy at an early stage.

Furthermore, environmental product information can exert a positive influence on relationships with investors and lenders.

Environmental product information plays a key role in sustainable product development.

Clearly formulated information throughout the supply chain offers a means of:

- increasing the material and energy efficiency of a product,
- avoiding the use of harmful substances in a product,
- avoiding the use of harmful consumables and additives,
- developing clean manufacturing processes,
- extending the life of a product, and
- putting other sustainable product development strategies into action.

Infobox 3

Clearly defined rules for drafting environmental information facilitate day-to-day work in product development, purchasing, marketing and sales.

In addition to voluntary measures, a number of legal requirements also have to be met. For many products, the regulations implementing the Ecodesign Directive contain clear, legally binding requirements regarding both the design of products and the information about the product that has to be provided. Regular revision of the Ecodesign Directive's Working Plans means that the requirements gradually extend to more and more products. Furthermore, for certain energy-using products implementing regulations under the Energy Labelling Directive contain very specific stipulations on what information must be displayed and in what form.

Numerous resources for recording and evaluating environmental impact are available to facilitate these tasks. They include international standards on the preparation of life cycle assessments and ecodesign of products and also a DIN Technical Report on incorporating environmental aspects into product development.

Sustainability as the objective

This brochure focuses on environmental aspects, which also constitute part of companies' voluntary responsibility for sustainable development. The German government has made a commitment to the global goal of sustainable development and has the widespread backing of society on this. This is particularly evident in the national sustainability strategy, which has sustainable production and sustainable consumption as two of its components.

Sustainability means addressing environmental challenges without neglecting economic and social aspects. By integrating these three main pillars, companies contribute towards achieving a green economic. However, governments and consumers must also accept responsibility. Governments need to create an enabling environment in which companies can manufacture their products in a sustainable manner, allowing consumers to make sustainable consumption choices.

An integrated course of action is essential to achieving the environmental objective. Further progress towards sustainability can only be achieved if provision of information, marketing, and environmentally sound product development and production, on the one hand, are combined with responsible consumption, on the other.

The ISO 14000 series of standards	
Organisation-related	**Product-specific**
ISO 14001 series of standards Supports organisations in establishing and optimising environmental management systems	**ISO 14020 series of standards** Provides guidance for environmental labelling and declarations
DIN EN ISO 19011 standard Provides guidance on carrying out environmental audits	**ISO 14040 series of standards** Provides guidance on the preparation of life cycle assessments
ISO 14030 series of standards Provides guidance on the selection and use of indicators for evaluating an organisation's environmental performance	**Technical Report ISO/TR 14062** Describes concepts for environmentally sound product design and development
DIN EN ISO 14063 standard Contains environmental communication guidelines	

The DIN EN ISO 14000 series of standards provides guidelines for companies on how to deliver environmental product information on a voluntary basis and, at the same time, satisfy the customers' need for information.

2 PRODUCT-SPECIFIC ENVIRONMENTAL INFORMATION TOOLS

Finding the suitable format

The DIN EN ISO 14000 series of standards, and particularly the DIN EN ISO 14020 series, provide general rules on the voluntary development and use of environmental product information. This brochure describes the most commonly used, internationally acknowledged options. There are also overlaps with the product-based environmental management standards of the ISO 14040 series. Companies can determine which options are most suitable for their purposes. The brochure aims to provide information and make recommendations, but without giving an opinion on specific suitability. The most suitable option depends on the product in question and the company's requirements.*

Environmental labels and declarations

Type I environmental labels

as defined in DIN EN ISO 14024:

- → are aimed at both private and business consumers,
- → declare that a product has a particular environmental attribute,
- → are relevant to public procurement,
- → have a high level of credibility and are usually very well known,
- → require third-party certification,
- → involve all interested parties.

Type II environmental labels and declarations

that meet DIN EN ISO 14021:

- → are primarily aimed at consumers,
- → often focus on one specific environmental aspect,
- → can also in principle be used to convey complex information,
- → are based on voluntary self-declarations for which the manufacturer has sole responsibility .

Type III declarations

as defined in DIN EN ISO 14025

- → are aimed at manufacturers in the supply chain, commerce and trade, rather than consumers,
- → are based on a life cycle assessment,
- → provide comprehensive quantitative and verified information,
- → provide data on environmental performance without any evaluation,
- → are suitable for all products and services,
- → make it possible to aggregate data across the entire value chain,
- → require independent verification by a third party.

** The practical examples described in the brochure are intended to give ideas for possible implementation; the publishers cannot accept any liability for their content.*

Guidelines on implementing ecodesign for products

Guidelines on implementing ecodesign for products

as set out in DIN EN ISO 14006 are aimed at companies and organisations, and

- support them in preparing, documenting, introducing, maintaining and continually improving the ecodesign aspects of their products.

Life cycle assessments

as defined in DIN EN ISO 14040 and DIN EN ISO 14044

- are aimed at experts in business, academia and politics and to some extent the public,
- contain a comprehensive description of a product's environmental impact,
- are based on the entire life cycle of a product,
- are suitable for all products and services,
- are the responsibility of the party commissioning them, the party carrying them out, and the reviewer,
- stipulate review of comparative life cycle assessments by an independent third party (reviewer).

Eco-efficiency assessments

as defined in DIN EN ISO 14045

- are aimed at experts in industry, academia and politics,
- facilitate practical use of the eco-efficiency assessment,
- are based on the entire life cycle of a product,
- are suitable for all products and services,
- promote transparent, accurate and informative reports,
- stipulate review of comparative life cycle assessments by an independent third party.

Water footprints

as defined in ISO/DIS 14046

- are aimed at experts in industry, academia and politics,
- follow the basic principles of life cycle assessments,
- define terms of reference and consistent assessment techniques,
- comprehensively cover the environmental impact of water use and consumption,
- can be used for products, processes or organisations.

Product carbon footprints

as defined in ISO/TS 14067

- is aimed at experts in industry, academia and politics,
- follows the basic principles of life cycle assessments,
- sets out principles and guidelines for quantifying and communicating the carbon footprint of products,
- describes the various communication options and defines the specific requirements.

3 CLEARLY DEFINED REQUIREMENTS FOR COMMUNICATION

How useful and effective environmental claims are depends on the extent to which they communicate reliable, meaningful information. The DIN EN ISO 14020 standard constitutes a basis for environmental product information at international level. Apart from this standard, there are statutory regulations that provide the framework for communication activities, which include the Act Against Unfair Competition (UWG) in Germany, to cite just one example.

Requirements to be met by communications

- → International standards
- → Legal framework
- → Distinction from other labels

3.1 Standards as an internationally recognised basis

Infobox 4

DIN EN ISO 14020 is consistent with Germany's Act Against Unfair Competition: advertising must not contain any misleading information (Section 3, Act Against Unfair Competition).

Product-specific environmental claims are widely used as part of marketing and public relations activities and in communications between companies. Claims that are trivial, dubious or misleading should not be made.

The DIN EN ISO 14020 standard was drawn up in an effort to establish greater security for companies and final consumers. It also contains clearly formulated guidelines for environmental product information that is designed to stimulate the supply and demand for those products that have the least environmental impact.

Nine principles

Principle 1:
Statements and claims about the environmental aspects of a product must be accurate, verifiable and relevant; they must not be misleading.

PROVIDE ACCURATE INFORMATION

Principle 2:
Criteria for environmental claims and labels must not create any unnecessary obstacles to international trade.

PREVENT TRADE BARRIERS

Principle 3:
Claims or statements regarding environmental aspects of a product must be based on scientifically verifiable methods, which are accepted and accessible to the greatest extent possible.

USE VERIFIABLE METHODS

Principle 4: Information concerning the processes, methods, criteria and basic assumptions connected with environmental labels must be made available to all interested parties.

DISCLOSE INFORMATION TO INTERESTED PARTIES

Principle 5:
When developing environmental claims and labels all the stages in the product's life cycle must be taken into consideration. A life cycle assessment is useful, but not essential.

CONSIDER THE LIFE CYCLE OF THE PRODUCT

Principle 6: Environmental labels must not inhibit the development of innovative products with the same or potentially better environmental performance..

DO NOT INHIBIT INNOVATION

Principle 7:
Administrative requirements and information demands associated with environmental claims must remain within reasonable limits.

REMAIN WITHIN REASONABLE LIMITS

Principle 8:
The environmental label development process must include open, participatory consultation with interested parties (with the exception of labelling that meets ISO Type II, page 34 ff.)

FACILITATE OPEN CONSULTATION

Principle 9:
Information that is relevant to the environmental aspects of a product must be made available to purchasers and potential purchasers.

PROVIDE INFORMATION FOR PURCHASERS

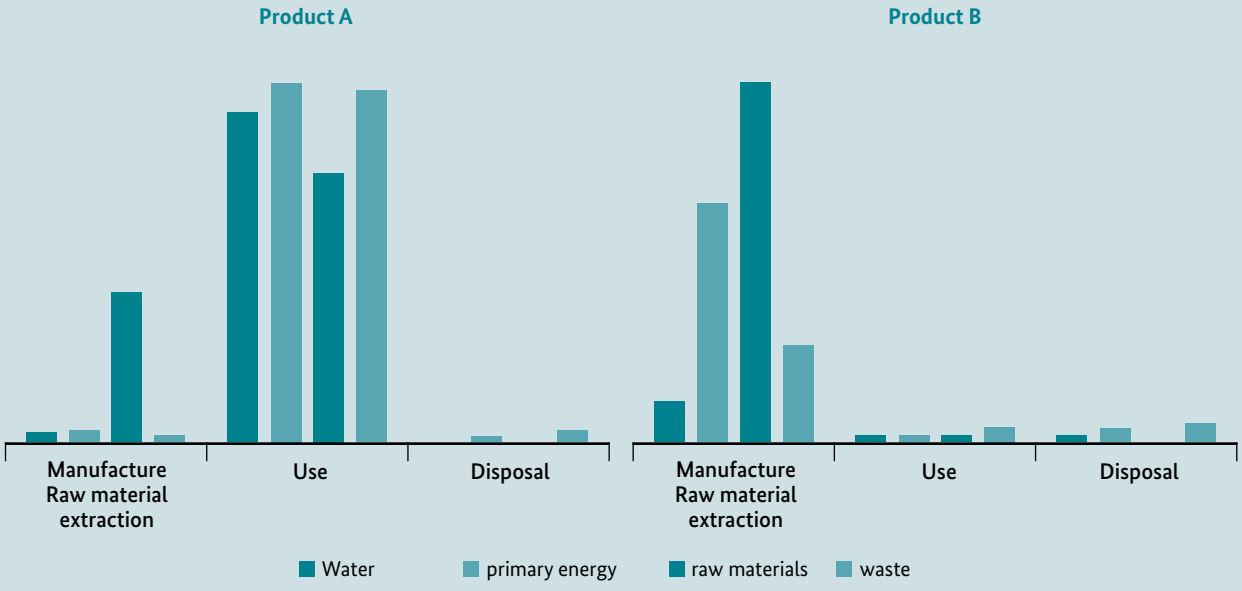
Infobox 5

An open process reinforces the acceptance of an environmental label on the market and increases the credibility of claims.

Infobox 6

Purchasers must be able to understand environmental claims and the information on which they are based.

Supporting material may include promotional literature, information panels in shops, and consumer helplines.



A study of the product life cycle takes all environmental impacts into consideration and weak points can be tackled selectively. The left-hand chart shows an energy-using product while the right-hand chart indicates the environmental impact of a piece of wooden furniture.

3.2 Relevant competition legislation

In addition to DIN EN ISO 14020, statutory regulations also set the framework for communication activities. In Germany, advertising is primarily regulated by the Act Against Unfair Competition (UWG). Under this act, advertising must not contain any misleading information and must not offend common decency. The information it provides must be correct and offer the consumer guidance.

CONSISTENCY BETWEEN DIN EN ISO 14020 AND THE ACT AGAINST UNFAIR COMPETITION

Infobox 7

The majority of court rulings on environmental advertising are primarily concerned with issues relating to possible misrepresentation.

Measured by the standards of the Act Against Unfair Competition (UWG), terms such as “environmentally benign,” “natural” or “degradable” are ambiguous. They evoke inconsistent expectations and emotions. Jurisprudence requires clearly formulated information with specific details of the way in which a product or service brings about an improvement to the environment, under what circumstances it does so and what the extent of the improvement is. A term like “environmentally friendly” alone does not fulfil these requirements. The spirit of the Act Against Unfair Competition is the same in this respect as DIN EN ISO 14020.

STRINGENT STANDARDS IMPOSED BY THE ACT AGAINST UNFAIR COMPETITION

To date, when interpreting what is considered to be “misleading” advertising, similarly stringent standards have been applied in Germany to the use of environmental attributes as those applied to health claims. This is because growing environmental awareness means that people pay greater attention to advertising that has an environment focus. This kind of advertising can be used to appeal to people’s emotions. Ambiguous terms exacerbate the risk of them being misled.

CHANGING LEGISLATION

However, the Act Against Unfair Competition is being revised as part of the work to harmonise legislation within the European Union. Changes are also being seen in German case law. At one time, misrepresentation was frequently assumed for all general environmental claims.

According to more recent case law, there is no case for misrepresentation if the facts of the matter are general knowledge and are therefore self-evident.

Court ruling on the percentage of recycled paper in a product

In Germany, the Federal Supreme Court (BGH) ruled that the attention-grabbing headline "Toilet tissue made from recycled paper" was misleading as the product actually only contained around 80 percent recovered paper. Furthermore, the misrepresentation was not cleared up by additional small print, which made no reference to the actual product in question (BGH, Ref.: I ZR 238/87).

Court ruling on fence varnish

Because of the stringent requirement that advertising be informative, it is deemed to be misleading if it implies that a product is completely free of substances that are harmful to the environment when this is not the case (BGH, Ref.: I ZR 39/89).

Court ruling on a tumble drier

Use of the name "Biotroc" for a tumble drier was found to be misleading advertising. The product name leads the consumer to expect the tumble drier to have an unreservedly positive effect on the environment in every respect, an expectation that cannot be fulfilled (KG Berlin. 5th Civil Division, Ref.: 5 U 362/94).

Court ruling on green electricity

A ruling by Hamburg District Court has created a new basis for attitudes to consumers in judging misrepresentation cases. The yardstick used is the "averagely well-informed, thoughtful and reasonable member of the public." This average consumer would not understand the term "green" electricity or "eco-electricity" in a literal sense and there is therefore no case for misrepresentation (Ref.: 315 O 773/99 and 406 O 198/99).

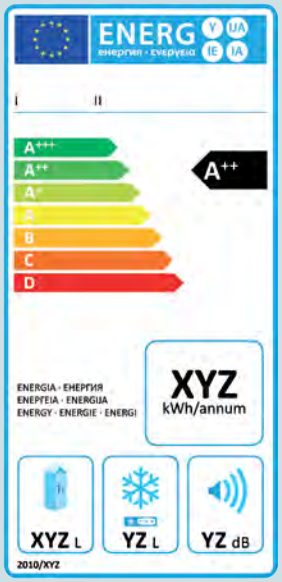
Distinction from other labels

Environmental labels are usually voluntary measures. They are designed to draw attention to and promote the positive environmental attributes of a product or service. In their capacity as "soft" instruments, environmental labels are not legally binding and can neither require nor prohibit anything. Their success and the level of acceptance they achieve are determined by the motivation of the companies involved in the scheme and their credibility with potential customers. However, there are also legally required labels and labels that are based on standards and other voluntary schemes in the product and service sector. Some examples are given below.

CE MARKING

A CE marking must be affixed to products to which – as a result of their type or character – one or more EU Directives apply, before they are placed on the market or put into operation for the first time in EU and EFTA countries (excluding Switzerland). This applies to numerous product groups, such as construction products, electrical appliances and toys. The mark may only be affixed to products for which it is mandatory. The CE mark confirms full compliance with all the essential (safety) requirements a product must fulfil under European Regulations, Directives or Standards. This also includes, for example, minimum requirements for energy-using products under the Ecodesign Directive and can also include provision of environmental information. The CE mark also confirms that the conformity assessment has been carried out in compliance with all applicable rules and that the production process has been monitored by an appointed or notified body.

LABELLING ENERGY CONSUMPTION



Electrical appliances such as refrigerators, washing machines and televisions sold within the European Union must carry a label giving information about their energy efficiency class, energy consumption and other specific details. Under EU regulations, product labels and data sheets are mandatory; they provide purchasers with information on the energy efficiency and other parameters of the appliances.

IDENTIFICATION MARKINGS AS PRESCRIBED BY THE HAZARDOUS CHEMICALS REGULATION

To implement the Globally Harmonized System of Classification, Labelling und Packaging of Chemicals (GHS) Europe enacted its own Regulation – the CLP Regulation.[1] This regulation will enter into force and thus replace Germany's Hazardous Chemical Regulation on 1 June 2015 when the transition period expires. CLP's universally used classification system with its hazard pictograms and labelling phrases is intended to minimise globally the hazards (physical-chemical hazards and hazards to human health and the environment) involved in the production, transport and use of chemicals.

1 Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

The CLP Regulation replaces the existing methods for labelling hazardous substances prescribed by EU legislation. The hazard symbols formerly used are now replaced by CLP's hazard pictograms. Under transitional arrangements, both the old and new symbols are currently still valid.

old

new

QUALITY LABELS

Quality labels are used to identify products and services manufactured or sold by third parties, which meet stringent quality criteria. Agencies responsible for issuing quality labels include RAL, the German Institute for Quality Assurance and Certification in Sankt Augustin. The criteria for its various quality marks are specified in collaboration with manufacturers, suppliers, distributors, consumers, testing institutes and government agencies as part of RAL's approval procedure. The quality marks are issued to manufacturers and service providers by Quality Assurance Associations that have been approved by RAL and meet its stringent quality assurance and testing requirements. All quality marks are continuously monitored by a neutral body.

Further information

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4 PRODUCT EVALUATION

Environmental labels can have an element of evaluation, in which case they designate products within a product group that have superior environmental performance. Under the ISO system, they are known as Type 1 labels. DIN EN ISO 14024 provides guidance in setting up systems of this kind.

Type I environmental labels

- → are aimed at both private and business consumers,
- → indicate a particular environmental quality,
- → are relevant to public procurement,
- → have a high level of credibility, are usually very well known,
- → require certification by a third party,
- → involve groups of interested parties.

4.1 Product evaluation based on specific criteria

The most well-known environmental labels include the Blue Angel in Germany, the Nordic Swan in Scandinavia and the EU Ecolabel. These are all awarded on the basis of a set of criteria that is used to evaluate products. They identify those products that comply with the environmental performance specified for different product categories. Participation in these labelling schemes is always voluntary for manufacturers. This means that even products without a label may fulfil the specified requirements for one, such as the Blue Angel.

Product labelling based on multiple criteria is referred to as Type I within the ISO system. The label may be – but does not necessarily have to be – issued by a government body.

Infobox 8

ISO Type I ecolabels are often used in advertising for final consumers because they guarantee a high standard.

The DIN EN ISO 14024 standard gives a detailed description of the way in which organisations can establish a criteria-based product labelling programme. It contains guidelines, outlining procedures for:

- selection of product categories,
- development of environmental criteria,
- product testing,
- product certification,
- involving interested parties.

ENSURING TRANSPARENCY, CREATING ACCEPTANCE

Since products are compared with one another, the standard sets out a transparent procedure. This applies to the selection of product categories, environmental criteria, testing methods etc. As far as furthering acceptance of an environmental label is concerned, interested parties – including companies, associations, non-government organisations and scientific institutions – should be involved right from the very beginning. A formal consultation mechanism must be created for this purpose. The standard states that this may include selected groups of representatives and make take the form of a verification committee or a public hearing.

CONSIDERING THE ENTIRE LIFE CYCLE

The procedures prescribed by DIN EN ISO 14024 also apply to such details as costs, charges and how long the endorsement that criteria have been met remains valid. When evaluating products, it is important to take their entire life cycle into consideration. The declared objective of the standard is “reducing environmental impacts and not merely transferring impacts across media or stages of the product life cycle.” The entire process must be taken into consideration: extraction of resources, manufacturing, distribution, use and disposal of the product. A complete life cycle assessment is not necessary, however.

The standard takes into account all aspects of a criteria-based product evaluation. It can provide comprehensive guidance throughout the process of setting up an environmental labelling programme.

4.2 The Blue Angel

The Blue Angel is a well-known example of an ISO Type 1 ecolabel. It was created by federal and regional ministries in 1978 to give consumers, the public sector and industry reliable product information. The idea was that their purchasing choices would stimulate consumer demand for environmentally sound products, which in turn would promote sustainable product innovation. In this way, the Blue Angel is beneficial for both environmental and health concerns and consumer protection. The label is awarded to products that have good overall environmental performance and also meet high standards of health and safety and functionality.

12,000 products, manufactured by 1,400 companies, which fall into about 120 different product categories, are currently entitled to use the Blue Angel label. They include paper products, furniture, electrical appliances, paint, varnish and lacquer, sanitary and hygiene products, and products used in the gardening and landscaping, interior decoration, home improvement, transport and service sectors.

Since the end of 2008, the Blue Angel has prioritised certain areas of its product portfolio. In particular, themed categories have been introduced. The aim of this categorisation is to strengthen the label's usefulness in providing guidance and make it even easier for consumers to make active choices that are beneficial for their health and the environment. It also makes it easier for manufacturers and retailers to convey the message associated with the Blue Angel and the particular product.

The label's impartiality and credibility is guaranteed by the Environmental Label Jury as the decision-making body, the Federal Environment Ministry as the official owner of the label, the Federal Environment Agency, which is in charge of developing the scientific criteria for the label, and RAL gGmbH as the independent certification body.

Infobox 9

The priorities focus on four protection goals:

- protects the climate
- protects the environment and health
- protects water
- protects resources

The Blue Angel is normally valid for three or four years. The costs are based on annual sales revenue from the product.

How the Blue Angel is awarded

If Basic Award Criteria already exist for the product group in question, interested companies can apply to RAL gGmbH for their products to be awarded the Blue Angel. The applicant must then submit evidence of compliance with the Basic Award Criteria. RAL checks the completeness and correctness of the documentation and the next step is that the company files an informal application, which is reviewed by RAL and the Federal Environment Agency. The applicant then has to submit the evidence of compliance with the Basic Award Criteria, which RAL checks to ensure completeness and correctness. If the product meets the criteria, a contract for use of the Blue Angel is concluded.

Information about award criteria and procedures and application packs can be downloaded at www.blauer-engel.de. The website also has a list of products that have already been awarded the label.

The Blue Angel is awarded to low-emission and energy-efficient printers and multifunction devices

Information and communication technology is now very common in homes and offices. The Environmental Label Jury therefore decided as early as the 1990s to have basic criteria for the Blue Angel award drawn up for printers and multifunction devices. These basic criteria were developed through a process of technical discussions and interviews with office equipment manufacturers, consumer protection associations and testing and research institutes. An analysis of the life cycle of a printer clearly showed that environmental impacts occur primarily during the use phase and that this should therefore be taken into account when developing criteria for awarding the Blue Angel.

This was the background that gave rise to a general set of criteria for office printers and multifunction devices (printers, photocopiers, fax machines, and scanners):

- energy consumption must be as low as possible;
- release of volatile substances and particulate matter to the indoor air during the printing process should be as low as possible;
- their noise emissions should be as low as possible;
- they should be designed for longevity and recyclability;
- pollutant materials and anything likely to cause indoor pollution should be avoided.

Consensus on criteria

This general set of specifications has been translated into the Blue Angel's Basic Award Criteria which set out specifications that the product has to fulfil, along with evidence to be submitted. The test procedure for ascertaining emissions from office printers and multifunction devices was developed by the Federal Institute for Materials Research and Testing (BAM). It includes identifying volatile organic compounds, gravimetric determination of ozone and particulate emissions, and carrying out a fine and ultrafine particulate matter count for laser printers under standardised test conditions in emission test chambers.

The applicant is awarded the Blue Angel if the printer or multifunction device meets not only the stringent emission criteria but also all the other safety and environmental specifications set out in the Basic Award Criteria. The award criteria for the Blue Angel were tightened up in 2013 (RAL-UZ 171). Currently over 20 office appliances have a Blue Angel label.

Infobox 10

The Basic Award Criteria for the Blue Angel are continuously updated, including those for office equipment. During the radical revision of criteria for printers and multifunction devices in 2012/2013, specifications on emissions of volatile organic compounds, ozone and particulate emissions that can be determined gravimetrically, and energy consumption were redefined.

Recycled paper with a Blue Angel label meets the highest quality standards

Using waste paper to make graphic paper helps conserve resources and reduce the volume of waste generated, especially when the waste paper originates from household-like or commercial sources. It makes it possible to prevent the pollution caused by chemical or mechanical pulp production. Furthermore, when looked at from a whole-systems perspective, while their general performance characteristics are comparable, the environmental performance of products made from recycled paper is significantly better than those made of virgin wood-based fibres, in terms of resource consumption, wastewater pollution, water and energy consumption.

There are five Blue Angel labels for different groups of paper products: recycled paper, newsprint, recycled cardboard, sanitary paper and wallpaper.

The Blue Angel label for office and print materials (RAL-UZ 14) requires:

- 100 percent recycled paper containing at least 65 percent of lower and medium grades of waste paper.
- No use of chlorine, optical brighteners, halogenated bleaching agents and other chemicals.
- The quality of the final products must meet the highest standards, such as optimum functionality and best print results. Photocopier papers that have a Blue Angel label have been tested for technical suitability under DIN EN 12281:2002.
- Recycled papers with a useful life of several hundred years meet the highest standards of archivability specified in LDK 24-85 (German durability class) and DIN 6738:2007.

The Blue Angel for recycled paper has been extremely successful: over 670 contracts granting use of the label have been concluded.

Low-pollutant paints and varnishes – a highly successful ecolabel for 30 years

The range of paints, varnishes, glazes and primers now on offer is virtually unlimited. This makes it difficult to choose suitable products for a particular application. Each year, the use of brushes and aerosols causes ten thousand tonnes of solvents to be released into the atmosphere. This can have an adverse effect on health and contribute to the formation of summer smog. Paints and varnishes that have been awarded the Blue Angel label have a particularly low solvent content and can be diluted with water.

The Basic Award Criteria that paints and varnishes have to meet to be awarded the Blue Angel label include environmental and health-related criteria:

- → strict specifications for additives that are not considered to be environmentally sound;
- → low solvent content;
- → do not contain plasticisers that are harmful to health;
- → minimise the use of preservatives.

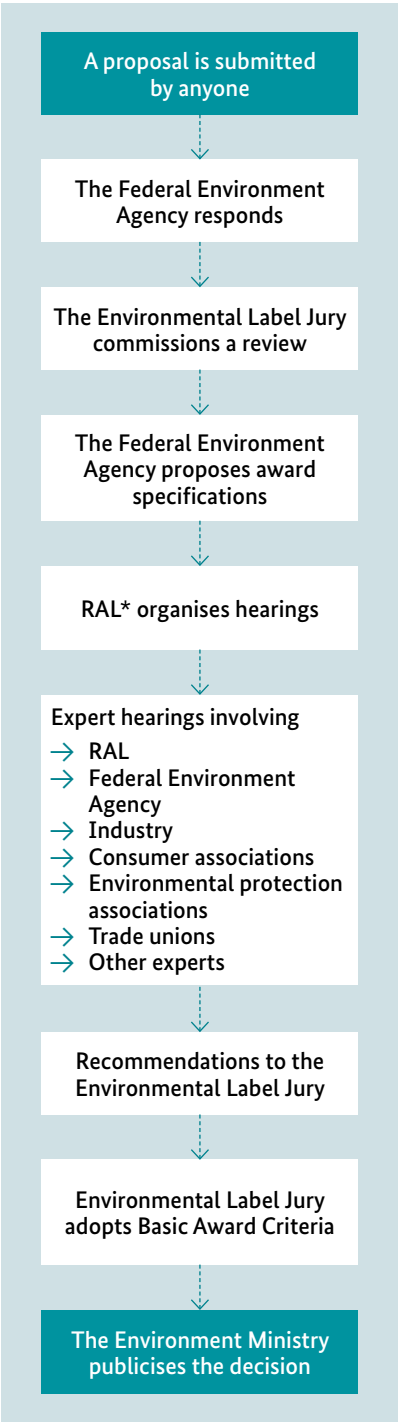
Currently over 400 low-pollutant paints, varnishes and glazes made by 52 companies have been awarded the Blue Angel.

HOW NEW BASIC AWARD CRITERIA ARE DEVELOPED

Anyone can submit to the Federal Environment Agency proposals for product categories for which basic Blue Angel criteria do not yet exist. An independent Environmental Label Jury, made up of representatives of various interested parties, selects individual product categories for closer scrutiny.

◀ *A feasibility study is carried out to review the selection of possible product categories and the market situation. The environmental impact of a product is subsequently determined and the potential for improvement ascertained. The Federal Environment Agency uses this as the basis for developing the Basic Award Criteria for that product. The German Institute for Quality Assurance and Certification (RAL) organises the expert hearings.*

How new Basic Award Criteria are developed



**RAL: German Institute for Quality Assurance and Certification, Sankt Augustin*

4.3 The European Ecolabel

The European Ecolabel is used for everyday articles. The structure and procedures of this labelling programme are similar to that of the Blue Angel. Applications for the "European flower" – the emblem of the European ecolabel – can currently be made in 29 product categories. These include paints and varnishes, televisions, textiles, shower gel, hair shampoo, hand and body soap, shoes, detergents, washing-up liquid, all-purpose cleaners, sanitary cleaners, hard flooring, and tourist accommodation. The list of product categories is extended at regular intervals.

The EU flower logo identifies detergents and cleaning products that are kinder to the environment

Detergents and cleaning products are used in all households every single day, as well as in trade and industry. Because they are so common, the possible harm they might cause to health and the environment is often underestimated. And yet using detergents and cleaning products pollutes wastewater with significant amounts of chemicals. The raw materials used in products with the EU Ecolabel have to meet stringent standards in terms of their impact on the environment and health, above and beyond the statutory regulations. For example, ecolabelled products have a lower impact on the aquatic environment and are to a great extent biologically degradable.

Other criteria specify, for example, that packaging must be kept to a minimum and information on how to use the product without harming the environment provided. The products' cleaning performance is tested, which guarantees that the ecolabelled products have to provide evidence that they are fit for purpose and meet the consumers' needs.

The European Ecolabel has six categories for cleaning products: household laundry and dishwasher detergents, hand dishwashing detergents, all-purpose and sanitary cleaning products, and industrial and institutional laundry detergents. In addition to these established ecolabels for detergents and cleaning products, a European ecolabel has now been developed for soaps, shampoos and hair conditioners.

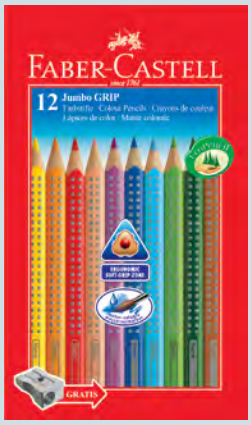
The ecolabels for laundry, cleaning and personal care are becoming increasingly popular in the European market. In Germany too the number of companies using the European flower logo is increasing. Currently, 47 companies have registered 180 products with RAL GmbH.

HOW THE LABEL IS AWARDED

Parties interested in applying for the ecolabel contact the Federal Environment Agency or the German Institute for Quality Assurance and Certification (RAL) in St. Augustin to determine whether basic criteria already exist for the product concerned. If so, the company can submit an application to RAL. In its capacity as the national label awarding agency, RAL then determines whether the product meets the specified requirements.

INCORPORATING NEW PRODUCT CATEGORIES

New basic criteria can be developed in the event that none exist for a particular product. The Federal Environment Agency and RAL accept relevant proposals. The basic criteria are formulated with the participation of interested parties and take market studies and the product's life cycle into consideration.
(www.ec.europa.eu/environment/ecolabel/).



Trading and industrial companies use the label to advertise their products. It gives both company and customers the assurance that all the wood used in the products has been processed in accordance with FSC® guidelines. In this case: Faber-Castell in Germany

4.4 FSC® and PEFC™

The FSC® (Forest Stewardship Council) and PEFC™ (Programme for the Endorsement of Forest Certification schemes) labels are awarded to wood products from sustainable, well-managed forests and can be found on windows, doors, furniture and paper, for example. Both international organisations are non-governmental and their common objective is to ensure that the world's forests are managed in an environmentally appropriate, socially beneficial and economically viable manner. While the Forest Stewardship Council was jointly founded by environmental organisations, the timber trade, the forestry sector and indigenous people's organisations in 1993, the Programme for the Endorsement of Forest Certification schemes was launched by small forest owners and representatives of the timber trade in 1999.

Just over 70 percent of Germany's forested area had been certified by 2011: 7.4 million hectares (around 67 percent) in line with PEFC™ criteria and 544,000 hectares (around 5 percent) in line with FSC® criteria. Worldwide, around 245 million hectares have been certified under PEFC™ requirements and around 149 million hectares in compliance with FSC® criteria.

HOW THE LABEL IS AWARDED

While PEFC™ certification focuses on an entire region, carrying out random checks on companies, FSC®'s certification and monitoring processes look at individual companies. The principles and criteria of FSC® International apply to every FSC® certificate awarded anywhere in the world and are supplemented by indicators that have been adapted to circumstances in the region concerned. The PEFC™ standard, on the other hand, constitutes a framework for acknowledging national certification systems, which already have standards of their own, provided they comply with minimum standards.

Monitoring material flow is important for wood-processing companies. This has to be checked and verified and explicitly mentioned in product descriptions. Both certificates require complete traceability from producer right through to the final retailer, assured by maintaining a strict chain of custody system.

4.5 Marine stewardship council

The Marine Stewardship Council (MSC) was established by the World Wildlife Fund (WWF) and Unilever in 1997. The MSC's objective is to safeguard the future of fish stocks and the healthy marine environment on which the fishing industry depends. The internationally active organisation has since become independent of its founders and is now a recognised non-profit-making organisation. MSC develops principles and criteria for assessing sustainable fishing. Any fishery can apply for certification in accordance with MSC guidelines. The transparent certification procedure is conducted by independent companies (www.msc.org).

Further information

- EU Ecolabel Helpdesk, c/o BIO Intelligence Service S.A.S., 20-22 Villa Deshayes, 75014 Paris, France, Tel.: +33 (0) 153 90 11 75, ecolabel@biois.com, **www.eu-ecolabel.de**
- RAL, German Institute for Quality Assurance and Certification, Siegburger Strasse 39, 53757 Sankt Augustin, Germany, Tel.: +49 (0) 2241 / 16 05-0, **www.ral.de**
- Federal Environment Agency, Eco-design, Environmental Labelling, Environmentally Friendly Procurement Section, Office for the Environmental Label Jury, Wörlitzer Platz 1, 06844 Dessau-Rosslau, Germany, Tel.: +49 (0) 340 / 21 03-0, **www.blauer-engel.de**

5 MAKING GOOD ENVIRONMENTAL CLAIMS

Environmental claims have been increasingly appearing on technical data sheets and packaging in advertising and publicity for some years now. The reliability of such claims must be assured if they are to be credible and useful. DIN EN ISO 14021 provides assistance for all product suppliers in this respect. This standard defines an accepted form of label and declaration, which is referred to as Type II within the ISO system.

Type II environmental labels and declarations

- → are primarily aimed at consumers,
- → frequently concentrate on one specific environmental aspect,
- → can also be used in principle to convey complex information,
- → are based on voluntary self-declarations for which the manufacturer has sole responsibility.

5.1 Keeping an eye on the market impact

Unreliable or deceptive environmental claims can have a negative impact on the market – resulting in trade barriers, for example, or unfair competition. It is therefore important that environmental claims comply with DIN EN ISO 14020, i.e. are accurate and verifiable. DIN EN ISO 14021 fleshes out the more generally framed DIN EN ISO 14020 standard, laying down codes of practice and clearly defined requirements for frequently used terms. In 2012, an addendum to the standard was adopted, which included terms that have become far more important in environmental claims in recent years. The main ideas behind this standard are summarised below, using specific examples.

DIN EN ISO 14021 regulates the use of typical environmental claims in the interests of certainty for both companies and consumers.

AVOIDING VAGUE OR NON-SPECIFIC CLAIMS

The meaning of terms such as "environmentally safe," "environmentally friendly," "green," "emission-free" or "ozone friendly" etc. is vague and people reading them have different expectations. Claims that imply that a product is environmentally beneficial without being specific about what that means should not be used in marketing.

The advertising slogan of a washing machine manufacturer – "ECO – the Green Machine" – is a general statement that is not based on anything specific; this slogan contravenes the international standard.

CARE IN MAKING SPECIFIC CLAIMS

Environmental claims:

- → must be accurate and not misleading;
- → must be substantiated and verified;
- → must not – either directly or by implication – claim an environmental improvement that does not exist;
- → must not exaggerate the environmental aspects of a product;
- → must not be made if they are likely to be misinterpreted by purchasers;
- → must be unambiguous in the area they are targeting: it must be evident whether the claim applies to the complete product, a specific component of it, the packaging or an aspect of a service;
- → must be relevant to the geographical area where the environmental impact occurs.

Infobox 11

The claim "CFC free" is inappropriate for pipe insulation materials or insecticides. It gives the impression that there are special benefits associated with the product, whereas there is a general ban on using these chlorofluorocarbon compounds in such products in any case.

Where an environmental claim not backed by further information is likely to result in misunderstanding, it must be accompanied by an explanatory statement. It may only be made without an explanatory statement if it is valid without restriction under all foreseeable circumstances.

Infobox 12

The term "free from..." is only appropriate as an environmental claim if the level of the specified substance is not greater than would be found as an acknowledged trace contaminant or background level.

Infobox 13

The recycled content of a product has been increased from 10 percent to 15 percent.

The absolute difference is 15 percent–10 percent = 5 percentage points. An environmental claim could legitimately draw attention to the additional 5 percent recycled content. The alternative claim of a 50 percent increase is technically correct, but could be misleading, since someone reading it quickly might assume that the recycled content was 60 percent (10 percent to start with plus a 50 percent increase).

COMPARATIVE CLAIMS

If comparisons are made between products or processes:

- → The comparison may only be made on the basis of a published standard or recognised testing method.
- → The comparison must be made between products that perform the same function and are currently available on the same market or have been until recently.
- → Environmental aspects of the product life cycle must be made using the same unit of measurement. They must refer to the same functional unit and must have been calculated over a reasonable period (usually twelve months).

Infobox 14

The useful life of a product has been increased from 10 to 15 months. The relative difference is five months, i.e. 50 percent of the original time. An environmental claim could draw attention to this 50 percent extension to the product's useful life.

Where comparative claims are based on percentages, the improvement in **absolute** terms should also be stated. Where comparative claims are based on absolute values, the **relative** improvement should also be stated.

OBLIGATION TO PROVIDE INFORMATION

The information required to verify an environmental claim may be published on a voluntary basis. If the information is not published, it must be disclosed upon request without disproportionate expenditure and without disclosing commercially sensitive information to any person seeking to verify the claim.

Environmental labels and declarations may contain a symbol, which should be easily distinguishable from other symbols.

Infobox 15

Environmental symbols that have been modelled on well-known environmental labels contravene the standard: users could mistake the symbol for an official label and be misled.

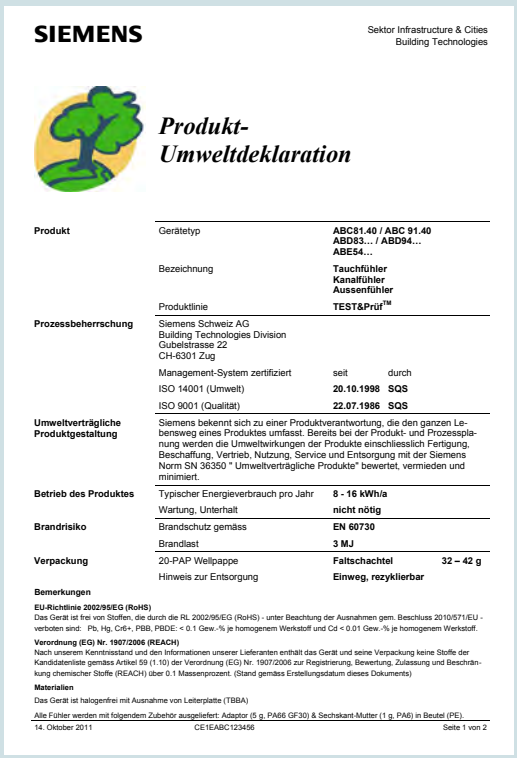
5.2 Guideline for complex information

The DIN EN ISO 14021 standard may be used as a guideline for exchanging complex information between companies. An example of this is the environmental declaration for a refrigerant valve manufactured by Siemens Building Technologies (Switzerland).

The environmental declaration is based on a Siemens standard and demonstrates one of the ways the company approaches environmental declarations. It:

- describes the product and its packaging,
- lists all the material components with their dimensions,
- specifically describes how to dispose of the printed circuit board
- gives details of risks to the environment, e.g. in the event of a fire.

A section entitled “Environmental benefits” contains supplementary information: “Used as an expansion valve, the energy consumption of the compressor is around 5 percent lower than that of a thermal expansion valve, thanks to the fast, precise lift movement [of the refrigerant valve]. Assuming 100 kW refrigerating capacity and a 100 percent duty cycle, the resulting energy saving amounts to 11,400 kWh per year.”



SIEMENS

Sektor Infrastructure & Cities
Building Technologies

Produkt-Umweltdeklaration

Produkt	Gerätetyp	**ABC81.40 / ABC 91.40 ABD83… / ABD94… ABE54…**	
	Bezeichnung	**Tauchfühler Kanalfühler Aussenfühler**	
	Produktlinie	**TEST&Prüf™**	
Prozessbeherrschung	Siemens Schweiz AG Building Technologies Division Gubelstrasse 22 CH-6301 Zug		
	Management-System zertifiziert	seit	durch
	ISO 14001 (Umwelt)	**20.10.1998**	**SQS**
	ISO 9001 (Qualität)	**22.07.1986**	**SQS**
Umweltverträgliche Produktgestaltung	Siemens bekennt sich zu einer Produktverantwortung, die den ganzen Lebensweg eines Produktes umfasst. Bereits bei der Produkt- und Prozessplanung werden die Umweltwirkungen der Produkte einschliesslich Fertigung, Beschaffung, Vertrieb, Nutzung, Service und Entsorgung mit der Siemens Norm SN 36350 " Umweltverträgliche Produkte" bewertet, vermieden und minimiert.		
Betrieb des Produktes	Typischer Energieverbrauch pro Jahr	**8 - 16 kWh/a**	
	Wartung, Unterhalt	**nicht nötig**	
Brandrisiko	Brandschutz gemäss	**EN 60730**	
	Brandlast	**3 MJ**	
Verpackung	20-PAP Wellpappe	**Faltschachtel**	**32 – 42 g**
	Hinweis zur Entsorgung	**Einweg, rezyklierbar**	

Bemerkungen

EU-Richtlinie 2002/95/EG (RoHS)
Das Gerät ist frei von Stoffen, die durch die RL 2002/95/EG (RoHS) - unter Beachtung der Ausnahmen gem. Beschluss 2010/571/EU - verboten sind: Pb, Hg, Cr6+, PBB, PBDE: < 0.1 Gew.-% je homogenem Werkstoff und Cd < 0.01 Gew.-% je homogenem Werkstoff.

Verordnung (EG) Nr. 1907/2006 (REACH)
Nach unserem Kenntnisstand und den Informationen unserer Lieferanten enthält das Gerät und seine Verpackung keine Stoffe der Kandidatenliste gemäss Artikel 59 (1.10) der Verordnung (EG) Nr. 1907/2006 zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH) über 0.1 Massenprozent. (Stand gemäss Erstellungsdatum dieses Dokuments)

Materialien
Das Gerät ist halogenfrei mit Ausnahme von Leiterplatte (TBBA)

Alle Fühler werden mit folgendem Zubehör ausgeliefert: Adaptor (5 g, PA66 GF30) & Sechskant-Mutter (1 g, PA6) in Beutel (PE).

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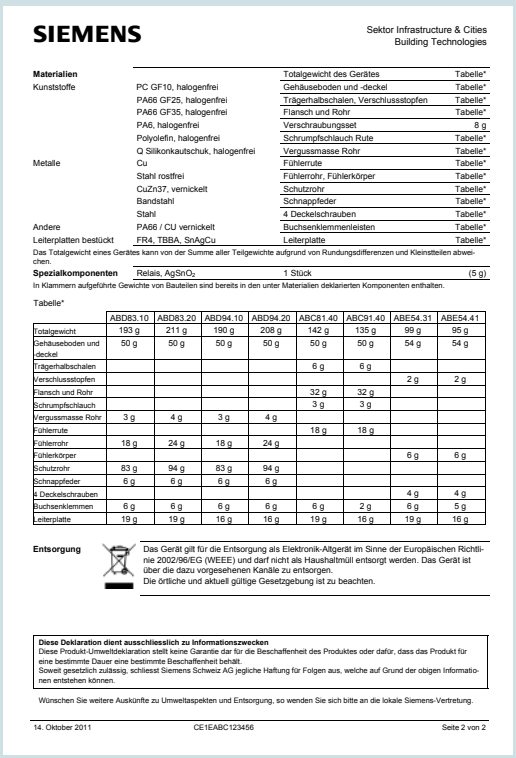

SIEMENS

Sektor Infrastructure & Cities
Building Technologies

Materialien			
Kunststoffe	PC GF10, halogenfrei	Totalgewicht des Gerätes	Tabelle*
	PA66 GF25, halogenfrei	Gehäuseboden und -deckel	Tabelle*
	PA66 GF35, halogenfrei	Trägerhalbschalen, Verschlussstopfen	Tabelle*
	PA6, halogenfrei	Flansch und Rohr	Tabelle*
	Polyolefin, halogenfrei	Verschraubungsset	8 g
	Q Silikonkautschuk, halogenfrei	Schrumpfschlauch Rute	Tabelle*
Metalle	Cu	Vergussmasse Rohr	Tabelle*
	Stahl rostfrei	Fühlerrute	Tabelle*
	CuZn37, vernickelt	Fühlerrohr, Fühlerkörper	Tabelle*
	Bandstahl	Schutzrohr	Tabelle*
	Stahl	Schnappfeder	Tabelle*
Andere	PA66 / CU vernickelt	4 Deckelschrauben	Tabelle*
Leiterplatten bestückt	FR4, TBBA, SnAgCu	Buchsenklemmenleisten	Tabelle*
		Leiterplatte	Tabelle*

Das Totalgewicht eines Gerätes kann von der Summe aller Teilgewichte aufgrund von Rundungsdifferenzen und Kleinstteilen abweichen.

Spezialkomponenten Relais, $AgSnO_2$ 1 Stück (5 g)

In Klammern aufgeführte Gewichte von Bauteilen sind bereits in den unter Materialien deklarierten Komponenten enthalten.

Tabelle*

	ABD83.10	ABD83.20	ABD94.10	ABD94.20	ABC81.40	ABC91.40	ABE54.31	ABE54.41
Totalgewicht	193 g	211 g	190 g	208 g	142 g	135 g	99 g	95 g
Gehäuseboden und deckel	50 g	50 g	50 g	50 g	50 g	50 g	54 g	54 g
Trägerhalbschalen					6 g	6 g		
Verschlussstopfen							2 g	2 g
Flansch und Rohr					32 g	32 g		
Schrumpfschlauch					3 g	3 g		
Vergussmasse Rohr	3 g	4 g	3 g	4 g				
Fühlerrute					18 g	18 g		
Fühlerrohr	18 g	24 g	18 g	24 g				
Fühlerkörper							6 g	6 g
Schutzrohr	83 g	94 g	83 g	94 g				
Schnappfeder	6 g	6 g	6 g	6 g				
4 Deckelschrauben							4 g	4 g
Buchsenklemmen	6 g	6 g	6 g	6 g	6 g	2 g	6 g	5 g
Leiterplatte	19 g	19 g	16 g	16 g	19 g	16 g	19 g	16 g

Entsorgung

Das Gerät gilt für die Entsorgung als Elektronik-Altgerät im Sinne der Europäischen Richtlinie 2002/96/EG (WEEE) und darf nicht als Haushaltmüll entsorgt werden. Das Gerät ist über die dazu vorgesehenen Kanäle zu entsorgen.
Die örtliche und aktuell gültige Gesetzgebung ist zu beachten.

Diese Deklaration dient ausschliesslich zu Informationszwecken
Diese Produkt-Umweltdeklaration stellt keine Garantie dar für die Beschaffenheit des Produktes oder dafür, dass das Produkt für eine bestimmte Dauer eine bestimmte Beschaffenheit behält.
Soweit gesetzlich zulässig, schliesst Siemens Schweiz AG jegliche Haftung für Folgen aus, welche auf Grund der obigen Informationen entstehen können.

Wünschen Sie weitere Auskünfte zu Umweltaspekten und Entsorgung, so wenden Sie sich bitte an die lokale Siemens-Vertretung.

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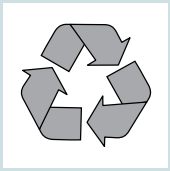
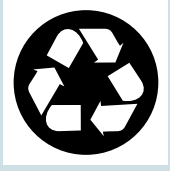
This environmental declaration for a refrigerant valve is based on DIN EN ISO 14020 and 14021 and a Siemens corporate standard.





The Mobius loop can be used to indicate the recycled content or recyclability of a product or packaging.

5.3 Frequently used terms

Certain environmental claims are used particularly frequently in marketing and in communications between companies. DIN EN ISO 14021 specifies the use of 17 terms and defines the way in which they should be used. The terms include compostable, degradable, recyclable, reduced energy consumption, reusable, sustainable, carbon neutral etc.

REDUCED WATER CONSUMPTION

According to DIN EN ISO 14021, all claims regarding products that use less water – such as washing machines or hand showers – must be qualified and must comply with the requirements for comparative claims (see above). The calculation of reduced consumption must be based on the product's actual use; the water used during the manufacturing process must not be included in the calculation..

RECYCLED CONTENT

The standard clearly defines recycled content as being the proportion by mass of recycled material in a product or packaging. Only pre-consumer and post-consumer materials may be included in the calculation. Product data must not be combined with packaging data.

Where more detailed information is requested by an external party, a company must provide the purchasing documentation or other reports to enable verification of the origin and quantity of recycled material. If a symbol is used for a claim regarding recycled content, it must be the Mobius loop accompanied by the percentage of recycled material in the product. A Mobius loop without a percentage indicates that a product or packaging is recyclable.

Declaring recycled content is appropriate when the secondary materials used are either generated or processed separately. If the waste occurs in a mixed form, such as mineral waste from construction and demolition, the focus should be on reusing the material in appropriate applications. In these cases, it is therefore not the recycled content but the recovery quota, i.e. the percentage by mass of reused material based on the total arising for that type of waste, that is relevant. If some kind of processing is necessary in order for the material to be reused, the recycling quota, i.e. the percentage by mass of the waste stream that passes through a recycling plant based on the total arising, is an appropriate parameter.

DEGRADABLE

Claims regarding degradability refer to the ability of chemical structures to change, causing a product or material to decompose. According to the DIN EN ISO 14021 standard, degradability claims must contain details of the method of testing, the level of degradation as a percentage and the duration of testing. In Germany, the term “degradable” is usually used in conjunction with an attribute describing the type of degradation, e.g. bio-degradable.

Anyone making environmental claims is responsible for providing the data needed to verify the claim.

Futher information

- → Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Division G I 4, 11055 Berlin, Germany, Tel.: +49 (0) 30 / 183 05-0, **www.bmub.bund.de**
- → Federation of German Industries (BDI), Environmental Policy Department, Breite Straße 29, 10178 Berlin, Germany, Tel.: +49 (0) 30 / 20 28-0, **www.bdi-online.de**
- → Consumers International, 24 Highbury Crescent, London N5 1 RX, United Kingdom, Tel.: 0044 / 20 / 72 26 66 63, **www.consumersinternational.org**
- → Association of German Chambers of Commerce and Industry (DIHK), InfoCenter, Breite Straße 29, 10178 Berlin, Germany, Tel.: +49 (0) 30 / 203 08-0, **www.dihk.de**
- → Principles of Environmental Protection Standards Committee (NAGUS) at DIN German Institute for Standardization, Burggrafenstr. 6, 10787 Berlin, Germany, Tel.: +49 (0) 30 / 26 01-0, **www.nagus.din.de**
- → German EMAS Advisory Board (German abbreviation: UGA) at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, UGA office, Gertraudenstraße 20, 10178 Berlin, Germany, Tel.: +49 (0) 30 / 29 77 32-30, **www.uga.de**
- → Federation of German Consumer Organisations – vzbv, Markgrafenstraße 66, 10696 Berlin, Germany, Tel.: +49 (0) 30 / 258 00-0, **www.vzbv.de**

6 Complex information for the international market

Companies are increasingly required to provide substantiated quantitative environmental information. Attention is focused on data that can be used expediently in an international market. DIN EN ISO 14025 was developed with this in mind.

Type III declarations[2]

- → are aimed at users in trade and industry, and consumers,
- → are based on a life cycle assessment,
- → provide comprehensive quantitative and verified information,
- → provide data on environmental performance without any evaluation,
- → are suitable for all products and services,
- → make it possible to aggregate data across the entire value chain,
- → require independent verification by a third party.

2 Type III environmental declarations are referred to internationally using the acronym EDP (Environment Product Declaration).

6.1 Quantitative data without evaluation

Comprehensive environmental data on a product can create confidence in the market. It constitutes a suitable medium to provide business partners with detailed information and can be used to support marketing activities and communication with investors and other stakeholders. DIN ISO 14025 is an international standard that provides the basis for quantitative declaration of products.

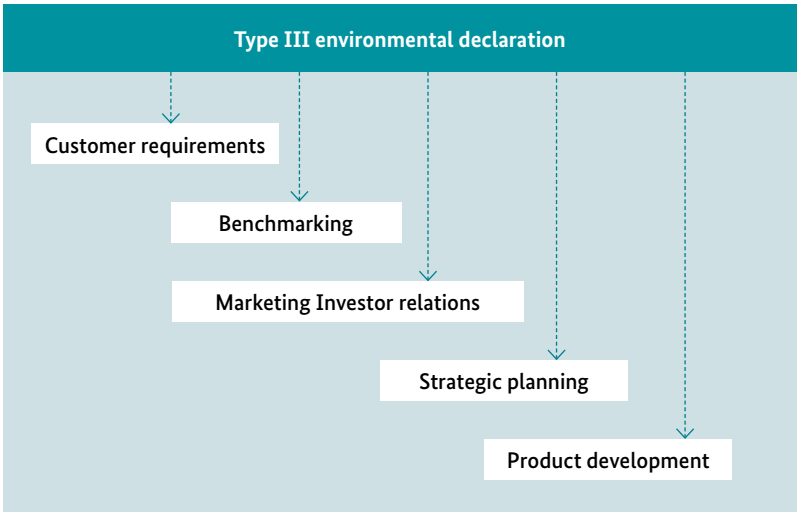
Infobox 16

Type III
Declarations are increasingly important for the procurement of the public sector.

THREE ELEMENTS OF THE DECLARATION

Environmental declarations – known as Type III declarations under the ISO system – are based on

- life cycle assessments and supplementary environmental information,
- standardised rules that are drawn up for categories of products by the interested parties (Product Category Rules), and
- an independent verification process.



The procedure ensures a high level of credibility. The standardised method offers a means of using environmental information in both regional and international markets across the entire value chain. The rules and stipulations applicable to a particular sector or product category are documented by the programme operator – this can be the manufacturer or trade association, a government authority or agency or independent scientific or other institution – in a Type III environmental declaration programme.

THE INITIATIVE IS IN THE HANDS OF THE COMPANIES

Type III declarations are primarily used for professional information management within companies and among interested parties. The initiative is taken by the business sector and participation is voluntary. The new procedure is oriented to the functionality and performance of products and produces a flexible environmental information tool. In the event of an improvement in environmental performance, it is relatively easy to modify the product declaration. The information is easily accessible internationally on the Internet. A declaration consists of only a few pages.

Infobox 17

In addition to life cycle assessments, Type III environmental declarations can also include technical information on things such as the insulation performance of a construction product or its VOC emissions.

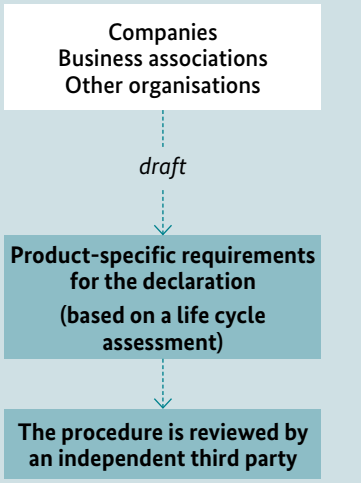
ESTABLISHED STRUCTURES

Many European countries – such as Germany, the United Kingdom, France, Sweden, Portugal, Spain and the Netherlands – have declaration programmes in the construction sector that are based on the European DIN EN 15804 standard. The European ECO Platform is designed to ensure harmonised implementation and promote an exchange of experience among the participating EPD programmes. GEDNet – Global Environmental Declaration Network – performs this function at global level.

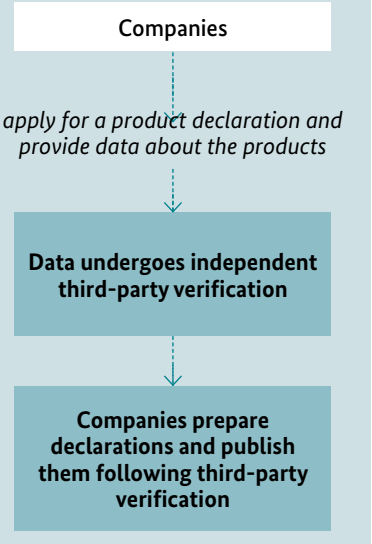
Infobox 18

Type III labelling programmes use a standardised procedure for life cycle assessments. This reduces the effort and cost involved.

Step 1



Step 2



THE DECLARATION PROCEDURE

If no basic criteria for a declaration that meet EN ISO 14025 exist, the declaration procedure takes place in two stages:

1. Companies, business associations or other organisations formulate a set of specific rules for preparing a life cycle assessment, which is reviewed by an independent third party.

2. An interested company applies to the programme operator for a product declaration and provides the relevant data for the product based on requirements specific to the product. The company prepares the declaration. Once it has undergone third-party verification, the declaration is published.

If the basis for a declaration – i.e. for the life cycle assessment – has already been created at an earlier stage, a company may proceed directly to the second stage and submit an application to the programme operator. In the event that a company objects to the existing product category-specific requirements, they may be revised, in which case the interested parties must be consulted again.

COSTS

The costs of a declaration are essentially incurred by supplying the life cycle assessment data, the organisational time and effort involved in consulting the interested parties and the verification process. Since life cycle assessment data are increasingly available in databases, the time, effort and cost involved in a life cycle assessment has decreased. .

INTERNAL INFORMATION AND CONTROL INSTRUMENT

Given the increasingly stringent legal framework for product stewardship, companies can use a Type III declaration as a means of adjusting to new situations in the market. The detailed data compiled for a Type III declaration is available to purchasers, product development and design engineers, designers and environmental managers. This makes it easier to steer product development towards environmental performance (eco-design); even when new models are developed, environmental performance remains the focus.

BENEFITS FOR OTHER MARKET PARTICIPANTS

Type III declarations are also useful for waste disposal companies because they contain information on valuable and hazardous substances in the waste products. Providing additional information about dismantling products and potential recoverables strengthens recycling loops.

6.2 Experience to date

Experience with this new environmental product declaration tool has thus far primarily been acquired in Europe and Asia. The spectrum of Type III product declarations ranges from simple data sheets through to extensive brochures. Some declarations are available in certified form; under the standard, certification is discretionary.

CONSTRUCTION PRODUCTS

The main area where environmental product declarations have become established in Germany and numerous other European countries is the construction sector. The background to this is the fact that construction products are rarely end products and their efficiency is usually only evident when they are used in building components or structures.

Infobox 19

Type III declarations already provide the data set needed to assess the environmental performance of buildings within building sustainability certification schemes.

Product information for sustainable building

The environmental performance of a building depends crucially on the construction products used. Depending on the type of building and what it is used for, and also on its location, construction products have to meet different requirements. As semi-finished products, their technical efficiency is usually only evident when they are used in building components and structures. It therefore follows that the environmental impact of a construction product can only be assessed in the context of a particular building and a specific use situation.

This approach has become generally established in Germany and Europe, partly in the light of work in the European Committee for Standardization (CEN/TC/350) on sustainable buildings. One of the main outcomes of the standardisation work is the realisation that the evaluation of a building's environmental performance should be based on the results of a life cycle assessment, for which environmental declarations for construction products with their product-specific life cycle assessments provide the key data set.

Germany already has two certification systems for making an overall evaluation of whether a building is sustainable: the evaluation system for sustainable building (German abbreviation: BNB) which was operated by the former Federal Ministry of Transport, Building and Urban Development and applied to federal buildings and the certification system run by the German Sustainable Building Council (German abbreviation: DGNB). They are based on the latest developments in European standards for buildings.

As part of CEN's standardisation work, rules on preparing environmental declarations that go beyond the stipulations of ISO were made more specific. European standard DIN EN 15804, which came into effect in April 2012 provides basic Product Category Rules (PCRs) for Type III environmental declarations for construction products und building services of all types. The PCRs also standardise the indicators and the structure of life cycle assessments and recording and calculation methods they are based on. FD CEN/TR 15941 provides guidance on data collection.

Programme operator in Germany

In Germany, the Institute Construction and Environment (Institut Bauen und Umwelt e.V. – IBU), which was set up on the initiative of construction product manufacturers, has the role of operator of the Type III environmental declaration programme for construction products in compliance with DIN EN ISO 14025 and DIN EN 15804. IBU also has an external Committee of Experts, which consists of independent third parties such as the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, the Federal Environment Agency, environmental associations, the Federal Institute for Materials Research and Testing and the Federation of the German Construction Industry. The Committee of Experts ensures that the Product Category Rules Document developed by the product category forum for specific product groups such as bricks, autoclaved aerated concrete, metals for buildings, timber products or insulation materials complies with the stipulations set out in the relevant standards. The Committee of Experts also mediates in the event of conflict and is responsible for having environmental declarations verified by independent expert third parties before they are published.

ECO platform: a European umbrella organisation for national programme operators

The European DIN EN 15804 standard, which was published in April 2012, prepared the way for transborder recognition of Type III environmental declaration for construction products in Europe. To achieve a coordinated European system, the European ECO platform – headquartered in Brussels – was set up in June 2013 as an umbrella organisation for the various national programme operators in Europe. The participating programmes commit to consistently basing their own programme rules on DIN EN 15804 and to ensuring uniform implementation. To ensure that environmental declarations deliver credible, consistent and comparable information about the environmental performance of products, the programmes have also agreed common principles for quality management and the verification procedure.

As the operator of a Type III environmental declaration programme for construction products in Germany, the Institute Construction and Environment also participates in the ECO platform.

NEW REQUIREMENTS CONCERNING MARKETING OF CONSTRUCTION PRODUCTS IN EUROPE

The EU Construction Products Regulation (CPR), which fully entered into force on 01.07.2013, replaces the former Construction Products Directive (CPD), which was introduced over 20 years ago. Under the CPR, marketing construction products in Europe will be contingent on buildings fulfilling seven basic requirements. No. 7 of these – sustainable use of natural resources – puts the direct focus on a building's resource efficiency for the first time.

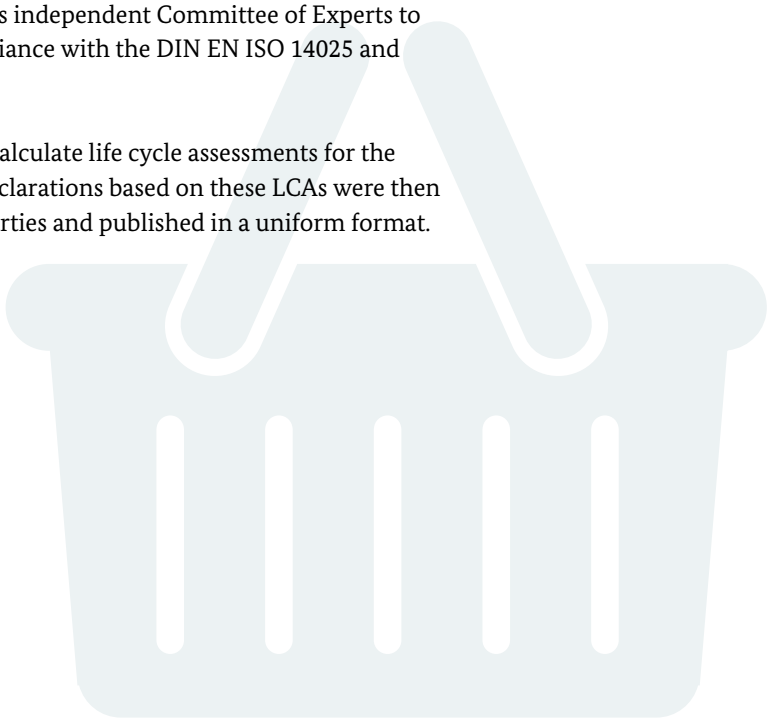
Although it is still not clear whether and to what extent this new requirement will result in construction products having to meet new standards, the recitals to the Regulation refer to the fact that environmental declarations should be used to assess whether a building's use of resources is sustainable.

6.2.1 Environmental declarations for rock wool and titanium zinc

As the first step in preparing the Type III environmental declarations for Deutsche Rockwool and Rheinzink, the product group forum appointed by the Institute Construction and Environment as programme operator developed specific requirements for the two product groups – mineral insulation materials and metals for buildings.

These product-specific requirements were then checked by the Institute Construction and Environment's independent Committee of Experts to ensure completeness and compliance with the DIN EN ISO 14025 and DIN EN 15804 standards.

On this basis, it was possible to calculate life cycle assessments for the products. The environmental declarations based on these LCAs were then verified by independent third parties and published in a uniform format.



Declaration for rock wool insulation materials (Deutsche Rockwool)

PCR document

Environmental declaration

Life cycle assessment

Declaration for titanium zinc (Rheinzink)

PCR document

Environmental declaration

Life cycle assessment

Stages in the process from a sample environmental declaration to a manufacturer's specific environmental declaration

PCR document

Environmental declaration

Personalised environmental declaration

In addition to product life cycle assessments with their total of 24 indicators for quantifying the key environmental impacts, use of resources and waste arisings connected with the product, the Institute Construction and Environment's environmental declaration also includes a comprehensive description of the product, comprising technical performance details, processing information, details of the use phase, of behaviour under exceptional circumstances such as exposure to fire or water, and options for disposal and recycling.

Furthermore, the Committee of Experts can – depending on whether it is relevant for the product group in question – require further evidence of impact on the environment and health, such as VOC emissions to indoor air.

6.2.2 Sample environmental declarations for construction chemical products

In a joint project, three industry associations that are members of the German Chemical Industry Association (VCI) – Deutsche Bauchemie, Industrieverband Klebstoffe, and Verband der deutschen Lack- und Druckfarbenindustrie – compiled sample environmental declarations for construction chemical products through the Institute Construction and Environment as programme operator, which cover a wide range of different technical applications in the construction sector. What was exceptional about this was that the members of the industry associations had the opportunity to "personalise" the sample declarations under certain conditions, i.e. translate them into their own terms of reference. A formula comparison tool ensures that the environmental impacts of a manufacturer's specific product are not greater than those on which the sample declarations are based. This results in tremendous cost-savings for the individual manufacturer, since – assuming the formulas are suf-

ficiently similar – they do not have to carry out a life cycle assessment specifically for their individual product.

6.2.3 Environmental declaration for insulating glass

Flat glass is a classic intermediate product, which is primarily used in buildings in windows and doors. To enable the converters of flat glass to prepare the environmental product declarations that downstream users such as architects, designers, investors and building contractors require, they need the relevant details from the flat glass manufacturer.

Saint-Gobain Glass was the first company in the flat glass industry to use EPDs specific to its products instead of EPDs based on averages. The EPDs produced by Saint-Gobain Glass for SGG CLIMAPLUS double glazing with high thermal insulation properties, for example, were calculated in compliance with the relevant standards and verified by an independent body (EPD verified). In addition to details of product properties and life cycle inventory analyses of environmental impacts, the EPDs also contain information for evaluating health risks and details on how their products contribute to economic efficiency.

Futher information

- German Building Materials Association, BBS, Kochstraße 6-7, 10969 Berlin, Germany, Tel.: +49 (0) 30 / 726 19 99-0, **www.bvbaustoffe.de**
- Building and Civil Engineering Standards Committee (NABau) at DIN, Burggrafenstraße 6, 10787 Berlin, Germany, Tel.: +49 (0) 30 / 26 01-0, **www.nabau.din.de**
- Federal Environment Agency, Substance-Related Product Issues Section, Wörlitzer Platz 1, 06844 Dessau-Rosslau, Germany, Tel.: +49 (0) 340 / 21 03-0, **www.umweltbundesamt.de**
- Institute Construction and Environment, Panoramastr. 1, 10178 Berlin, Germany, Tel.: +49 (0) 30 / 308 77 48-0, **www.bau-umwelt.de**
- ECO Platform AISBL, c/o Construction Products Europe AISBL Boulevard du Souverain 68, 1170 Bruxelles, Belgium, **www.eco-platform.org**
- **www.environdec.com**
- **www.GEDNet.org**

7 OTHER LABELLING SYSTEMS

Standards develop in response to market requirements. Environmental product labels already existed before the DIN EN ISO 14020 series of standards was drawn up. These earlier systems can provide ideas for current environmental product information.

Ideas for practical application

A number of similar forms of environmental product labelling had already become established before the DIN EN ISO 14020 series of standards was adopted. Although they do not strictly fit into the ISO standards system, they can serve as good examples and provide ideas for new labelling systems. They include OEKO-TEX® and bluesign®, IT Eco Declaration, Energy Star, Bio-Siegel for organic produce and the sustainability label for detergents, cleaning products and personal products, all of which are directed at professional buyers and consumers.

7.1 OEKO-TEX® and bluesign®: information flow across global production chains

To date, over 125,000 certificates have been issued to 10,000 companies all over the world for millions of textile products that comply with the requirements of OEKO-TEX®Standard 100. The label was launched in 1992, at a time when textiles and their potential threat to human health were repeatedly the subject of public and media debate.

DETAILED TESTING FOR HARMFUL SUBSTANCES

Supported by trade and industry, two textile research institutes developed the OEKO-TEX®Standard 100. This information and certification system now has over 15 test institutes in Europe and Japan and branches and liaison offices in over 47 other countries. Textile business in over 90 countries, mostly in Europe and Asia, now work with the OEKO-TEX®Standard 100.

Textiles and fabricated materials are tested for the presence of a detailed set of potentially harmful substances, such as heavy metals, pesticides, chlorinated phenols, and carcinogenic and allergenic dyestuffs. The OEKO-TEX® tests far exceed those required to comply with statutory standards in Germany and elsewhere.

A SECTOR WITH A HIGH DEGREE OF INTERNATIONAL DIVISION OF LABOUR

In response to the high degree to which the division of labour in this sector is international, the OEKO-TEX® Standard 100 provides uniform global methods for testing harmful substances in textile products. Production processes and conditions can also cause pollution and OEKO-TEX® Standard 100 specifications are also able to influence environmental standards in the manufacturing plants.

SECURITY FOR MANUFACTURERS AND RETAIL CUSTOMERS

A control number on the certificate offers a means of determining who introduced the labelled article into the market at any time. The test report that accompanies certification provides further up-to-date information about the product. The modular principle guarantees security for the processing companies but also for retail customers. Additional tests are carried out for 20 percent of all certificates to check conformity. Since 2010, audits of all certified companies have been carried out at three-year intervals. They are designed to verify that quality management systems comply with OEKO-TEX® specifications.

Modular principle: each party along the textile production chain assumes responsibility for compliance with the standard for their product – from the thread, fabric and buttons, right through to the finished garment. The certificates for all intermediate products are finally brought together into a single label for the finished product.

A PURCHASING PLATFORM

Interested commercial parties can find information about the certification system on the OEKO-TEX® website at www.oeko-tex.com along with assistance in making electronic applications. Companies wishing to purchase certified raw materials and preliminary products can also find suitable suppliers at www.oeko-tex.com/produkte.

The bluesign® standard certifies not only the finished products of the textiles industry but also textile articles at various processing levels (e.g. threads, semi-finished goods, finished fabrics, accessories), and the chemicals and dyes used in the industry. The owner and administrator of the label – Bluesign Technologies AG – works with manufacturers at all stages of the textiles chain, including suppliers of the chemicals used in the industry. The aim of this network is to reduce environmental impact across the entire textile value chain and to optimise occupational health and safety. (www.bluesign.com)

Infobox 20

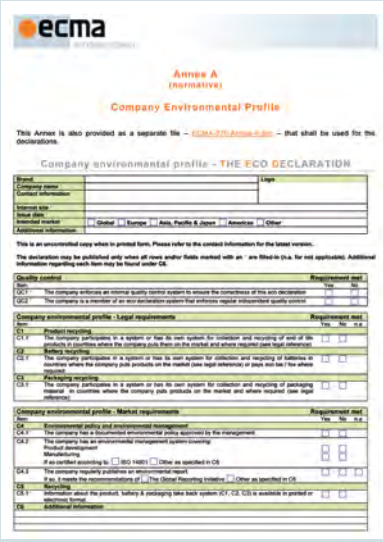
OEKO-TEX®Standard 100 is a purchasing and advertising tool used by trading companies. Other standards, such as the bluesign for example, have also been developed with the idea of creating a network among companies in the textile chain.

7.2 The IT ECO declaration and EPEAT: certification procedures for it products

The IT ECO Declaration is the most widely used environmental product information system for IT hardware products. The idea originated in Sweden in 1996 and around 80 percent of Scandinavian IT companies have now joined the scheme and completed over 6,000 declarations. The US EPA adopted many aspects of the system in its Electronic Product Environmental Assessment Tool (EPEAT) for green procurement in 2004. It also served as the basis for the international Type II ecolabel ECMA-370 – The Eco Declaration, which was launched in June 2006.

SIMPLE HANDLING AS THE OBJECTIVE

The aim of IT companies participating in the IT ECO Declaration scheme is to respond to the demand for product information of business customers, large industrial users and environmentally minded retail customers. Increasingly stringent environmental product specifications imposed on manufacturers and trading companies by the European Union are also a significant factor here.



The IT ECO Declaration form contains information on energy consumption, electrical safety, electromagnetic and chemical emissions, the use of flame retardants and heavy metals, batteries, disposal options for product and packaging, environmentally sound product development etc.

BINDING CHARACTER

The IT ECO Declaration is essentially based on a form containing detailed, sector-specific questions about the product. Unlike Type I labels:

- the IT ECO Declaration does not draw comparisons between products; it simply provides product information without comment or judgement;
- it offers a way for all participating companies to provide product information; it does simply award a certificate to the 20 percent who are "top of the class."

The IT ECO Declaration assumes a binding character as an element of product documentation for customers. The data sheets are accessible to the public on the Internet, for example. The demand for these declarations is growing continuously among manufacturers and major customers alike.

Since it was launched in July 2006, EPEAT – the Electronic Product Environmental Assessment Tool – has grown in significance in IT purchasing and is now used in over 40 countries.

The original idea for EPEAT came from the Western Electronic Product Stewardship Initiative (WEPSI) and received basic funding from the US Environmental Protection Agency (EPA). The product certification criteria were approved by IEEE[3] and incorporated into American National Standard 1680. The Green Electronics Council (GEC) was selected to implement and manage the system.

Certification of products is based on a system that in principle encompasses their entire life cycle. Its aims include reducing the use of toxic materials in manufacturing devices, minimising the amount of energy they use and improving their recyclability. Twenty-three of the total of 51 criteria are compulsory and the other 28 are optional. Based on this, the certified devices are categorised into three groups: Gold, Silver and Bronze. EPEAT can be used in other countries outside the USA, depending on the possibility of making country-specific modifications when registering products.

Infobox 21

The IT ECO Declaration has been coordinated with the public purchasing regulations within the EU member states.

Infobox 22

The following product categories that can be registered with EPEAT include:

- Desktop computer
- Notebooks
- All-in-one computers
- Thin clients
- Work stations
- Monitors
- Televisions
- Printers
- Photocopiers
- Scanners
- Photocopiers
- Multifunction devices

3 Institute of Electrical and Electronics Engineers

7.3 Energy efficiency as the objective

PCs, fax machines and printers are responsible for a large proportion of electricity consumed in private households and offices. It was for this reason that the US Environmental Protection Agency (EPA) created the voluntary Energy Star labelling programme in 1992, primarily to reduce the energy consumption of devices and appliances in stand-by mode. The symbol was intended to enable purchasers to determine immediately whether appliances could bring about energy-savings. Nowadays, the Energy Star applies not only to office equipment, but also to household appliances. The Energy Star programme for office equipment came into force in the European Union in 2002 and has since complemented the statutory EU energy label chain (see the section on communication requirements). It has now become the most important voluntary labelling scheme for computers and monitors in Europe. For more information visit www.energystar.gov (USA) and www.eu-energystar.org (EU).

Infobox 23

EPA's long-term objective is to promote the manufacture and sale of energy-efficient products.

7.4 Bio-Siegel: organic food

The "Bio-Siegel" was introduced in 2001 as a government-backed label for organic produce. This label may only be used on products supplied by producers and processors who comply with the requirements of the EU Regulation on organic production and labelling of organic products and undergo the prescribed checks. The aim of the "Bio-Siegel" is to achieve transparency in the market and, above all, provide guidance for consumers purchasing food.

On 1 July 2010, use of the EU organic logo on all packaged organic food became mandatory across Europe. Since both labels require that the food meets the standards set out in the EU organic food regulation, the logos have the same meaning in that they both certify minimum standards. The difference is that the EU label is mandatory, i.e. it must appear on all organic food. The German label can continue to be used as an additional voluntary option.

Infobox 24

The application procedure for foodstuffs is simple and unbureaucratic. By mid-2013, 4,200 companies used the government-backed Bio-Siegel on over 65,000 products.

7.5 Sustainability logo for laundry detergents, maintenance and cleaning products

In 2005, the International Association for Soaps, Detergents and Maintenance Products (A.I.S.E.) introduced its Charter for Sustainable Cleaning in order to send a signal about the need for these everyday products and activities to become more sustainable. The aim of this voluntary Europe-wide initiative is to promote continual improvement in all three aspects of sustainability: environmental, social and economic.

Manufacturers of detergent, maintenance and cleaning products across Europe, and also companies who distribute or market these products, can sign up to the charter. In doing so they commit to gearing their production processes to sustainability and making this verifiable. This takes in the entire spectrum from raw material purchasing, the production process itself and packaging through to use and disposal of the products by consumers.

Participating companies must meet certain criteria, which are verified by independent auditors. The criteria cover the following categories:

- → reduction of CO_2 emissions, energy and water consumption in the production process;
- → careful choice of raw materials and suppliers based on uniform criteria;
- → optimising packaging materials;
- → occupational health and safety;
- → health and safety of consumers and environmental protection using, for example, pictograms on packaging giving guidance about care of the environment when using the products, and telephone helplines.

Quality management systems, such as ISO 9001, ISO 14001/EMAS or BS OHSAS 18001, are recognised tools for checking compliance with the Charter's criteria.

Participating companies must report data on key performance indicators to A.I.S.E each year. Since 2006, A.IS.E. has used this data to summarise the key performance indicators for the industry, which it publishes as an Annual Review and Sustainability Report (www.aise.eu). In 2010, A.I.S.E. tightened up membership criteria; the next update is scheduled for 2015.

Company-specific label

Product-specific label

Labels on product packaging enable consumers to identify participating companies. Additional product-specific criteria were introduced in 2010 for certain product groups (e.g. laundry detergents or dishwasher detergents). These Advanced Sustainability Profiles contain the following specifications:

- the Environmental Safety Check must demonstrate that none of the ingredients used pose a risk to the environment;
- the products must be marketed in a concentrated form with as little packaging as possible;
- the packaging must include instructions on how to conserve resources when washing or cleaning.

If a product meets these criteria, a product-specific label may be used.

Further information on the initiative and on the new criteria can be found at: www.de.cleanright.eu

Further information

- Deutsche Zertifizierungsstelle OEKO-TEX, Postfach 5340, 65728 Eschborn, Germany, Tel.: +49 (0) 6196 / 96 62 30, **www.oeko-tex.com**
- Energy Star: EU Commission, DG TREN, DM 24, 04/14, 1049 Bruxelles, Belgium, **www.eu-energystar.org**
- Informationsstelle Bio-Siegel, Federal Office for Agriculture and Food, Deichmanns Aue 29, 53179 Bonn, Germany, Tel.: +49 (0) 228 / 68 45 33 55, **www.bio-siegel.de**

8 Life cycle assessments

A life cycle assessment (LCA) is a standardised tool for recording the environmental impacts of a product throughout its entire life from cradle to grave.

The results can be used in environmental product information schemes. DIN EN ISO standards 14040 to 14044 prescribes procedures for developing and communicating life cycle assessments.

Life cycle assessments

- → are aimed at experts in business, science and politics and, to some extent, the public;
- → contain a comprehensive description of a product's environmental impact;
- → are based on the entire life cycle of a product;
- → are suitable for all products and services;
- → are the responsibility of the party commissioning them, the party carrying them out, and the reviewer;
- → stipulate review of comparative life cycle assessments by an independent third party.

8.1 Differentiated study of products

Infobox 25

A life cycle assessment may be helpful in making environmental claims about the superiority or equivalence of a product compared with a rival product used for the same purpose.

Life cycle assessments are used to study the environmental impacts of a product throughout its entire life, i.e. from the extraction of raw materials, production and use, right through to recovery and recycling. A life cycle assessment identifies where a product causes the greatest environmental impact and helps companies to improve the environmental performance of their products and achieve sustainable use. LCAs can also be used as a basis for well-founded environmental claims directed at customers, business partners and stakeholders.

The 14000 series of DIN EN ISO standards is a modular system. The rules on environmental management, life cycle assessments and environmental product information are interconnected.

THE LIFE CYCLE ASSESSMENT AS A MANAGEMENT TOOL

Infobox 26

Some companies deal with their key products one after the other, preparing the LCA data for each in turn. If this approach is adopted, each life cycle assessment generally entails less work than the previous one as the volume of data gradually increases.

Life cycle assessments supply a company with extensive data on materials, components, and material and energy flows. This information may be incorporated into decision-making processes and used to support corporate environmental management.

Used in product development, in particular, life cycle assessments can:

- → increase knowledge of a product;
- → save costs as a result of
  - more efficient use of materials and energy,
  - more efficient production methods,
  - lower volumes of waste generated,
- → trigger innovation;
- → reduce environmental impacts and liability claims.

FOUR STAGES OF A LIFE CYCLE ASSESSMENT

The complexity of a life cycle assessment may vary depending on the objective. DIN EN ISO standards 14040 and 14044 outline the procedure to be adopted and the elements involved:

1. Scoping

defines the goal and scope of a life cycle assessment

2. Inventory analysis

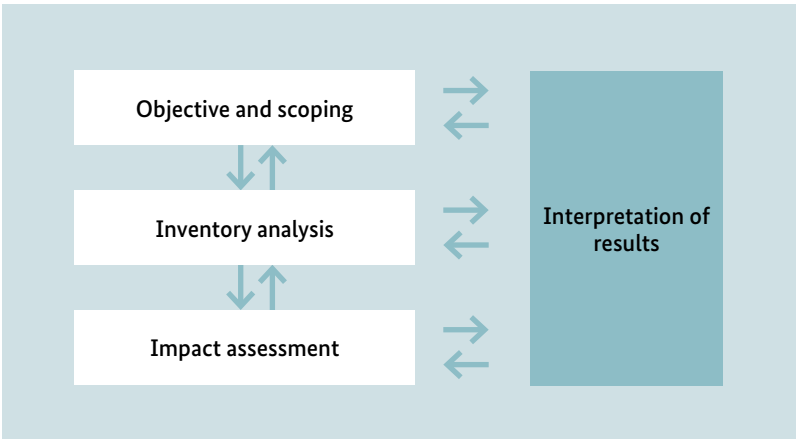
records the materials and energy flows throughout all stages of the life cycle: the weight of raw materials used, the amount of energy consumed, the type of waste and emissions produced etc.

3. Impact assessment

evaluates the potential impacts of the product on humans and the environment, i.e. how it affects the quality of air and soil, consumption of non-renewable resources etc.

4. Interpretation of results

outlines conclusions and makes recommendations.



Infobox 27

LCA data has already been published for many common materials and energy sources. This can considerably reduce the amount of work involved in a life cycle assessment.

DIN EN ISO 14040 and 14044 make no stipulations regarding the scope of a life cycle assessment. They merely support implementation by specifying minimum requirements regarding the procedure and the elements that must be considered. These minimum requirements are generally applicable irrespective of the particular product group under assessment.

TRANSPARENCY IN COMMUNICATIONS

Companies can use selected results of a life cycle assessment to provide environmental product information. In this case, the basic requirements for environmental claims laid down in DIN EN ISO standards 14040 and 14044 apply. Specific rules must be observed if complete life cycle assessments are published in the form of reports or brochures, for instance. This serves to ensure transparency and credibility in communications.

REQUIREMENTS TO BE MET BY PUBLICATIONS

- In addition to the results and associated data, documentation of life cycle assessments must also contain details of the methods used, basic assumptions and restrictions. This enables the reader to understand the work.
- Explanatory notes must be given where conclusions are drawn in the interpretation of results. The information in the inventory analysis or impact assessment from which the conclusion has been derived must be evident to the reader.
- It must be clearly pointed out in the documentation if any evaluation is subjective.
- The standard stipulates that life cycle assessments that make comparative claims (claims that a product's environmental performance is equal or superior to a rival product used for the same purpose) should not be summarised as a numerical score because there are no generally recognised scientific methods to support this.

PUBLICATION OF COMPARATIVE LCAS

The ISO set of standards stipulate that a critical review must be conducted by independent experts for LCA studies used to make a comparative assertion intended for publication. The experts' findings must be published as an integral element of the study. Furthermore, it is also recommended that interested parties be consulted in good time.

LIFE CYCLE ASSESSMENTS – TOO UNWIELDY TO BE USED FOR COMMUNICATION PURPOSES?

For communications purposes, it is important to ensure that the complex results are presented in a way that the target group can understand – both in terms of content and language. This is no different from the care that has to be taken when writing documentation for many other products requiring explanations. Some examples relating to the publication of life cycle assessments are given below:

8.2 Using life cycle assessments as a PR tool

A number of different examples of sophisticated communication of life cycle assessment results that not only conform to ISO standards but also meet the needs of the company or target group can be found in the automotive sector:

- Daimler AG publishes results of life cycle assessments for S and C class cars as the core element of its environmental certificates. They illustrate the environmental performance of these vehicles by comparison with their predecessors.

- Volkswagen AG issues Environmental Commendations for the VW Passat and VW Golf to inform customers, shareholders and other interested parties about the environmentally friendly design of these products.

- Ford combines life cycle assessment indicators with other sustainability criteria in its product development work and communicates the results in a Product Sustainability Index for its Galaxy, S-MAX, Mondeo, Fiesta, Focus and Kuga models.

8.3 Product carbon footprinting – a product-related approach to addressing climate change[4]

Leading experts believe that climate change is one of the key global challenges that our society faces this century. To mitigate the risks to humans and nature posed by global warming, the international community agreed at the Cancun Climate Summit in December 2010 to limit the global temperature rise to two degrees Celsius by 2100. Based on current knowledge, that means reducing greenhouse gas emissions in the industrialised countries by 2050 by at least 80 percent compared with the 1990 baseline.

That requires fundamentally rethinking certain things, not least the production of goods and services and their consumption. Manufacturers and consumers alike need to work towards sustainable production methods and consumption that do not damage the climate.

Infobox 28

A product carbon footprint measures and indicates not only carbon dioxide (CO_2) emissions but also all other relevant greenhouse gases, expressed as carbon dioxide equivalents (CO_2e), which reflect the impact of each different greenhouse gas in terms of the amount of CO_2 that would create the same amount of warming.

Against this backdrop, the last five years have seen intensive discussion on how to deliver to companies and consumers reliable information on the greenhouse gas emissions associated with products throughout their entire life cycle. This information is an important basis for minimising the climate impact of manufacturing, using and disposing of products.

A product carbon footprint (PCF) is intended to deliver that kind of information:

"A product carbon footprint measures the greenhouse gas emissions throughout the entire life cycle of a product used in a defined way and related to a specific functional unit."[5]

4 In 2010, BMUB and BDI jointly published a comprehensive guidance document entitled "Product-related climate protection strategies. Understanding and using product carbon footprints" (www.bdi.eu/download_content/KlimaUndUmwelt/PCF-Leitfaden_Langfassung_englische_Version.pdf). This brochure presents the key findings of the agreements on harmonisation and standardisation that have since been reached, along with other important basic information for calculating and communicating product carbon footprints.

5 Basically this definition, which is commonly used in Germany, concurs with the somewhat awkward wording used in the Technical Specification ISO/TS 14067. Here the carbon footprint of a product (CFP for short) is described as the sum of greenhouse gas emissions and removals in a product system, expressed as CO_2 equivalents and based on a life cycle assessment using the single impact category of climate change.

Measuring product carbon footprints can help companies to:

- Create transparency in the value chain – both in terms of upstream and downstream processes and stakeholders involved.
- Raise awareness of greenhouse gas emissions across the entire value chain and identify phases in the life cycle that produce particularly high emissions.
- Identify potential for reducing emissions, starting with product development.
- Document improvements, from one generation of a product to another for example. This kind of documentation is also referred to as a CFP performance tracking report.
- Trigger new ideas how to develop or refine their own climate change strategy.
- Analyse and evaluate the relevance of a product's greenhouse gas emissions by comparison with its other environmental impacts.

8.4 The limitations of the product carbon footprint

Product carbon footprints can be used to label consumer goods under certain circumstances. On the other hand, for intermediate products such as construction products, which can only be evaluated in a meaningful way within the context of a building, PCF is not an appropriate tool. Furthermore, a comprehensive assessment of a product's sustainability is not possible on the basis of a PCF alone. A number of assessment methods have been developed in recent decades, which take the environmental impact and sustainability of products throughout their entire life cycle into account: life cycle assessments, eco-efficiency and sustainability analyses. They focus not just on a single environmental category – greenhouse gas emissions, for example, in the case of product carbon footprinting – but take a more comprehensive look at all the relevant environmental categories or, in the case of a sustainability analysis, also examine the economic and social aspects of sustainability (such as life cycle costing or social LCAs) and include them in the assessment.

The latest progress in international harmonisation and standardisation of methodology

In 2007, a number of countries such as Britain, Japan, South Korea and Thailand began to step up the use of product carbon footprinting as a basis for product labels with a numerical CO_2 value, to test the voluntary use of these labels and introduce them on a trial basis. It became clear that there was a great demand for internationally harmonised binding standards and guidelines that would set out methods for product carbon footprinting.

The British Standards Institution (BSI), in conjunction with the Department for Environment, Food & Rural Affairs (Defra) and the Carbon Trust, made a recommendation for the United Kingdom with Publicly Available Specification [PAS] 2050 entitled "Specification for the assessment of the life cycle greenhouse gas emissions of goods and services." This proposal for a product carbon footprinting methodology strongly influenced the initial phase of the international debate. Although in its first final version of October 2008 PAS 2050 was largely based on DIN EN ISO 14040 and 14044, it differed from them in a number of important aspects. In Germany and other countries, it was therefore felt that PAS 2050 did not entirely meet requirements and the need for international harmonisation and standardisation was stressed. In this context, BMUB, UBA and the Institute for Applied Ecology published their Product Carbon Footprint Memorandum at the end of 2009, setting out the key priorities for standardising methods and making specific recommendations for the standardisation processes and how to practically deal with these points when preparing product carbon footprints in the transition period until finalisation of the international standards. It also published position statements on communicating product carbon footprints.

In autumn 2011, after the Washington-based World Resources Institute (WRI) and the Swiss World Business Council for Sustainable Development (WBCSD) had spent three years developing and trialling it, the GHG Protocol: Product Life Cycle Accounting and Reporting Standard was published. This document contains binding stipulations on calculating and communicating PCFs and also gives useful guidance on the practicalities of producing PCF studies.

However, in mid-2012 the standardisation process came to a standstill at ISO level when the draft standard ISO/DIS 14067 was not approved at either national or international level. After minimal modifications to its content, it has now been approved as a Technical Specification (TS).

Basic principles and key specifications for calculating product carbon footprints

The specifications on measuring and reporting PCFs described in ISO/TS 14067 are based in principle on the life cycle assessment methodology described in DIN EN ISO 14040 and 14044. The main principles described include:

- considering the product's entire lifetime;
- the importance of the functional unit;
- the emphasis on a process-oriented, iterative approach to preparing life cycle assessments and their four phases; and
- other core requirements, such as giving priority to scientific insights, the need for comprehensiveness, consistency, transparency and fairness.

A closer look at the greenhouse effect impact category of a product carbon footprint has shown that additional insights regarding the methodology for analysing climate relevance must be taken into account. Key examples of this are:

1. **Taking carbon offsetting activities into account**

A number of companies and organisations are investing in renewable energy technology, energy efficiency measures or afforestation/re-afforestation projects. The aim of these activities is to partially or fully offset the greenhouse gas emissions associated with the products they manufacture. However, ISO/TS 14067 unequivocally rules out the possibility of counting carbon offsetting activities when measuring PCFs.

2. **Fossil and biogenic carbon**

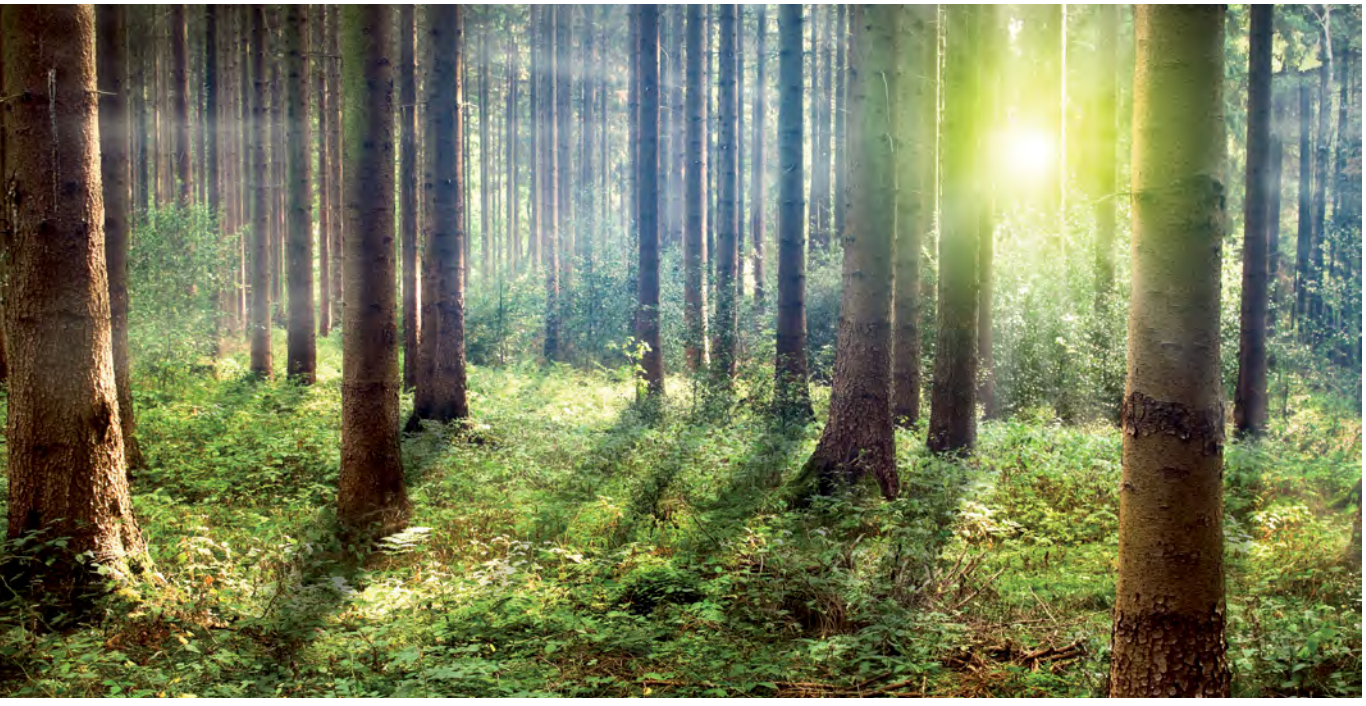
In principle, emissions from fossil *and* biogenic carbon sources (and possibly sinks) must be included in the greenhouse gas calculations for a PCF, but they must be listed separately in the report. This ensures that relevant biogenic methane emissions, for example, are included in PCF calculations.

3. **Treatment of electricity and taking specific electricity products into account**

Emissions from electrical power generation make a major contribution to overall greenhouse gas emissions in many PCFs. ISO/TS 14067 therefore stipulates that electricity treatment must be described in a PCF report. Green electricity can only be counted if it is possible to rule out "double counting."

4. **Changes in land use**

Changes in land use, which usually involve different use of land for agricultural or forestry purposes, trigger changes in greenhouse gas emissions, because the amount of carbon stored in the soil changes. A distinction is made between direct land-use change (dLUC) and indirect land-use



change (iLUC). Indirect land-use change can occur, for example, when energy crops are grown on land that was previously used to grow food, animal feed or fibres. It can often be assumed that land elsewhere will be used in a different way to replace the "displaced" production. Robust data on the greenhouse gas emissions that may be associated with this can only be ascertained on the basis of specific circumstances.

Under ISO/TS 14067 the greenhouse gases caused by direct land-use changes (and greenhouse gas removals) must be included in the PCF and separately detailed in the report. Indirect land-use changes are scheduled to be examined as soon as there is an internationally agreed procedure for doing so.

8.5 Communicating product carbon footprints

In principle, knowledge of a product's carbon footprint can be used across the entire supply chain – with manufacturers, retail companies and consumers – to:

- illustrate the impact on the climate of everyday products and services and demonstrate that everyone shares responsibility for climate protection;
- work with business partners to reduce emissions in certain parts of the value chain;
- inform consumers about alternative choices in purchasing and using products and in this way establish an edge over the competition; and
- use the example of a specific product to illustrate the company's social responsibility for protecting the climate.

Different types of CO_2 label

In principal there are four main types of CO_2 label: labels indicating CO_2e values with or without a comparative scale, "best-in-class" labels, labels indicating CO_2e values along with reduction targets, climate-neutral declarations.

The table below categorises by type the climate-related product labels that currently exist:

Product label	Example	Type of environmental label
CO_2 label: presents a CO_2e value (with or without a scale to relativize the value)	Casino Carbon Index	Product information only
CO_2 label: indication that the product is one of the "best-in-class"	Climatop	If the specifications of ISO 14020 are met, then Type II environmental label developed by manufacturer or retailer (ISO 14021)
CO_2 label: presents a CO_2e value along with proposed reduction targets	Carbon Trust Reduction Label	If the specifications of ISO 14020 are met, then Type II environmental label developed by manufacturer or retailer (ISO 14021)
CO_2 label: climate-neutral label (resulting from offsetting measures)	Carbon*free*	If the specifications of ISO 14020 are met, then Type II environmental label developed by manufacturer or retailer (ISO 14021)
Environmental label with a climate focus	Blue Angel "protects the climate" Climate Marking/KRAV	Certified type I environmental label (ISO 14024)
Environmental labels that present individual climate-related criteria in the form of CO_2e emission limit values	EU flower for photocopier paper and graphic paper	Certified type I environmental label (ISO 14024)
Environmental labels that address climate protection in the form of criteria relating to energy consumption	EU flower, Blue Angel, Nordic Swan,... (for various energy-using appliances)	Certified type I environmental label (ISO 14024)
Statutory labels	EU energy efficiency label	Energy label

Key communication specifications set by ISO/TS 14067

ISO/TS 14067 sets out a number of different possibilities and forms of communicating a product carbon footprint and stipulates different requirements that have to be met – including with regard to third-party verification. Basically, any type of PCF communication that is destined for publication must:

- → either be verified by a third party in compliance with DIN EN ISO 14025 and be based on quantified data that is subject to the type of critical external review to ensure compliance that is conducted for life cycle assessments, or
- → be based on what is known as a disclosure report, which has to meet special transparency standards.

In addition to the report option, a PCF can also take the form of labels. However, this requires a communication programme that meets the requirements for Type III labels in compliance with DIN EN ISO 14025 and is based on product-specific rules.

8.6 Product Water Footprint

In many parts of the world, protecting water is regarded as an even more important issue than global warming. About a third of the world's population is affected by water scarcity. Over and above the environmental problems associated with water scarcity, it also poses a serious threat to human health. Furthermore, it is anticipated that global water consumption will increase at twice the rate of population growth.

In view of this situation, the discussion about water and water management has begun to take far higher priority in the global sustainability debate in recent years. Publications on water footprinting for food and drinks, for example, that have appeared in media with broad public appeal have attracted a great deal of attention.

In life cycle assessments, recording and assessing water consumption is still relatively new, since this method was developed in industrialised countries where water scarcity has not usually been a major problem. However, as a result of growing worldwide water scarcity, globalised value chains and increased use of life cycle assessments for agricultural products, the focus is increasingly shifting to water consumption.

At the same time, the scientific discourse on methodological approaches, efforts to standardise them and provision of the data needed to calculate a product water footprint have gathered pace.

Methodoligical approaches

There are a number of different methodological approaches to calculating water footprints which can roughly be classified into volumetric and impact-based footprinting.

First attempts to calculate water consumption throughout the life of a product date back to the early 1960s. Later developments led to the "virtual water" method; unlike with water footprinting, this method classifies the water used into three categories, which can be described in simple terms as follows:

- "Blue water" is surface and ground water.
- "Green water" is rainwater that does not run off the land into surface water bodies and does not replenish the ground water.
- "Grey water" is water that is polluted by the addition of waste water. It can be equated with the volume of water that is needed to dilute polluted water to the extent needed to meet quality standards.

Infobox 29

The quality of data in common life cycle assessment databases currently has some shortcomings, which makes calculating water footprints considerably more difficult than calculating carbon footprints.

The methods available for assessing impact include various characterisation models that describe the mechanisms of action of a particular type of water use on different protection targets: human health, ecosystems or resources. Whereas some methods analyse the potential consequences for the environment in the middle of the cause and effect chain (what is known as midpoint assessment), others study the potential damage on the level of the protection targets (endpoint assessment). A great many local parameters have to be taken into account, especially for the damage-based methods (water scarcity, prosperity etc.).

Product water footprinting in practice

Evaluating the potential impact of water use for humankind and the environment requires high-resolution inventory data. In addition to actual use, local water scarcity, socio-economic factors, the quality of the water used and the type of water body from which the water is extracted play an important role.

These requirements represent a serious obstacle to calculating water footprints in practice. For complex industrial processes, geographic differentiation of water consumption is difficult because it means tracing it back along the entire value chain. The further requirement to describe the type of water bodies used and water quality could make the entire applicability of water footprinting questionable for many practice-oriented users.

International harmonisation and standardisation

On the same lines as for product carbon footprinting, the specifications described in the international draft standard ISO/DIS 14046 on quantitative determination and reporting of water footprints is based in principle on the methodology for life cycle assessments set out in DIN EN ISO 14040 and 14044, in particular:

- considering the product's entire lifetime;
- the importance of the functional unit;
- the emphasis on a process-oriented, iterative approach to preparing life cycle assessments and their four phases; and
- other core requirements, such as giving priority to scientific insights, the need for comprehensiveness, consistency, transparency and fairness.

The requirements set out in the draft standard support the use of impact-based water footprints. For example, they stipulate that the term water footprint may only be used if a complete assessment of potential impacts has been carried out. Furthermore, aggregating water of different qualities, origin etc. is not permissible. The simpler volume-based models described above would therefore not comply with the standard.

8.7 Future developments: product environmental footprinting (PEF)

In spring 2013, the EU Commission published a communication proposing EU-wide measures for measuring the environmental performance of products and organisations and encouraging Member States and the private sector to adopt them.

This proposal had been prompted by the observation that companies wishing to highlight the environmental performance of their products currently face numerous obstacles. They have to choose between several methods promoted by governments and private initiatives, often have to pay several times over for providing environmental information, and are then confronted with a lack of trust on the part of consumers who are confused by too many labels with information that makes it difficult to compare products.

Among other things, the EU Commission's proposal includes two methods for measuring the environmental performance throughout the life cycle: the product environmental footprint (PEF) and the organisation environmental footprint (OEF). It recommends that Member States, companies, private organisations and the financial sector use these methods on a voluntary basis.

A three-year testing period has been announced to develop product-specific and sector-specific rules through a multi-stakeholder process, with provision for organisations using different methods to have them assessed as well.

A number of organisations and trade and industry associations have taken a critical view of the proposal. They point out, for example, that a meaningful environmental assessment of products requires a mix of instruments that takes into account the strengths and weaknesses of the individual approaches. They also point out that the PEF defines data quality specifications in real supply chains, something which cannot be implemented in that form in the case of complex products. Furthermore, they criticise the fact that the PEF ignores fluctuation in upstream inputs and point out that the construction industry in particular has been using EPDs for many years, so that developing new product-specific and sector-specific assessment rules would be counterproductive.

Further information

- European Platform on Life Cycle Assessment, European Commission – DG Joint Research Centre, Institute for Environment and Sustainability, TP 460, Via E. Fermi 1, 21027 Ispra (VA), Italy, lca@jrc.ec.europa.eu, **www.lca.jrc.ec.europa.eu/**
- Society of Environmental Toxicology and Chemistry (SETAC), Av. de la Toison d'Or 67 b 6, 1060 Bruxelles, Belgium, Tel.: +32 / (0)2 / 772 72 81, **www.setac.org**
- Federal Environment Agency, Section III 2.1 “General Aspects,” Wörlitzer Platz 1, 06844 Dessau-Rosslau, Germany, Tel.: +49 (0) 340 / 21 03-0, **www.umweltbundesamt.de**
- United Nations Environment Programme, Division of Technology, Industry and Economics, (DTIE), 15 rue de Milan, 75441 Paris, France, Tel.: +33 / (0)1 / 44 37 14 50, unep.tie@unep.org, **www.uneptie.org**

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ISO/DIS 14046:2013	Water footprint – principles, requirements and guidelines
ISO/TR 14047:2012	Environmental management. Life cycle assessment. Illustrative examples on how to apply ISO 14044 to impact assessment situations
ISO/TS 14048:2002	Environmental management. Life cycle assessment. Data documentation format
ISO/TR 14049:2012	Environmental management. Life cycle assessment. Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis
DIN Technical Report ISO/TR 14062:2003	Environmental management. Integrating environmental aspects into product design and development; German and English version ISO/TR 14062:2002
DIN EN ISO 14063:2010-10	Environmental management. Environmental communication. Guidelines and examples (ISO 14063:2006); German version EN ISO 14063:2010
ISO/TS 14067:2013	Greenhouse gases. Carbon footprint of products. Requirements and guidelines for quantification and communication

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