

BLUE ANGEL

The German Ecolabel



Wood Pellet and Wood Chip Boilers

DE-UZ 112

Basic Award Criteria

Edition February 2016

Version 2

The Environmental Label is supported by the following four institutions:



The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.



The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.



The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.

Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.

The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

1.2 Background

Their high level of automation enables wood pellet and wood chip boilers to make an efficient and low-emission use of renewable fuels for heating purposes. Thus, they help protect our climate and reduce the primary energy use of non-renewable energy carriers. There are two methods to determine energy efficiency. Both methods describe the same level of performance. Applicants may choose one of these two methods:

- a) According to the current Commission Regulation (EU) No 2015/1189 on eco-design. This first method includes the auxiliary power demand and refers to the calorific value of the fuel used.
- b) According to the current standards. This second method requires the separate determination of efficiency and auxiliary power demand.

Ambitious limit values have been established to minimize the emissions of these systems and thus achieve better air quality.

It is noted in particular that the review of the limit values specified in these Basic Criteria is based on bench tests under idealised standard conditions. These tests allow the comparison of measurement results and usually strongly differ from practical values.

The above-shown Blue Angel eco-label may be awarded to wood pellet and wood chip boilers as specified under „Scope“ which make more efficient use of the fuel used and emit far less pollutants than what would be permitted under current DIN standards and the 1st Bundesimmissionsschutzverordnung (BImSchV) (Federal Immission Control Ordinance).

Therefore, following benefits for the environment and health are stated in the explanatory box:



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- energy efficient
- uses renewable raw materials
- low emissions

2 Scope

These Basic Criteria apply to boilers according to DIN EN 303-5¹. Included are boilers with a nominal heat output up to and including 500 kW exclusively designed and approved by the manufacturer for the use of the following fuels:

- wood pellets pursuant to DIN EN ISO 17225-2² (grade A1), ENplus (grade A1) or DINplus;
- and/or wood chips pursuant to DIN EN 17225-3³ or according to Section 3, para. 1 No. 4 of the 1st BImSchV (Federal Immission Control Ordinance)⁴.

Secondary measures for flue-gas cleaning may be installed thereby turning the boiler into a system; if so, the tests shall be conducted together for the entire system.

A basic requirement to be met by a Blue Angel eco-labelled device is an efficient and low-emission on-site operation. That is why only those appliances will be considered for the award of the Blue Angel eco-label

- that are exclusively designed and approved for the use with fuels listed in paragraph 2.1 of these Basic Criteria (exclusion of (co-)firing using other renewable or fossil fuels).
- which, depending on the heat demand, can be adjusted to each part load within the given heat output range in an infinitely variable manner.
- where ignition, output and combustion control as well as the cleaning of the heat exchanger are carried out fully automatically in order to avoid malfunctions through improper operation (exclusion of systems with manual control units, (for example, for lever-controlled combustion air supply)).
- which represent a complete system and, thus, allow the evaluation of the system's efficiency and emissions (exclusion of pure solid fuel burners).

Due to the fact that the selection of fuel type may have a substantial impact on the system's efficiency and emission behaviour the following requirements shall be met with respect to the approval of fuels:

- Compliance with the requirements specified below shall be verified for both wood chips and wood pellets if the system is approved for both fuels.

¹ Edition of October 2012

² Edition of September 2014

³ Edition of September 2014

⁴ First Ordinance implementing the Federal Immission Control Act of 26 January 2010

- Should a Blue Angel eco-labelled system be subsequently approved for the use with additional fuels the Contract on the Award of the Environmental Label shall be prematurely terminated and the continued use of the label shall not be allowed for either advertising or labelling.

3 Requirements and Compliance Verifications

The above Blue Angel eco-label may be awarded to the boilers under "Scope", provided that they meet the following requirements:

3.1 General Requirements

The product shall not only meet the energy and emission technology requirements hereunder but also the requirements of DIN EN 303-5⁵ for structural design and safe-ty behaviour (avoidance of critical operating modes during normal and faulty operation, limitation of surface temperatures, automatic switch-off and electrical safety).⁶

3.2 Requirements for Efficient Energy Use

3.2.1 Determination of the Requirements according to Regulation (EU) No 2015/1189

The seasonal space heating energy efficiency (η_s) according to Regulation (EU) No 2015/1189 shall not be less than 75 % for boilers up to 20 kW and 77 % for boilers over 20 kW. The parameters used for calculating the seasonal space heating energy efficiency shall be determined in accordance with Regulation (EU) No. 2015/1189 at nominal load (nominal heat output) as well as at part load conditions (30 % of the nominal heat output) and documented in Appendix A. If the system is approved for both wood pellets and wood chips the seasonal space heating energy efficiency shall be determined and reported for each of these fuels.

The auxiliary power demand for the ignition process shall be determined and recorded in the test report.

The electric power consumption of the internal power-consuming devices of the system specified in Appendix B to the DE-UZ 112 Basic Criteria (if present) shall be separately recorded in watts.

The waterside resistance shall be determined in accordance with DIN EN 303-5⁵ and documented in the test report.

3.2.2 Separate Requirements for Efficiency and Auxiliary Power Demand

3.2.2.1 Efficiency

The boiler efficiency shall be determined in accordance with DIN EN 303-5⁷ at nominal load conditions (nominal heat output) as well as at part load conditions (lowest adjustable output,

⁵ Edition of October 2012

⁶ On the strength of legal bases, other co-applicable EU Regulations must be observed for the marketing of wood chip boilers, such as, for example, the EMV Directive (Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility).

⁷ Edition of October 2012

30 percent of the nominal heat output at the most). If the system is approved for both wood pellets and wood chips the boiler efficiency shall be determined for each of these fuels. The boiler efficiency of systems with a nominal heat output of more than 12 kW shall not fall below 90 percent at nominal and part load conditions.

3.2.2.2 Auxiliary Power Demand

The auxiliary power demand shall be determined in accordance with Appendix B to this Basic Award Criteria. If the system is approved for both wood pellets and wood chips the demand shall be determined and indicated for the each of these fuels separately.

The auxiliary power demand of boilers approved for operation with wood-pellets only shall not exceed the following values (Table 1):

Table 1: Requirements for the Auxiliary Power Demand of Wood Pellet Boilers

Nominal Heat Output	Operation at Nominal Load ⁸	Operation at Part Load ⁸	Sleep (Standby without Heat Generation)
up to 50 kW	80 W or 0.8% of the nominal heat output	80 W or 0.6% of the nominal heat output	15 watts
over 50 kW and up to 500 kW	80 W or 0.6% of the nominal heat output	80 W or 0.3% of the nominal heat output	25 watts

The auxiliary power demand of boilers approved for operation with wood chips and (wood pellets, if applicable) shall not exceed the following values (Table 2):

Table 2: Requirements for the Auxiliary Power Demand of Boilers Approved for Operation with Wood Chips and (Wood Pellets, if applicable)

Nominal Heat Output	Operation at Nominal Load ⁹	Operation at Part Load ⁸	Sleep (Standby without Heat Generation)
up to 50 kW	80 W or 1% of the nominal heat output	80 W or 0.7% of the nominal heat output	20 watts
over 50 kW and up to 500 kW	80 W or 0.8% of the nominal heat output	80 W or 0.4% of the nominal heat output	30 watts

The auxiliary power demand for the ignition process shall be determined and indicated in the test report. The electric power consumption of the integrated power-consuming units of the boiler specified in Appendix B to the Basic Criteria DE-UZ 112 (if available) shall be separately indicated in watts.

The waterside resistance shall be determined in accordance with DIN EN 303-5¹⁰ and indicated in the test report.

⁸ The relative values related to the nominal heat output need only be met if the auxiliary power demand exceeds 80 W.

⁹ The relative values related to the nominal heat output need only be met if the auxiliary power demand exceeds 80 W.

¹⁰ Edition of October 2012

3.3 Emission Requirements

The emission limits hereunder shall be complied with in accordance with Regulation (EU) No. 2015/1189 – related to dry exhaust gas in standard reference condition (0 °C, 1013 mbar) with an oxygen volume content of 13 percent¹¹. The emission limits hereunder – related to dry exhaust gas in standard reference condition (0 °C, 1013 mbar) with an oxygen volume content of 13 percent - shall be observed. The measurement unit mg/Nm³ is to be understood as mg of pollutant per standard cubic meter of exhaust gas (mass concentration). Testing shall be done using the measurement methods described in para. 4. If the boiler is approved for both wood pellets and wood chips the values shall be determined and indicated separately for each of these fuels. The applicant shall not be required to verify compliance at part load if the boiler is marketed along with a buffer tank, because if so, the boiler is operated a full load.

3.3.1 Nitrogen Oxides (NO_x)

When operating the system with wood pellets and wood chips the content of nitrogen monoxide and nitrogen dioxide in the exhaust gas (expressed as nitrogen dioxide) shall not exceed 150 mg/Nm³.¹²

The requirement shall also be considered met if the test report is prepared prior to January 1, 2017 and only shows the measurement at nominal load.

3.3.2 Carbon Monoxide (CO)

When operating the system with wood-pellets the content of carbon monoxide in the exhaust gas shall not exceed 150 mg/Nm³ whereas when operating the system with wood chips it shall not exceed 165 mg/Nm³.

3.3.3 Organic Gaseous Carbon (OGC)

The content of gaseous organic carbon (OGC) in the exhaust gas shall not exceed 5 mg/Nm³ at nominal load and part load conditions.

3.3.4 Dust

The content of dust in the exhaust gas shall not exceed 15 mg/Nm³.

3.4 Setting and Operating Instructions

- The **Setting Instructions** shall include clear and explicit information on how wood pellet and wood chip boilers can be properly adjusted by qualified personnel. They shall be clearly labelled as instructions “for qualified personnel”. Setting according to the Setting Instructions must ensure an efficient and low-emission operation of the system. The Setting Instructions shall include information on how to match the wood chip firing and the exhaust gas unit as well as on how to combine the system with a buffer tank.
- The **Operating Instructions** shall include clear and comprehensible instructions for an environmentally friendly, i.e. efficient and low-emission, operation of the system by the user as well as information on regular system maintenance and cleaning by a specialist

¹¹ Concerning this matter, the requirement differs from Regulation (EU) No 2015/1189

¹² Based on current knowledge the formation of nitrogen oxides in wood firing systems primarily depends on the nitrogen content of the fuel. Thermal NO_x formation is largely ruled out. There is, however, indication that NO_x emissions can be controlled by combustion engineering measures.

company. They shall be clearly labelled as instruction "for the user". The Operating Instruction shall include a note that installation and setting should only be done by "qualified and trained personnel".

The documents shall at least meet the requirements of DIN EN 303-5¹³. Compliance with DIN EN 62079¹⁴ "Preparation of instructions. Structuring, content and presentation" is recommended.

Compliance Verification

The applicant shall submit the following documents to establish compliance with the requirements under paras. 3.1 to 3.5:

- *Test report according to Appendix A to the Basic Criteria DE-UZ 112 confirming product compliance with the requirements under paras. 3.1 to 3.5 in combination with para. 4 indicating the measurement methods/instruments used as well as the measurement inaccuracies.*
- *Setting and Operating Instructions providing information according to para. 3.5 as well as the Attachment to the Operating Instructions according to Appendix C to these Basic Criteria including the corresponding page/percent information (if the design of the heating system necessitates changes to the text of paras. 3 and 4 of the Annex in terms of an efficient and low-emission operation the applicant may make proposals for such changes).*

3.5 Services

The environmentally friendly operation of a wood pellet or wood chip heating system also heavily depends on proper installation and setting of the system, regular maintenance and cleaning of the system as well as on user behaviour. To ensure a permanently efficient and low-emission operation the manufacturer itself or its service partner shall provide specific services in selection, dimensioning and installation of the system as well as during the operation of the system:

- Technical training for fitters and sales personnel
 - Advice and offer for the installation of a buffer tank
 - Advice on the installation of the exhaust gas equipment
- Submission of an offer for the initial operation of the heat-generating equipment by the manufacturer and explanation of the parameters for an efficient, low-emission combustion as well as explanation of the boiler control system (customer training)
- Offer for maintenance services available during regular service hours
 - Offer for an annual checking and maintenance of the system
 - Availability of equivalent spare parts for at least 10 years following the placing on the market of the system.

3.6 Fuel Quality

The manufacturer undertakes to inform consumers in a proper way about fuel quality requirements and about current standards and quality assurance systems. The manufacturer shall also properly describe possible consequences (especially sintering, loss of warranty, increased emissions) of running the system with fuels that have not been approved for use in the system or do not possess the fuel properties required.

¹³ Edition of October 2012

¹⁴ Edition of November 2001

The manufacturer shall specify the properties of wood chips required for a failure-free and low-emission operation according to DIN EN ISO 17225-4¹⁵ (Grade A1) (e.g. grain size, water content, ash content, calorific value, bulk density, fine fraction).

If the system is approved for use with wood pellets the manufacturer shall point to relevant technical and quality standards (DIN EN ISO 17225-2¹⁶ (Grade A1), ENplus (Grade A1) or DINplus).

3.7 Environmentally Responsible Product Design

Unless there is compelling technical reason to the contrary the following principles for "designing recyclable technical products" shall be observed and explained in writing. The checklist "Recyclable Design" under Appendix D to these Basic Criteria shall serve as a basis for checking the individual features.

- Avoidance of non-separable material connections between different materials
- Avoidance of composite materials
- Easy detachability of modules – also for the purpose of easy repair
- Reduction of the variety of materials

In addition, the manufacturer shall, upon filing the application for award of the Blue Angel eco-label, submit a written declaration of compliance with following requirements:

- Plastic product components greater than 50 grams in weight shall be marked with a symbol or abbreviated term according to DIN EN ISO 1043-1¹⁷ or DIN ISO 1629¹⁸ (rubber) or DIN ISO 2076¹⁹ (chemical fibres). Plastics must not contain heavy metals, phthalates or halogenated flame retardants.

Compliance Verifications

The applicant shall declare compliance with the requirements under paras. 3.6, 3.7 and 3.8 (Manufacturer Declaration according to the "Annex to the Contract").

4 Testing

4.1 Testing Laboratories

Testing shall be conducted by an independent testing laboratory accredited according to DIN EN ISO 17025²⁰ for the testing of „Heating boilers for solid fuels“ or by a laboratory recognized by Deutsches Institut für Bautechnik (German Institute for Structural Engineering) for the testing of fireplaces for solid fuels. Testing shall comprise the complete compliance verifications under paras. 3.1 to 3.5.

4.2 Test Methods

Measurements shall be taken at nominal load (nominal heat output) and part load (30 percent of the nominal heat output). In addition, the auxiliary power demand for the duration of the ignition process shall be determined and indicated in the test report.

¹⁵ Edition of September 2014

¹⁶ Edition of September 2014

¹⁷ Edition of June 2002

¹⁸ Edition of November 2004

¹⁹ Edition of May 2001

²⁰ Edition of August 2005

Testing, especially the verification of compliance with the efficiency and emission requirements under paras. 3.2 and 3.3 shall be conducted in accordance with Regulation (EU) No 2015/1189 or DIN EN 303-5 respectively. If technically possible, the measurements of all necessary values shall be conducted in a single session (exclusion of measurements of individual parameters using system settings optimized for this particular parameter). Testing shall be conducted for each fuel approved by the system manufacturer. Beforehand, the fuels shall be subjected to an elemental analysis including determination of the calorific value.

4.3 Calibration Gases and Measuring Instruments

Certified calibration gases shall be used for the calibration of measuring equipment. The use of calibration gas generators shall not be permitted. Measuring instruments shall be used in accordance with DIN EN 303-5²¹. A heated measuring line shall be used for measuring the contents of nitrogen oxides and total hydrocarbons (for determining the OGC).

5 Applicants and Parties Involved

Distributors of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

6 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2022. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2022 or March 31 of the respective year of extension.

After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

²¹ Edition of October 2012

The Contract on the Use of the Environmental Label shall specify:

- Applicant (distributor)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.

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Appendix A Test report

Available on a separate document

Appendix B Measurement of the Auxiliary Power Demand in Different Operating Modes

The point of fuel supply shall be used as system boundary for determining the auxiliary power demand.

a) Auxiliary Power Demand

The objective of measuring the auxiliary power demand in the operating state is to determine the boiler's electric power consumption at nominal load and part load conditions (lowest adjustable power, 30% of the nominal heat output at the most).

For this purpose, the system's electric energy consumption (without taking into account the heating-water circulating pump and a possibly existing fuel conveyor system) is to be determined over a measuring time of at least 6 hours pursuant to DIN EN 303-5 for the heating equipment testing and shall be given in watts - based on the measuring time - as average electric power consumption in relation to the nominal heat output.

b) Auxiliary Power Demand in Sleep Mode (Standby without Heat Generation)

The objective of measuring the auxiliary power demand in sleep mode is to determine the electric power consumption of the boiler when there is no heat demand and when only electrical consumers are turned on to maintain operation readiness. For this purpose, the system's electric energy consumption is to be measured over a period of at least 10 minutes. This measuring time may have to be extended if control processes have an impact on the system's own electric power consumption. The energy consumption determined shall be given in watts - based on the measuring time - as average electric power consumption.

c) Auxiliary Power Demand for the Ignition Process

The auxiliary power demand of the ignition device shall be determined during the ignition process and expressed as electric work in watt hours. Manufacturer data without measurement of the auxiliary power demand for the ignition process will also be accepted if the type approval test has been conducted prior to the publication of these Basic Criteria.

d) Electric Power Consumption of Central Consumers

The electric power consumption of the following internal power-consuming devices (if available) shall be separately given in watts:

- ♦ Fan motor(s),
- ♦ Heat exchanger cleaning motor(s),
- ♦ Ash removal motor(s) and fuel auger motor(s).

If the system is equipped with a fuel conveyor system (mechanical or pneumatic conveyor) the electric power consumption of the motors shall be indicated.

e) **Waterside Resistance**

The waterside resistance shall be determined in accordance with DIN EN 303-5²². If the boiler is equipped with a heating water circulating pump its auxiliary power demand (minimum/maximum values) shall be indicated in the test report. These values shall be accompanied by information on the type of pump control system (multi-stage including the number of pump performance levels or automated control with indication of the control range in percent).

²² Edition of October 2012

Appendix C Attachment to the Operating Instructions

Attachment to the Operating Instructions

Company: ...

Dear Customer!

To ensure an efficient and low-emission operation of your heating system please read the following carefully:

- Only qualified and trained personnel shall be permitted to install and adjust the system.
- Do not use fuels other than those specified by us in the Operating Instructions (page ...). Only this way can we guarantee a low-emission, economic and trouble-free operation of your heating system.
- We recommend regular inspection and cleaning of the heating system. For further information please see the Operations Instructions (page ...). This ensures not only the functional safety of the heating system and its safety devices but also the system's energy-efficient and low-emission operation. For optimum servicing of your heating system we recommend a maintenance contract.
- Your heating boiler offers a variable range of heat output from ...% to ...% of the nominal heat output. The appliances should preferably be operated at medium or upper level of capacity (adjusted to the respective heat demand) to avoid unnecessary emissions in low-load operation. The ideal is the combination with a modulating room or heating thermostat in order to avoid unnecessary clocking and to achieve the longest possible operating times.
- From an energetic point of view, a buffer tank and the combination with a solar plant would be recommendable. This would ensure an energy-efficient and low-emission operation of your heating system.

Appendix D Checklist „Recyclable Design“

This checklist is divided into the following requirement sections :

- a) **Structure and Connection Technology**
- b) **Material Selection and Marking**
- c) **Disassembly**

a, b, c	Requirement	The requirement is met?	
		Yes	No

a) **Structure and Connection Technology**

a1	Can modules made of mutually incompatible materials be detached as such or are they connected via separation aids or can all materials used be separated by means of processing technologies.	Yes	No
----	---	-----	----

This concerns all connections between modules. Adhesive labels (e.g. company logos and labels) are concerned as well. The term "separation aids" stands, for example, for predetermined breaking points.

a2	Can modules that potentially contain pollutants (e.g. control) be easily detached from the pellet stove?	Yes	No
----	--	-----	----

Electric modules as well as measurement and control equipment should be easily traceable and separable.

b) **Material Selection and Marking**

b1	Is the variety of plastic materials performing comparable functions limited to a single polymer or polymer blend?	Yes	No
----	---	-----	----

The smaller the number of plastics used the more efficient are separation and sorting processes.

b2	Are components made of the same sort of plastic dyed uniformly or compatibly?	Yes	No
----	---	-----	----

“Compatible dyeing” refers to different shades of one colour (e.g. grey and anthracite). If, in addition, different types of plastics exhibit different colours, such "colour coding" would be useful for a safe type-specific separation of plastics.

b3	Is the coating of plastic components limited to the necessary minimum?	Yes	No
----	--	-----	----

Large-surface paint coats, vapour depositions and printings on plastic components necessitate additional removal processes to ensure material-specific recycling. Markings for material identification or disassembly instructions shall not be considered as printings.

b4	Do the materials and material compounds used allow high-level material-specific recycling?	Yes	No
----	--	-----	----

Materials allowing material-specific recycling are those materials that can be recycled on an industrial scale, i.e. where recycling would be useful from a technological and economic point of view. This is taken for granted with respect to steel and stainless steel.

b5	Do the plastics used allow a proportionate use of recyclates and does the product specification permit such proportionate use? Please note: This must not result in a shortening of the service life.	Yes	No
----	---	-----	----

A complete cycle of materials won't exist until recyclates are actually used.

b6	Are the plastics marked in accordance with ISO 11469?	Yes	No
----	---	-----	----

The marking of plastics enables all recycling companies to sort plastics by type.

b7	Has the product been manufactured without the use of plastic additives and colour pigments containing Pb or Cd?	Yes	No
----	---	-----	----

c) **Disassembly**

c1	Will it be easy to identify and separate modules that may contain pollutants?	Yes	No
----	---	-----	----

Components which are likely to contain hazardous substances must - as a minimum requirement for recyclable design - be easy to discover and separate.

c2	Will it be easy to identify connections that need to be separated?	Yes	No
----	--	-----	----

Connections that need to be separated during disassembly should be easy and quick to discover. If they are concealed appropriate instructions should be noted on the product.

c3	Can disassembly for the purpose of recycling be done using only general- purpose tools?	Yes	No
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The term „general-purpose tool“ stands for conventional commercial tools. Exempted are connections where mandatory provisions have an influence on the choice of connection technology.