



**EPF STANDARD  
FOR DELIVERY CONDITIONS  
OF RECYCLED WOOD**



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## **EPF standard for delivery conditions of recycled wood**

### **Foreword**

The wood-based panel industries are continuously improving their efforts to manage and use valuable resources in a sustainable manner throughout the life-cycle, ranging from Sustainable Forest Management to the recovery of pre- and post-consumer material, including CO<sub>2</sub>-neutral energy recovery at the end of the useful lifetime of the materials.

Secondary raw materials represent an increasing proportion of the processed raw materials, as technology progresses. This is logical as recovery and recycling of wood residues form an integral part of an eco-efficient utilisation of resources. Wood-based panels are thus derived in an energy-efficient way from renewable raw materials, with a high and continuous recycling potential.

The use of wood-based panels helps mitigating climate change, by sequestering carbon, not only during their primary lifetime, but even beyond, since they can also be recycled, so giving wood more than one life.

### **1. Scope**

The present industry standard provides quality criteria to ensure the environmental sustainability and in particular the health & safety and the technical workability of the following classes of wood and wood-based materials used in the manufacture of wood-based panels:

- By-products from processing and manufacturing sites
- Post-consumer reclaimed and recycled wood

This industry standard comprises standard requirements for the types, origins, chemical, physical and other contamination limits, cleanliness and delivery conditions of these materials.

Locally, other requirements may be applicable to the quality of recycled wood for the production of wood-based panels. These requirements need to be complied with, when and where they apply.

### **2. Bibliography**

- EPF standard on the use of recycled wood in wood-based panels
- RAL-GZ 428, Quality label for recycled wood and waste wood (Germany)
- Order on the Disposal of Waste Wood (“Altholzverordnung”), Germany, Bundesgesetzblatt, 23 August, 2002

### **3. Definitions**

For the purposes of this standard, the following definitions apply.



### **3.1 By-products from processing and manufacturing sites (pre-consumer recycled wood)**

Wood material in the form of sawdust, fibrous wood, solid wood off-cuts or composite wood offcuts resulting from any wood transformation or manufacturing process and which may be reclaimed and recycled as raw material for a manufacturing process (e.g. from the manufacture of panelboards, assembled products, building structures). (Not to be confused with sawmill co-products or post-consumer recycled wood).

### **3.2 Post-consumer reclaimed and recycled wood**

Wood material (e.g. pallets or other wood packaging material, demolition waste, used furniture) which after consumer use is reclaimed and recycled into the chain of commercial supply and reduced to a raw material form.

### **3.3 Wood-based panel (panelboard)**

Manufactured panel, board or sheet made primarily from wood particles or wood fibres.

### **3.4 Treated wood**

Wood that contains halogenated organic compounds or heavy metals as a result of treatment with wood preservatives.

### **3.5 Wood preservative**

Products intended to prevent wood-destroying or wood-disfiguring organisms (fungi, insects and marine borers) from attacking wood and wood-based products

## **4. Classes of unacceptable materials**

The following categories of reclaimed wood materials shall be considered as unacceptable for recycling for use in the manufacture of wood-based panels:

- Wood exceeding the limits for chemical contamination given in clause 6 of this standard
- Treated wood (e.g. poles, sleepers etc.).

Any other category of reclaimed wood materials (described by product type, wood species etc) not acceptable to a wood-based panel producer for purposes of his own production activity shall be identified in his conditions of purchase or delivery.

## **5. General requirements**

If a wood-based panel producer requests a declaration from the supplier about the origin of the material, this declaration shall be given taking into account national regulations or standard requirements.



Recycled wood shall be produced to the following specification:

### 5.1 Quality

Material shall be clean, free from rot and without degradation. It shall be free from chemical or other non-natural odour.

### 5.2 Cleanliness

The material shall be free from general contaminants such as soil, concrete, slate, stones, textile, plastic, rubber, waste paper, cardboard or metal. Excessive contaminant content (exceeding 2% of the total dry weight) shall entitle the buyer to a loss adjustment.

### 5.3 Moisture content

Moisture content shall normally not exceed 20%, subject to a tolerance of +/- 5%, relative to the dry weight. This implies that all appropriate steps shall be taken to prevent addition to natural moisture as a result of inadequate storage conditions or transportation. The additional weight in excess of 20% may be claimed back. The method of testing and sampling shall be agreed between buyer and seller.

### 5.4 Size

The size of the wood material (particles, fibres,..) shall be in line with the manufacturer's specification.

## 6. Chemical contamination

The limit values of chemical contamination in supplied material shall comply with existing regulations (example in bibliography: "Altholzverordnung"), when and where they apply or at least shall be as follows:

<b>Elements / Compounds</b>	<b>Limit values (mg/kg recycled wood)</b>
Arsenic (As)	25
Cadmium (Cd)	50
Chromium (Cr)	25
Copper (Cu)	40
Lead (Pb)	90
Mercury (Hg)	25
Fluorine (F)	100
Chlorine (Cl)	1000
Pentachlorophenol (PCP)	5
Creosote (Benzo(a)pyrene)	0,5



## **7. Delivery requirements**

Deliveries shall be effected in line with the manufacturer's specification, e.g. in tipper or container vehicle. When required by the manufacturer, container vehicles shall have side opening facilities for side discharge. Vehicles shall be adequately covered at all times.

## **8. Acceptance of deliveries**

Any action proposed by the buyer to downgrade or reject, or adjust the price of, any load for non-compliance with the general or special requirements of which the seller is aware, shall be preceded by established sampling and testing procedures. The buyer shall adopt a suitable procedure for recording all defaults, deficiencies and remedial actions.

## **9. Sampling and reference test methods**

In case of dispute or for periodical supplier checking purposes, the reference test methods specified in the EPF industry standard for wood-based panels containing recycled wood, listed in Annexe A shall be utilised. The cost of such testing in case of dispute shall be agreed upon between seller and buyer.

NOTE: Alternative test methods that guarantee a similar accuracy (repeatability and reproducibility), e.g. RAL-GZ 428, may also be used.

All loads shall be subject to spot checking on arrival to establish whether creosote is present. Loads containing creosote treated wood shall immediately be classified as unacceptable material.

NOTE 1: Creosote treated wood may only be used for energy recovery in appropriately equipped and licensed installations. Please refer to existing regulations when and where they apply.

NOTE 2: Test methods for spot testing to determine other wood preservatives are under development.

The samples to be examined shall be taken during unloading of the lorry or from running production, on a regular basis, but with a maximum batch size of 500 tonnes. Where possible sampling shall be carried out without contact by operational devices, such as drop hatches. The samples shall be transported and stored so as to exclude any chemical, physical or biological change of the sample material.

For each batch to be tested a laboratory sample shall be prepared. For this purpose individual samples shall be combined and homogenised by repeated mingling. A laboratory test sample of about 500 g shall be removed from the mixed sample with appropriate sample dividers or by coning and quartering. The laboratory sample shall be divided after drying. All analyses shall be performed on air-dry material samples.

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## **Annex A** (Informative)

### **Reference test methods for the analysis of recycled wood**

Sample preparation, digestion or destruction and methods of analysis shall be performed according to recognised and calibrated procedures. For each analysis desired accuracy will be balanced with cost.

#### **Cadmium (Cd), Chromium (Cr), Copper (Cu), and Lead (Pb):**

Destruction via incineration and solution of ashes in HNO<sub>3</sub> or, preferably, by acid solution in a microwave furnace. The determination is done via Induction Coupled Plasma (ICP), Flame Atomic Absorption Spectrometry (FAAS) or via Electro Thermal Atomic Absorption Spectrometry (ETAAS), depending on the concentration in the extract

#### **Mercury (Hg)**

Wet destruction in HCl, with the addition of H<sub>2</sub>SO<sub>4</sub>, followed by reduction of the solution to form Hg-vapour. The determination will be done by Cold Vapour Atomic Absorption Spectroscopy (CVAAS).

#### **Arsenic (As)**

Wet destruction via H<sub>2</sub>SO<sub>4</sub> with the addition of HNO<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> until a clear solution is obtained. The determination is carried out via Hydride Flame Atomic Absorption Spectrometry (HFAAS), while reducing the solution to form AsH<sub>3</sub>.

#### **Fluorine (F) and Chlorine (Cl)**

EN 24260: “Wickbold combustion method” may be used.

#### **Pentachlorophenol (PCP)**

Prepare sample and standard solutions by hexane extraction in acid environment, followed by methylation.. The determination is done via gas liquid chromatography (GLC).

#### **Creosote (Benzo(a)pyrene)**

Use EN 1014-2 for sampling “Procedure for obtaining a sample of creosote from creosoted timber for subsequent analysis”. Use hexane instead of toluene as a reagent. For determination, use EN 1014-3 “Determination of the benzo(a)pyrene content of creosote”. High performance liquid chromatography (HPLC) is used.

#### **Grit content**

Grit content will be determined according to ISO 3340.