

## Positive list of permissible biomasses for the production of biochar

European Biochar Certificate

### Feedstock

Origin	Feedstock	ID	EBC-FeedPlus & EBC-Feed	EBC-AgroOrganic	EBC-Agro	EBC-Urban	EBC-ConsumerMaterials	EBC-BasicMaterials	Special requirements and notes
<b>Agriculture:</b> biomass from agricultural farms, including both residues and biomass deliberately cultivated for biochar production.	Annual energy crops (e.g. com, rape, sugar beets, sunflowers) grown specifically for energy or material biomass use.	Ag-01	✓	✓	✓	✓	✓	✓	For EBC-AgroOrganic only from organic cultivation. For C-sink certification, the amount of fertilizer used must be declared.
	Perennial energy crops (e.g. miscanthus, marbled silphya, meadow cuttings) grown specifically for energetic or material biomass use	Ag-02	✓	✓	✓	✓	✓	✓	For EBC-AgroOrganic only from organic cultivation. For C-sink certification, the amount of fertilizer used must be declared.
	Woody biomass from short rotation plantations (SRC)	Ag-03	✓	✓	✓	✓	✓	✓	For EBC-AgroOrganic only from organic cultivation. For C-sink certification, the amount of fertilizer used must be declared.
	Tree, vine and shrub pruning	Ag-04	(✓)	✓	✓	✓	✓	✓	Particular attention to be paid to heavy metals from crop protection spraying. For EBC-Feed: only from defined and documented sources, biomass from municipal collection not allowed.
	Harvest residues such as straw, cabbage, leaves, stalks, husks	Ag-05	✓	✓	✓	✓	✓	✓	Particular attention to be paid to heavy metals from crop protection spraying.
	Old straw and grain dust	Ag-06		✓	✓	✓	✓	✓	Observe worker's protection in case of heavily dusty biomasses.
	Vegetables	Ag-07		✓	✓	✓	✓	✓	Only residual and waste materials that cannot or can no longer be used as animal feed. For EBC-AgroOrganic only from organic farming
	Seeds	Ag-08		✓	✓	✓	✓	✓	This only concerns expired seeds. For EBC-AgroBio only seeds from organic farming.
<b>Forestry and wood processing:</b> Natural bark and wood, untreated or mechanically treated, from forestry operations, sawmills or similar operations	Bark	F-01	✓	✓	✓	✓	✓	✓	
	Wood chips only from mechanically treated wood (pure firewood)	F-02	✓	✓	✓	✓	✓	✓	Only from certified, sustainable forestry. Approved are the FSC and the PEFC labels, others on request.
	Wood, wood residues from mechanical processing (waste wood A1)	F-03	✓	✓	✓	✓	✓	✓	Only from certified, sustainable forestry. Approved are the FSC and the PEFC labels, others on request. For EBC-Feed: only from defined, well documented sources, biomass from municipal collection not allowed.
	Sawdust, sawdust shavings	F-04	✓	✓	✓	✓	✓	✓	Only from certified, sustainable forestry. Approved are the FSC and the PEFC labels, others on request.
<b>Landscape management:</b> Residues generated by municipalities, landowners, landscaping contractors, NGOs active in nature conservation	Foliage	S-01		✓	✓	✓	✓	✓	No road wiping material. Special measures for checking leaves for contamination can be determined in the instruction manual.
	Root stocks	S-03		✓	✓	✓	✓	✓	The soil content is considered an additive and must not exceed 10% of the DM.
	Biomass from nature conservation	S-04	(✓)	✓	✓	✓	✓	✓	For EBC-Feed: only from defined, well documented sources, biomass from municipal collection not allowed.
	General landscaping residues	S-05	(✓)	✓	✓	✓	✓	✓	For EBC-Feed: only from defined, well documented sources, road-side biomass and biomass from municipal collection not allowed.
	Urban green cuttings	R-01		✓	✓	✓	✓	✓	Without food- and other biomass processing wastes.
	Waste paper	R-02			(✓)	(✓)	✓	✓	For EBC-Agro and EBC-Fertilizer only defined sub-assortments from defined sources (paper with low mineral filler content and without varnishes) and with small amounts of foreign matter: total content of synthetic coating, varnishes and plastic contamination max not exceed 1% (10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed when 1% limit is exceeded). To be regulated in the operating manual if required.

Recycling economy: Residual biomass, organic residues and wastes from industrial processes ("defined source") or from collection/separation by specific recycling companies	Untreated waste wood (A1), wood shavings, bark, wood wool	R-03		✓	✓	✓	✓	✓	
	Treated waste wood (glued, painted, coated) without PVC or heavy metal enrichment or wood preservatives (waste wood A2)	R-04			(✓)	(✓)	✓	✓	For EBC-Agro, EBC-Fertilizer and EBC-Urban only sub-assortments from defined sources (e.g. pure plywood waste) without coating and max. 1% synthetic binder (glue). Synthetic binder and coating must in total not exceed 10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed when 1% limit is exceeded. To be regulated in the operating manual if necessary.
	Treated waste wood (glued, painted, coated) with PVC content and/or heavy metal enrichment, without wood preservative (waste wood A3)	R-05				(✓)	(✓)	✓	Individual approval is needed for EBC-Urban and EBC-ConsumerMaterials. Synthetic binder, coatings and/or plastic contamination must in total not exceed 1% and 10% for EBC Urban and EBC-ConsumerMaterials/EBC-BasicMaterials, respectively. More frequent analysis on PCDD/F and heavy metals may be specified in the operating manual if necessary.
	Waste wood with wood preservatives (waste wood A4)	R-06				(✓)	(✓)	✓	Individual approval is needed for EBC-Urban and EBC-ConsumerMaterials: Producer must demonstrate complete thermal elimination of wood preservatives by the pyrolysis conditions applied. Synthetic binder, coatings and/or plastic contamination must in total not exceed 1% and 10% for EBC Urban and EBC-ConsumerMaterials/EBC-BasicMaterials, respectively. More frequent analysis on PCDD/F and heavy metals may be specified in the operating manual if necessary.
	Residues from industrial biomass processing	R-07		(✓)	(✓)	(✓)	(✓)	(✓)	Each individual feedstock needs to be evaluated by the EBC, and a special permit issued regulating additives, processing, controlling. R-07 feedstock are only permitted with the signed EBC process assessment.
	Paper fibre sludge	R-09		✓	✓	✓	✓	✓	Only from chemically untreated (wood) fibers, a pollutant analysis of the paper fiber sludge must be available.
	Municipal organic waste	R-10					(✓)	(✓)	Plastic contamination must in total not exceed 10%. More frequent analysis on PCDD/F and heavy metals may be specified in the operating manual if necessary. Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. Individual approval required upon application to CSI. For this purpose, a dossier must be submitted on the origin, composition and legal status of the waste.
Kitchen and canteen waste	Kitchen, canteen and restaurant residues	K-01			✓	✓	✓	✓	Contamination by plastic must not exceed 1% (10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed).
Food processing residues on vegetable basis from food industry and manufactures, food wholesale, supermarkets, convenience stores etc.	Material from washing, cleaning, peeling, centrifuging and separation processes	N-01		✓	✓	✓	✓	✓	The soil or sand content is considered an additive and must not exceed 10% of the DM.
	Pomace, kernels, husks, grist or press residues (e.g. from oil mills, spent grains)	N-02	✓	✓	✓	✓	✓	✓	
	Expired food residues	N-03		✓	✓	✓	✓	✓	Only vegetable food. Contamination by plastic must not exceed 1% (10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed).
	Manufacturing residues from the production of canned food	N-04		✓	✓	✓	✓	✓	only pure vegetable residues
	Residues from spices and seasoning	N-05	✓	✓	✓	✓	✓	✓	
	Residues from potato, corn or rice starch production	N-06	✓	✓	✓	✓	✓	✓	
	Fruit, grain and potato mashes, alcohol distillery residues	N-07		✓	✓	✓	✓	✓	
	Malt spent grains, -germ, and dust from beer production, hop spent grains, lees and sludge from breweries	N-08		✓	✓	✓	✓	✓	
	Pomace, wine lees, sludge from vinification	N-09		✓	✓	✓	✓	✓	
	Tobacco, tobacco dust, -grit, -rubs, -sludge	N-10		✓	✓	✓	✓	✓	
	Tea and coffee grounds	N-11		✓	✓	✓	✓	✓	
	Fruits	N-12	✓	✓	✓	✓	✓	✓	
	Molasses residues	N-13	✓	✓	✓	✓	✓	✓	
	Mushroom substrates	N-15		✓	✓	✓	✓	✓	Eligibility for EBC-C-sink must be reviewed separately, carbon from peat must not be credited.
	Residues from the processing of coffee (e.g. silver skin), cocoa (e.g. press residues) or tea.	N-16	✓	✓	✓	✓	✓	✓	

Water maintenance & vegetal marine biomass	Screenings, floating debris, mowed material	W-01		✓	✓	✓	✓	✓	Contamination by plastic must not exceed 1% (10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed).
	Aquatic plants and algae	W-02	✓	✓	✓	✓	✓	✓	For EBC-Feed: only from aquaculture or dedicated collection of aquatic plants to strictly avoid impurities. Special attention must be taken in regard to contaminated water. Systems with no direct control of water quality need a special permit from CSI and proof of origin.
Textiles	Cellulose, cotton and plant fibers	T-01		✓	✓	✓	✓	✓	The content of synthetic fibers must not exceed 1% (10% for EBC-ConsumerMaterial and EBC-BasicMaterials, individual approval needed). For AgroOrganic, the fibers must not be dyed or otherwise chemically treated.
	Fibers of hemp, sisal, etc.	T-02		✓	✓	✓	✓	✓	
Anaerobic Digestion	Plant-based digestate	AD-01		(✓)	✓	✓	✓	✓	Digestate from anaerobic digestion of deliberately produced biomass, agricultural residues and/or well-defined, non-contaminated residues from biomass processing. For EBC-AgroOrganic, only digestate from agricultural biomasses or biomasses approved for EBC-AgroOrganic production.
	Manure digestate	AD-02			✓	✓	✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. EU: When manure digestate is still considered an animal by-product, the pyrolysis unit must be approved as an end point for of animal by-products (Regulation EU 1069/2009).
	Animal by-product digestate	AD-03			✓	✓	✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. EU: If the digestate is still considered an animal by-product, the pyrolysis unit must be approved as an end point of animal by-products (Regulation EU 1069/2009). Non-EU: National annex to the EBC may define further criteria, otherwise a dossier on national regulation or the handling of animal by-products must be provided.
	Digestate from secondary plant biomass	AD-04		✓	✓	✓	✓	✓	Feedstock may contain organic fractions of municipal waste, secondary biomass from public collection places, etc. but must not contain sewage sludge. Contamination of the digestate by plastic must not exceed 1% (10% for EBC-ConsumerMaterials and EBC-BasicMaterials, individual approval needed).
Sludges from wastewater treatment	Sludge from municipal wastewater treatment ("biosolids")	WW-01						✓	Includes untreated, aerobically stabilized and/or anaerobically digested municipal sewage sludge. Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate micropollutants and polymer additives used in wastewater treatment. Regular analysis of the feedstock (heavy metals, chlorine etc.) may be specified in the operating manual. More frequent biochar analysis on PCDD/F and heavy metals of may be specified in the operating manual.
	Sludge from other wastewater treatment	WW-02						(✓)	Individual approval required upon application to CSI. For this purpose, a dossier must be submitted on the origin and composition of the sludge, as well as any contaminants it contains. The exact scope is determined by CSI in each individual case.

Animal by-products	Bones	AB-01			✓	✓	✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. EU: If the feedstock is still an animal by-product according to Regulation (EC) 1069/2009, i.e. it did not already pass an end-point, the pyrolysis unit must be approved as an end point for animal by-products. Non-EU: National annex to the EBC may define further criteria, otherwise a dossier on national regulation on handling of animal by-products must be provided.
	Manures	AB-02			✓	✓	✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. EU: If the feedstock is still an animal by-product according to Regulation (EC) 1069/2009, i.e. it did not already pass an end-point, the pyrolysis unit must be approved as an end point for animal by-products. Non-EU: National annex to the EBC may define further criteria, otherwise a dossier on national regulation on handling of animal by-products must be provided.
	Other animal by-products	AB-03			(✓)	(✓)	(✓)	(✓)	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. Individual approval required upon application to CSI. For this purpose, a dossier must be submitted on the origin, composition and legal status of the animal by-product. EU: If the feedstock is still an animal by-product according to Regulation (EC) 1069/2009, i.e. it did not already pass an end-point, the pyrolysis unit must be approved as an end point for animal by-products. Non-EU: National annex to the EBC may define further criteria, otherwise a dossier on national regulation on handling of animal by-products must be provided.

## Additives

Additives serve to improve pyrolysis conditions and biochar quality. Their share in the pyrolysed biomass must not exceed 10% DM in total. Higher dosages require individual approval.

Group	Feedstock								Special requirements
mineral and organic additives	Lime	Z-01		✓	✓	✓	✓	✓	
	Bentonite	Z-02		✓	✓	✓	✓	✓	
	Rock powder	Z-03		✓	✓	✓	✓	✓	
	Argile	Z-04		✓	✓	✓	✓	✓	
	Clay	Z-05		✓	✓	✓	✓	✓	
	Soil	Z-06		✓	✓	✓	✓	✓	
	Wood- und plant ashes	Z-07		✓	✓	✓	✓	✓	Only certified ashes. Approved are RAL-quality (Bundesgütegemeinschaft Holzäsche, Germany) ash. Further ashes on request. The instruction manual may include additional analyses and limit values for ash (for Switzerland).

The inclusion of other biomasses and additives not included in the positive list can be applied for at CSI.

The decision about the inclusion in the positive list as well as possible additional requirements will be made by the scientific advisory board of the EBC.

All decisions are justified and published on the EBC website.