Positive list of permissible biomasses for the production of biochar

Feedstock

Origin	Feedstock	ID	WBC Premium	WBC Agro	WBC Material	Special requirements and notes
Agriculture: biomass from agricultural farms, including both residues and biomass deliberatly cultivated for biochar production.	Annual energy crops (e.g. corn, rape, sugar beets, sunflowers) grown specifically for energy or material biomass use.	Ag-01	✓	✓	✓	For C-sink certification, the amount of fertilizer used must be declared.
	Perennial energy crops (e.g. miscanthus, marbled silphyia, meadow cuttings) grown specifically for energetic or material biomass use	Ag-02	✓	✓	✓	For C-sink certification, the amount of fertilizer used must be declared.
	Woody biomass from short rotation plantations (SRC)	Ag-03	✓	✓	✓	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.
	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.
	Seeds	Ag-08		✓	✓	Only expired seeds.
Forestry and wood processing: Natural bark and wood, untreated or mechanically treated, from forestry operations, sawmills or similar operations	Bark	F-01	✓	✓	✓	Only from certified, sustainable forestry. Approved are the FSC and the PEFC labels, others on request.
	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.
	Sawdust, sawdust shavings	F-04	✓	✓	✓	Only from certified, sustainable forestry. Approved are the FSC and the PEFC labels, others on request.
Landscape management: 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	✓	✓	✓	Biomass from municipal collection not included here.
	General landscaping residues	S-05	✓	✓	✓	Road-side biomass and biomass from municipal collection not included here.
Recycling economy: Residual biomass, organic residues and wastes from industrial processes ("defined source") or from collection/separation by specific recycling companies	Urban green cuttings	R-01	✓	✓	✓	Without food- and other biomass processing wastes.
	Waste paper	R-02		(✓)	✓	For WBC-Agro 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 must not exceed 1% (individual approval needed when 1% limit is exceeded). To be regulated in the operating manual if required.
	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 WBC-Agro 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 WBC-Material. 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			✓	Synthetic binder, coatings and/or 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.
	Waste wood with wood preservatives (waste wood A4)	R-06			✓	Synthetic binder, coatings and/or 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.
	Residues from industrial biomass processing	R-07			(✓)	Each individual feedstock needs to be evaluated by CSI, and a special permit issued regulating additives, processing, controlling. R-07 feedstock are only permitted with the signed CSI 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			(✓)	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 (H/Corg < 0.4) 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% for WBC Agro.
Food processing residues on vegetable basis, from food industry and manufactures, food wholesale, supermarkets, convience 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% for WBC Premium and 10% for WBC Agro and WBC Material.
	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, -ribs, -sludge	N-10	✓	✓	✓	
	Tea and coffee grounds	N-11	✓	✓	✓	
	Fruits	N-12	✓	✓	✓	
	Molasses residues	N-13	✓	✓	✓	
	Mushroom substrates	N-15	✓	✓	✓	Eligibility for C-sink certification 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% for Premium and 10% for Agro and Material.
	Aquatic plants and algae	W-02	✓	✓	✓	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 deliberatly produced biomass, agricultural residues and/or well-defined, non-contaminated residues from biomass processing.
	Manure digestate	AD-02		✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum (H/Corg < 0.4) to eliminate biological hazards and micropollutants.
	Animal by-product digestate	AD-03		(✓)	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. National annex to the WBC may define futher criteria, otherwise a dossier on national regulation or the handling of animal by-products must be submitted to CSI.
	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 10% for WBC Agro.
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 (H/Corg < 0.4) 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. Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate micropollutants and polymer additives used in wastewater treatment (H/Corg < 0.4)
Animal by-products	Bones	AB-01	✓	✓	✓	Pyrolysis conditions must exceed 500 °C for 3 min at minimum to eliminate biological hazards and micropollutants. (H/Corg < 0.4). National annex to the EBC may define futher 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. (H/Corg < 0.4). National annex to the EBC may define futher 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. (H/Corg < 0.4). National annex to the EBC may define futher 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. Further ashes on request. The instruction manual may include additional analyses and limit values for ash.
	Organic Oils	Z-08	✓	✓	✓	Only organic oils. Mineral oils are not permited.
	Biochar	Z-09	✓	✓	✓	Only EBC-certified biochar of the corresponding certification class.
	Biochar from own production	Z-10	(✓)	(✓)	(✓)	Biochar from the start-up and shutdown of the own production plant, produced from the same feedstock as the registered batch, may be mixed with the regular feedstock of the batch and pyrolyzed again. For Feed and Agro classes, new EBC analyses may be required.

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/WBC.

All decisions are justified and published on the EBC/WBC website.