Positive list of permissible matrices for the establishment of biochar C-sinks (H/Corg < 0.4)

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For blochars presenting an H to Corg ratio below 0.40. A new persistence evaluation system based on advanced analysis is in preparation. The latter mainly concerns the proportions of the PAC and SPC fractions. For blochars with an H to Corg ratio above and equal to 0.40, please refer to the indications in the standard.

Matrix

x post Manure	B-01 B-02 B-03	Controlling period in years	Solifuse C sink authorized	Leakage margin to be deduced before registration	C remaining during temporary C-slink	C remaining after > 1000 y	SPC fraction with MRT of 50 years	Corditions	EBC-FeedPlus	EBC-Feed	EBC-AgroOrganic	EBC-Agro	EBC-Urban	EBC-BasicMaterials		WBC Premium	WBC Agro	
Manure	B-02		>															
						75%	25%	The use of compost as soil amendment must be proven. When used to produce potting soil, it has to be declared as matrix B-09.	i _		✓ .	/ (·)*			, ,		
d Manure	B-03		>			75%	25%	The use as soil amendment must be proven. It must not be pyrolysed, combusted. If the manure is treated by anaerobic digestion, non combustive use of the solid digestate must be guaranteed.	√		✓ ·	/ (v)*			1 1		
			\			75%	25%	If the manure is treated by anaerobic digestion, non combustive use of the solid digestate must be guaranteed.	✓		✓ .	/ (s	0.			1 1		
robic Digestate	B-04		>			75%	25%	The use as soil amendment must be proven, must not used as feedstock for pyrolysis	√		✓ ·	/ (s	0*			1		
nar Based Fertilizer	B-06		<			75%	25%	The fertilizer does not reduce the permenance but biochar may increase emissions during manufacturing and storage. A GHG balance of the production must be provided.	>		<i>,</i>	, (·)*			<i>,</i>		
al feed	B-07		√			75%	25%	Only lifestock feed with guaranteed end-of-life as soil amendment. Horse and chicken manure are often used for energetic purposes, which must be excluded. Pet feed products are generally excluded as pet execreta end up mainly in waste treatment plants.	s	J						,	not recommended	
coating	B-08		>	10%		75%	25%	An accounting for waste seed management must be provided and deduced from C-sink. 10% margin because expired seeds are often combusted.	<i>y</i>		✓ ,	,				<i>y</i>		
ng soil / growing media / substrates for horticulture	B-09		✓	<> 20%		75%	25%	Life cycle data and statitistcs must prove that the end of life is in soi (e.g., via composting) for a relevant share of the total volume produced. This share defines the security margin.	il ✓		✓ .	,				, ,		
ng soil / growing media / substrates for ornamental plants	B-10		√	⇔ 20%		75%	25%	Must not be used to grow plants that are used for food or feed production. Life cycle data and statitistics must prove that the end of life is in soi (e.g., via composting) for a relevant share of the total volume produced. This share defines the security margin.	il 🗸		✓ ,	, ,				1 1		
rrete	Min-01				100%	75%	25%		,	,	,	, ,	,	,		, ,	. ,	
ent, cement mortar	Min-02		✓		100%	75%	25%	After biochar addition, these matrixes must not be subject to thermal treatment beyond drying. Following demolition, the biochar- containing mineral matrix should be recycled for use in new building	1	<i>'</i>	<i>y</i> ,	, ,	<i></i>	<i>y</i>		/ /	. ,	
, lime mortar, gypsum	Min-03	ny 10 years	✓		100%	75%	25%	the matrix. In the case of Global Material C-sink certified constructions, demolition must be communicated to the Global C- Sink Registry so that the registered matrix and geolocation can be	,	✓	✓ .	, ,	1	1		, ,		
clay plaster, mudbricks and clay drywall	Min-04	theu	✓			75%	25%	induced accordingly. In legality destinating the conditioning second in the construction, which is monitored by satellite imagery. If the construction is removed or significantly allered without proper notification to the registry, the C-aink certification will be revoked.	·	√	✓ .	, ,	√	√		, ,		
ait	Min-05	30 years for the firi			100%			Lost of pyrogenic carbon during the different recycling process are not yet investigated. Currently 80% of asphalt is recycled at temperatures that do not cause biochar degradation (< 300 °C). However, pending the results of those investigations, a control perior of 30 years is set. Pyrolysis treatment of used asphalt causes the removal from the C-sink register.	d									
al fe	ed ting oil / growing media / substrates for horticulture oil / growing media / substrates for ornamental plants cement mortar e mortar, gypsum	2 Digestate	Digestate	Digestate	Digestate	Digestate	Digestate	Digestate	Depetative B-04	Depetation B-04 Fig. 25% The solid dispetation must be guaranteed. The use as soil amendment must be proven, must not used as feedback for propigis. The feedback for	Depetation Bo4 For the use as soll amendment must be proven, must not used as feedabook for profysis seed Fertilizer Bo5 For the use as soll amendment must be proven, must not used as feedabook for profysis seed Fertilizer Bo5 For the use as soll amendment must be proven, must not used as feedabook for profysis seed Fertilizer Bo5 For the use as soll amendment must be proven, must not used as feedabook for profysis seed Fertilizer Bo5 For the use as soll amendment must be proven, must not used as feedabook for profysis and chicken musture as other used to feedabook for profysis and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies purposes, and chicken musture as other used for energies as expected and chicken musture as other combusted. 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An accounting for waste seed must must not be subject to themse waste of life to the life is in soll or a soll of l	of the solid digestate must be guaranteed. 7 7% 25% The use as soil amendment must be proven, must not used an electronic prophysis and provided and electronic provided and	Degestate B-04 T75% Degestate B-06 T75% Degestate B-07 T75% Degestate B-06 T75% Degestate B-07 T75% Degestate B-08 T75% Degestate B-07 T75% Degestate B-08 T75% Degestate B-07 T75% Degestate B-08 T75% Degestate B-08 T75% Degestate B-07 T75% Degestate Degestate Degestate Degestate B-08 T75% Degestate Degestate	Solid Provided and Solid Provided and Solid Provided and Solid Sol	The sead of depasted must be guaranteed. ### Comment must be proven, must not used an expectation of the solid dispatcher must be proven, must not used an expectation of the solid dispatch must be proven, must not used an expectation of the production must be proven, must not used an expectation of the production must be proven, must not used an expectation of the production must be provided and control of the production of the production must be provided and control of the production of the production must be producted and production of the pro	S Digestate B 64 Fire use as sol amendment must be parameted. 76% 26% Fire use as sol amendment must be proven, must not used as solecular to the proven, must not used as solecular to the province must be proven, must not used as solecular to the province must be proven, must not used as solecular to the province must be provinced. 76% 26% The fertilizar does not reduce the provinced must be provinced and the provinced must be provinced and the provinced must be provinced. 77% 26% The fertilizar does not reduce the previous must be provinced and the provinced must be provinced. 77% 26% The fertilizar does not reduce the previous must be provinced and the provinced must be provinced. 77% 27% 28% An accounting for waste seed must prove that the use of this is in set (so as a must prove the provinced must be provinced and provinced mus	The such as solid dignishal must be guaranteed. Possession Bod 77% 25% 25% between the permanent of the pe	B-04 B-06 B-07 Total assessment for the cold dispestate must be guaranteed. Total assessment must be proven, must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used as excellent cold by a proving must not used by a proving of must be provided and cold cold must not be provided and cold must not be provided and and cold must not be provided and and statistics must prove that the end of life is in see a provided and cold must not be provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must prove that the end of life is in see a provided and and statistics must provide an excellent must be provided and astatistics must provided and astatistics must provided and astatistics must pro

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	Composite	Mat-01	individual	✓		100%				class and expected recycling t is a sand expected recycling t										
Materials	Plastics	Mat-03	individual	✓		100%			The temporary C-sink period depends on the expected life span of each respectiv product or product class and expected recycling					/		,	,	√		
Materials	Textiles	Mat-04	individual	√		100%			pathways determind by statistics. It is governed by the Global Material C-Sink standard. High security margins are due to variation between use scenarios and difficulty of tracking and control.					✓		<i>-</i>	,	√		
	Paints	Mat-05	individual	√		100%								✓		,	,	✓		
	Agricultural soil	S-01		✓			75%	25%	Tracking and prove of soil application must be provided. Wetlands (S 04) must be excluded.	S-		✓ .	,			_	, ,			√
	Urban soil	S-02		\			75%	25%	Tracking or reporting and prove of soil application must be provided.	./	./	./	, ,				, ,			./
	Mine reclamation	S-03					75%	25%	Tracking or reporting and prove of soil application must be provided.	,			,			,	, ,			
	Wet lands	S-04	√		100%		75%	25%	Biochar may lead to accelerated mineralization of wetlands. Too few scientific data available. Not accepted as C-sink matrix today.			not allowed	as C-Sink Matrix (yet)	,	,		not allowed as C-Sink	Matrix (yet)		
	Forest	S-05			0-20%		75%	25%	Biochar may lead to accelerated mineralization of certain boreal forests where a higher security margin is applied. The soil of natural forests should better not be disturbed by machines and substrates. The safety margin can be reduced to zero if the soil is proven to be degraded with a low SOC content or if the biochar is used as a concentrated root zone application during planting.	√		✓ .	/				, ,			√
	Foundation and compacted ground under constructions (e.g. roadbeds)	S-06					75%	25%	Depending on the subsoil analysis (SOC) and depth, reduced degradation of SPC can be expected but not yet guaranteed. Once sufficient scientific data are provided, a correction of the SPC degradation can be registered retroactively.	√	1	✓ ,	/ /			<i>-</i>	, ,			
	Clay subsoil	S-07					75%	25%	Depending on the clay-soil analysis (SOC) and depth, reduced degradation of SPC can be expected but not yet guaranteed. Once sufficient scientific data are provided, a correction of the SPC degradation can be registered re	√	√	,	/ /			_	, ,			
	Sediments	S-08					75%	25%	Depending on the sediment analysis (SOC), depth, and location, reduced degradation of SPC can be expected but not yet guaranteed Once sufficient scientific data are provided, a correction of the SPC degradation can be registered retroactively.		y	✓ .	/			>	, ,			
Landfili	Waste disposal	LF-01					75%	25%	Only authorized when mixed to cover soil or any other mineral matrix at a ratio < 1:5 to avoid any risk of smoldering.				, ,		./					
	Ash	LF-02					75%	25%	If the blochar is homogeneously mixed to pyrolysis sah at a ratio < 1. 1.5, the blochar is efficiently protected from blodgical or chemical odulation when applied to a landfill even in cases of landfill fire. The blochar persistence can thus be certified as for blochar soil application. The blochar-ash must be certified at least as EBC- or WBC-Materials.	:	·	√ .	/ /		√		, ,	√		
Waste water	Waste water treatment / Sewage Sludge	W-05		√	10%		75%	25%	Tracking of the treatment and sludge needed to exclude that the amended sludge ends up as feedstock for pyrolysis or combustion. The margin was set as the sludge amendment and use is sometimes obscured.	·		√ .	,				, ,			√
Geological storage		G-01			5%		100%	0%	Geological storage requires application deep below the soil in geological horizons, where no biological activity is sustained, protected from water and air, and where it cannot be recovered because of a sealed cover or because of its embedding in a C-sink matrix. For storages above 10,000 m3 continous monitoring of temperature and gas evolution must be set up.	√	✓	✓ .	/ /		√		, ,	√		

^{*} The use of biochar with certification class EBC-Urban in the biological substrat is only permitted when the substrate packaging indicates that it is for urban use only and must not be used for agricultural purposes...

SPC = semi-persistent carbon fraction of biochar

For the inclusion of other matrices not included yet in the present positive list an official request can be sent to Carbon Standards.

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

All decisions are justified and published on the Carbon Standard website.