

Eligible Biochar End Uses List [DRAFT]

All end uses for the application of biochar associated with a project must comply with relevant environmental laws and regulations, extending from the time immediately after the production of the biochar to the final application serving as the basis for long-term storage of the sequestered carbon and, hence, the permanence factor applied for credit quantification. Environmental and health requirements are specified in the table below for each eligible end use, including the materials standards that are applicable for end use applications in jurisdictions lacking heavy metal and toxicant standards for a given end use. Permanence factors applicable to each end use are also indicated, as is an indication as to whether emissions associated with the transportation of biochar must be included in project emissions calculations.

Feedstock categories	Eligible uses	Environmental safeguards, including default material standards	Permanence factor (P_{EU})	Biochar transportation emissions?															
Agricultural, horticulture, home gardening, and/or forestry applications	Direct soil amendment	Compliance with soil amendment or compost regulatory requirements for material composition relevant to the end use location. May not be derived from the following feedstock types: <ul style="list-style-type: none"> - Municipal solid waste - Construction and demolition waste If standards for heavy metals and toxicants are not available for soil amendments or compost in the jurisdiction in which the biochar is applied, the standards specified as applicable to all soil amendments and to biochar by the USDA NRCS Conservation Practice Standard for Soil Carbon Amendment (Code 366) (United States only) must be applied for soil amendments. For biochar used as a compost additive, the additional standards for	$P_{EU} = C_{hc} - m_{hc}(H/C_{org})$ From Woolf et al. 2021 Value for H/C_{org} based on laboratory analysis performed for each biochar batch Mean annual temperature spatial layer available on the Biochar Protocol webpage and is used to determine the applicable coefficients for C_{hc} and m_{hc} : <table border="1" data-bbox="1241 1057 1654 1370"> <thead> <tr> <th>Mean annual temp (°C)</th> <th>C_{hc}</th> <th>m_{hc}</th> </tr> </thead> <tbody> <tr> <td>≤5</td> <td>1.13</td> <td>-0.46</td> </tr> <tr> <td>5.1 – 10.0</td> <td>1.10</td> <td>-0.59</td> </tr> <tr> <td>10.1 – 15.0</td> <td>1.04</td> <td>-0.64</td> </tr> <tr> <td>15.1 – 20.0</td> <td>1.01</td> <td>-0.65</td> </tr> </tbody> </table>	Mean annual temp (°C)	C_{hc}	m_{hc}	≤5	1.13	-0.46	5.1 – 10.0	1.10	-0.59	10.1 – 15.0	1.04	-0.64	15.1 – 20.0	1.01	-0.65	Excluded
	Mean annual temp (°C)			C_{hc}	m_{hc}														
	≤5			1.13	-0.46														
5.1 – 10.0	1.10	-0.59																	
10.1 – 15.0	1.04	-0.64																	
15.1 – 20.0	1.01	-0.65																	
Agricultural water filtration, with eventual field application																			
Compost additive																			

Feedstock categories	Eligible uses	Environmental safeguards, including default material standards	Permanence factor (P_{EU})			Biochar transportation emissions?
		compost specified under Code 366 also apply.	≥20.1	0.98	-0.66	
	Livestock/animal feed additive	Compliance with livestock/animal feed regulatory requirements relevant to the end use location.				
	Animal bedding	Compliance with animal bedding regulatory requirements relevant to the end use location.				
	Horticultural growth media	Compliance with horticultural growth media regulatory requirements relevant to the end use location.				
Urban applications	Non-food/-feed soil applications, e.g., urban trees and/or landscaping, green roofs	Compliance with soil amendment regulatory requirements relevant to end use location	Same as for agricultural applications, as indicated above			Excluded
Construction/engineered materials	Cement additive	Compliance with laws and regulations for cement content	100%			Excluded
	Gypsum additive	Compliance with laws and regulations for gypsum wallboard content				
	Mineral plaster additive	Compliance with laws and regulations for plaster content				
	Clay additive	Compliance with laws and regulations for clay composites content				
	Asphalt additive	Compliance with laws and regulations for asphalt content	20% (based on low end of lifespan ranges for traditional asphalt road)			

Feedstock categories	Eligible uses	Environmental safeguards, including default material standards	Permanence factor (P_{EU})	Biochar transportation emissions?
			applications relative to 100 years, i.e., 20 years = 20%)	
Permanent storage structures	Wood polymer composites	Compliance with laws and regulations for wood polymer composites content	30%	Included
	Spent oil/gas wells	Compliance with relevant environmental laws and regulations for oil and gas well retirement	100%	
	Subsurface mine remediation	Compliance with relevant environmental laws and regulations for subsurface mine remediation		
	Landfill disposal, including as alternative daily cover	Compliance with relevant environmental laws and regulations for contents of materials disposed of in landfills (or as alternative daily cover, as applicable)		
Environmental remediation/stabilization and wastewater sanitation	Soil remediation, stormwater management, erosion control, septic and transpiration trenches, effluent polishing	Compliance with relevant environmental laws and regulations for environmental remediation/stabilization and wastewater sanitation	Same as for agricultural applications, as indicated above	Excluded