



**SCS Certification Standard
for Biobased Content**
SCS-114 Biobased Content Standard



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25 **1. Introduction**

26 1.1 The purpose of the Certification Standard for Biobased Content (hereinafter SCS-114) is to
27 describe the requirements for a third-party certification of the biobased content of a material when
28 that biobased content is derived from mass balance allocation or from physical segregation.

29 1.2 The SCS-114 Standard applies to:

30 1.2.1 Any material used in a product for which the manufacturer is making a claim about the
31 biobased content.

32 1.2.2 An operator who wishes to demonstrate that the biobased content is traceable back to
33 an eligible certified source of biomass via a chain of certified entities.

34 1.3 Mass balance allocation allows the physical mixing of traceable, eligible biomass with other
35 materials (e.g., fossil derived or biomass from an unknown origin). The characteristics of the eligible
36 biomass are transferred down the supply chain on an accounting basis and remain assigned to a
37 specific consignment.

38 **2. Scope and Limitation**

39 **2.1 Supply chain**

40 2.1.2 SCS-114 is primarily a chain of custody standard.

41 2.1.3 This Standard can be applied to:

- 42 ■ all members of the supply chain who produce or process gaseous, liquid and solid biobased
43 fuels and gaseous, liquid and solid biobased chemicals, polymers and products
44 manufactured from them.
- 45 ■ purchasers of hydrogen from biomass or made from electrolysis of water using renewable
46 energy, who wish to make a claim covering the hydrogen incorporated into biobased
47 products.

48 2.1.4 All operators who take physical possession or legal ownership of the biobased fuels and
49 materials listed above are included in the scope of this standard, as well as traders and storage sites.

50 2.1.5 Brokers and transportation companies are not included in the scope of this standard, unless
51 they take ownership.

52 2.1.6 Farms, forests or sites where biobased waste or residues originate are not within the scope of
53 this Standard.

54 **2.2 Raw Materials**

55 2.1.7 All types of biomass can be accepted by operators certified to this Standard if produced
56 responsibly (see Section 6).

57 2.1.8 Hydrogen from biomass or made from electrolysis of water using renewable energy, when
58 incorporated into biobased products, is within the scope of this Standard.

59 2.1.9 Oxygen and nitrogen extracted from air are within the scope of this Standard.

60 2.1.10 Carbon dioxide and carbon monoxide, extracted from air or industrial waste streams, are not
61 within the scope of this Standard.

62 **2.3 GHG emissions**

63 2.1.11 The calculation of the GHG intensity of processing is not within the scope of this Standard.

64 **3. Normative References**

- 65 ▪ SCS Standards Certification and Approval Requirements
- 66 ▪ <name of document with CB/auditing requirements>

67 **4. Definitions**

68 **Biomass.** The biodegradable fraction of products, waste and residues from biological origin from
69 agriculture, including vegetal and animal substances, from forestry and related industries, including
70 fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and
71 municipal waste of biological origin.

- 72 ▪ **Agricultural biomass.** Biomass produced from agriculture.
- 73 ▪ **Forest biomass.** Biomass produced from forestry.
- 74 ▪ **Biomass fuels.** Gaseous and solid fuels produced from biomass.
- 75 ▪ **Biogas.** Gaseous fuels produced from biomass.

76 **Agricultural, aquaculture, fisheries and forestry residues.** Residues that are directly generated by
77 agriculture, aquaculture, fisheries and forestry and that do not include residues from related
78 industries or processing.

79 **Certification Assessment.** Independent evaluation of a product claim using specific, predetermined
80 criteria and procedures with assurance of data reliability.

81 **Certified Product.** Finished product and raw materials, subassemblies, components and accessories
82 for which a manufacturer has demonstrated full conformance to the requirements of the standard,
83 and for which the manufacturer is therefore authorized to apply the SCS Certification Label, as
84 evidence that the product complies with the program requirements.

85 **Chain of Custody.** The path that a material/product takes from its point of production to the end
86 consumer, consisting of each entity that takes legal and/or physical possession along this pathway.

87 **Claim.** Oral, written, implied, or symbolic representation, statement, or advertising or other form of
88 communication presented to the public or buyers of products that relates to a product's

89 environmental claim such as the percentage of recycled content. An environmental marketing claim
90 must be consistent and compliant with Federal Trade Commission guidelines.

91 **Data Review Period.** The 12-month period of time represented by the data submitted for an
92 assessment. This is typically comprised of the four most recent consecutive quarters, and at a
93 minimum the most recent quarter. The data review period shall be the same for all data included in
94 the review. Data provided for this period shall be for materials used for saleable production only.

95 Note: In the case that requested data are not available for the most recent twelve consecutive
96 months because of an acceptable circumstance, the data review period shall be set by SCS.
97 Acceptable circumstances are subject to the discretion of SCS. If certification is granted based on a
98 limited data review period, additional data may be requested to verify the claim after initial
99 certification, per the auditor's recommendation.

100 **Energetic Value:** The energy content of a material, equal to the lower heating value (LHV). Energetic
101 value may be used to assign credits in the mass balance or system allocation chain of custody
102 systems.

103 **Lower Heating Value (LHV).** Also known as net calorific value or net heat content, LHV is the amount
104 of heat energy available to be released via combustion of a material, less the energy required for
105 vaporization of water.

106 **Mass Balance.** A traceability protocol to match outputs with inputs according to a specific
107 conversion factor, within a predefined system boundary during a given time period (typically 3
108 months).

109 **Mass Balance Allocation.** May also be referred to as system allocation. Mass balance allocation is a
110 chain of custody model in which certified inputs are transformed into credits upon entering a system
111 and credits (and associated claims) are freely attributed to outputs leaving the system. Credits
112 entering and leaving the system must be reconciled on a mass basis or other accepted unit
113 conversion.

114 **Private Label Customer.** The primary entity that purchases a SCS certified product directly from a
115 SCS Certified Client for the purpose of selling said product as a private label product, with only label
116 and/or packaging modifications.

117 **Product.** A product is an item with defined materials, function, and styles. It may be associated with
118 a specific stock-keeping unit (SKU). When considering the material basis, ancillary materials may be
119 considered. Secondary materials may relate to type, style, fabrication method, or specific function.

120 **Records.** Any information in written, visual, or electronic form that documents the activities
121 undertaken by a user to demonstrate conformance with this Standard.

122 **Renewable energy.** Energy from renewable non-fossil sources, namely wind, solar (solar thermal
123 and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy,
124 hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas;

125 **SCS Supplier Affidavit Form.** A form that is required from suppliers of biobased material. The form
126 requires disclosure that the supplier has done business with the manufacturer, information about
127 the company (e.g. length of time in business, business license, etc.) and information about the type
128 of biobased material provided (e.g. amount sold, source of biobased material, waste stream source,
129 etc.). The form must be signed by a duly authorized representative.

130 **Stakeholders.** People who are, or who might be, affected by any action taken by users of this
131 Standard. Examples include: customers, workers, partners, contractors, suppliers, etc.

132 **Standard.** When capitalized, refers to this Standard (SCS Certification Standard for Biobased
133 Content, SCS-114).

134 **Supplier.** Organization that supplies a material, product or service to the manufacturer. Brokers are
135 not considered suppliers unless they provide a physical chain of custody from actual suppliers.

136 **System.** A connected network of transformations and transport between transformations in which
137 certified biobased material enters and is converted to an allocated biobased product.

138 **Traceability.** The ability to trace materials and/or products sequentially throughout a manufacturing
139 process and/or value chain in a way that is verifiable through objective evidence.

140 **Waste.** Anything for which the generator or holder has no further use and which is discarded or is
141 released to the environment (Source: ISO 14021:2016).

142 **Waste Stream.** The aggregate flow of waste material from homes, businesses, institutions and
143 industry that is recycled, burned or landfilled.

144 **Waste Stream Source.** The specific origin of a waste material.

145 **5. Management system & documentation**

146 5.1 Operators shall maintain a management system that records information about all inputs and
147 outputs containing eligible biomass/biobased allocations. The following information shall be
148 recorded:

- 149 Name and address of all suppliers of eligible biomass/biobased inputs;
- 150 Name and address of all customers for eligible biobased outputs;
- 151 Type and dry mass (or volume) of eligible biomass or allocated biobased content received in
152 each consignment;
- 153 Sustainability information accompanying each consignment, indicating the country of origin
154 of the biomass raw material, biomass category or product identification, certification
155 program, the method of biobased allocation (energy or mass);
- 156 A copy of the Proof of Renewability of any hydrogen incorporated in the product, such as
157 Guarantees of Origin or Renewable Energy Certificates, with evidence that these have been
158 cancelled and cannot be used again;
- 159 Sustainability information and any Proof of Renewability, containing the information listed
160 above, accompanying all consignments of biobased outputs sent to customers.

161 5.2 Operators shall maintain a list of all conversion factors for the processing of biomass/biobased
162 inputs and evidence to show how they have been derived. Any products, accounted for in the
163 conversion factors, but which are used to displace fossil fuel in energy generation, shall be detailed.

164 5.3 Operators shall maintain a documented Procedure for operating the Mass Balance System as
165 described in Section 7. The Mass Balance Records including Excel spreadsheets shall include

- 166 ■ Masses of all inputs and outputs with dates received and despatched;
- 167 ■ Evidence of an exact or positive balance at the end of the mass balance period;
- 168 ■ Records of credits carried forward to the next Mass Balance period.

169 5.4 Operators shall maintain a documented Procedure for allocating biobased outputs to products
170 as described in Section 8. The calculation supporting allocated biobased outputs and any claims shall
171 be documented.

172 **6. Requirements for raw materials**

173 All biomass raw materials including wastes and residues, that justify a biobased content claim, shall
174 be purchased from a producer which has proven eligible production of raw materials and/or
175 verification of wastes and residues.

176 **6.1 Agricultural Biomass (including wastes and residues from agriculture)**

177 6.1.1 Biomass purchased from a farm shall be third-party certified to one of the following
178 certification programs:

- 179 ■ SAI Farm Assurance Level Silver
- 180 ■ SCS Sustainably Grown
- 181 ■ International Sustainability and Carbon Certification (ISCC)
- 182 ■ REDcert
- 183 ■ Biomass Biofuel Sustainability Voluntary Scheme (2BSvs)
- 184 ■ Better Biomass
- 185 ■ Bonsucro
- 186 ■ Proterra
- 187 ■ Roundtable on Sustainable Palm Oil (RSPO)
- 188 ■ Round Table on Responsible Soy Association (RTRS)
- 189 ■ Roundtable on Sustainable Biomaterials (RSB)
- 190 ■ U.S. Soybean Sustainability Assurance Protocol (SAP)
- 191 ■ Rainforest Alliance (RA)
- 192 ■ Other Sustainability Schemes approved by the European Union

193 **6.2 Forest biomass (including wastes and residues from forests)**

194 6.2.1 Biomass purchased from a forest shall be third-party certified to one of the following
195 certification programs:

- 196 ▪ Forest Stewardship Council (FSC)
- 197 ▪ Programme for the Endorsement of Forest Certification (PEFC)
- 198 ▪ Sustainable Biomass Program (SBP)
- 199 ▪ Better Biomass
- 200 ▪ ISCC
- 201 ▪ REDcert
- 202 ▪ Other Sustainability Schemes approved by the European Union

203 **6.3 Wastes and residues from aquaculture and fisheries**

204 6.3.1 Waste and residues from aquaculture and fisheries purchased from a processing plant shall
205 be third-party certified to one of the following certification programs:

- 206 ▪ Responsible Fisheries Management Certification (RFM)
- 207 ▪ Aquaculture Stewardship Council (ASC)
- 208 ▪ Marine Stewardship Council (MSC)
- 209 ▪ ISCC
- 210 ▪ Other Sustainability Schemes approved by the European Union

211 **6.4 Other biomass wastes and residues**

212 6.4.1 Other waste and residues purchased from a collector or processor shall be third-party certified
213 to one of the following certification programs:

- 214 ▪ ISCC
- 215 ▪ REDcert
- 216 ▪ 2Bsvs
- 217 ▪ RSPO
- 218 ▪ Bonsucro
- 219 ▪ RSPO
- 220 ▪ RTRS
- 221 ▪ RSB
- 222 ▪ Other Sustainability Schemes approved by the European Union

223 6.4.2 Additional schemes may be added to the list as they are evaluated by SCS Standards.¹

224 **6.5 Hydrogen, oxygen or nitrogen as a raw material**

225 6.5.1 Hydrogen, oxygen and nitrogen already contained within the eligible biomass are part of the
226 biobased content.

¹ For example, the list of accepted certification programs for raw materials will be expanded in due time to include programs such as the US Sustainable Soy Marks, the Corn Sustainability Assurance Protocol, or the Global Platform for Sustainable Natural Rubber.

227 6.5.2 Additional hydrogen, to be eligible for a claim of biobased content, shall be produced as a
228 coproduct of biomass processing or by electrolysis of water using renewable energy. It shall remain in
229 the product through all processing steps.

230 6.5.3 Additional oxygen and nitrogen extracted directly from air by an operator, or one of its tolling
231 companies, certified to this Standard or to ISCC PLUS, REDcert2 or RSB Advanced Products, can also
232 be part of the biobased content providing that they remain in the product though all processing steps.

233 6.5.4 The oxygen and nitrogen shall also be chemically bonded to a biobased carbon atom or a
234 renewable hydrogen atom in the chemical compounds or polymers which form the product.

235 6.5.5 Hydrogen, oxygen and nitrogen introduced from other molecules or other sources shall not
236 qualify as biobased content.

237 **6.6 Intermediate products as raw materials**

238 6.6.1 Operators throughout the supply chain can use raw materials whose biobased content is from
239 mass balance allocation.

240 6.6.2 Such materials shall be purchased from a supplier that is certified by a third-party certification
241 body to this Standard or to one of the below listed equivalent Standards for biobased content based
242 on mass balance allocation:

- 243 ■ ISCC PLUS
- 244 ■ REDcert2
- 245 ■ RSB Advanced Products

246 6.6.3 Operators shall ensure that all the details of the biobased content, including the method of
247 allocation is detailed in documentation that accompanies each incoming consignment. Operators shall
248 use the same method of allocation (see Sections 7 and 8) to reallocate the biobased content to the
249 products derived from these raw materials.

250

251 7. Requirements for a Mass Balance System

252 7.1 An operator mixing fossil and biobased raw materials or biobased allocations, shall develop,
253 maintain and implement a mass balance system as described below.

254 7.2 In a mass balance system, outputs from a production process shall be calculated based on
255 inputs and pre-determined conversion factors.

256 7.3 The operator shall experimentally derive a conversion factor for each process or sequence of
257 processes converting biomass on a particular site. The conversion factor shall quantify the mass
258 fraction of the total mass of eligible inputs converted to output products.

259 7.4 Eligibility of inputs

260 7.4.1 Eligible inputs cover eligible biomass, water, oxygen and nitrogen and renewable
261 hydrogen, as defined in Section 6.

262 7.4.2 Waste products that are not collected from the process, as they are emitted to air, water
263 or soil, or lost as unrecycled scrap or other wastage, shall not be included in the conversion
264 factor.

265 7.4.3 Products from which energy is extracted that replaces fossil energy, can be included in the
266 conversion factor.

267 7.4.4 Products or reactants that are consumed during the chemical process itself are considered
268 as a yield loss if they result in CO or CO₂ or other products that are released to atmosphere
269 or otherwise lost to waste.

270 7.4.5 Biomass that is solely used for energy purposes, such as electricity generation or steam
271 raising shall not be included in the mass balance system.

272 7.5 The input mass multiplied by the conversion factor gives the output mass.

273 7.6 At the end of each three-month period, the mass of eligible biomass sold or claimed shall be
274 less than or equal to the output mass.

275 7.6.1 If it is less than the output mass, then the surplus input biomass shall become a credit.

276 7.6.2 These credits can be held in stock for the next period or transferred virtually between any
277 certified sites that are wholly or majority owned by the same company or part of the same
278 group of companies.

279 7.6.3 These credits do not expire as long as the operator's certification remains valid.

280 7.7 The Certificate Holder shall decide, before the first audit, whether:

281 7.7.1 a mass balance shall be maintained for each certified site, with credits removed from one
282 mass balance and added to another, as they are transferred between sites, or

283 7.7.2 one central mass balance shall cover all certified sites.

284 7.8 If a Certificate Holder changes between the two mass balance options, then a new audit shall
285 be required.

286 7.9 The Certificate Holder shall decide whether their accounting system for products is based on
287 mass or energy content.

288 7.10 If a Certificate Holder changes accounting system, then a new audit shall be required.

289 **8. Requirements for allocation of biobased outputs to products.**

290 8.1 Biobased outputs may be allocated to any of the products arising from the process or
291 sequence of processes that convert eligible biomass on the site, when substantiated by the mass
292 balance system.

293 8.2 Free allocation of biobased content to any products is allowed, except for water.

294 8.3 The biobased outputs shall not be allocated to products that cannot arise from the eligible
295 biomass converted on the site. This means that there must be a physical and chemical pathway on the
296 site for the biomass (or the raw materials to which it has already been allocated) to be converted to
297 the products to which biobased outputs are subsequently allocated.

298 **9. Requirements for a Physical Segregation System**

299 9.1 An operator who implements a physical segregation system shall not physically mix fossil and
300 biobased materials on the site where they process biobased raw materials.

301 9.2 All biobased raw materials entering the site shall be kept completely separate.

302 9.3 Biobased allocations shall be treated as fossil material.

303 9.4 The entire supply chain shall operate a physical segregation system.

304 9.5 A mass balance system as described in Section 7 is not usually required. However, if an
305 operator receives biobased raw material that is not in compliance with Section 6, then a system, as
306 described below, shall be set up to account for volumes of compliant (eligible) and non-compliant
307 biomass.

308 **Mixing of eligible and non-compliant biomass**

309 9.6 A conversion factor for eligible biomass shall be derived as described in Section 7.

310 9.7 The conversion factor shall determine the amount of product that can be the subject of
311 biobased claims, as described in Section 10

312 9.8 Eligibility of inputs

- 313 9.8.1 Waste products that are not collected from the process, as they are emitted to air, water
314 or soil, or lost as unrecycled scrap or other wastage, shall not be included in the conversion
315 factor.
- 316 9.8.2 Products from which energy is extracted that replaces fossil energy, can be included in the
317 conversion factor.
- 318 9.8.3 Products or reactants that are consumed during the chemical process itself are considered
319 as a yield loss if they result in CO or CO₂ or other products that are released to atmosphere
320 or otherwise lost to waste.
- 321 9.8.4 Biomass that is solely used for energy purposes, such as electricity generation or steam
322 raising shall not be included in the conversion factor.
- 323 9.9 The input mass multiplied by the conversion factor gives the output mass.
- 324 9.10 At the end of each three-month period, the mass of eligible biomass sold or claimed shall be
325 less than or equal to the output mass.
- 326 9.10.1 If it is less than the output mass, then the surplus input biomass shall become a credit.
- 327 9.10.2 These credits can be held in stock and can only be transferred to other sites carrying out
328 the same process and owned by the same company.
- 329 9.10.3 These credits do not expire as long as the operator's certification remains valid.
- 330 9.11 Eligible biobased outputs may be allocated to any of the products arising from the process or
331 sequence of processes that convert eligible biomass on the site.
- 332 9.12 Free allocation of compliant biobased content to any products is allowed, except for water.
- 333 9.13 The compliant biomass outputs shall not be allocated to fossil materials. There must be a
334 physical and chemical pathway on the site for the compliant biomass to be converted to the products
335 to which compliant biobased outputs are subsequently allocated.

336 10. Claims and labelling

- 337 10.1 Any certified member of the supply chain, or private label customer, can make a claim about
338 the eligible biobased content of their products to which eligible biobased content has been allocated.
- 339 10.2 The minimum biobased content for a claim shall be 20% by mass or energy content of the
340 entire output of the product for which a claim is being made.
- 341 10.3 The claim shall specify the item to which the claim refers. All compliant claims can be
342 accompanied by the SCS logo.
- 343 10.3.1 An example of the allowed claim is: *Package: X% biocontent by mass balance*

344 10.4 Any certified member of the supply chain, or private label customer, that operates a physical
345 segregation system as described in Section 9 can make a claim about the eligible biobased content of
346 their products. Only the part of the biobased content which is derived from biomass compliant with
347 this Standard shall be claimed. The minimum biobased content for a claim shall be 20%.

348 10.4.1 An example of the allowed claim is: *Package: Y% biobased*

349 10.5 The mass of nitrogen, hydrogen and oxygen can be included in either type of claim providing
350 that they are chemically bonded to a biobased carbon atom or renewable hydrogen atom in the
351 chemical compounds or polymers which form the product.

352 10.6 A certified operator shall be required to choose the percentage of biobased content they
353 intend to claim prior to their audit being conducted.

354 10.7 The Certificate Holder shall only make a change to their claim after an audit was conducted
355 and the new claim verified by the certification body.

356 11. Requirements for Chain of custody

357 11.1 The supply chain to which this Standard applies, starts at the first operator who chemically or
358 physically transforms biomass.

359 11.2 All biomass entering the supply chain shall be accompanied by the documentation of one of
360 the approved certification programs listed in Section 6.

361 11.3 Traders who store biomass shall be certified to this Standard unless they hold a valid
362 certificate to one of the approved certification programs listed in Section 6.

363 11.4 Operators who carry out a chemical transformation to biomass shall be certified to this
364 Standard. Such operators include but are not limited to biorefineries, anaerobic digesters, gasifiers,
365 HVO plants, steam crackers, polymerisation units and polymer converters.

366 11.5 Operators who physically transform biomass shall be certified to this Standard. Such operators
367 include but are not limited to oilseed crushers, sawmills, woodchippers or pellet producers and waste
368 management companies who clean or physically purify waste materials.

369 11.6 Tolling companies who chemically or physically transform biomass or raw materials containing
370 biobased allocations on behalf of a certified operator, can choose to be included in the scope of
371 certification of that operator. The certified operator shall purchase all of the biomass and retain
372 responsibility for the mass balance system plus any credits arising.

373 11.7 Companies such as brand owners, at the end of the supply chain, who label and sell products
374 without changing them, shall apply to become Private Label Customers through an approved
375 certification body to carry through claims without undergoing an audit.