

Polylactic Acid - PLA (beta Scorecard)

Plastics Scorecard (v.1.0 beta) -- Polylactic Acid (PLA)

Maximum Attainable Grade:[†] A-

Grade Range: F to A-

Comments:

The major factors affecting PLA's grade range are: agricultural practices, additives, catalysts and compostability if it is a single use product. With the use of safer additives and catalysts, and more sustainable agricultural practices PLA could attain Grade A-.

Life Cycle Stage	Attribute	Grade	Comments
1 Feedstock Production			
	1.a Pesticide Use	F to A+	Grade will depend on pesticides used. If sourced in the U.S. = Grade F to Grade C+ due to the use of atrazine.
	1.b GMO Use	D to A+	Grade will depend on source. If sourced in the U.S. = Grade D to Grade C+.
	1.c Sustainable Agriculture Practices	F to A-	Grade will depend on feedstock sources. Note Grade A- is the highest grade possible if using food crop.
	1.d Post-Consumer Recycled (PCR) Content (<i>fossil fuels only</i>)	not applicable	
Grade range for Feedstock Production:* F to A-			
2 Manufacturing			
	2.a Primary + Intermediate Chemicals	A+	Starch and sugar are the intermediate chemicals
	2.b Monomer	A+	Lactic acid = Green Screen yellow chemical
	2.c Catalysts	C- to A+	Depends on catalysts used
	2.d Additives	F to A+	Grade depends on additives used
	2.e Nanomaterials	C- to A+	Depends on whether nanomaterials are used in the product
Grade range for Manufacturing:* F to A+			
3 Use and End of Life			
	3.a Chemical Releases & Breakdown Byproducts	F to A+	Potential chemical releases and breakdown byproducts are product dependent, depending especially on the catalysts and additives used.
	3.b Single Use Biobased Plastic Products	C+ to A+	Depends on product and whether it is certified compostable and biodegradable in the marine environment.
Grade range for Use and End of Life:* F to A+			

[†] The "maximum attainable grade" for a plastic is determined by the lowest grade it receives for any single attribute.

*The "best possible grade" for a stage is determined by the lowest grade attainable for any criterion for that stage.

It is important to note that these are draft assessments, since they are based on a beta version of the Scorecard and are likely to change with the finalization of v.1.0.