

SUPPORTING INFORMATION

Bio-based polyisoprene can mitigate climate change and de-forestation in expanding rubber production

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Table S1. Contributions to the LCIA metrics by life cycle stage.

Impact category	Unit	Total	Isoprene	Corn stover	Di ammonium phosphate, as 100%	Enzymes	Hydrated Lime	Electricity required	Electricity credit
Global warming	kg CO2 eq	-6.58E+00	-5.39E+00	2.76E-01	9.47E-03	4.63E-01	1.44E-01	6.66E-02	-2.15E+00
Stratospheric ozone depletion	kg CFC11 eq	8.88E-06	-	8.03E-06	9.30E-10	1.51E-06	4.44E-08	2.26E-08	-7.30E-07
Ionizing radiation	kBq Co-60 eq	-2.50E-01	-	-	7.62E-05	3.19E-02	8.76E-04	9.07E-03	-2.92E-01
Ozone formation, Human health	kg NOx eq	1.69E+00	1.69E+00	1.17E-04	1.87E-05	1.14E-03	3.18E-06	8.90E-05	-2.87E-03
Fine particulate matter formation	kg PM2.5 eq	8.86E-01	8.92E-01	1.41E-03	6.79E-06	1.01E-03	3.17E-05	2.85E-04	-9.19E-03
Ozone formation, Terrestrial ecosystems	kg NOx eq	1.69E+00	1.69E+00	1.19E-04	1.90E-05	1.15E-03	5.12E-06	8.96E-05	-2.89E-03
Terrestrial acidification	kg SO2 eq	3.05E+00	3.04E+00	1.06E-02	2.05E-05	2.42E-03	1.03E-04	2.05E-04	-6.62E-03
Freshwater eutrophication	kg P eq	-2.51E-03	-	1.11E-04	8.69E-07	2.05E-04	6.33E-09	9.04E-05	-2.91E-03
Marine eutrophication	kg N eq	2.31E-04	-	1.35E-06	8.47E-09	4.09E-04	5.24E-08	5.72E-06	-1.84E-04
Terrestrial ecotoxicity	kg 1,4-DCB	9.31E-01	-	9.01E-03	4.71E-04	1.95E+00	1.21E-02	3.35E-02	-1.08E+00
Freshwater ecotoxicity	kg 1,4-DCB	-7.05E-02	-	2.55E-04	3.40E-07	1.59E-02	1.18E-06	2.77E-03	-8.95E-02
Marine ecotoxicity	kg 1,4-DCB	-9.34E-02	-	3.32E-04	2.44E-06	2.41E-02	2.34E-05	3.77E-03	-1.22E-01
Human carcinogenic toxicity	kg 1,4-DCB	-1.37E-01	-	1.42E-05	3.00E-06	1.70E-02	5.38E-05	4.93E-03	-1.59E-01
Human non-carcinogenic toxicity	kg 1,4-DCB	-1.27E+00	-	9.09E-03	5.54E-05	9.33E-01	5.20E-04	7.09E-02	-2.29E+00
Land use	m2a crop eq	2.54E-01	-	-	-	2.74E-01	-	6.60E-04	-2.13E-02
Mineral resource scarcity	kg Cu eq	4.42E-04	-	-	4.54E-04	1.22E-03	2.92E-06	3.95E-05	-1.27E-03
Fossil resource scarcity	kg oil eq	-3.52E-01	-	2.71E-02	3.44E-03	1.13E-01	1.03E-02	1.62E-02	-5.22E-01
Water consumption	m3	-5.60E-03	-	4.93E-05	7.87E-06	4.95E-03	8.26E-05	3.42E-04	-1.10E-02