

Comments on the “GHG Emission Reduction Effect of Fuel-efficient Synthetic Rubber Tires”

Atsushi Inaba, Professor

Department of Environmental Chemistry and Chemical Engineering, School of Advanced
Engineering, Kogakuin University

This report assesses the effect of synthetic rubber for fuel-efficient tires on reducing greenhouse gas emissions (GHG), using the life cycle assessment (LCA) methodology which assesses all the stages of a product's life cycle, including emissions to the environment and the consumption of resources. In order to fulfil the commitment to reduce GHG emissions by 26% less than that of FY2013, which Japan promised in the Paris Agreement in 2015, and also in order to contribute to the SDGs presented by the UN in 2015, it is indispensable to assess GHG emissions using the LCA methodology.

The GHG emission reduction effect of synthetic rubber for fuel-efficient tires evaluated in the report can be achieved only if the tires are used on automobiles. However, the GHG emission reduction effect of automobiles is the total effect of various measures such as more-efficient engines and lighter bodies, in addition to fuel-efficient tires. For this reason, it is difficult to quantitatively assess, among all GHG emission reductions in automobiles, the contribution of synthetic rubber for fuel-efficient tires. Moreover, it is difficult to assess the proportion that synthetic rubber contributes to fuel-efficient tires.

This report is based on the engineering consideration that the contribution of fuel-efficient tires to the improvement of automobile fuel economy, assuming other conditions are the same, is attributable to the improvement of rolling resistance. This concept is in accordance with the “Tyre LCCO₂ Calculation Guidelines Ver. 2.0” published by The Japan Automobile Tyre Manufacturers Association in 2012. Their methods comply with ISO14040:2006 and ISO14044:2006, which are international standards defining the methods of LCA assessments.

This report's unique characteristic is that the rolling resistances of conventional tires and fuel-efficient tires were actually measured. The report clearly shows the efforts to quantitatively determine the contribution to reducing society's GHG emissions by material manufacturers, which help make the final product. The assessment method used for this reduction contribution volume complies with the “Guideline for Assessing Contribution of Products on Avoided Greenhouse Gas Emissions” published by The Institute of Life Cycle Assessment, Japan in 2015, and the “Guideline for Quantifying GHG Emission Reduction Contribution” published by the Ministry of Economy,

Trade and Industry in 2019.

The results shown in this report indicate that synthetic rubber enormously contributes to the improvement of automobile fuel economy, assuming that all other conditions are the same. On the other hand, the report also mentions that fuel-efficient tires alone do not improve automobile fuel economy, revealing the company's deep awareness that cooperation in the entire value chain is necessary. The report addresses synthetic rubber for fuel-efficient tires and concretely describes the role to be played by material manufacturers in society to reduce GHG emissions, and is thus highly valued.

Atsushi Inaba

Graduated from the Engineering Faculty of the University of Tokyo in 1976, and obtained a doctor's degree from the University of Tokyo. Joined the National Research Institute for Pollution and Resources, the Ministry of International Trade and Industry. Then served as a visiting researcher at the National Fire Research Laboratory, U.S. Department of Commerce and at the International Institute for Applied Systems Analysis, Austria. Director of the Research Center for Life Cycle Assessment, the National Institute of Advanced Industrial Science and Technology. Professor at the Research into Artifacts, Center for Engineering, the University of Tokyo. Then, professor at the School of Advanced Engineering, Kogakuin University. Currently, director of Japan Life Cycle Assessment Facilitation Centre, and professor of Engineering. These comments were written while serving as a professor at the School of Advanced Engineering, Kogakuin University.

Served in various positions, including co-chair for the revision of the international standards of ISO14040/44:2006 for life cycle assessment (LCA), a lead author of IPCC/5th Report/WG3, and chairperson of the standards work group, Japanese Industrial Standards Committee. His recent major engagements include chairperson of The Institute of Life Cycle Assessment, Japan, which published the "Guideline for Assessing Contribution of Products on Avoided Greenhouse Gas Emissions," and of the environmental load reduction contribution evaluation/research group, and as a member of the committee which created the "Guideline for Quantifying GHG Emission Reduction Contribution" published by the Ministry of Economy, Trade and Industry.

"LCA with Learning Exercises" (joint author, CAT, 2018), "Book of Carbon Footprint Stories" (Japanese Standards Association, 2010), "LIME3—Environmental Effect Evaluation for Global Scale LCA" (joint author, Maruzen, 2018), and many other publications.