Environmental Targets for Fiscal 2017 and Results Achieved

R&D

Initiatives	Promotion of products containing no substances of concern (SOCs)	Medium- to long-term Targets	Complete the conversion to lead-free sintered material by 2020 (for local and bullet trains)

Targets for Fiscal 2017	Results Achieved in Fiscal 2017	Plans for Fiscal 2018 and After
Lead-free sintered material production rate is greater than 55%	Lead-free sintered material production rate is 58% as of fiscal 2017	• Further promote a changeover to the lead-free sintered material for applicable categories of rolling stock • Develop lead-free sintered materials that suit for other categories of rolling stock

Production

Initiatives	Reduction of total CO_2 emissions at production plants in Japan	Medium- to long-term Targets	Reduction of CO_2 emissions intensity more than 1% on an annual average by 2020
	Continue and improve ISO14001-related activities		Continue to enhance environmental activities
	Promote no landfill waste disposal at production site		Maintain and continue no direct landfill waste disposal

Targets for Fiscal 2017	Results Achieved in Fiscal 2017	Plans for Fiscal 2018 and After
Reduction of CO_2 emissions intensity more than 1%	9.8% reduction in CO_2 emissions compared to fiscal 2013 (annual average reduction of 2.4%) achieved by introduction of next-generation friction materials manufacturing equipment and application of thermal barrier coatings to factory roofs	Collect information globally on CO_2 reducing measures and energy-saving technologies
Firmly root ISO14001 in operations and steadily renew certifications	Renewed the ISO14001 certifications at four sites, including Iwatsuki Manufacturing	Continue to firmly root ISO14001 in operations and steadily renew certifications
Continue no direct landfill waste disposal	Continue no direct landfill waste disposal	Continue no direct landfill waste disposal

Environmental Education

Initiatives	Environmental training center	Medium- to long-term Targets	Nurture human resources to disseminate environmental preservation methods to locations nationwide through training programs implemented at Environmental training center

Targets for Fiscal 2017	Results Achieved in Fiscal 2017	Plans for Fiscal 2018 and After
Get feedback from the trainees and reflect it in the program	• Held lectures on chemical substance management by external instructors • Started introducing the online education program implemented at ABCT (United States) to Japan	Get feedback from the trainees and reflect it in the program

Environmental Targets for Fiscal 2017 and Results Achieved

Logistics	Initiatives	Response to revised Energy Conservation Law (energy saving obligation of cargo owners)	Medium- to long-term Targets	Reduce unit energy consumption by 1% (five-year average)	
	Targets for Fiscal 2017		**Results Achieved in Fiscal 2017**		**Plans for Fiscal 2018 and After**
	Improve transport efficiency and increase energy usage efficiency		• Reduced CO_2 emissions per transport weight and distance from logistics by 0.4% on a year-on-year basis • Implemented eco-friendly driving activities and seminars • Introduced the real-time management system of truck operations		Continue efforts to reduce unit energy consumption by 1% or more in five-year average

Purchasing	Initiatives	Promotion of green purchasing	Medium- to long-term Targets	Establish structure that ensures purchasing activities in line with the Green Purchasing Guidelines	
	Targets for Fiscal 2017		**Results Achieved in Fiscal 2017**		**Plans for Fiscal 2018 and After**
	Revise supplier quality management (SQM) standard manuals		• Conducted research in tandem with suppliers into the alternate materials that use fewer environmental impact substances and require lower energy input with the aim of making concrete proposals for new material development • Carried out the following revisions to SQM standard manuals to ensure the greater understanding of suppliers with regard to the Company's approach to environmental impact substance reduction (Enhanced GADSL[*1] explanations and provided clearer descriptions of procedures for the handling of environmental impact substances)		• Encourage suppliers to upgrade their environmental management systems • Continue supply chain survey using IMDS[*2]

Production Engineering	Initiatives	Promotion of resource-saving design	Medium- to long-term Targets	Develop manufacturing facilities that are reusable, achieving a greater yield ratio, energy saving, and eco-friendly operations with the aim of realizing environmentally friendly manufacturing	
	Targets for Fiscal 2017		**Results Achieved in Fiscal 2017**		**Plans for Fiscal 2018 and After**
	Further enhance energy-saving and resource-saving technologies		Power saving by introducing 5 electric molding machines (improved energy efficiency with servo hydraulic & electric actuators) at Yamagata Manufacturing together with the implementation of individual dust collectors and commencing mass production of next-generation friction materials equipment		Aim for zero CO_2 emissions by 2050 and further enhance energy-saving and resource-saving technologies

*1 Global Automotive Declarable Substance List
*2 International Material Data System used by automobile industry to report data on materials