



LEADING

FINE

CHANGE



24

ISSUE 1

Environment & Safety

LOTTE Fine Chemical is dedicated to protecting the pristine environment by pursuing green management, and strives to create a sound workplace by placing safety as our integral value.

REPORT SUMMARY This Report is the second Sustainability Report of LOTTE Fine Chemical, and our company has published and disclosed a report to stakeholders annually since the first report in 2016. Through this Report, LOTTE Fine Chemical aims to pursue the advancement of sustainable management and promote trust with stakeholders by sharing its sustainable management activities and performances as well as its direction for the future.

REPORTING PERIOD AND SCOPE LOTTE Fine Chemical conducted a materiality test, ascertained from it highly important issues in business that may significantly affect stakeholders, and described them in this Report. The financial figures in the Report were prepared on a consolidated basis, while non-financial performances such as environment and society were prepared on an individual company basis. Unless otherwise specified in the contents of the Report, data from overseas corporations, subsidiaries, investment, and supply chain of LOTTE Fine Chemical were excluded.

Quantitative performances reflect the latest three-year performances (2014-2016) to identify trends. Meanwhile, qualitative activities and performances focusing on activities in 2016 were reported, although some major issues or significant activities and performances up to March 2017 are included.



30

ISSUE 2

Customer Value

LOTTE Fine Chemical creates new customer values by delivering customized products and solutions based on the ideas and opinions of the customers.

Change of the organization during the reporting period The company changed its company name from "Samsung Fine Chemicals Co., Ltd." to "LOTTE Fine Chemical Co., Ltd." at the 52nd ordinary general meeting of shareholders (February 29, 2016).

REPORTING STANDARDS The Report addresses the key issues for stakeholders by conducting a materiality test based on global standards including GRI (Global Reporting Initiative) G4 and ISO 26000 as well as issues in the chemical industry. In particular, the Report meets the reporting guidelines of the preparation in guideline G4 of the sustainability report by the GRI, and it is in accordance with the core option of G4. For more details, please refer to the GRI Index (pp.64~67).

ASSURANCE Financial information in this Report was prepared through accounting and audit by Samil PricewaterhouseCoopers, an independent audit corporation, and non-financial information was proven by IMCSR, an independent specialist institute.

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The Report can be downloaded from the website of LOTTE Fine Chemical.

CONTENTS

04 CEO Message

INTRODUCTION

06 LFC at a Glance

12 Major Products

16 Company Overview

18 Business Overview

20 Sustainable Value Chain

SUSTAINABILITY ISSUES

24 Issue 1. Environment & Safety

30 Issue 2. Customer Value

36 Issue 3. Human Resources

40 Issue 4. Business Partners

MANAGEMENT REPORT

46 Corporate Governance

49 Risk Management

51 Compliance Management

53 Sustainability Management System

55 Materiality Assessment

56 Social Contributions

58 Facts & Figures

APPENDIX

62 GRI Index

65 Independent Assurance Statement

66 Product Lists

68 Membership



ISSUE 3

Human Resources

The company makes every effort to ensure the further development of talented professionals through the unique “creative labor-management culture” of LOTTE Fine Chemical.

ISSUE 4

Business Partners

The company creates a better future with its partners by seeking mutual growth from diverse aspects to exceed today's growth.



CEO Message



Dear Stakeholders,

It is my pleasure to present the second Sustainability Report of LOTTE Fine Chemical.

Since our establishment in 1964, LOTTE Fine Chemical (LFC) has shown consistent growth and advancement through changes and innovations, despite various hardships and difficulties. LFC joined LOTTE Group in 2016, and all employees are devoted to maintaining LFC's history and tradition of success, as well as improving our competitiveness and increasing profitability from our existing businesses.

By further reinforcing our specialty businesses such as MECELLOSE[®] and AnyCoat[®], LFC has secured competitiveness. We have boosted sales by consistently expanding our customer base and products, improving profitability, and realizing further growth for EUROX[®], which is used to purify diesel engine exhaust gases, and our laser print toner business.

In terms of performance, the company recognized an usual one-time loss about the investment on SMP, which is a joint company between LFC and SunEdison, in 2016. Subsequently, LFC recorded sales of KRW 1,111.1 billion and a net loss of KRW 43.5 billion in 2016. Despite this large one-time loss, LFC's operating profit, which reflects its actual competitiveness, showed recovery in 2016 and recorded KRW 29.8 billion compared to KRW 2.6 billion in the previous year. This means the company has prepared a foundation for substantial growth and a turnaround for its future.



The global economy has been more unpredictable due to various reasons including the increase of protectionism driven by the U.S., expansion of geopolitical risks, and growing uncertainties. With the realization of the 4th industrial revolution represented by artificial intelligence (AI), the Internet of Things (IoT), and virtual reality (VR), it is difficult to forecast the speed and extent of upcoming changes and competition. However, LFC will accomplish sustainable growth by ensuring global competitiveness and market leadership, despite rapid changes in the market environment. We will dedicate ourselves to creating customer value while positioning LFC as the essential growing engine of LOTTE Group's chemical companies. By pursuing our new vision of becoming a "Lifetime Value Creator" and creating synergy with the various affiliates of LOTTE Group, we will provide customers greater value over their entire lifetimes.

Dear Stakeholders,


The '2016 Sustainability Report of LOTTE Fine Chemical' is an opportunity for active communication with not only our customers who have supported us, but also all our stakeholders including our partners, employees, community, shareholders, and investors. LFC will make even greater efforts to actively fulfill our responsibilities and the company's mission. We will work on Creating Shared Value (CSV) for the mutual growth and advancement of both LFC and our stakeholders. We hope for your continued interest and support in all our endeavors.

Thank you.

May 2017

CEO of LOTTE Fine Chemical

Hong-Yul Lee



Leading to the future

LOTTE Fine Chemical always aims for one step further.

Since its establishment in 1964, LFC has grown together with the industrial advancement of Korea over the past half century, and it has continued ceaseless innovations. LFC will create a sustainable value with customers through its accumulated capabilities and experiences for over half century.



LOTTE Fine Chemical is entirely committed to increasing the efficiency and profitability of its existing businesses to secure a growth engine for the future.

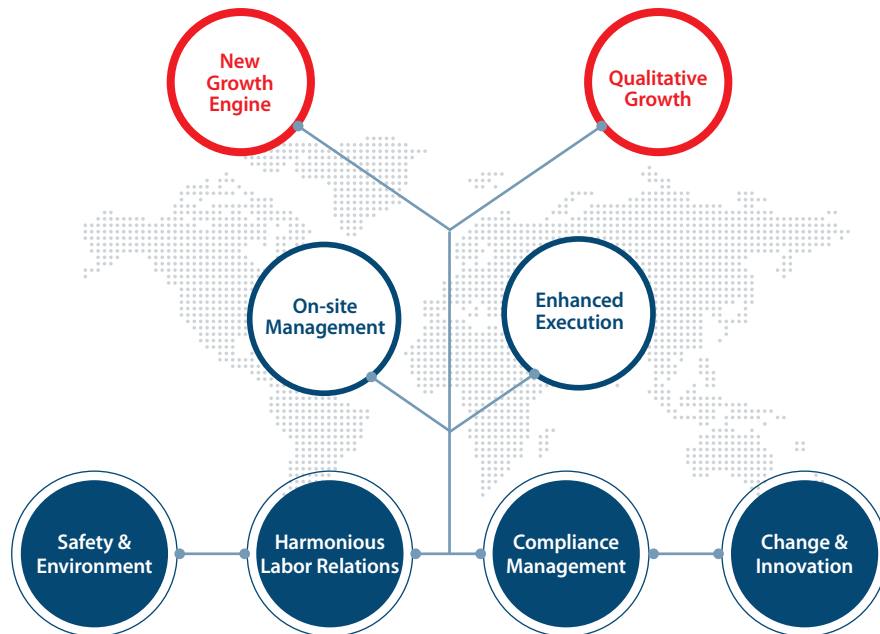
With this aim, LFC will cultivate global competitiveness by consistently improving its business structure, actively expanding business in competitive areas, and ensuring new businesses while developing a sophisticated business structure in the specialty chemical business. Furthermore, LFC will be a trustworthy and respectable company for stakeholders including customers, employees, as well as local communities by creating successful economic outcomes and actively fulfilling environmental and social responsibilities.



2017 BUSINESS POLICY

Leading fine chemical industry through innovation and growth

FOCUSED ISSUES TO PURSUE





Fine-tuning our progress

We generate a new value by leveraging synergy effects.

Beginning a new journey under the company name of "LOTTE Fine Chemical" since 2016, LFC has made meticulous preparation through serious consideration to achieve stable growth. In particular, through the generation of synergy between affiliates of LOTTE Group, LFC has tried to find a way to achieve sustainable growth beyond the corporate level. Based on the strategy, LFC will create a competitive edge and advance the realization of "Lifetime Value Creator", the new vision of LOTTE Group.

INTEGRATED SYNERGY



LOTTE Fine Chemical completed business restructuring in advance and became a member of LOTTE Group in February 2016.

LFC prepared a foundation for mid- to long-term growth by reinforcing synergies with the chemical areas of LOTTE Group, which have grown quickly based on accumulated technologies and experience over the past 50 years. Also, the company will accomplish bigger growth on the basis of LOTTE's infra in the Korean market along with its network and operational performances in the global market. Furthermore, the specialty business driven by LFC will also be dedicated to fortifying competitiveness in the chemicals, food, retail, and construction areas.

INTEGRATED SYNERGY

Cooperation on technology and R&D areas

LFC has generated synergy in research and development through technological cooperation with the R&D parts of affiliates of LOTTE Group.



Vertical integration of raw materials

Vertical integration of raw materials of products manufactured by LOTTE affiliates as well as joint purchase of raw materials is expected to improve cost competitiveness.



Utilization of overseas footholds

150 subsidiaries of LOTTE Group are positioned in 21 countries centered on Asia and emerging markets. In particular, as LOTTE CHEMICAL has secured production lines in 8 countries including the US and Uzbekistan. This would generate synergy including local sales, marketing, and enhancement of competitiveness utilizing these overseas footholds.



Expansion of new business opportunities

LOTTE Group has expanded the chemical area as one of the major businesses of the group along with retail business through proactive M&As. LFC seeks for new business opportunities in the specialty chemical field.





Change for the better

We deliver better solutions which add more values and reduce ecological footprint.

The original brands of LFC, namely MECELLOSE[®], HECELLOSE[®], AnyCoat[®], and AnyAddy[®], are high functional cellulose products exported to 78 countries throughout the world. Urea solution, a remover of nitrogen oxide, is an eco-friendly product that enables green growth both for the company and society. LFC will devote itself to making people's lives richer and happier through more diversified, high value-added, and eco-friendly specialty chemical products.



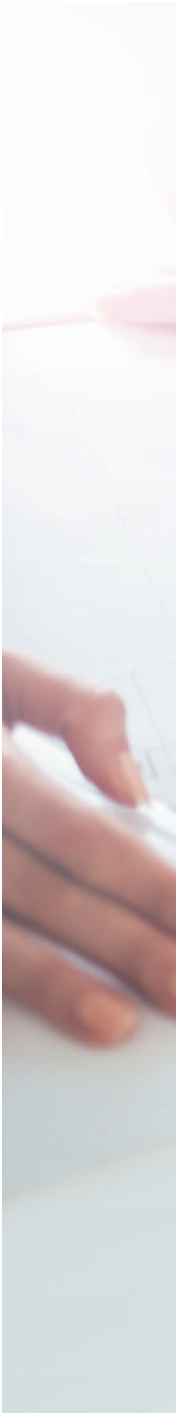
Major Products

The major areas of LFC are high functional cellulose relatives and chloride relatives used in various industrial fields, general chemical products for enriching our lives, and electronic materials as a key to IT innovation.

Based on long-term, accumulated technical power and know-how in the general chemical field, LFC has built a business portfolio focused on high value-added products and has driven sustainable growth while expanding into specialty chemical businesses with eco-friendly products.

Product Line-up

Chloride relatives	Cellulose relatives	Electronic materials	General chemical products
ECH	MECELLOSE®	TMAC	Ammonia
Caustic soda	HECELLOSE®	Toner	EUROX®
Methyl chloride, etc.	AnyCoat®		
	AnyAddy®		





Adding more values

High functional cellulose products

Additive for construction, MECELLOSE®

MECELLOSE® is a water-soluble macromolecule product that performs specific functions such as thickening, moisturizing, lubricating, and stabilizing.

Additive for paint, HECELLOSE®

HECELLOSE® is added to paints and health care products including shampoo and body lotion. And it is a water-soluble polymer product that increases functions such as thickening and moisturizing.



Cellulose relatives website



Capsule coating material for medicine, AnyCoat®

AnyCoat® is a high functional product used in coating and as a capsule raw material for medicine which enhances medicine delivery with characteristics such as viscosity, water solubility, and water-holding capacity.

Food additive, AnyAddy®

AnyAddy® improves food texture using viscosity, water solubility, and maintainability.





Reducing ecological footprint

Eco-friendly products

Nitrogen oxide reducer, EUROX®

A brand developed independently by LFC, EUROX® is a urea solution used as a reductant to reduce nitrogen oxide in SCR devices for diesel vehicles, vessels, and industrial purposes.



EUROX® website



Company Overview

Since its establishment in 1964, LOTTE Fine Chemical has been part of the history of the advancement of the Korean chemical industry. LOTTE Fine Chemical will continue to grow based on the capacity and experience accumulated over the past 50 years.

Company name	LOTTE Fine Chemical Co., Ltd.
Date of establishment	August 27, 1964
CEO	Hong-Yul Lee
Employees	822 (as of the end of December 2016)

Global network

Ulsan Complex

19, Yecheon-ro, 217beon-gil, Nam-gu, Ulsan, South Korea

Seoul Office

26th and 27th Fl., Glass Tower Building
534, Teheran-ro, Gangnam-gu, Seoul, Korea

Incheon Plant

4L, 129B, 47, Namdong-daero, 79beon-gil, Namdong-gu, Incheon, South Korea

LOTTE Fine Chemical Trading(Shanghai) Co., Ltd.

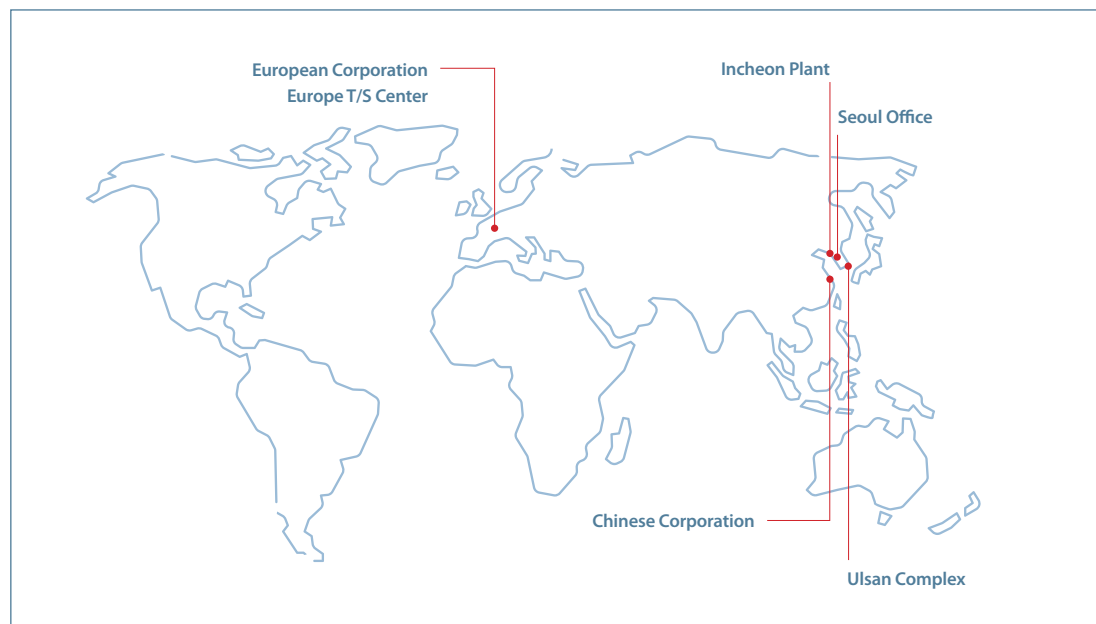
Rm1515, Shanghai International Trade Center, No.2201, Yan'An Road, Shanghai, China 200336

LOTTE Fine Chemical Europe GmbH

Ober der Roeth 4, D-65824 Schwalbach/Ts. Germany

LOTTE Fine Chemical Europe GmbH, Technical Service Center

C/O KIST Europe Campus E 7.2 66123 Saarbruecken, Germany



Key financial statements

(Unit: KRW million)

1,530,938

Assets

1,110,704

Sales

29,750

Operating income

37.7%

Debt to equity ratio

72.6%

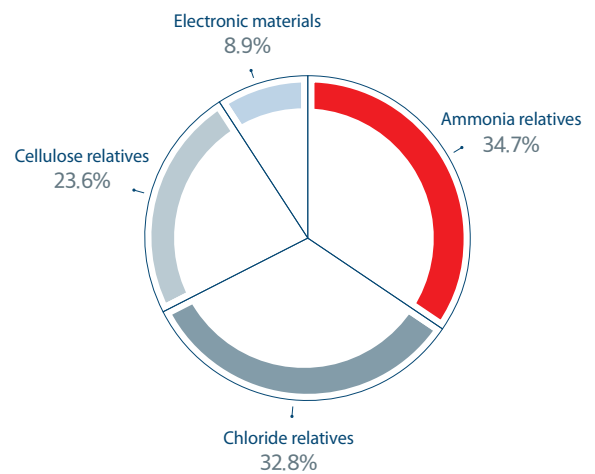
Capital adequacy ratio

(As of the end of December 2016)

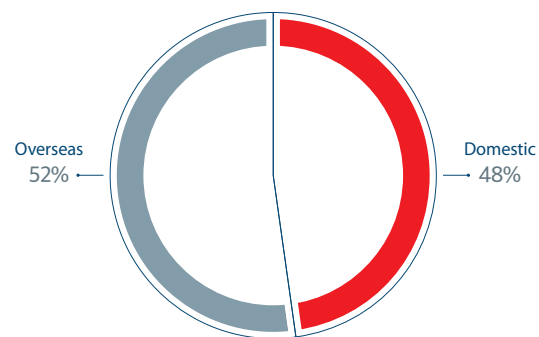
Sales by area

(Unit: KRW billion)

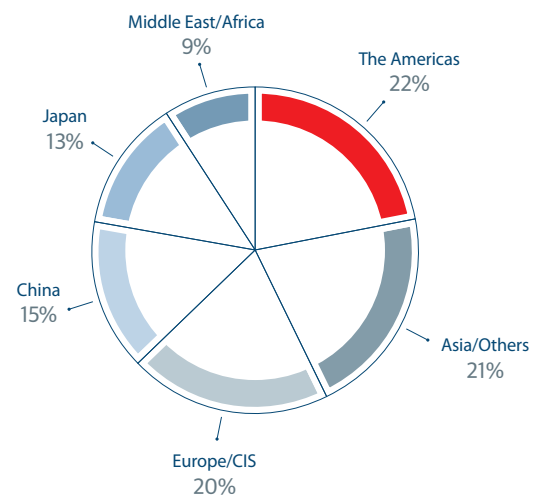
Area	Sales
Ammonia relatives	385.6
Chloride relatives	364.4
Cellulose relatives	261.9
Electronic materials	98.8



Exports to sales ratio



Exports by region



Business Overview

Chemical Business

2016 Review

LFC has provided a wide range of general chemical products such as caustic soda, methyl chloride, EUROX[®], and ECH, and a certain portion has been used as raw materials for the main business products – the fine chemical products. TMAC is used as a raw material for semiconductors and LCD developing process, and it has ensured stable profits along with growth of the end-use industry. Meanwhile, the other chemical business, such as ECH (raw material of epoxy resin) and ammonia, has also played a pivotal role for the company.

2017 Outlook & Plan

Due to the introduction of relevant regulations owing to issues including microdust pollution, air pollution is expected to attract attention in 2017. Because of this, eco-friendly products including EUROX[®] demands are expected to soar. Thus LFC plans to increase the supplies of eco-friendly products and further accelerate the expansion of distribution through optimization of the production and logistics system securing the stable supply of products.

2016 Performance

385.6 KRW billion

Ammonia relatives sales

364.4 KRW billion

Chloride relatives sales

Secure stable supply of quality products	Increase sales of eco-friendly products	Exploration of new markets
Acquisition of various necessary certificates for quality assurance of products	Expansion of EUROX [®] sales to commercial diesel vehicles	Enhance business competitiveness for potential customers by entering new overseas markets and securing market share
Optimization of the production/logistics system for stable product supply		Provide new product development solutions to customers with new applications for existing products



Green Material Business

2016 Review

LFC has produced specialty products such as MECELLOSE[®], HECELLOSE[®], AnyCoat[®] and AnyAddy[®] that have competitive advantages at home and abroad, and it has expanded the use of these products into diverse industries, namely construction, pharmaceuticals, and personal care. Also, LFC has been operating R&D and technology support centers in Korea and Europe to provide customized products and specific technical services. The company is producing pharmaceutical and food application products in accordance with 'Good Manufacturing Practice (GMP)' in independent spaces with their own facilities.

2017 Outlook & Plan

Thanks to increasing favor towards eco-friendly and naturally sourced materials and a trend valuing user friendliness, green material products are expected to show high growth. In particular construction market demand which is a major application for MECELLOSE[®] is expected to show recovery in South America centering on Brazil as well as in developed countries. Specialty chemical products including MECELLOSE[®], HECELLOSE[®], and AnyCoat[®] will lead the high value-added product market based on their technical competitiveness achieved through consistent new product development.

2016 Performance

261.9 KRW billion

Cellulose relatives sales

78 countries

Countries to export






8 %

Global market share

Innovation	Global management	Customized new products, new technology development	Establishment of a foundation for sustainable growth
Reinforcement of sales/marketing	Strengthening the capabilities of overseas corporations	Expansion of product portfolio	Continue to conduct preceding research for new applications
Ensuring of fundamental cost competitiveness	Enhancing the efficiency of sales channels	Reinforcement of capabilities to provide solutions	Reinforcement of capabilities to launch new business










Sustainable Value Chain

	 R&D	 Purchase	 Production
Risks and opportunities	<ul style="list-style-type: none"> • Change of population structure through aging • Growing interest in health and well-being • Increased possibility of the growth of high value added industries including pharmaceutical and bio industry 	<ul style="list-style-type: none"> • Importance of fair trade • Mutual growth of large and small to medium size companies • Need to diversify customer range • Need to ensure quality raw materials and other materials 	<ul style="list-style-type: none"> • Growing social interest in safety • Reinforcement of environmental regulations • Demand for active investment towards safe environments
Stakeholders	<ul style="list-style-type: none"> • Customers • Environment • Local community 	<ul style="list-style-type: none"> • Employees • Partners 	<ul style="list-style-type: none"> • Employees • Environment • Local community
Responses and activities	<ul style="list-style-type: none"> • Product research and development in consideration of safety and environment effect • Safety review of raw materials and safety assessment of developed products • Extended cooperation to generate R&D synergy with the Group affiliates 	<ul style="list-style-type: none"> • Conduct education on fair trade to all persons in charge of purchase • Conduct raw material inspection and expand the subject range • Reinforce the execution of quality audit of suppliers 	<ul style="list-style-type: none"> • Achieve high energy efficiency in production process • Establish the chemical management process for all steps • Operate a comprehensive safety and accident prevention center • Execute field innovation activity to enhance safety and achieve manufacturing competitiveness
Performance data	R&D investment 11.8 KRW billion	Investment 36.3 KRW billion	Sales 1.11 KRW trillion
Sustainable Development Goals *	3. Good health and well-being 9. Industry, innovation and infrastructure 13. Climate action 14. Life below water 		6. Clean water and sanitation 13. Climate action 
Related pages	30~32	40~43	24~29

* The Sustainable Development Goals (SDGs): As an agenda adopted by the UN in 2015, it will be executed by 2030 and has 17 global goals, 169 targets, and 230 indicators.



 Employees	 Distribution	 Customers	 Local community
<ul style="list-style-type: none"> • Foster talented people for the global market • Promote active communication in the company • Emphasize the work and life balance 	<ul style="list-style-type: none"> • Enhance the overall efficiency in logistics • Accidents in the process of transportation 	<ul style="list-style-type: none"> • Improve customer satisfaction degree • Enhanced responsibility for products to secure customer convenience and safety 	<ul style="list-style-type: none"> • Need to help the community as a corporate social responsibility • Program development utilizing core competences of the company • Expansion of participation of stakeholders
<ul style="list-style-type: none"> • Employees • Investors 	<ul style="list-style-type: none"> • Customers • Partners • Local community 	<ul style="list-style-type: none"> • Customers • Environment 	<ul style="list-style-type: none"> • Employees • Local community
<ul style="list-style-type: none"> • Reinforcement of leadership and developing key talented people • Specialized education program for technicians and engineers • Establishment of communicative corporate culture • Operate a maternity care 	<ul style="list-style-type: none"> • Reinforcement of safety facilities for chemical storage tanks • Safety training program for road tanker drivers • Improvement of product packaging and recycling of consumables 	<ul style="list-style-type: none"> • Operate a system for hearing the voice of customer • T/S (technology support) activity • Global T/S center operation 	<ul style="list-style-type: none"> • Promote Urban Box Farming Campaign • Care for Taehwa River Eco Park • Support multicultural families
Parental leave 56%		Eco-friendly products 303.8 KRW billion	Ratio of participation in CSR activities 89.5%
5. Gender equality 8. Decent work and economic growth 10. Reduced inequalities		12. Responsible consumption and production	4. Quality education 11. Sustainable cities and communities 14. Life below water 15. Life on land
			
36~39	27~29	30~35	56~57



www.un.org/sustainabledevelopment/sustainable-development-goals/

Sustainability Issues

- 24 **Issue 1. Environment & Safety**
- 30 **Issue 2. Customer Value**
- 36 **Issue 3. Human Resources**
- 40 **Issue 4. Business Partners**

Employees

Environment

Partners

Local community

Environment & Safety

Strategic Focus & Approach

For green management, LFC has aimed for sustainable environment improvements such as GHG¹⁾ reduction, high efficiency levels in energy use, and minimal effects on the environment. To prevent accidents from chemicals and observe reinforced laws and regulations about the use and management of chemicals, LFC has constructed and operates a company-wide chemical management system. Also, to create a safe workplace, LFC has created an understanding of the importance of safety and health management; not only with its employees but also with partners, and has offered relevant education and training to respond to safety and health issues.

Our Effort

- 1 Reduce energy through process improvement and introduction of highly efficient facilities
- 2 Introduce renewable energy such as waste plastic solidification fuel
- 3 Establish a management process through management of the whole process of chemicals
- 4 Insured with environmental impairment liability insurance to compensate for environment pollution and reduce risks
- 5 Strengthen safety and health training and publish an encyclopedia of guidelines



6. Clean water and sanitation 7. Affordable and clean energy
9. Industry, innovation and infrastructure 13. Climate action
14. Life below water 15. Life on land

Our Performance

652,170 tCO₂eq

GHG emissions

6.2 KRW billion

Investment amount in environment

0 case

No. of occurrences of industrial disasters at workplaces

¹⁾ GHG: Greenhouse gas

Stakeholder Interview

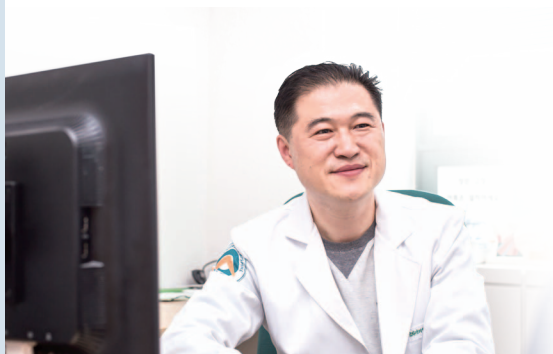
Hun Lee

Professor, Occupational & Environmental Medicine at Ulsan University Hospital

Ulsan University Hospital has undertaken measurement of the work environment at LFC since 2015, and it has carried out a health checkup of employees since 2016. Our industrial health service covers 3 areas including measurement of the work environment, health checkup of employees, and health management agency services.

“ In the chemical industry, safety accidents may develop into large accidents with accompanying casualties. Subsequently, it is of the utmost importance to conduct safety education and changes of awareness. Chronic exposure to hazardous chemicals is a crucial issue in terms of health. Accordingly, it is essential to wear protective equipment and inspect local exhaust devices.

LFC has tried to create a more pleasant environment than other workplaces through an emphasis on safety and health area and systematic investment. Now is the time to establish a culture of being autonomous about safety and health. Through the advanced culture of safety and culture, the work environment should be improved. ”

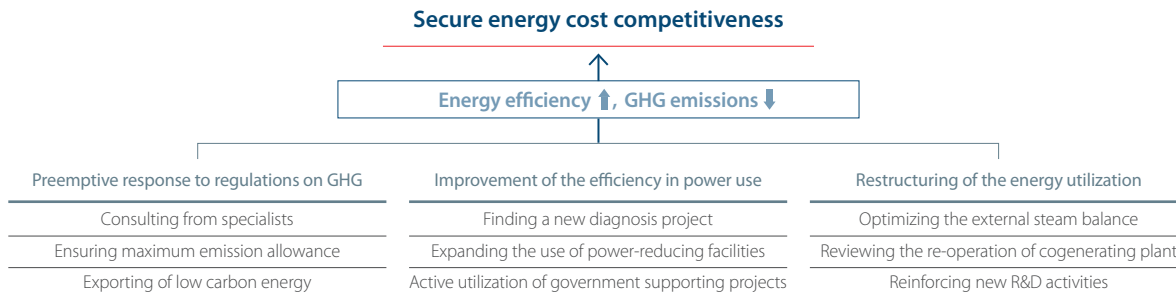


Environment

Climate change response

Strategies for climate change response

By improving efficiency in energy use and reducing GHG, LFC has increased sustainability by actively fulfilling its corporate environmental responsibilities and ensuring cost competitiveness.



GHG and energy reduction

GHG and energy reduction

As a company consuming large amounts of energy, LFC has known well the importance of climate change and energy policy, and has pursued multilateral energy reduction activities to reinforce corporate competitiveness. In accordance with the "Rationalized Energy Use Act", LFC completed an energy diagnosis in November 2016, determined additional plans for energy reduction, and has made investments in facility improvements.

For energy use reduction, LFC has focused on improving processes and introducing highly efficient facilities. LFC improved energy efficiency by changing a cell type for an electrolytic bath in its caustic soda manufacturing facilities to a highly efficient type in 2016, and also reduced the amount of fuel use and accordingly GHG emissions by collecting and utilizing waste heat generated during process operations. By making efforts to reduce energy, energy use that was recorded as 3,017 TOE¹⁾ in 2013 at its Incheon Plant after the expansion of AnyCoat[®] facilities in 2012 was reduced by about 17% over four years to 2,500 TOE in 2016.

Introduction and increase of renewable energy

LFC has actively pursued the introduction of renewable energy that replaces fossil fuel energy, the main cause of climate change. Fossil energy use and GHG emissions have been reduced with the introduction and expansion of steam using waste plastic solidification fuel, resulting in the non-operation of existing cogeneration boilers.

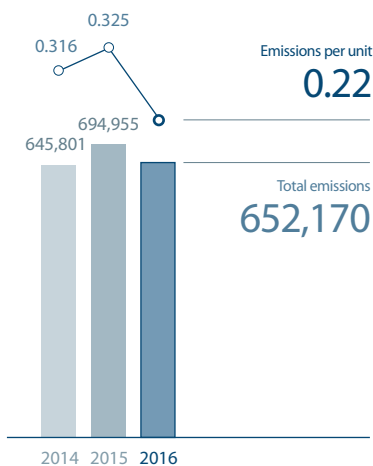
Organization system for climate change response

LFC operates a conference system for GHG reduction to encourage the active attention and participation of its employees in energy reduction and to reduce energy. With mainly executives in charge from each production department, LFC organized a steam and power reduction Task Force (TF), held a meeting once a week, and has searched for and pursued electricity and steam use reduction projects. In addition, LFC distributed a reduction target to each team and department, and a manufacturing innovation team has managed KPI.

Regulations on GHG and initiative response

The government has designated GHG emissions allowance to corporations since January 2015, and operates a GHG emissions trading system for companies through which emission allowances can be purchased or sold in case of excess or deficiency compared with their allowance. LFC has been a member company subject to a target management system since 2012, even before the introduction of the allowance system, and it had already far exceeded the set allowance target of that year. LFC has established and put into operation responsive strategies for the emission trading system and energy reduction strategies, and also it plans to be actively engaged in the emission trading system and the carbon market. In addition, LFC has responded to climate change by participating in a carbon disclosure project (CDP) since 2012.

Total GHG emissions and emissions per unit
 Unit: total emissions (tCO₂e)
 Emissions per unit (CO₂e/product-tonne)



¹⁾ TOE: tonne of oil equivalent

Reinforcement of chemicals management

CASE STUDY



Execution of special joint consulting for environment safety inspection

To prevent accidental leakage and safety accidents of chemicals, which have the potential to cause tremendous damage, LFC has introduced preemptive responses. LFC conducted exclusive consulting with a specialized consulting company, ERM in the environment safety and health field. The consulting was held in cooperation with LFC's customer, Samsung Electronics for prior inspection of potential environmental safety accidents.

As a result of inspecting the actual processes with ERM as well as potential risk factors concerned with process safety and safety and health, LFC was recognized for its efforts to manage the company's environment and safety at a high level. Through establishment of environment safety standards of workplaces that satisfy the environment safety standards of customers, LFC is responding to potential risks by actively searching for problems and making improvements while maintaining consistent communications with its customers.

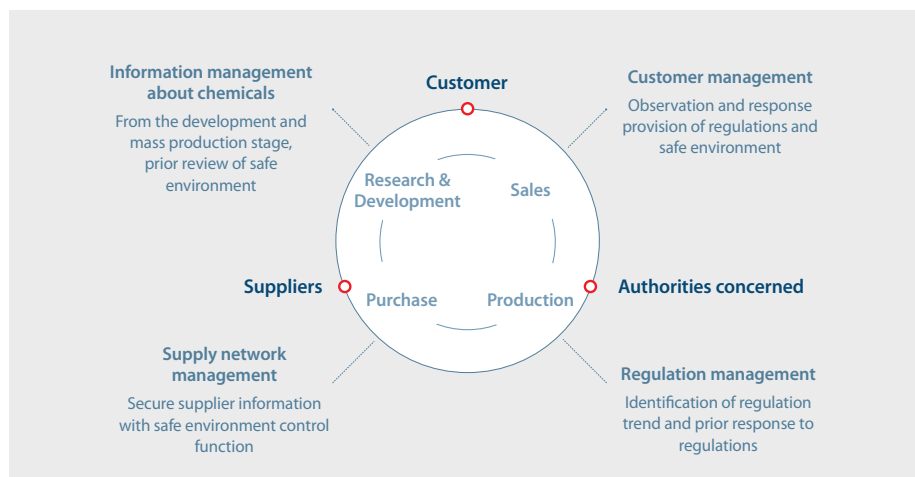
Establishment of a management process system

LFC has accounted for, controlled and thoroughly managed even small amounts of reagents, products and all chemicals carried in and delivered. In particular, for comprehensive management of the hazardous chemicals, LFC has re-established a relevant system while reconstructing a chemical management system (CMS) to increase work efficiency through the systematic management of information about chemicals.

Chemical management process

LFC has managed in real time chemicals warehoused or released (about 300 materials and 200 substances as of 2016), and it has tracked the distribution of chemicals. After confirming whether to warehouse or release chemicals through a review of chemicals from a safe environment aspect before warehousing or releasing, LFC systemized a control process of purchase and sales of substances subject to control and regulation, and it has prevented any risk from hazardous chemicals by restricting entry of any substance that has not been reviewed in the site. In addition, LFC has counted and controlled products as well as all chemicals warehoused or released. Through integration and restructuring of the chemical management system and benchmarking, LFC plans to pursue upward leveling and stabilization of the system.

Chemicals management system



Response to chemical regulations

LFC has responded actively to "the Act on Registration and Evaluation, etc. of Chemicals" and "Chemicals Control Act" enforced since 2015. LFC has confirmed chemical substances in products and new raw materials as well as in existing chemicals subject to registration, and it has regulated materials by implementing a system to manage materials subject to 'the Act' and regulated materials subject to the Chemicals Control Act. Also, LFC has reviewed materials for registration in 'the Act' in accordance with the scale and scope of registration by managing the quantities of each material warehoused or released.

In particular, regarding the Chemical Registration and Assessment the Act, LFC joined a council for each material to complete joint registration of existing chemicals by June 2018, and its main products have served as representative products. Through successful execution of the duty for joint registration, LFC has enabled seamless manufacturing and imports of target materials, and it has prevented accidents by double-checking information on environmental risks. LFC has been able to cope effectively with gradually reinforced regulations by adding a purchase limit function to the chemical management system.

Reinforcement of the prevention and management of accidental leakage

To prevent chemical accidents, LFC has frequently replaced old facilities and pipes, and has strengthened accident-monitoring and prevention facilities in preparation for any leakage from the site owing to rain water. Also, in order to manage emissions of specific air pollutants and hazardous chemicals, LFC established a leakage detection and repair (LDAR) system that minimizes risks of leakage by intensive management and repair of all points from which hazardous materials may be leaked among processing facilities such as pipe connections.

Insured with environmental impairment liability insurance

With an increasing need for the introduction of a system that ensures prompt compensation for damage to those who suffer environment pollution and for sustainable management even for companies responsible for damage, the ‘Act on Liability for Environmental Damage and Relief Thereof’ has been enforced since 2016. The company minimized legal risks by mandatorily taking out environmental impairment liability insurance in June 2016. Upon obtaining insurance coverage in a total of 5 areas including air pollutant emission facilities, waste water emission facilities, facilities subject to soil pollution management, hazardous chemical treatment facilities, and marine facilities, LFC was able to reduce its financial risk in case of chemical accidents and reinforce sustainable management.

Current facilities subject to insurance coverage

Classification	Facilities subject to mandatory insurance	Ulsan Complex	Incheon Plant
Air quality	Specific air pollutant emission facility (1~5 types), air pollutant emission facility of 1 type workplace	○	○
Water quality	Specific hazardous material for water quality release facility (1~5 types), waste water emission facility of 1 type workplace	○	○
Waste materials	Designated waste treatment plant	X	X
Soil	Hazardous chemical manufacturing and storage facilities of companies subject to preparation and submission of a written plan of risk management	○	○
Hazardous materials	Hazardous chemical handling facilities of companies subject to preparation and submission of a written plan of risk management	○	○
Marine	Facilities with 300kL capacity or over among oil and hazardous liquid material storage (including reserve) facilities	○	X

Reinforcement of environment pollutant management

Air pollutant management

LFC has focused on air pollutant management by active investment in air pollution prevention facilities such as SCR¹⁾, SNCR²⁾ and desulfurization facilities. LFC also manages air pollutant emissions to comply with internal standards, and it checks the concentration of pollutant emission in real time by the installation of a tele-monitoring system (TMS) at main outlets. In addition, to reduce foul odors and volatile organic compounds (VOCs), LFC operates a direct combustion facility (Flare Stack³⁾ and RTO (Regenerative Thermal Oxidizer), and the company conducts regular checkups for foul odors.

For management of facilities with potential emissions, LFC has minimized accident risks by building an inventory of facilities subject to emissions aimed at 10 types of air pollutants including 8 types of specific air pollutants utilizing a leakage detection and repair (LDAR) system and performing timely renovation and repair of facilities through real-time monitoring.

Reinforcement of waste management

LFC manages all waste treatment process through an online system, and has tried to reduce its generation by setting up an annual goal. Waste discharge in 2016 recorded 62,000 tons, which is 82% of the waste generated in 2015.

Strengthening of wastewater management at sites

Wastewater released from the Ulsan Complex is treated primarily at a wastewater treatment facilities within the Complex, and then for a large portion of treated wastewater there is secondary treatment in Yongyeon sewage terminal treatment plant operated by Ulsan city. LFC has reduced wastewater by establishing a reduction target for each major wastewater source and improving the wastewater recycling process.

LFC improved an ECH wastewater treatment facilities in preparation for the capacity expansion of ECH to respond reinforcement of water quality standards, and deterioration of the facilities and to carry out stable wastewater quality management. Along with these activities, LFC has acted to prevent environment accidents by setting up an emergency shield system in a rain waterway for emergency accident prevention and management, and it plans to reduce wastewater by recycling effluent water from a physical treatment facilities.

¹⁾ SCR: Selective Catalytic Reduction
²⁾ SNCR: Selective Non-Catalytic Reduction
³⁾ Flare Stack: As a method of emitting gas or steam of highly volatile liquids into the air through combustion, it is a safety device to prevent disaster expansion by emitting contents to the outside promptly during accidents such as a leakage or a fire.

Enhancement of environment investment



Safety and Health

Strategies and organization



¹⁾ PSM (Process Safety Management)

Increase of investment for environment facility improvement

For a sustainable environment improvement, LFC has pursued optimization of the process and efficiency enhancement by setting up an annual goal for green management. In 2016, LFC invested approximately 6.2 billion won in a total of 31 cases involving improvement of air quality and wastewater treatment facilities, replacement of old facilities, introduction of energy efficient facilities, and purchase of environmental impairment liability insurance. From 2012 to 2016, this investment totaled about 92 billion won.

During the regular maintenance of No.2 ECH in Q1 of 2016, LFC accomplished an accident-free operation and improved the efficiency of facilities. In preparation for reinforced standards for effluent water discharge in 2017, LFC plans to meet the standards for discharge allowance by investing around 4 billion won in the improvement of waste water treatment facilities for direct discharges.

Investment details on environment in 2016

(Unit: hundred million won)

Noise	Waste materials	Hazardous material	Energy	Water quality	Air	Accident prevention	Total
0.2	1.1	13.1	13.9	28.0	3.0	2.4	61.7

Certificate of the environment management system

Ulsan Complex has consistently advanced an environment management system since it built and acquired a certificate of the environment management system for the first time in 1996. Since it was designated as a green company in 2005 by the Ministry of Environment, it has strengthened the green management system.

Strategies and goals for safety and health

For sustainable growth and advancement of the company, LFC set up a goal of accident-free work place, and with this goal, made up action plan strategies such as establishment of a PSM¹⁾ safety culture, reinforcement of communications in strategies and execution, improvement of safety and health infrastructure, and thorough observance of relevant laws. With a clear understanding of strategies, LFC has made continued efforts to establish a safety culture by holding weekly PSM education and meetings of engineers. To keep reinforcing and managing the system, LFC has operated an environment safety department as a separate organization, and a safety management team under the organization is responsible for safety and health management.

Workplace safety certificate and verification

As a workplace subject to PSM, the company has prepared a process safety report regarding process safety data, risk assessment of processes, and the establishment of a safety operation plan and emergency response plan, and it has submitted them to the Minister of Employment and Labor. As all employees of LFC and partners of the Incheon Plant actively joined PSM, it achieved an S rating during the assessment of new execution of PSM in 2016, the second site to achieve this after the Ulsan Complex in 2015. Furthermore, the Ulsan Complex and the Incheon Plant acquired KOSHA/OSHAS 18001 joint certificate by complying with a safety and health management system.

Safety and health strategies



Habituation of safety and health

Promotion of safety and health culture

To further enhance the safety and health management system, LFC operates various conferences to facilitate interactive communications while paying attention to the needs of each area and sharing opinions. Through this, LFC has prevented human errors by creating a consensus on safety and establishing a safety-first culture. LFC offers regular safety education and discusses main safety issues for all employees by selecting a monthly theme.

Target	Name of the meeting	Cycle	Participants	Main contents
CEO	Safe environment meeting of company	Bi-monthly	CEO, plant manager, executives, department managers	Sharing of foreign trends and issues and reporting of establishment and execution of strategies to pursue a safe environment and execution
	Weekly meeting of CEO	Weekly	CEO, plant manager, executives	Report on current progress of main action projects, Sharing of major safe environment issues and trends
Plant manager	Weekly plant meetings	Weekly	Plant manager, executives, department managers	Report on the current progress of detailed action projects
	Safe environment plant meetings	Monthly	Plant manager, executives, department managers	Sharing of major safe environment KPI performance and industry trends
Department managers/ General managers	Safety contact	Weekly	Designated executives or above level	Proposal of a safe environment guide and sharing of accident cases
	Lunch meeting of management supervisors	Monthly	Management supervisors (general managers)	Sharing of safe environment trends/issues/guides and explanation of action plans
Engineers	Engineers' meeting	Monthly	Engineers' meeting members	Listening to voice of engineers, improvement of safe environment work process
	PSM engineers' meeting	Frequently	PSM engineers	Sharing of PSM guide and discovery of irrationalities, independent inspection and independent audit of PSM
Occupational Safety & Health Committee	Occupational Safety & Health Committee	Quarterly	Occupational Safety & Health Committee of labor and management	Discussion of safety and health policies between labor and management, discussion of solutions for irrationalities
	Working session of the Occupational Safety & Health Committee	Frequently	Occupational Safety & Health Committee of labor union, safety management team	Checkup and discussion between labor and management of anomalies in a safe environment

CASE STUDY

Publication of an encyclopedia for a safety and health guidelines

LFC has published and utilizes an encyclopedia compiled from safety and health guides to enable any irrationalities and violations of regulations in the field to be checked and improved easily. The encyclopedia is classified into 5 categories including safety, pipe, gauge/electricity, work, and firefighting, and a guideline is provided per each category. A focused theme to be checked is determined every week, and then a relevant field department independently undertakes a field checkup and improvement activities by utilizing the guide. 1,016 absurdities were identified in 2016, and 972 cases (95.7%) were completely rectified.

Reinforcement of safety and health culture and education

Execution of personalized education and collective education for promoted employees The safety awareness of its employees has been enhanced by fortifying safety and health education, which is the most basic factor to achieve an accident free site. "Safety and health education for promoted employees" is a personalized education through which necessary knowledge about safety and health are distinguished and acquired in accordance with a person's position and duties. The main subjects taught are regulations on the standards of occupational safety and health, PSM overview, first aid and CPR (cardiopulmonary resuscitation), and practice with fire-extinguishing facilities. Through quarterly offering of "regular safety and health collective education" to all employees, LFC has been trying to deliver safety health education to all employees, and it has internalized safety awareness with the packaged information of safety and health.

Safety Golden Time The Ulsan Complex operates "Safety Golden Time" on a daily basis for 2 hours from 8:00am to 10:00am. During the Safety Golden Time, all employees within the workplace can intensively review any unstable condition and behaviors of a workplace and the results are managed online to help create a safe workplace every day.

Inspection of the duties of management supervisors LFC has encouraged management supervisors to be more focused on safety and health work by checking whether they have conducted their duties as defined in the Occupational Safety and Health Act. LFC has legally classified the required duties of management supervisors into inspection of working devices or facility safety and health, inspection of workers' protective gear and protective devices, industrial accident, cleanup and arrangement of a workplace, cooperation in the instruction and advice of safety and health managers, and risk assessment, and it has conducted a quarterly inspection by checking the accomplishment of jobs per item. Accordingly, LFC has calculated scores for each management supervisor, and the results are reported to the general manager in charge of safety and health to be reflected in the performance assessment.

Customers

Employees

Investors

Customer Value

Strategic Focus & Approach

LFC operates R&D and technical support centers in Korea and Europe for tailor-made product development which is a feature of a specialty chemical business, and providing solutions. Also, it produces food and pharmaceutical grade products in accordance with GMP in independent spaces with independent facilities. While minimizing risk factors by thorough management of the entire process ranging from the securing of raw materials to the use and disposal of the final products, LFC pursues quality innovation and safety improvement of various products through continuous research and development. LFC has elevated customer satisfaction and product value by collecting customers' opinions through diverse communication channels.

Our Effort

- 1** Research and development in consideration of safety and environment effect
- 2** Reinforcement of quality management for major raw materials and subsidiary materials
- 3** Introduction of a quality management system to review manufacturing conditions and history
- 4** Execution of joint promotions with customers for the sale of eco-friendly products



3. Good health and well-being 9. Industry, innovation and infrastructure
12. Responsible consumption and production 13. Climate action
14. Life below water

Our Performance

11.8 KRW billion

Budget for research and development

303.8 KRW billion

Sales from eco-friendly products
(based on sales from cellulose relatives, EUOX®, etc.)

Stakeholder Interview

Tamer Karakurum
President, K2 Chemical

As one of the top tier cellulose suppliers in the Turkish market, K2 Chemical and LFC take pride in becoming the best solution provider to customers.



“ In consideration of quality, lead time, and price of all players in the market, customers prefer LFC as it has shown sustainable supply and trust over the long term through good communications.

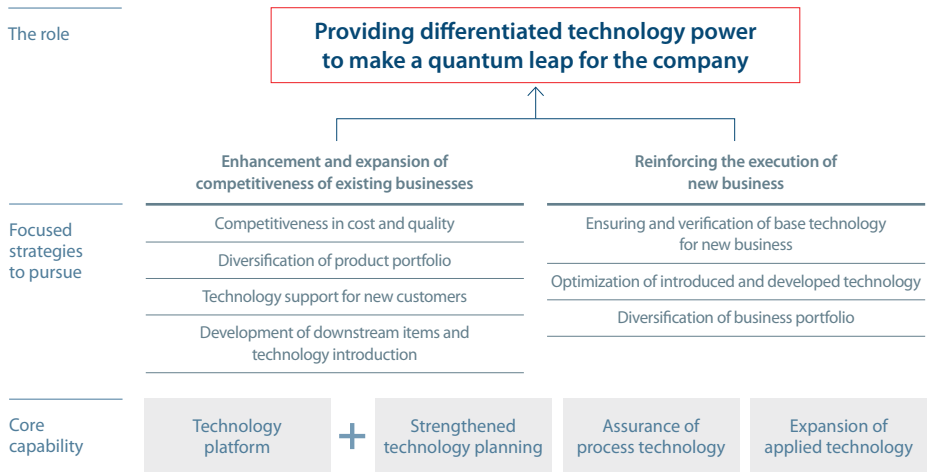
LFC has been a stable and consistent partner for our company. LFC has provided customized solution to issues raised by customers over the past 7 years. We will continue to seek growth potential together by maintaining sufficient inventories in Turkey for LFC to immediately respond to the request of customers.”

Research and Development

R&D strategies and organization system

Strategies

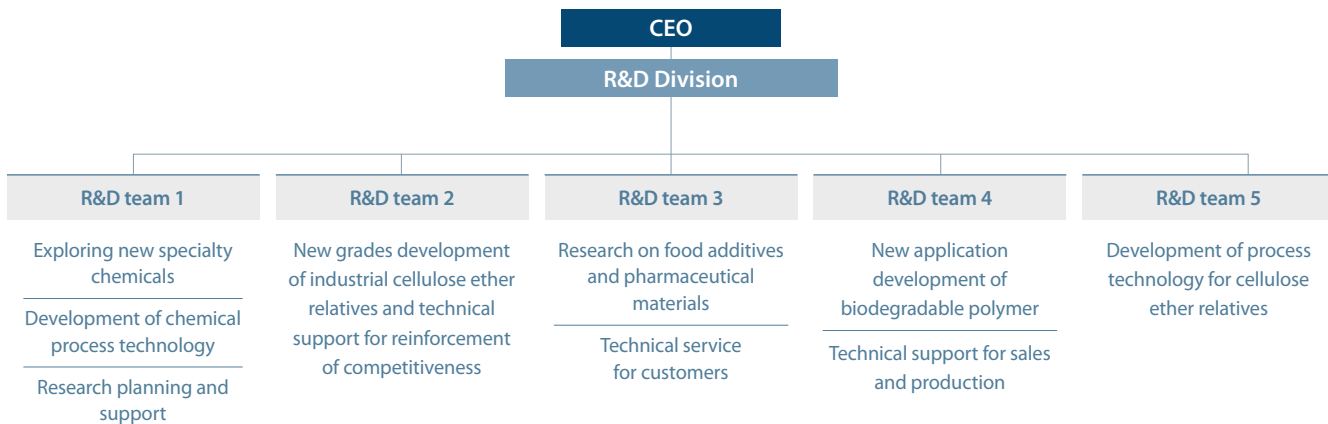
LFC possesses enough capabilities and experience to grow sustainably in the specialty chemical field such as industrial, food and pharmaceutical cellulose ether relatives and amine relatives and chloride relatives. For research and development, LFC has striven to achieve a corporate vision by enhancing the competitiveness of existing businesses, reinforcing the execution of new business, and furnishing customers with technological benefits.



Organization in the research and development

In order to ensure manufacturing competitiveness and technology leadership, in 2016 LFC re-established the R&D center, reporting directly to the CEO, and the development team and a technology team for each business department were affiliated with the R&D center. From 2017, the name has changed to "R&D Division". The research and development is made up of 50 employees, and professional researchers of each team conduct a variety of research projects.

Organization chart of the research and development



Environment & Safety

Customer Value

Human Resources

Business Partners



Research and development

R&D performance and outcomes

To satisfy the gradually diversifying needs of customers and develop new business opportunities for the future, LFC has strengthened research and development activities.

Green material research and development

Development of high functional additive MECELLOSE[®] HIEND for construction With the trend for the use of large tiles for decoration and wall finishes, demand for quality tile cement with excellent adhesion strength is growing.

Attuned to such market demands, LFC developed its MECELLOSE[®] HIEND series product, a high functional additive for construction that reinforces the slip resistance and adhesion strength of tile cement. The product is sold on the global market, and LFC will lead the high end premium additive market in the construction sector by consistently developing new products that ensure a great pot life.

Development of MECELLOSE[®] that minimizes the occurrence of lumps Lumps that appear frequently in gypsum plaster mortar impair on-site work. Many customers have asked cellulose ether manufacturers to develop products that can minimize the occurrence of lumps. To meet this request, LFC has minimized the occurrence of lumps in mortar by introducing a new surface treatment technology with its MECELLOSE[®] manufacturing technology. Currently, LFC is promoting the HiPER (High Performance) series using this technology.

Food and pharmaceutical material research and development

Development of 3 grades of highly viscous HPMC Amidst the great growth of generic products, copies of drugs of which the patent to the original drug has expired, highly viscous HPMC¹⁾ has attracted attention for use in sustained-release tablets, which account for most oral generic products. Based on accumulated technologies in the HPMC excipient field, the company developed three types of new grades with improved technology in terms of particle properties, flowability, tabletability and hardness, and dissolution rate compared with those of existing products. Sustained-release tablets applied with such technologies have been widely applied with a focus on drugs for lifestyle diseases including diabetes, obesity, and cardiovascular disease.

Development of biodegradable polymer

Development of biodegradable resin material for shopping bags for clothing stores Upon receiving a request from a domestic clothing store for replacement of paper shopping bags by an eco-friendly material as part of eco-friendly marketing, LFC developed a biodegradable resin compound technology and completed the development of the material early by discovering new additives and optimizing their compositions to strengthen the physical properties of shopping bags.

Using that material, LFC succeeded in ensuring the technology for mass production of eco-friendly shopping bags through processes of filming, printing, and cutting, and received the approval from the customer for supply of the product. Moreover, LFC acquired an environmental product declaration that is authorized by the Korea Environmental Industry & Technology Institute affiliated with the Ministry of Environment.

Generation of synergy in research and development with other affiliates In the fine chemical research and development field, LFC generates synergy in research and development by diversifying technology exchanges in the R&D field with affiliates in LOTTE Group. For the reinforcement of competitiveness in eco-friendly biodegradable resin and expansion of its use, LFC has pursued technical cooperation with LOTTE ALUMINIUM, which supplies product packing material to food, marts, and department stores of LOTTE Group. In particular, to strengthen the competitiveness of plastic resin, LFC has extended technical cooperation with the LOTTE CHEMICAL Research Center, which has accumulated much experience and capability through the execution of various types of polymer material businesses.

¹⁾ HPMC (Hydroxypropyl methylcellulose):
Cellulose derivative material used for food, drug,
cosmetics, and additives for construction products

Quality Management

Quality management system

Strategies for quality management

LFC has operated a quality management system (ISO 9001) throughout all management activities such as the purchase of raw materials, production, testing, sales, shipping and transportation, and post-management to ensure “Global Top-Tier quality competitiveness”. Also LFC has striven to discover and improve any inadequate elements of products while raising customer satisfaction with product quality. Based on the quality management system LFC performs activities concerned with product quality management, reinforcement of the quality management of raw and subsidiary materials and process auditing, and it operates a response system to the voice of the customer.

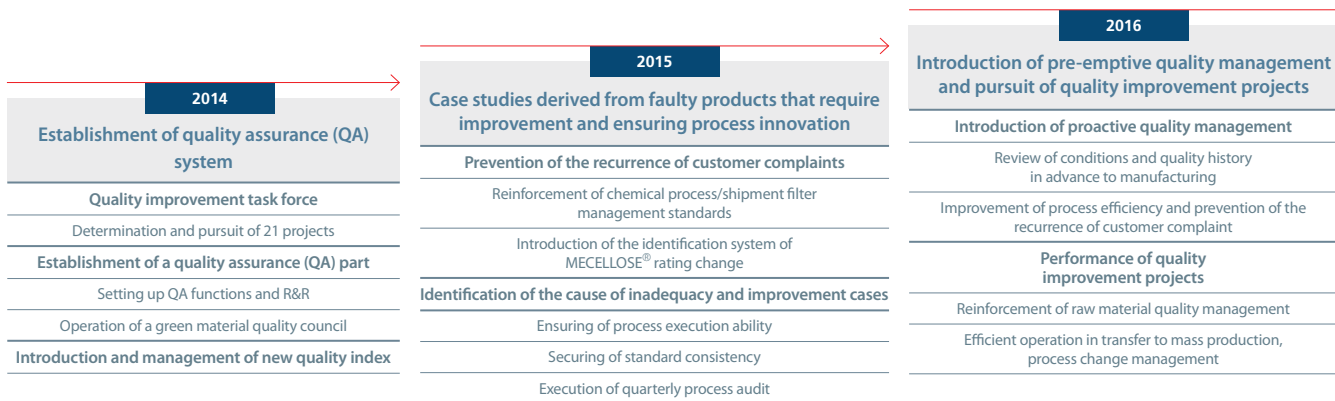
Ensuring global top-tier quality competitiveness

Observance of rules and process	Securing a competitive edge in the quality	Achieving the zero complaints
Based on the basics and rules	Consistent quality improvement	Customer-oriented thinking
Pre-emptive quality management beginning from the introduction of raw materials	Phased process management based on systems and data	Promote response to the voice of the customer related with sales, production, and quality complex
Customized standard management	Comprehensive innovative activities and closed-loop improvement	Execution of the quality responsibility system through customer D/B management

Major activities on quality management

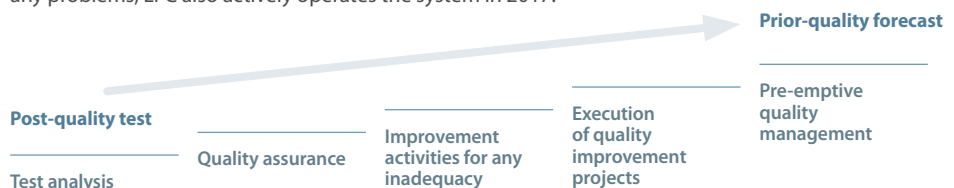
Quality management performance and future direction

To ensure quality competitiveness LFC has executed diverse activities including process development, establishment of a quality assurance (QA) system, and case studies derived from faulty products that require improvement. Based on these activities, LFC plans to reinforce the foundation of quality management and pursue improvement projects for quality competitiveness.



Manufacturing quality management

To analyze the cause of any inadequacy during the occurrence of any error in a process or a product, LFC operates a checkup conference system in which relevant departments participate for production quality, and development. Through this system, LFC identifies fundamental causes, establishes solutions, and confirms the execution results. In 2016, LFC introduced a pre-emptive quality management system that reviews manufacturing conditions and quality history prior to the production of products. In order to predict quality earlier than a post-quality test and to respond to any problems, LFC also actively operates the system in 2017.



Environment & Safety

Customer Value

Human Resources

Business Partners

Execution of process audit

To review the response system for customer complaints and improve any inadequacies activities, LFC carries out process audits. Through these LFC can inspect the reliability of products and services delivered to customers and establish a culture where employees work based on the standards and processes. LFC plans to consistently perform intensive improvement activities by selecting a main theme determined through the process audit each quarter.

Reinforcement of raw and subsidiary material quality management

LFC has raised customer satisfaction with the quality of its products by fortifying quality management of raw and subsidiary materials subject to intensive management. In order to reinforce quality management, each business department has classified major raw and subsidiary materials, chemicals, and catalysts into inspection¹⁾, substitution of a report card²⁾, and non-testing³⁾. Also, LFC conducted quality management of 137 major raw and subsidiary materials, 158 chemicals, and 48 catalysts in 2016. LFC plans to expand on receiving inspection of raw and subsidiary materials subject to intensive management, and it will establish a quality verification system of raw materials and products during the early stages of introduction by applying the system to new materials and a supplier authentication process.

¹⁾ Inspection: raw material of which quality may change after inspection and warehousing and that have a significant effect on product quality

²⁾ Substitution of a report card: raw material that has no quality issue during inspection for over 1 year and has stable quality

³⁾ Non-testing: raw material or subsidiary material relevant to process operations, that has no quality property issue after warehousing for over 2 years

Eco-friendly products

LFC has developed and sold materials and products that can minimize any environmental effect in diverse fields such as industry, drug, and general living. Eco-friendly materials and products currently produced by the company include cellulose derivative products, EUROX[®], and biodegradable plastic.

Cellulose relatives MECCELLOSE[®], HECCELLOSE[®], AnyCoat[®], and AnyAddy[®] are eco-friendly product brands of LFC made of cellulose from trees and raw cotton.

EUROX[®] As an eco-friendly product to remove NOx, an air pollutant emitted from diesel vehicles, EUROX[®] is a 'catalyst reducer' used for an emission gas reducer (SCR system) to reduce emission gases from vehicles in accordance with the Atmospheric Environment Preservation Act.

Biodegradable plastic (EnPol) Biodegradable plastic, EnPol maintains the equivalent physical properties as those of general-purpose non-biodegradable plastic during use. However, it is eco-friendly plastic that when disposed of after use or in its natural condition is completely degraded into water and CO₂ by microorganisms such as bacteria, mold, and fungus existing in the nature.

Stakeholder Interview

Tim Cheyne

Representative of Integer Research



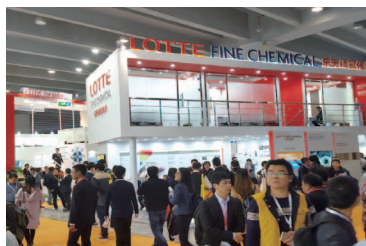
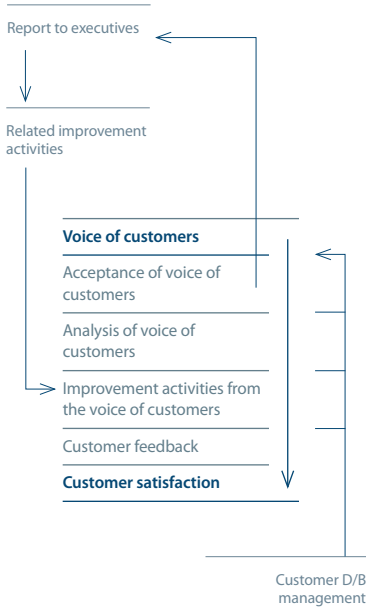
As a technology and market research company regarding diesel engine emission controls field, Integer Research held an 'Asia Pacific conference on the regulation of emission gas and urea solution' for the second successive year in Seoul in April 2017. LOTTE Fine Chemical, a leading sponsor of the conference, shared innovative and exemplary cases that reduce the environmental effects of diesel engines in Korea and encouraged the positive advancement of the urea solution market.

“ Korea is in the leading position in the Asia Pacific region in terms of the regulation of emission gas, and some companies have satisfied EURO VI* regulation by introducing cutting-edge technology such as SCR. EUROX[®] of LFC is one of the best product for reducing the emission gas of diesel engine. Integer Research is committed to improving the atmospheric environment of the Asia Pacific region in consistent cooperation with LFC. ”

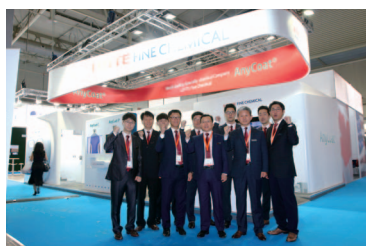
* EURO VI: As an emission gas regulation system enforced by the EU, the key restriction for vehicles less than 3.5t is to reduce nitrogen oxide (NOx) from existing 0.18g/km to 0.08g/km.

Customer Satisfaction

Enhancing of communication with customers



Participation in ChinaCoat 2016



Participation in CPhI Worldwide



Urea Solution Conference

Response to the voice of customers

To promptly identify and respond to the changing demands of customers, LFC has extended and operated a communication channel for customers. All areas including sales, production, and quality have rapidly coped with the demands of customers through the response system for the voice of the customer. With the received voice of the customer, LFC conducts activities to causes through analysis, and it then implements appropriate improvement solutions. In 2016, LFC was dedicated to enhancing customer satisfaction by responding to 12 voices of the customer and 188 customer inquiries. In future, LFC will prevent any recurrence of customer' complaints from negligent management in quality and delivery, and it will operate a database and manage response solutions for customers' demand more systematically.

Execution of joint promotion of EUROX[®] with customers

To improve customer awareness of EUROX[®], a remover of NOx, LFC engaged in a "Summer Service Camp 2016" promotion in cooperation with customer Volvo Trucks. This promotion moved around from 16 strategic regions nationwide for 5 days from July 11, 2016, and safe operation and prevention of air pollution were emphasized while the original EUROX[®] was given to truck drivers. LFC was able to enhance its brand value by actively being engaged in EUROX[®] promotion along with its customers.

Expansion of customer channels through lots of activities such as participation in overseas exhibitions

To respond to diverse demands of customers, LFC has performed joint research, customer invitation events, exhibitions, and seminars, and from the results of these activities it has tried to offer optimized products and solutions to customers. Through participation in ChinaCoat, an exhibition of global paint materials, CPhI (Convention Pharmaceutical Ingredients & Intermediates) Worldwide, an international exhibition of drug, and Abrafati, an exhibition of paint materials in South America, LFC introduced the characteristics of HiEND and HiPER, which are new brands of MECELLOSE[®], as well as HECELLOSE[®] and AnyCoat[®], and offered optimal solutions attuned to the needs of customers. In addition, LFC held a presentation and meeting with relevant persons from the American Association of Pharmaceutical Scientists (AAPS) and the 7th International Conference of Asian Concrete Federation (ICACF) for technical cooperation and open innovations in R&D.

ChinaCoat 2016 As an exhibition connecting the whole world including the Asia Pacific region, Europe, and the Middle East while focusing on China, ChinaCoat is held every year, alternatively in Shanghai and Guangzhou. LFC has joined the exhibition for 5 consecutive years since 2012. In 2016, it was held in Guangzhou, and about 1,000 companies from 80 countries participated. While introducing chemical products mainly around HECELLOSE[®] and MECELLOSE[®], LFC provided solutions to increase customer satisfaction.

CPhI Worldwide LFC has participated in CPhI Worldwide, the largest exhibition of the industry for 6 consecutive years. In 2016 CPhI Worldwide was held in Barcelona, Spain. A total of 2,500 companies from 150 countries participated, and LFC attended in order to listen to the demands of customers and offered solutions while introducing AnyCoat[®], a coating material for drugs.

Sponsoring of global urea solution conference LFC was a platinum sponsor in 2016 and 2017 for the "Regulation of Emission Gas and Urea Solution Conference" in Seoul held by Integer Research, a special research institute of the UK for emission gases. Also participating in the conference were government officials from Korea and overseas and commercial vehicle companies. LFC discussed the current regulation of emission gases and the urea solution industry including its outlook. Through the urea solution conference, LFC raised the brand awareness of its EUROX[®] and promoted the excellence of the product while sharing reduction cases of the advanced markets and SCR device technology.

Investors

Employees

Local Community

Human Resources

Strategic Focus & Approach

All employees share the establishment of a corporate identity and the vision of sustainable growth through a new promising start at LOTTE Group. Based on its remarkable technological power, excellent human resources, systematic infra, and a creative labor and management culture, LFC will focus on its capability to be a leader of the chemical companies in LOTTE Group. LFC has accelerated organizational changes and innovation, and it has reinforced its global capabilities.

Our Effort

- 1** Vision sharing and execution of the systemization of the organization
- 2** Establishment of a corporate culture of communication such as CEO meetings and an organizational culture event
- 3** Operation of an academy for technicians and specialized education for engineers
- 4** Enforcement of a motherhood protection system for the balance of work and life



5. Gender equality 8. Decent work and economic growth
10. Reduced inequalities

Our Performance

930,000 KRW

Education expenses per person

45 hours

Education hour per person

56 %

Parental leave rate

Stakeholder Interview

Wook-soo Chang

Manager, Production Innovation Team of LFC

The department manages innovation activities, the key performance index (KPI) and system management, and energy efficiency. In the production innovation team, I have been in charge of planning enterprise innovation activities, promotion of improvement activities, and technology education that is the foundation of the above activities.



“The most important qualification of engineers is the optimization ability of plant operation. This requires problem-solving and process analysis. To raise professional engineers, LFC has executed an analysis of fundamental cause, Six Sigma management system in search of the optimal point, creative problem-solving using TRIZ, and process simulation by inviting external instructors. Also, LFC educates new engineers directly with practice curriculums utilizing programs instead of conventional one-sided collective education.

For engineers with a career of 4~8 years, LFC has helped them to gain hands-on experience at the plant and generate synergy through an industrial academic program with the Ulsan National Institute of Science and Technology (UNITS). Various education programs have been a foundation for engineers to be developed as the best technology experts.”

HR Management



Internal language course

CASE STUDY

Specialized education for technicians and engineers

In accordance with the need for specialized job education, LFC offers a technology academy for technicians and specialized education for engineers.

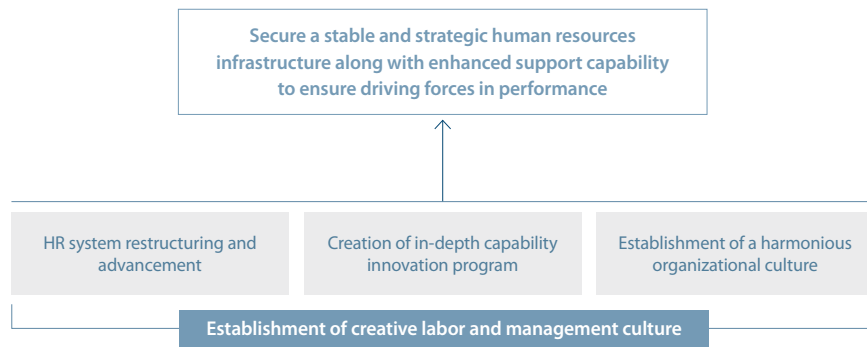
The technology academy aims to ensure a knowledge basis for achieving safety and manufacturing competitiveness, and it provides training sessions of 8 days (64 hours) for 24 different courses. In 2016, it was successful in cultivating an additional 22 internal instructors.

In a survey after the education, 95% of trainees answered "satisfied". In response to a question about usefulness in their jobs, 92% replied they would utilize it for their job, thereby showing a high level of satisfaction with the training. Furthermore, diverse types of specialized education for engineers have been delivered to improve production processes and to reinforce manufacturing competitiveness.

In cooperation with the Ulsan National Institute of Science and Technology (UNIST), LFC has held an Innovation Campus, and it has offered process simulation education which is a program that illustrates the actual process and education of Six Sigma and improvement in problem-solving skills by using TRIZ.

Strategies

Through its accumulated technology power over half a century, excellent human resources, and infra for systematic cultivation of human resources, LFC has rendered support to generate actual outcomes. For this, LFC has pursued HR system restructuring and sophistication, established a one-way organizational culture, and prepared an in-depth capability innovation program.



Competency development program for employees

LFC offers its employees value, leadership, and job education so that they can observe the basic fundamentals and rules and deal actively with their work in accordance with their position and situation. Moreover, LFC provides various educational programs to reinforce global and innovative capabilities.

Value/education by position level LFC provides initiation education for all employees to form a consensus on the core values and vision of LOTTE Group. For the creation of a bright and sound organizational culture for observation of the basic fundamentals and rules, LFC consistently offers education on fraud prevention, a healthy mind, and prevention of sexual harassment. Also, LFC provides education on the basic attitude and etiquette required of new employees and promoted employees.

Leadership/specialized education LFC holds regular forums and conferences aimed at leaders including executives and team managers to establish their R&R as leaders through reinforcement of leadership, an innovative mind, and teamwork. LFC supports SEMBA and EMBA courses to cultivate leaders with a macroscopic perspective and way of thinking. Besides, LFC has offered an application course for a graduate school of engineering as well as forums and education aimed at talented females to strengthen technical competency through the cultivation of good engineers.

Global education In order to establish an organizational culture for learning foreign languages and improving proficiency, LFC operates internal language courses, supports language learning outside the company, supports language assessment, online education courses, and cultivates and dispatches employees overseas who understand different cultures and have a global business capability.

Job training To strengthen capabilities in special knowledge necessary for a person's duties, LFC supports education from special external institutes. For the reinforcement of safety awareness and cultivation of HR with manufacturing competitiveness, LFC has extended education in various areas such as a practical field education technology academy and the acquisition of national technical qualifications, and persons in charge of fair trade, personnel and legal affairs, and financial duties have operated specialized courses.

Corporate Culture

Corporate culture of communication

Based on the philosophy that satisfaction and happiness of employees determine the future of a company, LFC has made a consistent effort to create the best work environment and to communicate with employees. LFC operates diverse welfare systems, and it has expanded online and offline channels for enforcement of a culture of communication to resolve any difficulties and discomfort of employees.

CEO meeting CEO shares the company's business philosophy and listens to the difficulties and opinions of employees by preparing on-site meetings directly with employees. Through consistent operation as a place for forming a consensus and communication between management and employees, LFC has established a mutual respect of opinions and communication as its corporate culture.

Soh-tong (Communication) Insight Through an internal communication portal called "Soh-tong Insight", management and company news, useful living information, and family events and club event introductions are shared with the whole company. Also, LFC's employees can participate voluntarily in an internal bulletin board that provides them with a space where they can express opinions and communicate with each other. In particular, on the "Soh-tong Avatar (anonymous bulletin board)" they can upload posts anonymously and communicate even more frankly with the company, and resolve difficulties. LFC has striven to communicate with external customers and potential employees by operating a social networking service (SNS) of the company.

Place of cultural consensus and unity LFC operates the "Salon de Panorama", a multi-purpose lounge for employees to refresh themselves from work and produce creative ideas. Also, they can appreciate various performances including classical music and jazz as LFC hosts "Salon Concert", where they can have fun and charge up their motivation along with their colleagues. In addition, LFC has led communications and unity between employees through events such as watching movies or baseball games together with colleagues and family members.

Work-life balance

Family-friendly company certificate LFC actively encourages leaving the office on time by designating every Wednesday and Friday as a "day of family love", and it was certified as a family-friendly company in December 2016. LFC has established a happy organizational culture that is loved not only by employees but also by their families.

Operation of a flexible work system LFC has operated a flexible work system that enables employees to select their working times according to their needs such as parenting and self-development. The company has pursued the best performance by enhancing work efficiency through efficient time operation, and employees are able to keep a balance between work and life as well as job satisfaction by selecting their working hours.

Reinforcement of a motherhood protection system LFC actively recommends maternity leave and parental leave of employees to ensure conditions for employees' long-term working and to resolve the social issue of low birth rate. LFC supports for safe delivery such as by a work-hour reduction system and offering checkups during pregnancy. In addition, it provides 5-day paid paternity leave to spouses. In particular, LFC operates a policy through which talented women can be confident in displaying their abilities by preventing unequal treatment and any disadvantages in employment, pay, and career path by the use of maternity leave.

Based on the policy, the actual use of the motherhood protection system has increased and 56% of employees qualified for maternity leave utilized their maternity leave in 2016. Since January 2017, LFC has extended the maternity leave period to a maximum 2 years, allowing male employees access to a mandatory paternity leave of 1 month to reduce the parenting burden on employees. In addition, it provided further encouragement to have a child by opening a daycare center at the workplace in April 2017.

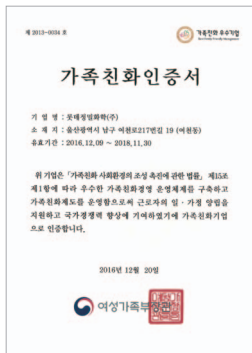
Welfare and benefits system LFC provides various welfare and benefits programs for its members as well as for their families to help them enjoy stable lives. LFC supports tuition and school support fees for children of employees and operates summer and winter camps. LFC also supports comprehensive



Internal portal 'Soh-tong Insight'



FINE COMPANY education poster



Family-friendly company certificate



Opening of daycare center



'Do Dream' Counseling Center

BEST PRACTICE

Maximization of value creation through enterprise innovative activities

In order to ensure competitiveness at manufacturing sites and to create a safe and environmental workplace, the responsible departments have developed innovative activities participated in by all members including partners as well as by the relevant departments. An engineer group accomplished a cost reduction project, a field technical service group carried out job improvement for a safe environment and a cost reduction project, an indirect support group for office works undertook a cost reduction and job efficiency project, and a partner group organized a field improvement activity project. As a result, LFC generated tangible cost-saving effects of 22.5 billion won (3.1 billion won from productivity, 4.1 billion won from raw materials, 11.8 billion won from energy, and 2.9 billion won from costs) in its accounting performance in 2016. In particular, LFC achieved efficiency improvements through habituation of reduction activities while recording 3.4 billion won savings from steam reduction during an ECH manufacturing process and 2 billion won savings from an improvement of raw materials for green materials.

In 2017, LFC will make further efforts to analyze and utilize data through the introduction of a daily cost management system and the utilization of a test plan program, and it will generate value through efficiency improvement by the participation of 13 working teams of partners.

medical checkups its employees and their spouses, lending for housing and annual housing rental, and personal pensions to ensure a stable life after retirement. LFC exerts every effort to improve job satisfaction for employees with various welfare and benefits programs while operating vacation apartments and lounges for relaxation during the summer season and providing a legal advisory service.

Health management of employees

Operation of "Do Dream", a counseling center LFC provides channels to effectively mitigate different types of stress that occur in daily life from work and home through Do Dream Center, a counseling center. The company regularly delivers information about mental health through a monthly internal mail and online bulletin board, and it operates a guide to, and execution of, a psychology test, and a meditation program. LFC helps to promote family health and happiness by offering services such as a mobile toy library in cooperation with an external local organization and allowing families of employees to take a psychology test free of charge.

Execution of comprehensive medical checkups LFC tries to ensure the mental and physical health of employees by conducting regular general (comprehensive) medical checkups and special checkups every year. Also, LFC actively supports medical expenses and accident insurance for employees and their families to enable them to manage their health and live a healthy life without worrying about diseases and consequences of accidents.

Operation of a fitness center and support of club activities LFC operates a fitness center for each office, and it encourages sound leisure activities employees through active support of diverse internal club activities.

Cooperative labor and management culture

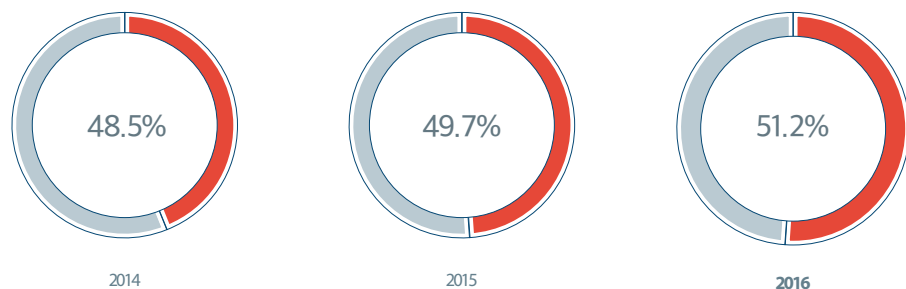
Since its establishment in 1971, the labor union of LFC has built up great trust and communication while constructing a "creative labor and management culture" in cooperation between labor and management. LFC has achieved good communications and a reasonable labor and management culture based on mutual trust with the union, and has tried to reinforce internal innovative capabilities through a declaration of global manufacturing competitiveness by avoiding a confrontational relationship.

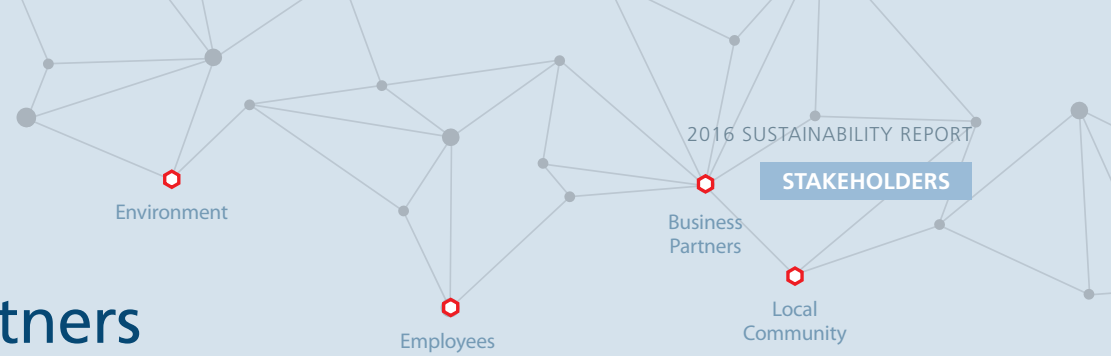
While declaring its determination for a new start at LOTTE Group in cooperation between labor and management, the labor union has provided communications and exchanges with the awareness of "labor and management bound by a common destiny", and it has consistently adopted and advanced a "creative labor and management culture", which consists of a part of the unique DNA of the company.

Increase of career development opportunities

LFC carries out assessments based on a goal management system to match personal goals with the corporate vision, and it helps employees to demonstrate their full abilities by operating performance-based bonuses. Also, it offers a wide variety of career development opportunities through diverse job experiences along with capability development. The job rotation system helps employees to develop personal careers and has been established as the main policy for cultivating future managers of the company.

Collective agreement application rate





Business Partners

Strategic Focus & Approach

LFC pursues win-win cooperation with partners from diverse aspects of technology and product quality. In the selection and assessment of a partner, LFC provides equal opportunities through fair and transparent procedures. The company expects to reinforce the competitiveness of its partners by the incorporation of quality strategies in Profit Center 2.0 rather than just cost reduction strategies. With extended financial and technical support, LFC will carry out actively social responsibilities for its partners.

Our Effort

- 1** Establishment and pursuit of Profit Center 2.0
- 2** Operation of an incentive system for partners
- 3** Reasonable operations to ensure the autonomous operations of partners
- 4** Expansion and reinforcement of communication with partners about safety and health



3. Good health and well-being 8. Decent work and economic growth

Our Performance

254.2 KRW billion

Purchase amount from partners

36.3 KRW billion

Investment amount

Stakeholder Interview

Jin-hoh Kim

Executive Director, Woochang TS

As a resident partner of the Complex from February 1, 2014 to date, Woochang TS has undertaken repair for ordinary machine and heating maintenance facilities and regular repair as well as construction projects.

“ Based on an awareness of placing a top priority on safety in accordance with the safety standards of LFC, the company has done its utmost to perform work safely. LFC consistently maintains close communication regarding safety and safety education through a council for the advancement of partners, thematic patrol activity, and Wednesday safety meetings.

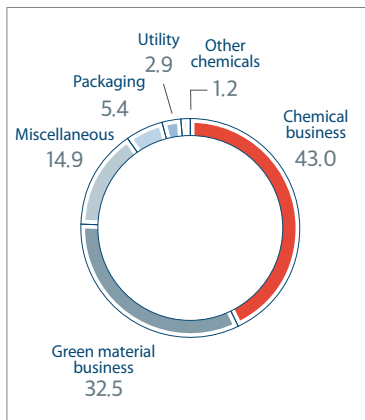
The company obtained a safety and health management system (KOSHA 18001) in 2014, and it consistently receives consultations independently in connection with a special external organization, and accordingly it has been able to maintain an accident-free workplace accordingly. Even in the future, the company hopes to facilitate mutual communication through consistent technical support and safety council activities and continue a win-win cooperative relationship that further grows each party by sharing each other's strength and weaknesses and thereby making up for any weaknesses. ”



Purchases

Percentage of purchase items

Unit: %



Status of purchasing from partners

In order to optimize trade efficiency with its partners, a purchase team and a material team have undertaken trades in accordance with the types of items. The purchase team purchases raw materials used for products, while the material team manage items used for other purposes such as utility and packing materials. In 2016, LFC conducted trades of 254.2 billion won with 510 partners.

Profit Center 2.0

Profit Center 1.0 is a cost-reduction strategy for discovering new companies with high price competitiveness aimed at reduction of purchase prices, and LFC gained great results by discovering various buyers in 2015. To move on from only cost reduction, in 2016, LFC established and pursued Profit Center 2.0 by incorporating quality. Profit Center 2.0 is an advanced purchase strategy focused on the big 5 major strategies of "pursuit of market sensing reinforcement, cost reduction, quality improvement, competency reinforcement of human resources, and improvement of work processes". Through this, the company has improved product quality as well as obtained cost reductions by strengthening cooperation such as the joint development of new grades with partners.

Big 5 strategies of Profit Center 2.0



Major items to be pursued by Profit Center 2.0

Classification	Details
Raw material	New grade joint development, localization, discovery of new company
Facility and equipment	Purchase integration of facility and equipment, optimization of specifications
Repair material/packaging	Diversification and optimization of specifications, improvement of repair material management process
Purchase process innovation	Preemptive improvement of new and increased purchase processes, optimization of purchase cycle, merge of simple purchase works

Fair selection of partners

To reinforce transparency and fairness in selecting partners, LFC has exerted efforts from diverse aspects such as utilization of a standard contract and a proposal of a payment system change. At the time of signing a contract with a new partner, LFC uses a standard contract that has completed an internal legal review to ensure that it does not violate internal regulations and compliances of the company. Also, in case of any other specific issues, the contract is signed after legal advice and a review by our Legal Compliance Team. This is to prevent any unfair act not only by the company but also by the partners, and to strengthen and provide a more equal and closer cooperation.

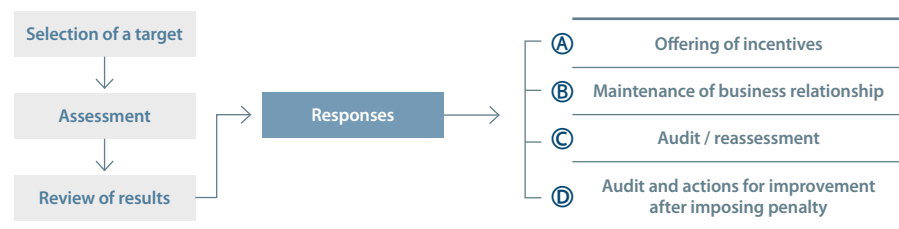
Also, LFC confirms regularly whether a partner has been paid under reasonable conditions, and it identifies whether any changed environment of the partner and the payment conditions of the company have disadvantaged the partner. For instance, if the company category of the partner is changed from a large-size company category to a small to medium-sized enterprise category, as soon as the changed conditions and environment of the partner are confirmed, instead of waiting until the year's end, LFC discusses this with a relevant department and reflects this in advance to take prompt action so that the payment conditions may help the partner.

Assessment of purchase partners

To achieve mutual growth with its partners, LFC conducts an assessment of purchase partners who are in business for raw and subsidiary materials. The purchase assessment is committed to solidify the business by ensuring product quality and building trust through an assessment of the raw and subsidiary material quality, delivery, and cooperation of the partner. For the top 20 partners in terms of the purchase amount for business, LFC must conduct the assessment and determine other companies that are not subject to the assessment through an internal agreement.

In accordance with the assessment results, partners are given ratings of A, B, C, or D. LFC awards incentives and a prize for good companies to A rated partners, maintains B rated partners, and complements issues by conducting an audit of C rated partners. For D rated partners, LFC provides an opportunity to improve through an audit of any failing issues and a report of improvement solutions during regular exchange meetings. When a partner receives a D rating more than 2 times in a row, LFC reviews the dualization of the items concerned. In addition, LFC stops business with partners who record more than 3 non-conformity issues such as accidents, defective process quality, poor receiving inspection, and failure in notification of any change to construct a thorough management system for raw and subsidiary materials provided by partners.

Assessment process for purchases partners



Quality management and technical support for partners

To support the quality improvement of partners, LFC conducts a quality audit every year. Also, upon the request of partners, LFC also provides technical support such as joint development of a new grade through cooperation of engineers from a production team.

Reinforcement of purchase capability

The internal capability of a purchase department is the foundation of the identification of a partner’s adequacy and fair trade. The company offers education to collect various views and opinions of persons in charge of different jobs in the purchase team toward a purchase. In 2016, this internal education aimed at all the team members, was provided. The presenters took turns to present different items, raw materials, subsidiary materials, and key devices. The department plans to continue this education in 2017, and will consistently upgrade the team’s capability by delivering education on other items, materials, devices, and processes other than those discussed in 2016.

Internal Business Partners

Reinforcement of communication with partners

To build a sustainable business relationship based on trust with partners, LFC frequently holds meetings, and listens to the opinions of partners. LFC has prepared a good environment to communicate instead of simple notification, and it reflects the opinions in corporate management or businesses with its partners.

Incentive system for internal business partners

To prevent the safety environmental risk of its partners and to revitalize the motivation of employees of partners, LFC has operated an incentive system since 2015. The company assesses partners twice a year based on three items, namely safe environment management, job management, and external assessment, and the items are classified into safe environment, quality, management, human resources, and labor and management. LFC provides performance incentives in accordance with the rating from assessment results, imposes penalties on the lowest-rated partners, and manages strictly non-ethical behavior such as concealment of accidents.

In 2016, LFC undertook assessments of 6 partners. Results for the first half showed that 4 partners were excellent, 1 partner was good, and 1 partner needed improvement, while results for the second half showed that 5 partners were excellent and 1 partner was good. The company provided performance incentives in accordance with the results.

Safety Management of Partners

Supports for partners operation

Attuned to a changing labor market trend and government policy, LFC has confirmed whether the minimum wage is being applied and has encouraged workplaces with less than 300 employees to also introduce a retirement age of 60. To cope with the changing environment, LFC supports the efficient operation of partners through offering preemptive guidelines.

Reinforcement of risk management of consignment transaction

To prevent any violation of relevant laws and regulations by unfair transaction in business with small to medium-sized enterprises, the company has checked consignment transaction business operating departments, and executed to provide improvements. In 2016, LFC inspected 27 cases from 22 partners for current business with the purchase contract department and subsidiaries and 8 partners for business with subsidiaries, and completed 100% improvement. LFC plans to extend education on win-win management and integrity management for cooperative departments to reinforce the education in accordance with operations with partners.

Reinforcement of communication with partners and their education about safety and health

Given the characteristics of the chemical industry, it is very important to ensure safety in manufacturing processes. To manage the safety of the employees of its partners, LFC holds a weekly safety meeting and a monthly safety advancement conference with its partners. Through the safety advancement conference attended by the plant manager, representatives of partners, and managers, the company shares major notices, accidents, and activities for pursuing safety and health for its partners and offers a place to discuss it. Moreover, LFC gives special safety education on unsafe behavior and conditions, accidents, forklift safety, and risk assessment, and it also offers health education such as wearing of air respirators and CPR through briefings about measurement results of the work environment.

Efforts to prevent quality costs with regard to safety

Safety is an essential value not merely of manufacturing process, but also an important value in the purchase stage. Therefore, the company has tried to minimize quality costs that can result from safety accidents based on various experiences and Lesson & Learn.

The purchase team collected and analyzed safety accident cases that can occur from packing, prepared packing instructions in 2016, and distributed them to partners for packing. The instructions have been beneficial both for partners and the company by keeping basic safety and preventing various types of quality costs.

Communication channels for safety and health with partners

Target	Name of the meeting	Cycle	Person in charge/ department in charge	Participants	Main contents
Partners	Partner advancement council	Quarterly	Plant manager/ SM team ¹⁾	Representative of a partner	Explanation about safety policy by partners Listening to opinions about a safe environment
		Monthly	Director of a center/ SM team	Safety manager of a partner	Proposal of safety policy guidelines by partners Listening to opinions about a safe environment
	Weekly safety meeting	Weekly	Safety manager/ SM team	Safety manager of a partner	Sharing of activities/accident cases between partners
Resident partners	Safety and environment meeting of resident partners	Monthly	Director of a center/ SM team	Safety manager of a resident partner	Discussion about joint response strategies for sharing safety policy for resident partners

¹⁾ SM team: Safety Management team

Management Report

- 46 Corporate Governance
- 49 Risk Management
- 51 Compliance Management
- 53 Sustainability Management System
- 55 Materiality Assessment
- 56 Social Contributions
- 58 Facts & Figures

Corporate Governance

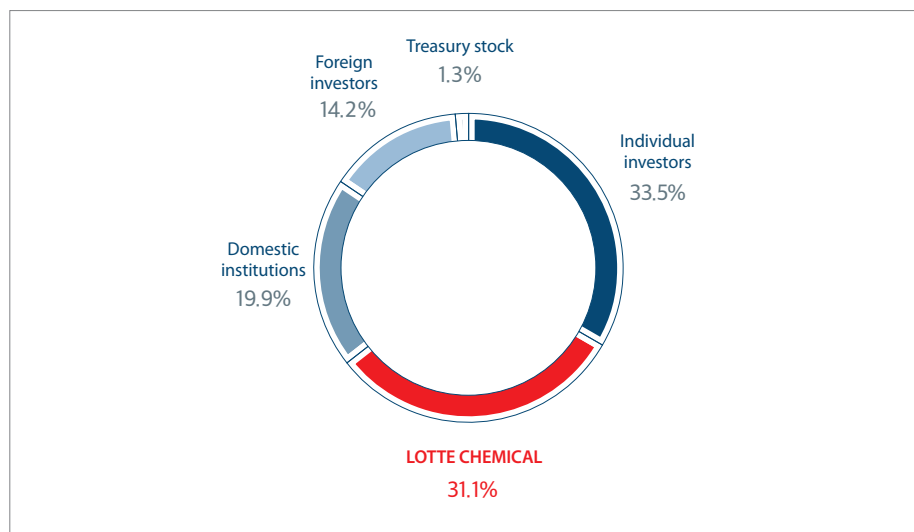
Composition of the Board of Directors

As of the end of 2016, the board of directors (BOD) of LOTTE Fine Chemical (LFC) is composed of five directors including two inside directors, two outside directors, and one non-executive director. Directors with a specialty in the relevant sector are elected at the company's general meeting of shareholders in accordance with relevant laws and regulations.

Classification	Name	Career Profile
Inside director	Sung-Yup Oh	2016 Director of Management Support Headquarters of LOTTE CHEMICAL
		2013 Director of Monomer Business Headquarters of LOTTE CHEMICAL
	Kyung-Moon Jung	2012 Head of Planning Sector of Honam Petrochemicals
		2016 Head of Planning Sector of LOTTE CHEMICAL
Non-executive director	Byung-Yeon Lim	2015 Director of Vision Strategy Office of Policy Headquarters of LOTTE Group
		2012 Director of International Office of Policy Headquarters of LOTTE Group
		2014 Head of Department/Executive Director of Vision Strategy Office of Policy Headquarters of LOTTE Group
Outside director	Dong-Geul Byun	2011 Director of International Office of Policy Headquarters of LOTTE Group
		2008 Head of Planning Sector/Director of KP Chemicals
	Seok-Hwan Park	2014 Corporate Lawyer of Hwawoo Law Firm
		2013 Chairman of Mediating Committee of Seoul Central District Court
Auditor	Byung-Hong Kim	2005 Representative Lawyer of Hwawoo Law Firm
		2014 Auditor and Outside Director of LOTTE CHEMICAL
		2012 Ambassador of the Embassy of Republic of Korea in UK
		2011 1st Vice Minister for Foreign Affairs and Trade
		2011 Head of Coffee Sector of LOTTE Chilsung Beverage
		2009 Head of TGIF Sector of Lotteria

* Inside director Sung-Yup Oh and non-executive director Byung-Yeon Lim resigned for personal reasons, and inside director Hong-Yul Lee and non-executive director Jong-Min Yoon were elected in the annual general meeting of shareholders on March 24, 2017.

Ownership structure * (As of the end of 2016)



* With LOTTE CHEMICAL acquiring shares from Samsung SDI, former largest shareholder, and four related parties thereof, there was the change in the largest shareholder.

Independency of the BOD

Transparency in Appointing Directors

With its total assets less than KRW 2 trillion at the end of the previous year, the company does not have an obligation to operate an outside director nominating committee. For fairness and independence in management, it elects directors through nomination by the BOD and resolution by the general meeting of shareholders. If the candidates for directors have been confirmed before the notification to convene the general meeting of shareholders, the name and career profile of the candidates shall be notified and announced.

Expertise of Outside Directors

The company nominates external experts rich in professional knowledge or experience in management, economy, law, or relevant technologies as outside directors. A supporting department within LFC provides support to outside directors to enhance professional performance of their duties. The outside directors are provided with relevant material and a separate presentation thereof if necessary prior to the BOD meetings so that they can sufficiently review the items to be discussed at the meetings, and are also provided from time to time with information on other important issues of the company.

Independency of Auditing

To monitor whether directors and the BOD perform their duties in accordance with related law and the company's articles of incorporation an auditor is appointed. The auditor may attend to the BOD meetings and independently oversee the directors' performance of duties.

Sub-Committees of the BOD

To improve the efficiency of management activities, the management committee, the compensation committee and the related party transactions committee have been established as sub-committees of the BOD.

Committee	Composition	Name	Purposes and Authorities	Key Agenda Items in 2016
Management Committee	2 inside directors	Sung-Yup Oh (chairman), Kyung-Moon Jung	<ul style="list-style-type: none"> Efficiency of management and operation Resolution of matters delegated by the BOD 	<ul style="list-style-type: none"> Abolition of long-term performance incentives and settlement Payment guarantee for a renewed loan provided to overseas subsidiary in Europe Organizational restructuring Establishing an integrated IT system
Compensation Committee	2 outside directors & 1 inside director	Dong-Geul Byun (chairman), Seok-Hwan Park, Kyung-Moon Jung	<ul style="list-style-type: none"> Objectivity and transparency in calculating director compensation Compensation limits of registered directors to be submitted to the general meeting of shareholders Other matters delegated by the BOD 	<ul style="list-style-type: none"> Approval of director compensation limits to be submitted to the general meeting of shareholders
Related Party Transactions Committee	2 outside directors & 1 inside director	Dong-Geul Byun (chairman), Seok-Hwan Park, Kyung-Moon Jung	<ul style="list-style-type: none"> Secure transparency in company management by establishing an autonomous fair trade compliance system 	<ul style="list-style-type: none"> Large-scale internal transactions (related party transactions) (Q1 of 2016) Reported : Results of large-scale internal transactions (Q4 of 2015) Additional payment of retirement pension Loan provision to S-EnPol Reported: Results of large-scale internal transactions (Q1 of 2016) Retirement pension contract with related parties

Activities of the BOD in 2016

The BOD deliberates and decides upon matters set by the laws or articles of incorporation, matters delegated by the general meeting of shareholders, basic principle of the company, and important matters in the execution of business. The BOD is composed of all directors elected in general meeting of shareholders. Regular BOD meetings are held monthly, but if there is no agenda, it can be not held, and temporary BOD meetings are held as needed. The resolutions of the BOD meetings are made by the attendance of majority directors and the majority votes of the attending directors. The voting rights of directors with special interest in the specific agenda are restricted. In 2016, a total of seven Board meetings were held and a total of 20 resolutions were passed.

No.	Date	Key Agenda Items
1 st	Jan 15, 2016	<ul style="list-style-type: none"> • Approval of the 52nd financial statements and business annual report • Approval of large-scale related-party transactions • Reported: 2016 Management Budget
2 nd	Feb 5, 2016	<ul style="list-style-type: none"> • Convening of the 52nd annual general meeting of shareholders and agenda thereof • Payment of 'New Beginning' bonus • Additional payment of retirement pension • Participation in capital increase of SMP • Reported: Evaluation of operation of internal accounting management system in 2015 Auditor's report evaluating operation of internal accounting management system Report on the result of inspecting whether compliance control standards are followed
3 rd	Feb 29, 2016	<ul style="list-style-type: none"> • Appointment of CEO • Appointment of directors • Appointment of members of the BOD's sub-committees • Approval of execution of the 53rd director compensation • Approval of comprehensive limits for transactions with major shareholders (2016) • Appointment of Chief Compliance Officer (CCO) • Payment of continuous service incentives
4 th	Apr 28, 2016	<ul style="list-style-type: none"> • Provision of loan to S-EnPol • Transfer of overseas subsidiary in Europe • Approval of director serving for another company in the same industry • Reported: Business performance (Q1 of 2016) and projections (1st half of 2016)
5 th	Jul 21, 2016	<ul style="list-style-type: none"> • Retirement pension contract with related parties • Revision of the BOD Operation Rule • Reported: Business performance (1st half of 2016) and annual projections
6 th	Oct 26, 2016	<ul style="list-style-type: none"> • Approval of comprehensive limits for transactions with major shareholders (2016) • Reported: Business performance (Q3 of 2016) and annual projections
7 th	Dec 19, 2016	<ul style="list-style-type: none"> • Approval of comprehensive limits for transactions with major shareholders (2017) • Reported: 2017 Management Budget

Risk Management

Risk Management Framework

In order to effectively respond to various financial and non-financial risks which can arise out of the rapidly changing management environment, LFC conducts risk management. To recognize risks in advance and minimize damages therefrom, LFC operates a risk management framework which includes risk management system, organization, personnel, process, risk management regulations, etc.

Risk Levels and Guidelines

LFC manages risks by classifying potential risk factors according to the level of risk. Also, it has set up risk guidelines on its employees' responses to risks.

Level	Criteria	Responses
A	Situation in which critical influence is given to management activity	Minimize damage; recover corporate image; minimize legal issues; situation in which prompt recovery is essential
B	Situation in which social issues may occur due to insufficient response	Prevent expansion to level A by promptly recovering and tasking advance responses on legal issues, etc.
C	Situation that can be resolved by initial response	Prevent expansion to level B by having the responding department promptly resolve the situation

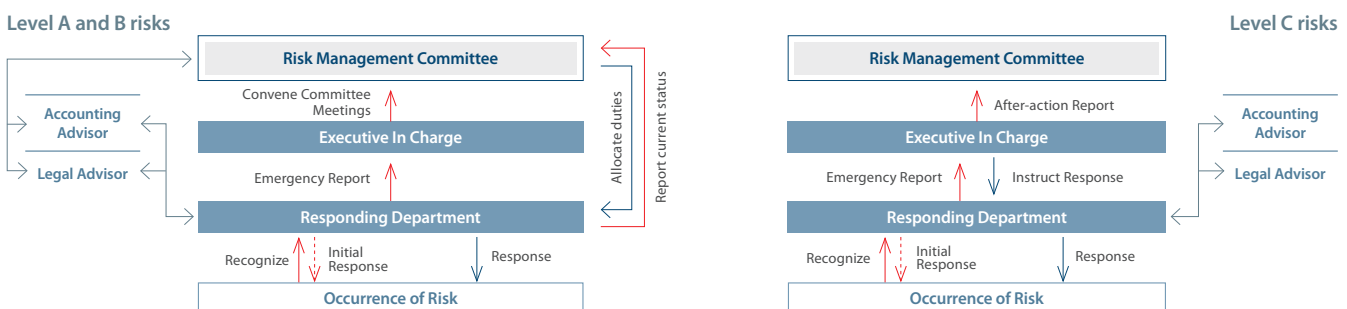
Risk Management Organization

For efficient risk management from a company-wide perspective, LFC has composed a risk management organization, the "risk management committee". Through the committee, LFC responds to risks at a company-wide level, rapidly and systematically. The risk management organization performs the roles of making comprehensive judgments in risk situations and overseeing organized responses by various departments.



Process of Responding to Risks

LFC operates a risk response process according to the level of risks. For levels A and B with higher risk levels, the risk management committee is convened for a company-wide response. For level C risks at lower level, a prompt response is made under the control of the executive manager in charge and follow-up reports are made to the risk management committee.



Corporate Governance
Risk Management
Compliance Management
Sustainability Management System
Materiality Assessment
Social Contributions

Risk Response Process by Situation

LFC operates a risk response process to minimize damage by establishing an advance risk management system, a risk response system, emergency response flow and detailed response guidelines for each risk situation. The 11 risk situations include environmental and safety incidents, fire and explosions, natural disasters, negative external image, patent disputes, product liability compensation, error in management environment estimation, investment loss, insolvency risk, bankruptcy of trade accounts, and IT risk.

Financial Risk Management

LFC is exposed to various financial risks such as market risk (foreign currency risk, fair-value interest rate risk, interest rate risk, and price risk), credit risk, and liquidity risk. The company's overall risk management policy is focused on unpredictability of the financial market and places emphasis on minimizing such effect as can be potentially disadvantageous to its financial performance. LFC uses derivatives in order to avoid certain risks. LFC's financial assets covered by financial risk management consist of cash and its equivalents, short-term financial instruments, available-for-sale financial assets, accounts receivable and other receivables, and its financial liabilities consist of accounts payable, other payables, and borrowings.

With over 50% of its sales coming from export, LFC manages risks from volatility of exchange rates and interest rates. LFC has formulated internal standards to respond to volatility of exchange rates, monitors foreign currency situation, and reports any unusual matters to the management. To reduce damages from exchange rates risk, the company minimizes balances of EUR and JPY by buying or selling them daily, and limits balance of USD to USD 5 million. Moreover, to respond to volatility of interest rates, LFC minimizes the amount of corporate bonds it holds.

Environmental Risk Management

In order to minimize the negative environmental effect in the process of business and environmental risks due to environmental incidents such as chemical leaks, fires, and explosions, the company has built a company-wide chemical management system and systematically analyzes and manages risks using the system. To respond to policy and economic risks due to domestic or overseas environmental regulation, LFC continues to keep monitoring the relevant regulation and policies and to reflect the result to its business and the internal guidelines.

Safety Risk Management

The company manages safety risks so that a safety accident does not develop into a social disaster. It conducts safety training not only for its employees but also for its resident business partners and supports safety inspection and facility improvement. The employees and business partners join LFC in creating a safe work environment, including identifying risk factors in the work sites and turning them into innovation tasks. In 2016, together with its customers and a specialized environmental consulting firm, LFC prognosed and inspected the level of its overall environmental safety management.

Compliance Risk Management

With strengthening of corporation-related laws and regulations, legal risks are increasing to such an extent that violations of law will make it difficult to preserve a corporation's good reputation (e.g., negative external image formed). To respond to the tougher regulations and prevent potential legal risks, the company conducts compliance management strictly.

LFC implements a fair trade education program to prevent any chance for possible violations of law during work, not only for the relevant personnel in charge but also for those in related departments, and operates an intensive on-site inspection system. Twice a year, the company conducts compliance inspections for departments which face high compliance risks such as sales department and contract-related departments and reports the result to management in order to raise the relevant personnel's awareness and make timely corrections. Also, it requires that any risk for violations of law must be subject to confirmation by Legal Compliance Team and Support Department.

Compliance Management

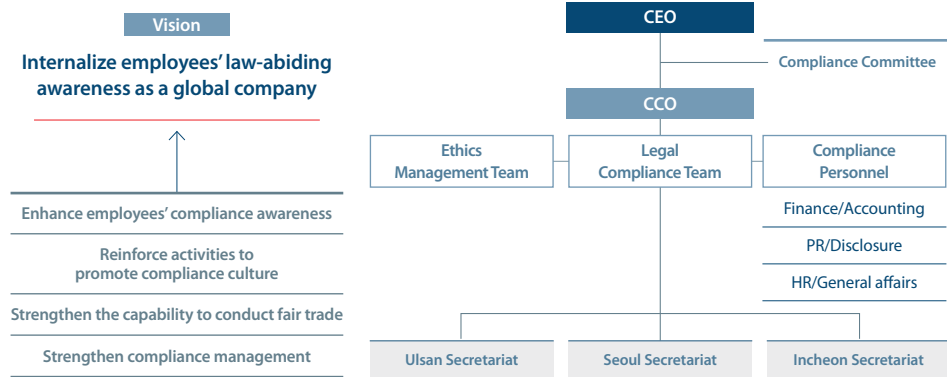
Compliance Management

Organizations by issues

Issues	Response organizations
Internal transactions	Financial Accounting Team
Collusion	Legal Compliance Team
Subcontracting	Shared Growth Management Part
Public disclosure	Business Management Team

Compliance Management System

In order to establish a fair and transparent corporate culture, the company is helping employees to internalize law-abiding awareness. For this purpose, LFC is enhancing its law-abiding awareness, reinforcing expansion of compliance culture, and strengthening the capability to conduct fair trade and compliance management.



Reinforce Activities to Promote Compliance Culture

LFC employees are sufficiently aware that law-breaking companies will be spurned by customers and society and ultimately go out of business. To properly respond to the regulations, strengthening in all directions, and prevent potential legal risks so that compliance culture will become internalized in their works, all employees are engaging in various activities.

CEO compliance message On July 15, 2016, in commemoration of Constitution Day, a compliance management message containing the CEO's commitment for compliance and policy was posted on the internal communication portal. It was sent company-wide via email to solidify the commitment for compliance management.

Establishing internal regulations and guidelines to ban improper solicitation In preparation for the 'Improper Solicitation and Graft Act' which went into enforcement on November 30, 2016, LFC, in addition to establishing and enforcing its 'Regulation on Anti-Corruption Compliance including Improper Solicitation Ban,' collected the employees' written pledges on the matter, posted key contents of the Act (5 times) for employees, and held promotion activities such as a quiz event. Also, to help the employees implement the Act in their actual work, LFC established and is enforcing guidelines governing expenses of events, PR, and sponsorship spent for public institutions, the media, etc. The company plans to require that all employees must have any matters whose legality is debatable or is not certain be confirmed by Legal Compliance Team in the future so that legal risks can be prevented in advance.

Enhancing Employees' Compliance Awareness

To enhance employees' compliance awareness and establish compliance management as its corporate culture, the company conducts customized compliance training and inspection programs.

Basic and introductory compliance training To share awareness on the importance of compliance management, the company conducted basic compliance training on the Monopoly Regulation and Fair Trade Act, Subcontracting Fairness Act, and Improper Solicitation and Graft Act for all employees, and from time to time conducts introductory compliance training for newly-hired employees in July 2016.

Job-specific compliance training The company conducted training on business confidentiality for researchers (May/Jun), on the Improper Solicitation and Graft Act for relevant employees (Nov), and on the Agency Transaction Fairness Act for sales department personnel (Dec).

CEO's compliance message

LFC and its employees shall respect the rule of fair market competition, and fair competition will make us stronger. It is Lotte Group people's core code of conduct to comply with the law and the principles and to compete fairly.

First, all employees must be well aware of, and comply with, work-related laws.

Where an employee conducts his/her job based on conjectures without correct understanding of the law, there is a high chance of violating the law and it will ultimately result in damage to the company.

Second, as for any matter which legality is debatable or is not certain, all employees must check such matter.

All employees, when not certain, must inquire of the Compliance Management Team and support departments and thus prevent legal risks in advance.

Third, not only violating the law directly but also instructing, approving, assisting or tolerating the foregoing must not be allowed.

All employees violating the law or internal regulations shall be held strictly accountable.



Basic compliance training

100%

Percentage of employees having received anti-corruption training

0

No. of disciplinary actions or dismissals due to corruption

* As of 2016

Fair Trade

Intensive on-site inspection To remove the risk of breaking the law in its work sites, LFC performed inspection on subcontracting issues (Jan/May/Sep), on internal transaction issues (May), on equipment contract forms (Oct), on fair trade issues (Nov), and on the Agency Transaction Fairness Act issues (Dec). In the following period, the company will make the training more effective by testing the sales department’s legal compliance.

Strengthening Compliance Management

For high CP risk departments such as sales department and contract related departments, compliance inspections are conducted twice a year and the results are reported to the management to raise the relevant personnel’s awareness and make timely corrections. Also, after each inspection, the company thoroughly checks whether improvement actions are implemented. Meanwhile, after joining LOTTE Group in 2016, it has been operating various activities such as management of the internal transaction disclosure and inspection of the disclosure system, to meet the group’s guidelines for fair trade.

Online Whistleblowing System

In order to identify any issues related to unfair business practices and unethical behaviors on the part of its employees or business partners, the company operates an online whistleblowing system called ‘Online Sinmungo’ on its official website. Through the system, LFC gathers reports regarding the employees’ embezzlement, bribery, unfair business practices, demand or provision of money and valuables or treats, unfair equity participation in unlisted business partners, double employment, and other violations of the code of ethics. Also, the company operates various communication channels including e-mail, telephone, and fax to listen to opinions of stakeholders other than employees.

In order to solidify a transparent corporate culture, the company selects individuals in charge of compliance by department, with Legal Compliance Team playing the central role. The Legal Compliance Team is the supervising department in all matters related to fair trade. The process here is operated in such a way that all fair trade matters shall undergo confirmation by Legal Compliance Team. In terms of purchase requests and general transaction contracts, only the forms, both Korean and English versions, examined and confirmed in advance by Legal Compliance Team may be used. In addition, all contracts are subjected to a final examination and confirmation by Legal Compliance Team before signing.

Compliance Program for Fair Trade

The company introduced its fair trade compliance program (CP) in 2006 and has been working to prevent unfair trade practices. As a part of its efforts, it has prepared and distributed the CP handbook as the work manual and conducts regular training for work site personnel regarding amendments in the relevant laws. LFC has appointed a Chief Compliance Officer (CCO) to supervise monitoring of fair trade law compliance and reports the result of annual operation thereof to the BOD. Also, LFC emphasizes importance of fair trade to all stakeholders within its sphere of influence such as expanding CP activities to its subsidiaries. As a result of these efforts, in the past three years including 2016, LFC has not had a case of fair trade law violations nor has been fined.

Strengthening the Capability to Conduct Fair Trade

To strengthen the capability to conduct fair trade, the company is carrying out executive CP compliance training for the executives, contract education for contract managers, and business confidentiality training for researchers. Also, it carries out manager training for high-risk departments including sales sector, purchasing team, material team and personal information handlers as well as special training for its overseas and domestic subsidiaries. To reinforce their competence, compliance managers completed training at the Korea Fair Competition Federation and acquired the compliance expert qualification in November of 2016.

Sustainability Management System

In order to become the leading sustainable company, LFC pursues balanced growth in the economy, environment, and society. Thus, it has set goals to become a sustainability management leader by actively communicating with its stakeholders, and is strengthening its capabilities throughout the company.

Core Areas of Sustainability Management

To implement sustainability management, LFC has set seven core areas which cover the economy, society and environment. To habituate and enhance its employees' awareness for sustainability management, the company conducts a variety of training including compliance management training, information security training, safety training, and the 'Fine Company' training. LFC is going to manage and improve the performance in the seven core areas of sustainability management.



Corporate Governance
Risk Management
Compliance Management
Sustainability Management System
Materiality Assessment
Social Contributions

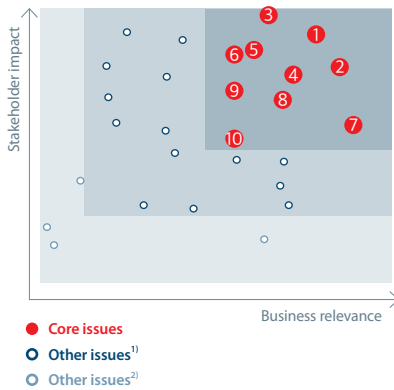
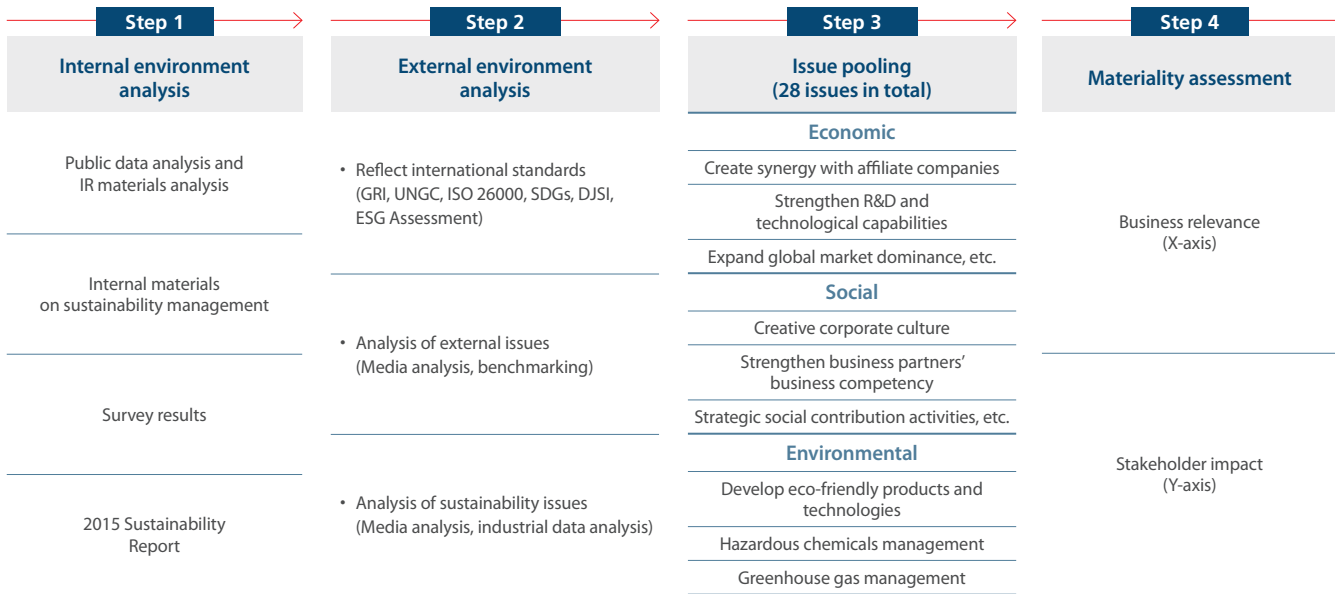
Stakeholder Engagement

LFC has defined its stakeholder groups, with which it has a relationship of direct or indirect mutual influence through business activities, as shareholders and investors, local community, business partners, employees, customers, and government and public institutions. The company is operating various communication channels to collect opinions and expectations of the stakeholders and actively reflects them in its sustainability management activities. By doing that, it aims to build a consensus and long-term collaborative relationship with its stakeholders.

Stakeholders	Communication channels	Expectations
Shareholders and investors	Public disclosures	Improving profitability Continuous growth Management transparency Stable governance
	Annual general meeting	
	IR activities (meetings and conferences, etc.)	
	Website (investment information, business status)	
	Sustainability management survey	
Local community	Social contribution campaign	Expanding social contributions Minimizing environmental impacts Continuous communication Investment and job creations
	Support for sisterhood villages	
	Environmental clean-up activities	
	Social group-specific contributions	
	Sustainability management survey	
Business partners	Weekly safety meeting	Fair trade compliance Technological support Financial support
	Safety Development Committee	
	Business partners discussion	
	Sustainability management survey	
Employees	Communication portal	Respecting human rights Competency building Fair evaluation and compensation Healthy corporate culture
	Labor-Management Committee	
	Regular conferences	
	Employee satisfaction survey	
	Sustainability management survey	
Customers	Visits and communication (on demand)	High quality products and services Stable supply capability Prompt response to VOC Customer information protection
	VOC response process	
	Customer satisfaction survey	
	Company website	
Government and public institutions	Inspection by related institutions (safety and environment, etc.)	Legal compliance Tax payment Cooperation with government policy Opinions for establishing policy
	Public hearing	
	Committee	
	Sustainability management survey	

Materiality Assessment

The company conducted materiality assessment by considering ‘stakeholder inclusiveness’, ‘sustainability context’, ‘materiality’, and ‘completeness’, which are the reporting principles of the GRI (Global Reporting Initiative) Guidelines. The materiality assessment was carried by evaluation of ‘stakeholder impact’ and ‘business relevance’ on the 28 issues derived from the nature of chemical industry and the current status of LFC. As a result of the materiality assessment, 10 core issues were selected.



Link between core issues and reported contents

Rank	Core issues	Report Contents	Details
1	Reinforcing occupational safety and health activities	Environment & safety	Reducing greenhouse gases and energy consumption Strengthening chemicals management Habituating safety & health
5	Greenhouse gas management		
6	Hazardous chemicals management		
9	Identifying and managing company-wide environmental risks	Customer value	R&D system and performance Expanding quality management and customer communication
2	Strengthening R&D and technological capabilities		
4	Increasing customer satisfaction through high-quality products	Human resources	Corporate culture of communication Developing employees' competency
3	Reinforcing labor-management communication		
7	Expanding programs for employee competency building	Business partners	Purchase strategy Business partners' safety management
8	Strengthening mutual growth with business partners		
10	Creating synergy with affiliated companies	Creating integrated synergy	Synergy effect with the Group

¹¹ Other issues: Expanding global market dominance, performing strategic social contribution activities, expanding employment and attracting talents, enhancing corporate value through management innovation, increasing internal efficiency and productivity, building a global-level eco-friendly system, energy management, transparent disclosure of business activities and status, building a creative corporate culture, upgrading ethics management, establishing mid- to long-term strategy, complying with and establishing fair trade order, developing eco-friendly materials and products, financial risk management, compliance with and response to environmental laws and regulations

²¹ Other issues: Enhancing soundness of BOD's operation, strengthening BOD's management of sustainability issues, pollutant discharge management (e.g., water quality)

Social Contributions

Social Contribution System

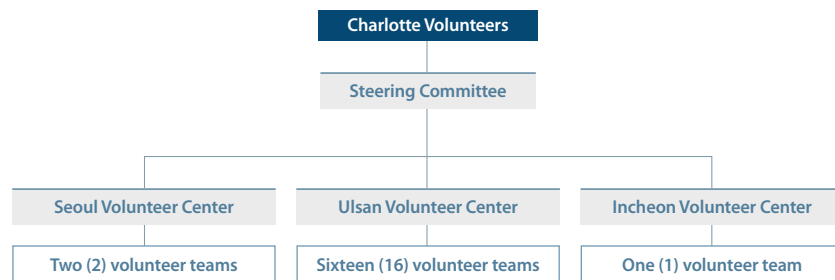
Strategy

To create the value of shared growth between the company and the local community, LFC is implementing 'shared-growth management'. LFC re-established its CSR Identity and, in link with the top three strategies of 'environment, children-& women, and local community', continued various activities of sharing with the local community, including Urban Box Farming Campaign, Taehwa River Eco Park Cultivation, and Support for Multicultural Families.

The company is strengthening its flagship social contribution program's relationship with LOTTE Group, and execute new social contribution programs specific to its business. LFC will supplement its weaknesses based on analysis of its social contribution performance, and contribute to the local community with great effectiveness and efficiency.

Social Contribution Organization

The company is strengthening and implementation of its social contribution activities, the company is operating a separate social volunteer group. Focused around the social volunteer group, LFC has a volunteer center in each business site, and volunteer teams in each business site carry out social contribution activities. Volunteer teams in the business sites engage in activities of protecting the environment, helping the local community, and helping children and women.



Social Contribution Fund

LFC's social contribution fund is divided into the fund raised by employees and the matching grant made by the company.

Fund raised by employees	Matching grant made by the company
Fund deducted from employees' wages, and additional donation from employees	Matching grant that LFC supports 1:1 for fund raised by employees

Major Social Contribution Activities

Environment

Urban Box Farming Campaign This is a practical-activity program wherein city dwelling families have a chance to grow and harvest farm products themselves with the goal of turning the city into a sustainable eco-friendly space. It met its seventh year of implementation in 2016 as it began in 2010. Boxed vegetable gardens and blueberry seedlings were given to 3,200 Ulsan citizens, LFC employees, and their families who participated in the campaign of making boxed vegetable gardens. Also holding various events hand in hand with the citizens, including a hands-on family booth experience and urban farming education, the company received great support from the participants. LFC plans to continue this campaign and share the value of nature with the citizens.

Bamboo Shoots Protection Campaign in Taehwa River Grand Park's Bamboo Forest Since 2005, the company has been running environmental and cultural campaigns in the Taehwa River Eco Park. In June of 2016, it conducted the Bamboo Shoots Protection Campaign in the Taehwa River Bamboo Forest for 10 days and actively promoted the importance of bamboo shoots protection to the citizens.



Multicultural little baseball league club



Urban Box Farming Campaign



Love Kimchi-Sharing activities



Supported fall outdoor picnic for stay-home senior citizens

Children & Women

Sharing with Multicultural Families This area is a children & women-specific area which is one of the major three areas in the social contribution strategy. The company has been conducting activities for multicultural families since 2009 and are currently expanding its support program by diversifying activities. So that children from multicultural families can improve their self-esteem through baseball, a cultural and sports activity, the company supported the launch of 'Ulsan Swings', a little baseball league club. Also, LFC sponsors the children's education and training expenses, hosts friendly baseball games twice a year, invites club members to baseball games, etc. In July of 2016, LFC invited a sportscaster and former famous player, Ma Hae-young and held a summer camp of basic baseball training and tee ball mini games. In addition, it has been sponsoring 'Ulsan Little Rainbow Orchestra', a cultural performance group consisting of multicultural children.

Volunteer Camp for Employees' Children Since 2009, the company has conducted volunteer training for employees' children during the summer vacation. In the volunteer camp, participants learn the true meaning of sharing with the local community through introductory and specialized volunteer training, volunteering experiences, and other hands-on activities. In July of 2016, 19 middle and high school students, participated in the program and learned the meaning and methods of volunteering and applied them in the local community.

Chemistry Scholarships The company actively sponsors training of future talents who will be leaders of chemical industry development in Korea. LFC intends to contribute to healthy growth of future generations through educational support, including scholarships to high school and university students majoring in chemistry.

Donating Books to Schools in Ulsan For healthy growth of local children and youth and training of future talents by promoting reading education, the company plans to donate a certain number of cultural, learning, and science books to selected elementary, middle, and high schools every year, by cooperation with the Ulsan Metropolitan City Office of Education.

Local Community

Year-End Good Neighbor Campaign The company has been conducting year-end love-sharing activities for disadvantaged groups in the local community since 1996. On Christmas of 2016, LFC presented to low-income family children and disabled persons cookies which its employees made themselves and the funds which they raised, and donated winter items for senior citizens and disabled children in the local welfare facilities.

Love Kimchi-Sharing Activity Every year, in order to help neighbors in need in the local community survive the winter, LFC has been raising kimchi-sharing funds and thereby made winter kimchi for such neighbors. In 2016, LFC donated to 130 households such winter items as electric heating mats and underwear as well as 500 heads of kimchi carefully prepared by its employees and their families.

Employee Health & Sharing Campaign By linking between its employees' health and sharing activity, LFC used the funds saved out of the employees' bicycle commuting in order to help senior citizens having difficulty in movement. For senior citizens' convenience of movement, the company conducted the sponsoring program of providing 'love silver cars'.

Social contribution awards in 2016

Individuals	Company	Volunteer groups
Ulsan Metropolitan City Volunteer Festival Awarded by the mayor of Ulsan Metropolitan City	Support for multicultural little baseball league club Awarded by the head of Ulsan Nam-gu Welfare Center	Support for disadvantaged groups by LFC's Christian employee volunteer team Awarded by the head of the welfare corporation MICOS
	Ulsan Little Rainbow Orchestra Awarded by the head of Ulsan Nam-gu Multicultural Family Support Center	

89.5%
Social contribution participation rate

3.5 hours
Social contribution hours per employee

Facts & Figures

Economic Performance

(As of the end of December 2016)

Classification	Unit	2014	2015	2016
Summary of Consolidated Financial Statements				
Current assets	KRW million	471,922	583,397	569,184
Cash and cash equivalents	KRW million	97,141	219,295	210,111
Short-term financial instruments	KRW million	-	1,000	30,000
Held-to-maturity financial assets	KRW million	28	31	109,435
Derivatives and financial assets	KRW million	10	12	0
Accounts receivable	KRW million	181,834	171,238	162,887
Other current financial assets	KRW million	14,599	24,626	20,696
Other current assets	KRW million	19,131	15,197	8,570
Inventories	KRW million	159,179	151,998	136,811
Non-current assets held for sale	KRW million	125,018	-	-
Non-current assets	KRW million	1,249,020	1,100,828	961,754
Long-term financial instruments	KRW million	34	32	31,608,168
Held-to-maturity financial assets	KRW million	227	213	112,015
Other non-current financial assets	KRW million	4,346	20,215	3,189
Available-for-sale financial assets	KRW million	244,478	108,107	26,180
Investment in subsidiaries and joint ventures	KRW million	32,733	173,816	168,660
Property, plant, and equipment	KRW million	927,366	760,862	717,133
Intangible assets	KRW million	37,721	33,600	24,130
Other non-current assets	KRW million	95	1,367	897
Deferred income tax assets	KRW million	2,020	2,617	21,422
Total assets	KRW million	1,845,960	1,684,225	1,530,938
Current liabilities	KRW million	184,346	185,332	202,786
Non-current liabilities	KRW million	465,814	335,313	216,488
Total liabilities	KRW million	650,160	520,645	419,274
Equity attributable to owners of the parent	KRW million	1,186,678	1,163,580	1,111,664
Capital stock	KRW million	129,000	129,000	129,000
Capital surplus	KRW million	302,905	302,905	302,905
Other components of equity	KRW million	18,802	18,802	18,802
Accumulated other comprehensive income	KRW million	113,886	(159)	(134)
Retained earnings	KRW million	622,085	713,032	661,091
Non-controlling interest	KRW million	9,122	-	-
Total equity	KRW million	1,195,800	1,163,580	1,111,664
Sales	KRW million	1,210,498	1,161,863	1,110,704
Operating income (loss)	KRW million	(24,355)	2,554	29,750
Net profits	KRW million	58,683	89,979	(43,547)
Profit attributable to:				
Owners of the parent	KRW million	61,175	93,865	(43,547)
Non-controlling interests	KRW million	(2,492)	(3,886)	-
Earnings per share	KRW/Share	2,402	3,685	(1,710)
Number of companies subject to consolidation	Compnay	5	4	3

Classification		Unit	2014	2015	2016
Distribution of economic value					
EC1, EC9	Shareholders	KRW million	7,641	12,735	7,641
	Employees	KRW million	133,937	126,274	96,775
	Government / Public institutions	KRW million	22,139	26,210	20,307
	Local community	KRW million	466	485	388
	Business partners	KRW million	405,674	373,676	315,122

Environmental Performance

GRI Index	Classification		Unit	2014	2015	2016
G4-9	Product	Production volume ¹⁾	Ton	1,989,327	2,137,232	2,221,727
EN3, EN5	Energy	Energy consumption	TJ	13,526	14,149	13,158
		Energy consumed per unit production	TJ/Product-Ton	0.007	0.007	0.006
EN6		Decrease in energy consumption	TJ	84	117	401
EN8	Water	Water consumption	Ton	11,282,880	11,080,670	11,163,890
		Water consumed per unit production	Ton/Product-Ton	0.016	0.014	0.014
	Water withdrawal by source	Streams	Ton	11,313,792	11,080,670	11,163,890
EN15~19	Greenhouse gas (GHG)	Total emissions ²⁾	tCO ₂ eq	645,801	694,955	652,170
		GHG emissions per unit production	tCO ₂ eq/Product-Ton	0.325	0.344	0.220
		Direct emissions (Scope 1)	tCO ₂ eq	93,837	114,702	71,508
		Indirect emissions (Scope 2)	tCO ₂ eq	551,964	580,253	580,662
		Decrease in GHG emissions	tCO ₂ eq	4,754	7,297	34,944
EN21	Other air pollutants ³⁾	NOx emissions	Kg	18,773	65,621	41,458
		SOx emissions	Kg	10,014	15,298	19,206
EN22	Wastewater	Total weight of wastewater	Ton	7,623,230	8,386,890	8,200,790
		Wastewater discharge per unit production	Ton/Product-Ton	4.149	4.149	2.777
	Water pollutants	Total weight of COD	Kg	213,761	213,396	235,714
COD discharge per unit production		Kg/Product-Ton	0.100	0.106	0.080	
EN23	Waste materials	Total weight of waste	Ton	51,490	70,135	61,749
		Waste discharge per unit production	Ton/Product-Ton	0.026	0.035	0.021
		Specified waste	Ton	769	1,009	891
		Regular waste	Ton	50,721	69,126	60,858
		Incineration	Ton	1,660	1,457	298
		Landfill	Ton	38,837	44,189	42,860
		Others	Ton	2	15	724
		Recycling	Ton	10,990	24,474	17,868
		Recycling rate	%	21.3	34.9	28.9
EN31	Investment and procurement	Total environmental protection expenditures and investments	KRW million	8,328	13,905	6,176
		Green procurement	KRW million	7,494	2,626	2,926

¹⁾ From the 2016 report, the total number of products was set to 30.

²⁾ Data based on the verified 2016 greenhouse gas statement

³⁾ 2014 & 2015 data revised due to change in emissions calculation method (Currently linked with data from the Ministry of Environment's air emission sources management system)

Social Performance

GRI Index	Item	Classification	Description	Unit	2014	2015	2016
G4-9	Employees	Employees	Total No. of employees	Person	899	823	822
			Male	Person	804	742	739
			Female	Person	95	81	83
G4-10	Employees	By type	Permanent	Person	873	804	804
			Temporary	Person	26	19	18
		By age	Under 30	Person	201	133	94
			30-50	Person	639	627	651
			Over 50	Person	59	63	77
G4-11	Collective bargaining	Coverage	Percentage of employees covered by collective bargaining agreements	%	48.5	49.7	51.2
LA1	Employment	Newly hired employee	Total No. of newly hired employees	Person	26	25	20
		Employee turnover	Employee turnover rate	%	2.2	0.9	1.7
LA3	Employment	Parental leave	No. of employees covered by parental leave	Person	19	20	16
			No. of employees on parental leave	Person	7	8	9
			Parental leave rate	%	36.8	40.0	56.3
LA6	Employment	Industrial accident	No. of Industrial accidents	Case	0	1	0
			Industrial accident rate	%	0	0.15	0
			Hours of work lost	Hour	0	648	0
LA8	Education and training	Employee education and training	Total Hours of employee training	Hour	31,880	59,184	36,911
			Training hour per person	Hour	35.46	71.91	44.90
LA12	Diversity	Neglected groups	Persons with disabilities	Person	23	22	22
			Recipients of patriots & veterans benefits	Person	44	42	43
			Foreigners	Person	1	1	1
HR2	Investment	Human rights training	Hours of human rights training	Hour	2.5	1.0	1.0
			Percentage of employees having received human rights training	%	100.0	100.0	100.0
SO4	Anti-corruption	Anti-corruption training	Percentage of executives having received anti-corruption training	%	100.0	100.0	100.0
SO5		Incidents of corruption and actions taken	Percentage of employees having received anti-corruption training	%	100.0	100.0	100.0
			No. of Incidents of corruption	Case	0	0	0
			No. of disciplinary actions or dismissals due to corruption	Case	0	0	0
			No. of contracts terminated, or not renewed, due to corruption	Case	0	0	0
PR1	Customers' safety & health	Safety & health assessment	Percentage of product/service categories having received industrial safety assessment ⁴⁾	%	100.0	100.0	100.0
		Regulatory compliance	Violation of industrial safety regulation	KRW million	8	8	0
PR6	Marketing Communicatoins	Regulatory compliance	Fines for non-compliance with regulations concerning marketing communications, including advertising and promotion	KRW million	0	0	0
			Incidents of non-compliance with regulations concerning marketing communications, including advertising and promotion	Case	0	0	0
PR8	Customer privacy	Complaints	Complaints received concerning breaches of customer privacy	Case	0	0	0
			Number of identified leaks, thefts, or losses of customer data	Case	0	0	0

⁴⁾ All products produced by LFC are being managed by its own industrial safety assessment process.

Appendix

- 62 GRI Index
- 65 Independent Assurance Statement
- 66 Product List
- 68 Membership

GRI Index

General Standard Disclosures						
Aspect	Core	Index	Description	Page	Assurance	
Strategy and analysis	●	G4-1	Statement from the most senior decisionmaker of the organization	4-5	●	
	●	G4-2	Description of key impacts, risks, and opportunities	4-5, 20-21	●	
Organizational profile	●	G4-3	Name of the organization	16	●	
	●	G4-4	Primary brands, products, and/or services	12-15	●	
	●	G4-5	Location of organization's headquarters	16	●	
	●	G4-6	Countries with significant operations	16	●	
	●	G4-7	Nature of ownership and legal form	16	●	
	●	G4-8	Markets served	16-17	●	
	●	G4-9	Scale of the reporting organization	18-19	●	
	●	G4-10	The total workforce by employment type, gender, employment contract and region	16	●	
	●	G4-11	The percentage of total employees covered by collective bargaining agreements	60	●	
	●	G4-12	Description of the organization's supply chain	20-21, 40-43	●	
	●	G4-13	Significant changes during the reporting period relating to size, structure, or ownership or its supply chain	2	●	
	●	G4-14	Implementation of the precautionary approach or principle	49-50	●	
	●	G4-15	External initiatives that the organization endorses	20-21	●	
	●	G4-16	Memberships of associations such as industry associations	72	●	
	Identified material aspects and boundaries	●	G4-17	Entities included in the organization's consolidated financial statements or equivalent documents	2	●
		●	G4-18	Process for defining report content	55	●
●		G4-19	Material Aspects identified in the process for defining report content	55	●	
●		G4-20	Aspect Boundary within the organization	55	●	
●		G4-21	Aspect Boundary outside the organization	55	●	
●		G4-22	Effect of any restatements of information provided in previous reports, and the reasons for such restatements	2	●	
●		G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries	2	●	
Stakeholder engagement	●	G4-24	Stakeholder groups engaged by the organization	54	●	
	●	G4-25	Basis for identification and selection of stakeholders with whom to engage	54	●	
	●	G4-26	Approaches to stakeholder engagement by type and by stakeholder group	54	●	
	●	G4-27	Key topics and concerns raised through stakeholder engagement, and how the organization has responded to them	54	●	
Report profile	●	G4-28	Reporting period	2	●	
	●	G4-29	Date of most recent previous report	2	●	
	●	G4-30	Reporting cycle	2	●	
	●	G4-31	Contact point for questions regarding the report or its contents	2	●	
	●	G4-32	Table identifying the location of the Standard Disclosures in the report	62-64	●	
	●	G4-33	Policy and current practice with regard to seeking external assurance for the report	65	●	
Governance	●	G4-34	Governance structure of the organization, including committees of the highest governance body	46-47	●	
Ethics and integrity	●	G4-56	Organization's values, principles, standards and norms of behavior	51-52	●	

Specific Standard Disclosure					
Aspect	Materiality	Index	Description	Page	Assurance
Economic					
Economic performance		G4-DMA	Disclosure on management approach		●
		G4-EC1	Direct economic value generated and distributed	59	●
		G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	25	●
		G4-EC3	Coverage of the organization's defined benefit plan obligations	2016 Business Annual Report 54-55, 74-76, 140-142	●
Procurement practices	●	DMA		40	●
	●	G4-EC9	Percentage of the procurement budget used for significant locations of operation spent on local suppliers	41, 59	●
Environmental					
Energy	●	G4-DMA	Disclosure on management approach	24-25	
	●	G4-EN3	Energy consumption within the organization	25, 59	●
	●	G4-EN5	Energy intensity	59	●
	●	G4-EN6	Reduction of energy consumption	59	●
Water		G4-EN8	Total water withdrawal by source	59	●
Emissions	●	G4-DMA	Disclosure on management approach	24-25	●
	●	G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1)	59	●
	●	G4-EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2)	59	●
	●	G4-EN18	Greenhouse gas (GHG) emissions intensity	59	●
	●	G4-EN19	Reduction of greenhouse gas (GHG) emissions	59	●
	●	G4-EN21	NOx, SOx, and other significant air emissions	59	●
Effluents and waste	●	G4-DMA	Disclosure on management approach	24-27	
	●	G4-EN22	Total water discharge by quality and destination	59	●
	●	G4-EN23	Total water discharge by quality and destination	59	●
	●	G4-EN24	Total number and volume of significant spills	26	●
Overall		G4-EN31	Total environmental protection expenditures and investments by type	27, 28	●
Labor Practices and Decent Work					
Employment		G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender, and region	60	●
		G4-LA3	Return to work and retention rates after parental leave, by gender	60	●
Labor-management relations	●	G4-DMA	Disclosure on management approach	36	●
	●	G4-LA4	Minimum notice periods regarding operational changes	Immediate notice if needed	●
Occupational health and safety	●	G4-DMA	Disclosure on management approach	24	●
	●	G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	60	●
Training and education	●	G4-DMA	Disclosure on management approach	36	●
	●	G4-LA9	Average hours of training per year per employee by gender, and by employee category	60	●
	●	G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	37	●
	●	G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	100% (In case of full-time employees)	●

Specific Standard Disclosure					
Aspect	Materiality	Index	Description	Page	Assurance
Human Rights					
Supplier human rights assessment	●	G4-DMA	Disclosure on management approach	40	●
	●	G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken	42-43	●
Society					
Local communities		G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	56, 100%	●
Anti-corruption		G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	52	●
		G4-SO4	Communication and training on anti-corruption policies and procedures	51-52	●
		G4-SO5	Confirmed incidents of corruption and actions taken	60	●
Compliance		G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	60	●
Product Responsibility					
Customer health and safety	●	G4-DMA	Disclosure on management approach	30	●
	●	G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	32	●
	●	G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	60	●
Product and service labeling	●	G4-DMA	Disclosure on management approach	30	●
	●	G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	33-34	●
	●	G4-PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	60	●
Compliance		G4-PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	60	●

Independent Assurance Statement

To: The Stakeholders of LOTTE Fine Chemical

Introduction and objective of work

IMCSR (the 'assurance provider' hereafter) has been engaged by LOTTE Fine Chemical to conduct an independent assurance of its 2016 Sustainability Report (the 'Report' hereafter). This assurance statement applies to the related information included within the scope of work described below. The information and its presentation in the Report are the sole responsibility of the management of LOTTE Fine Chemical. The assurance provider was not involved in the drafting of the Report. Our sole responsibility was to provide independent assurance on its content.

Assurance standard and scope of work

The assurance process was conducted in line with the requirements of the Assurance Standard AA1000AS(2008) Type1 assurance. The moderate level of assurance has been applied. GRI G4 guidelines and ISO 26000 were also used. The scope of work included:

- Data and information included in the Report;
- Reporting systems and processes, used to collect, analyze and review the information reported;
- Evaluation of the Report against the GRI G4 'In Accordance' Criteria;
- Evaluation of the Report against the main principles of the AA1000 Assurance Standard;

Methodology

Our work was conducted against standard procedures and guidelines for external assurance of sustainability reports. As part of its independent assurance, the assurance provider undertook the following activities:

- Review of documentary evidence;
- Review of data and information systems for collection, aggregation, analysis and review;
- Site audit and interviews with relevant personnel

Our findings

On the basis of our methodology and the activities described above, it is our opinion that:

- ① LOTTE Fine Chemical has established appropriate systems for the collection, aggregation and analysis of relevant information. The information and data included in the Report are accurate, reliable and free from material mistake or misstatement;
- ② The Report has been prepared in accordance with the 'Core Option' of GRI G4. Further detail is provided below;

General Standard Disclosures The assurance provider reviewed General Standard Disclosures, and believes that the Report meets the Core Option requirements of General Standard Disclosures. G4-1~34, G4-56

Specific Standard Disclosures The assurance provider reviewed Material Aspects, DMAs and Indicators, and believes that the Report meets the Core Option requirements of Specific Standard Disclosures. DMA, G4-EC1~3, G4-EC9, G4-EN3, G4-EN5~6, G4-EN8, G4-EN15~16, G4-EN18~19, G4-EN21~24, G4-EN31, G4-LA1, G4-LA3, 4, 6, G4-LA9~11, G4-HR11, G4-SO1, G4-SO3~5, G4-SO8, G4-PR1~4, G4-PR9

- ③ The Report properly reflects the organization's alignment to and implementation of the AA1000 Assurance Standard(2008) principles of Inclusivity, Materiality and Responsiveness in its operations. Further detail is provided below;

Inclusivity LOTTE Fine Chemical retains the process in identification and engagement for stakeholder engagement. LOTTE Fine Chemical has implemented the various programs for stakeholder engagement. The result of stakeholder engagement has been reflected to the Report appropriately.

Materiality Materiality assessment in terms of impact on business and concern of stakeholder led to material issues. The Report addresses the material issues that LOTTE Fine Chemical has identified as being of highest material importance.

Responsiveness LOTTE Fine Chemical has integrated material issues into organization's strategy and operation. The Report properly reflects the organization's response to the material issues which are defined through process for identifying material issues.

Key areas for ongoing development

The following is a recommendation which does not affect our conclusions on the assurance statement. Based on the work conducted, we recommend LOTTE Fine Chemical to consider the following:

- ① LOTTE Fine Chemical is advised to consider development of Key Performance Indicators against areas and issues of concern where they do not already exist and incorporating or refining existing performance measures through the use of reporting guidelines such as the GRI G4;
- ② In order to integrate the material issues recognized from the stakeholders engagement into the corporate sustainability strategy, it is recommended to organize and operate a highest organization system such as a sustainability committee;

Statement of independence, impartiality and competence

No member of the assurance team has a business relationship with LOTTE Fine Chemical. We have conducted this assurance independently, and there has been no conflict of interest. The assurance team consists of the best experts equipped with sufficient knowledge and expertise in the relevant areas.

May, 2017

Hyun Lee, CEO, IMCSR Co., Ltd.




AA1000
Licensed Assurance Provider
000-171

Product List

Category	Product Name	Abbreviation	Chemical Formula	CAS No.	Characteristic / Purity	Packing
Chlor-Alkali Derivatives	Sodium Hydroxide (Caustic Soda Solution)		NaOH	1310-73-2	Liquid, 25%, 50% ap. Solution	Tank lorry, Bulk vessel, Pipe
	Sodium Hypochlorite	HYP0	NaOCl	7681-52-9	Colorless or slightly yellow liquid, 12% Solution	Tank lorry
	Hydrogen		H ₂	1333-74-0	Gas, 99.99%	Pipe
	Hydrochloric acid		HCl	7467-01-0	Liquid, 35% aq. Solution	Cylinder, Tank lorry
	Methyl Chloride	MC	CH ₃ Cl	74-87-3	Colorless, Liquefied gas, 99.9% min.	940Kgs Cylinder
	Methylene Chloride	MCL	CH ₂ Cl ₂	75-09-2	Colorless, clear, volatile liquid, 99.9% min.	250Kgs Steel drum, 20MT ISO-Tank, Tank lorry
	Chloroform	CFM	CHCl ₃	67-66-3	Colorless, clear, volatile liquid, 99.9% min.	250Kgs Steel drum, 20MT ISO-Tank, Tank lorry
	Epichlorohydrin	ECH	C ₃ H ₅ OCl	106-89-8	Colorless liquid, 99.9% min.	240Kgs Steel drum, 19MT ISO-Tank, Tank lorry, Bulk vessel
Cellulose Ethers	S-Quata® (3-chloro-2-hydroxy PropylTrimethyl Ammonium Chloride)	PTAC	C ₆ H ₁₅ Cl ₂ NO	3327-22-8	Colorless liquid, 65% min. (S-Quata 885), 69% min. (S-Quata 889)	230Kgs PE Drum, 1.1MT IBC, Flexibag, Tank lorry
	MECELLOSE®	MC		9004-67-5	White or yellowish powder	20kg: Paper bag with PE inner liner 350kg: PP Jumbo bag with PE inner liner
		HPMC		9004-65-3		
		HEMC		9032-42-4		
	HECELLOSE™	HEC		9004-62-0	White or yellowish powder	25kg: Paper bag with PE inner liner 450kg: PP Jumbo bag with PE inner liner
		HPMC		9004-65-3		
		AnyCoat®	HPMC-P	9050-31-1		
	AnyAddy®	HPMC-AS		71138-97-1	White or yellowish powder	20kg, 25kg: Fiber drum with PE double inner bag
		MC		9004-67-5		
		HPMC		9004-65-3		
Ammonia Derivatives	Monomethylamine	MMA	CH ₃ NH ₂	74-89-5	Colorless liquid, 40% min. (aq. Solution)	170Kgs Steel drum, 20MT ISO-Tank (aq. Solution)
		DMA	(CH ₃) ₂ NH	124-40-3	Colorless liquid, 50%, 60% min. (aq. Solution), Gas, 99.8%	160Kgs Steel drum, 19MT ISO-Tank (aq. Solution), High-pressure ISO-Tank
	Eurox® (Aq. Urea solution)		(NH ₂) ₂ CO	57-13-6	Colorless urea solution, 32.5% and 40%	10L PET, 200L Drum, 1000L IBC, Bulk vessel
	Ammonia (Anhydrous ammonia)		NH ₃	67-56-1	Colorless liquid, 99.5% min.	Tank lorry, Pipe
	Tetramethyl Ammonium Chloride	TMAC	(CH ₃) ₄ NCl	75-57-0	Colorless solution, 58% min.	20MT ISO-Tank
Bio-degradable Plastics	EnPol	PBAT		55231-08-8	White pellet	25Kgs paper bag with PE & aluminum inner liner 1MT bulky bag with PP & aluminum inner liner
		PBS		67423-06-7		

Application	Note
Chemical agent, Pulp & Paper processing	
Bleaching agent, Disinfectant	Domestic Only
Hydrogen peroxide raw material, Hydrodesulfurization	Domestic Only
Agrochemicals, Pharmaceuticals	Domestic Only
Agrochemicals, Organic synthesis, Quaternary ammonium salt	
Electronic material processing, Pharmaceuticals, Metal cleanser, Urethane foaming	
Pharmaceuticals, Solvents, Fluorocarbon refrigerants (R-22)	
Epoxy resin, Synthetic glycerin, Water treatment chemicals	EU REACH Registered
Additives for starch, High-quality pulp, Personal care product, Textile, Raw materials for surface active agent	EU REACH Registered
Tile adhesives, EIFS/ETICS, Plasters & Renders, Ceramic & Cement extrusion, Joint compounds, Paints & Coatings	
Paints & Coatings, Personal care, Joint compounds, Oil field, Emulsion polymerization, Detergents, Construction applications	
Film coating, Binder, Sustained release, Formulation, Capsule making	
Enteric coating, Solid dispersion	Certificate: Kosher, ISO9001, DMF
Foods, Dietary supplements	Certificate: FSSC22000 (GFSI)
Pharmaceuticals, Alkylalkanolamines (MDEA), Soil fumigant, Pesticide, Properllants	
Agrochemicals, Surface active agent, Water treatment, Rubber vulcanization accelerator	
Selective catalytic reduction (De-Nox) in diesel engine	
Urea, Caprolactam, Acrylonitrile, Hydrazine	
TMAH raw material, Oil & Gas industry	
Photoresist development, Anisotropic etchant	
Film & package, Coating, Medical supplies, Architecture & Civil engineering, Reforming, Fiber fishing net & tools, Injection molding	

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Korea Specialty Chemical Industry Association	Korea Customs Logistics Association	Ulsan Civil Defense Working Council
Korea Chemicals Management Association	Korea International Trade Association	Green Company Council
Korea Pharmaceutical Traders Association	Korea Management Association	Ulsan Yecheon Safety Association
Korea Industrial Technology Association	Korea Fire Safety Association	Ulsan Shipper Logistics Council
Korea Hydrogen Industry Association	National Emergency Plan Association	Ulsan Industrial Security Council
Korea Responsible Care Council	Southern Fire Safety Promotion Council	Ulsan Prosecutor's Office Environmental Protection Association
Korea Electric Engineers Association	Korea Association of Occupational Health Nurses	Ulsan Environmental Engineering Association
Korean Bioplastics Association	Korea Fair Competition Federation	Ulsan Safety Communication Committee
Korea Chlor Alkali Industry Association	Korea Fire Safety Association (Fire safety, Danger)	Incheon Environmental Volunteer Association
Korea Health Supplements Association	Korean Nurses Association	Incheon Environmental Engineering Association
Korea Gas Safety Corporation (Information member)	Ulsan Electric Association	

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