Ajinomoto Group Sustainability Report 2023
Appendix 1 : Environmental Data

Scope of the Environmental Data

The environmental data of this section covers Ajinomoto Co., Inc. and other Group companies subject to the Ajinomoto Group Environmental Management as defined in the company's Environmental Regulations as of March 31, 2023. Performance statistics are for the 141, which substantially represent the environmental performance of the entire Ajinomoto Group under the consolidated financial accounting system.

Reduction of greenhouse gas emissions

Greenhouse gas emissions calculated from IEA[1] CO_2 emissions factors

(t-CO_2e)

	FY2018	FY2019	FY2020	FY2021	FY2022
Scope 3 Category 1: Raw materials	8,115,946	7,784,783	7,614,734	6,960,412	6,610,392
Scope 1:	1,196,969	1,013,315	1,008,811	1,005,363	973,780
Scope 3 Category 3: Production	381,765	625,142	630,823	583,499	604,719
Scope 2:	Market-based method 1,015,723 Location-based method 1,026,764	Market-based method 960,375 Location-based method 978,066	Market-based method 901,789 Location-based method 910,791	Market-based method 606,594 Location-based method 622,059	Market-based method 611,712 Location-based method 620,751
Scope 3 Category 4: Transport	1,274,589	1,256,044	1,210,741	1,121,673	1,037,133
Scope 3 Category 11: Use	1,294,392	1,353,234	1,355,477	1,396,947	1,386,049
Scope 3 Category 12: Disposal	443,333	431,048	425,003	409,500	405,337
Scope 3 Category 2: Capital goods	249,944	255,910	262,711	232,674	219,172
Scope 3 Category 5: Waste generated in operations	140,678	85,666	85,714	92,884	97,854
Scope 3 Category 6: Business travel	4,479	4,486	4,226	4,350	4,446
Scope 3 Category 7: Employee commuting	16,206	16,231	15,292	15,740	16,087
Scope 3 Category 8: Upstream leased assets	Included in category 1	Included in category 1	Included in category 1	Included in category 1	Included in category 1
Scope 3 Category 9: Downstream transportation and distribution	3,780	3,503	3,183	3,448	2,535
Scope 3 Category 10: Processing of sold products	8,158[2]	5,517	179,801	126,716	108,585
Scope 3 Category 13: Downstream leased assets	0	0	0	0	0
Scope 3 Category 14: Franchises	0	0	0	0	0
Scope 3 Category 15: Investments	0	0	0	0	0
Scope 3 total	11,933,270[2]	11,821,564	11,787,705	10,947,844	10,492,309
Scope 1, 2 and 3 total	14,145,962[2]	13,795,254	13,698,305	12,599,801	12,077,801

(t-CO_2e)

By region	FY2018	FY2019	FY2020	FY2021	FY2022
Scope 1 emissions	1,196,969	1,013,315	1,008,811	1,005,363	973,780
Japan	327,345	302,700	293,358	288,531	279,268
Asia/Africa	526,405	376,020	389,741	412,339	394,705
Europe	39,021	41,463	37,902	18,721	15,824
North America	219,337	212,796	221,691	206,394	210,282
South America	67,231	65,408	53,877	67,975	63,998
China	17,629	14,926	12,242	11,402	9,704
Scope 2 emissions (market-based method)	1,015,723	960,375	901,789	606,594	611,712
Japan	141,952	118,337	120,119	101,645	92,886
Asia/Africa	427,389	414,365	380,604	276,867	308,580
Europe	184,253	171,196	158,749	20,451	19,161
North America	193,766	194,490	179,067	170,258	159,857
South America	40,308	38,306	32,692	6,753	2,646
China	28,056	23,681	30,558	30,620	28,582
Scope 1 and 2 total emissions	2,212,692	1,973,690	1,910,600	1,611,957	1,585,492
Japan	469,297	421,038	413,477	390,177	372,154
Asia/Africa	953,794	790,386	770,346	689,205	703,286
Europe	223,275	212,659	196,651	39,172	34,985
North America	413,103	407,286	400,758	376,652	370,139
South America	107,538	103,714	86,569	74,729	66,644
China	45,686	38,608	42,799	42,022	38,286

[1] International Energy Agency
[2] Because former data only in FY2018 was calculated by Location based method, it was unified to be Market based method data.

(t-CO_2e)

By business activity/division		FY2018	FY2019	FY2020	FY2021	FY2022
Scope 1 emissions		1,196,969	1,013,315	1,008,811	1,005,363	973,780
Business activities	Production	1,149,384	976,078	970,831	974,789	932,429
	Transportation	25,976	16,060	17,633	12,524	24,732
	Others (office, sales, R&D, etc.)	21,609	21,177	20,348	18,050	16,620
Business division	Food products	347,927	338,518	436,813	485,193	524,660
	AminoScience	849,041	674,797	571,998	520,170	449,121
Scope 2 emissions (market-based method)		1,015,723	960,375	901,789	606,594	611,712
Business activities	Production	1,010,908	955,202	897,639	604,268	609,377
	Transportation	9	2	2	3	5
	Others (office, sales, R&D, etc.)	4,806	5,172	4,148	2,323	2,330
Business division	Food products	379,571	356,388	384,066	311,163	299,081
	AminoScience	636,152	603,988	517,722	295,431	312,631

Greenhouse gas emissions per volume unit calculated from IEA[1] CO_2 emissions factors

	FY2018	FY2019	FY2020	FY2021	FY2022
Scope 1 and 2 emissions per volume unit (intensity per ton of product)	0.84	0.79	0.79	0.68	0.67
Scope 3 emissions (exclude category 11) per volume unit (intensity per ton of product)[2]	4.54	4.71	4.87	4.64	4.46
Reference value: Production volume (1,000 t)[3]	2,627	2,512	2,423	2,360	2,350
Scope 1 and 2 emissions per volume unit (intensity per million yen sales)	1.99	1.79	1.78	1.40	1.17
Scope 3 emissions per volume unit (intensity per million yen sales)	10.71	10.75	11.00	9.53	7.72
Consolidated sales (million yen)	1,114,308	1,100,039	1,071,453	1,149,370	1,359,115

[1] International Energy Agency
[2] The results scope 3 emissions per volume unit were revised because the coverage of organizations for calculation were different.
[3] We used data different from production volume set forth for the other environment data.

Ajinomoto Group products carbon footprint

Product	Production plant	CFP values[4] (per kg of product)	CFP values per serving[5]
(1) *HON-DASHI®*	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	14.08 kg-CO_2e	-
(2) *Ajinomoto KK Consommé* (Granules)	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	6.87 kg-CO_2e	-
(3) *Knorr® Cup Soup Tsubu Tappuri Corn Cream*	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	7.08 kg-CO_2e	-
(4) *Ajinomoto KK Shirogayu 250 g*	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	0.81 kg-CO_2e	-
(5) *Cook Do® Hoikoro*	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.95 kg-CO_2e	1.21 kg-CO_2e per serving (approx. 700 g)
(6) *Cook Do® Kyo-no Oozara Butabara Daikon*	Shizuoka Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.31 kg-CO_2e	2.90 kg-CO_2e per serving (approx. 1 kg)
(7) *Nabe Cube Toridashi Umashio*	Kunneppu Plant, Ajinomoto Food Manufacturing Hokkaido Co., Ltd.	8.54 kg-CO_2e	-
(8) *Blendy® Stick Café au Lait* (coffee mixes)	AGF Suzuka, Inc.	4.85 kg-CO_2e	-
(9) *Lemon and Basil Fried Chicken* (frozen foods)	Kyushu Plant, Ajinomoto Frozen Foods Co., Inc.	5.84 kg-CO_2e	-
(10) *Yamaki Mentsuyu* (400 ml and 500 ml)	Daini Plant and Minakami Plant, YAMAKI Co., Ltd.	2.02 kg-CO_2e	-
(11) *Masako® Ayam* (11 g)	Mojokerto Factory, PT AJINOMOTO INDONESIA	2.49 kg-CO_2e	-
(12) *Aji-ngon® Pork flavor seasoning* (400 g)	Long Thanh Factory, AJINOMOTO VIETNAM CO., LTD.	2.68 kg-CO_2e	-
(13) *Ros Dee® Pork* (75 g)	Nong Khae Factory, AJINOMOTO CO., (THAILAND) LTD.	3.15 kg-CO_2e	-

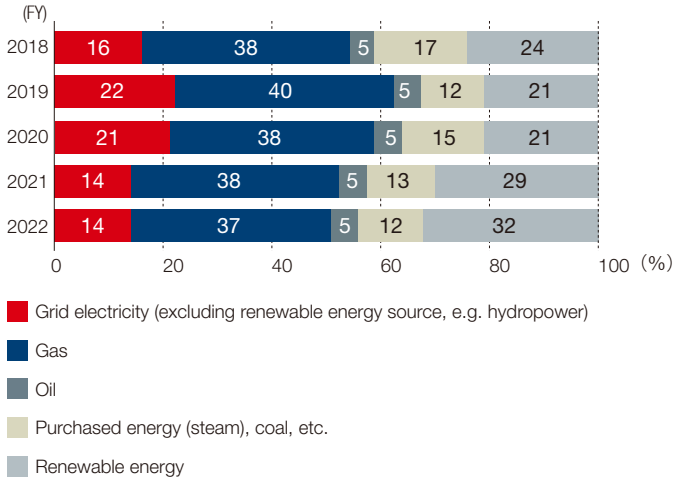
[4] Carbon footprint (CFP) values in the report are calculated in accordance with PCR No. PA-CG-02 from the Japan Environmental Management Association for Industry. The calculation system and the results are backed by a third-party assurance statement from Lloyd's Register Quality Assurance Limited, based on the ISO/TS 14067 standard.
[5] CFP values of ingredients including vegetables and meat are included.

Energy input

	FY2018	FY2019	FY2020	FY2021	FY2022
Energy input (TJ)[1]	38,468	34,619	33,494	31,733	32,125
Energy input intensity of production (per kilo tons of product)	14.6	13.8	13.8	13.4	13.7

[1] TJ: terajoule, T (tera) = 10^{12}. The joule conversion factors officially published in 2005 have been used.

Composition of consumed energy (thermal equivalent)



NOx and other atmospheric emissions

(tons)

	FY2018	FY2019	FY2020	FY2021	FY2022
Nitrogen oxide (NOx)	9,421	5,224	6,637	5,673	4,730
Sulfur oxide (SOx)	10,701	6,779	7,016	7,676	5,311
Particulates	1,827	884	1,310	871	3,492
CFCs[2]	11	9	7	5	4

[2] Figures for fiscal 2019 and beyond exclude natural refrigerants and other non-fluorocarbons due to the redefinition of CFCs, HCFCs, and HFCs.

Conservation of water resources

Water use/intensity

(1,000 kl)

	FY2005 (Base Year)	FY2018	FY2019	FY2020	FY2021	FY2022
Total water withdrawal[3]	221,863	69,892	66,926	64,406	59,979	60,039
Fresh surface water	180,363	20,672	19,630	17,004	17,259	17,890
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater, renewable	0	15,076	14,366	13,041	13,769	13,369
Fresh groundwater, non-renewable	-	0	0	0	0	0
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	34,144	32,930	34,361	28,950	28,781
Water consumption per production volume unit (intensity per ton of product)	123	27	27	27	25	26
Reduction rate (vs. FY2005)	-	78%	78%	78%	79%	79%
Ref. Total amount of production[4] (1,000 t)	1,800	2,627	2,512	2,423	2,360	2,354
Total water discharge[3]	201,300	55,800	52,342	51,564	48,034	46,353
Fresh surface water (processed by the Group)	47,000	27,498	24,297	24,088	20,490	19,655
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations	10,300	11,273	11,291	11,139	11,360	11,245
Total water recycled or reused	144,000	17,029	16,754	16,338	16,184	15,453
Proportion of water recycled or reused	65%	24%	25%	25%	27%	26%
Total water consumption	20,563	14,092	14,584	12,842	11,945	13,685
BOD (tons)	550	312	283	284	263	269
Nitrogen (tons)	3,200	501	506	583	430	327

[3] Water withdrawal is disclosed as the volume measured and invoiced in accordance with the laws of each country and region, or as a converted volume based on pump power use and pipe water speed. Data for quantity and quality of wastewater is aggregated in accordance with the laws of each country and region.

[4] We used data different from production volume set forth for the other environment data.

3Rs of waste

Volume of waste and by-products and resource recovery ratio

(tons)

	FY2018	FY2019	FY2020	FY2021	FY2022
Hazardous waste (waste acid, waste alkali, waste oil, cinder)					
Generated	69,991	83,834	81,216	83,770	106,161
Recycled	68,422	83,429	80,892	83,399	105,997
Incinerated	40	60	38	24	12
Landfills	1,529	345	286	347	152
Non-hazardous waste					
By-products[1]					
Generated	2,194,566	2,021,002	1,615,808	1,546,599	1,470,197
Composted	2,194,470	2,020,885	1,615,713	1,543,988	1,470,110
Incinerated	0	0	0	0	0
Landfills	96	117	95	2,611	87
Other[2]					
Generated	174,651	181,246	173,310	195,832	208,120
Recycled	153,388	156,432	150,295	169,243	182,956
Incinerated	2,821	2,121	1,784	2,318	3,969
Landfills	18,442	22,693	21,231	24,271	21,195
Total generated	2,439,208	2,286,082	1,870,334	1,826,201	1,784,478
Total recycled	2,416,280	2,260,745	1,846,900	1,796,630	1,759,063
Total waste	22,928	25,337	23,434	29,571	25,415
Resource recovery ratio	99.1%	98.9%	98.7%	98.4%	98.6%

[1] Sludge, Bacteria, Humus carbon, Waste activated carbon, Gypsum sludge, Salts, Fermentation final concentrate, Waste filter aide, etc.
[2] Sludge, Animal and plant residues, Plastic wastes, Glass and ceramic wastes, Metal scraps, Paper wastes, Wood wastes, Rubber scraps, Waste construction materials, Office wastes, etc.

Volume of packaging material and resource recovery ratio

(ktons)

	FY2019	FY2020	FY2021	FY2022
Wood/Paper fiber	150	150	150	150
Recycled and/or certified material ratio	84%	83%	86%	87%
Metal (e.g. aluminum or steel)	13	13	13	14
Recycled and/or certified material ratio	-	-	-	-
Glass	5.4	6.4	6.6	6.6
Recycled and/or certified material ratio	-	-	-	-
Plastic[3]	71	70	71	69
Recyclable plastic ratio[3]	52%	50%	50%	48%
Plastic packaging materials	67	66	66	64
Recyclable plastic packaging materials ratio	52%	50%	51%	48%
Compostable plastic packaging materials ratio	0%	0%	0%	0%

[3] Corrections have been made as a result of a review of totals.

Volumes of food loss and waste[4]

(tons)

	FY2018	FY2019	FY2020	FY2021	FY2022
Total generated volume	53,226	46,729	48,901	47,377	43,389
Total volume used for alternative purposes	25,515	21,222	26,634	28,115	28,222
Total discarded volume[5]	27,710	25,507	22,267	19,262	15,167
Total discarded volume per volume unit (intensity per ton of product)	10.6	10.0	9.2	8.2	6.4
Reference value: Production volume[6] (1,000t)	2,609	2,542	2,423	2,357	2,354
vs. Fiscal 2018 (%)	-	95%	87%	77%	61%

[4] Measured with reference to the Food Loss & Waste Accounting and Reporting Standard. (Measurement methods may differ between target organizations.)
[5] Refers to the amount of "food loss and waste", which is an indicator of the reduction target. It is calculated by excluding the “total volume used for alternative purposes” from the “total generated volume”.
[6] We used data different from production volume set forth for the other environment data.

Third-party assurance

* After the issuance of this Assurance Statement, the title was changed from “Sustainability Data Book” to “Sustainability Report”. There is no change to the reports covered by the warranty.

LRQA Independent Assurance Statement

Relating to Ajinomoto Co., Inc.’s Environmental and Social Data within Ajinomoto Group Sustainability Data Book 2023 for the fiscal year 2022

This Assurance Statement has been prepared for AJINOMOTO Co., Inc. in accordance with our contract but is intended for the readers of this report.

Terms of engagement

Lloyd’s Register Quality Assurance (LRQA) was commissioned by AJINOMOTO Co., Inc. (“the Company”) to provide independent assurance on its Environmental and Social data within Ajinomoto Group Sustainability Data Book 2023 (“the report”) for the fiscal year 2022 from 1 April 2022 to 31 March 2023), against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement of the verifier using ISAE 3000 and ISO 14064-3 for GHG emissions data.

Our assurance engagement covered the Company’s operations and activities in Japan and overseas and specifically the following requirements:

- Verifying conformance with the Company’s reporting methodologies for the selected dataset;
- Evaluating the accuracy and reliability of data for the selected environmental and social indicators listed below:[1]
  - Scope 1 GHG emissions [2] (tonnes CO_2e)
  - Scope 2 GHG emissions, market-based and location-based [2] (tonnes CO_2e)
  - Scope 3 GHG emissions associated with Categories 1 to 15 (tonnes CO_2e)
  - Lost Time Injury Frequency Rate (LTIFR) [3]
  - Occupational Illness Frequency Rate (OIFR) [3]

Our assurance engagement excluded the data and information of the Company’s suppliers, contractors and any third-parties mentioned in the report.

LRQA’s responsibility is only to the Company. LRQA disclaims any liability or responsibility to others as explained in the end footnote. The Company’s responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of the Company.

LRQA’s Opinion

Based on LRQA’s approach nothing has come to our attention that would cause us to believe that the Company has not, in all materiaLRQAespects:

- Met the requirements above
- Disclosed accurate and reliable environmental and social data

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

[1] *GHG quantification is subject to inherent uncertainty.*
[2] *Scope 1 and Scope 2 GHG emissions cover only energy-oriented CO_2 at Manufacture sites.*
[3] *Including office work only sites.*

LRQA’s approach

LRQA’s assurance engagements are carried out in accordance with ISAE3000 and ISO14064-3 for GHG emissions. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Auditing the Company’s data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification.
- Interviewing with key people responsible for compiling the data and drafting the report.
- Sampling datasets and tracing activity data back to aggregated levels;
- Verifying the historical GHG emissions, Lost Time Injury Frequency Rate (LTIFR) and Occupational Illness Frequency Rate (OIFR) data and associated records for the fiscal year 2020; and
- Verification for confirming of the effectiveness of its data management system of AGF Kanto Inc. and Ajinomoto Frozen Foods Co., Inc. Shikoku Plant were conducted by emails, telephone, and site visit. The data for the all sites was reviewed at the head office of AJINOMOTO Co., Inc..

Observations

The company is expected to continue its efforts for implementing quality assurance and quality control (QA/QC) systems in data and information management. At that time, this is particular to ensure effective internal verification processes at both the corporate and member company levels.

LRQA’s standards, competence and independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition* and ISO/IEC 17021-1 *Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part1: Requirements* that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification and certification assessments are the only work undertaken by LRQA for the Company and as such do not compromise our independence or impartiality.

Signed Dated: 18 June 2023

Takahiro Iio
LRQA Lead Verifier
On behalf of LRQA Limited
10th Floor, Queen's Tower A, 2-3-1 Minatomirai, Nishi-ku, Yokohama, JAPAN

LRQA reference: YKA4005549

ISO 14001 certificate (examples)

LRQA

Current issue date: 17 March 2022
Expiry date: 31 March 2024
Certificate identity number: 10433506

Original approval(s):
ISO 14001 - 7 March 2003

Certificate of Approval

This is to certify that the Management System of:

Ajinomoto Co., Inc.
Kawasaki Administration & Coordination Office, Kawasaki Plant, L Area

1-1, Suzuki-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa-ken 210-8680, Japan

has been approved by LRQA to the following standards:

ISO 14001:2015
JIS Q 14001:2015

Approval number(s): ISO 14001 – 0071764

The scope of this approval is applicable to:
Manufacture of amino acids and amino acid-based fine chemicals and pharmaceuticals.
Research and development of seasonings, food-related products, amino-acids, and amino acid-based fine chemicals and pharmaceuticals.

Yasushi Horikawa

Japan Operations Manager

Issued by: LRQA Limited

LRQA Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'LRQA'. LRQA assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant LRQA entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
Issued by: LRQA Limited, Queen's Tower A, 10th Floor, 2-3-1, Minatomirai, Nishi-ku, Yokohama, 220-6010 for and on behalf of: LRQA Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

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Certificate of Approval
Ajinomoto Co., Inc.
Kawasaki Administration & Coordination Office, Kawasaki Plant, L Area

bsi.

Certificate of Registration

ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2015

This is to certify that:

Ajinomoto Co., (Thailand) Ltd.
99 Mu 1, Bang Kadi Sai-Nai Road,
Tambon Bang Kadi,
Amphoe Mueang Pathum Thani,
Pathum Thani
12000
Thailand

Holds Certificate Number: **EMS 767302**

and operates an Environmental Management System which complies with the requirements of ISO 14001:2015 for the following scope:

The Manufacture of Monosodium L-Glutamate.

For and on behalf of BSI:

Michael Lam - Managing Director Assurance, APAC

Original Registration Date: 2020-05-18
Latest Revision Date: 2022-09-26

Effective Date: 2022-12-01
Expiry Date: 2025-11-30

Page: 1 of 1

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This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract.
An electronic certificate can be authenticated online.
Printed copies can be validated at www.bsi-global.com/ClientDirectory or telephone +66(2) 2944889-92.
Further clarifications regarding the scope of this certificate and the applicability of ISO 14001:2015 requirements may be obtained by consulting the organization.
This certificate is valid only if provided original copies are in complete set.

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Certificate of Registration
AJINOMOTO CO., (THAILAND) LTD., Pathum Thani factory