

**Guideline for requirements regarding
the agricultural chemical residue management
of frozen vegetables to Japan**

(Guideline for the agricultural chemical residue management of frozen vegetables)

Association for Quality and Safety of Imported Frozen Vegetables (ASV)

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.Objectives

For the past several years, the Japanese consumers have deepened their distrust and concern about the safety of imported frozen vegetables. As an example, voluntary restraint (substantial import ban) was taken against frozen spinach imported from China in July, 2002 due to repeated excess of Maximum Residue Limit (MRL) of chlorpyrifos. The import of the frozen spinach was resumed in February, 2003, but banned again in May, 2003. Therefore, it became difficult situation for both producers of frozen vegetables in China and sales in Japan. In addition, the enforcement of Positive List System from May, 2006 requires more strict management.

Importers and distributors in Japan established the “Association for Quality and Safety of Imported Frozen Vegetables (ASV) ” in May 2004 to prevent problems of agricultural chemical residues, and the association has started many activities to secure the safety of imported frozen vegetables. ASV established “Guideline for requirements regarding the agricultural chemical residue management of frozen vegetables to Japan”.

We hope that the companies in each country follows this guideline to produce safe frozen vegetables so that the companies can trade safely.

. Scope

The scope of this guideline is for the listed foods in the Ministry of Health, Labour and Welfare Notification No. 499 (November 29, 2005) from “legumes/pulses” to “other vegetables”. However, “sweet corn” of corn (maize) in cereal grains and “strawberry” which is a sort of vegetable in berry fruits are included in the scope of this guideline.

Specifically, gramineous vegetables (sweet corn, bamboo shoot, Manchurian wild rice, etc), mature and immature legumes, potatoes, brassicaceous vegetables, composite vegetables, liliaceous vegetables, umbelliferous vegetables, solanaceous vegetables, cucurbitaceous vegetables, mushrooms, other vegetables (spinach, okra, water chestnut, molokheiya, lotus root, etc.) are included.

.Terms and definitions

A qualified person	It is complied with rules of each companies and a qualified person means a person in charge of quality control management, an inspector, a person in management of cultivation, etc.
Fields	Field or place where crops are cultivated.
Owned fields	Own and contract fields.
Other, certifications	Certifications are such as fertilizer management list.
Crops, cultivated crops	Crops and cultivated crops are plants which are cultivated in the fields.
Cultivation management	Cultivation management is that plans, implements, records and confirms activities, such as soil conditioning, fertilization, watering, pesticide spraying, weeding, sowing seeds, planting, and harvesting etc.
The record of cultivation management	The record of cultivation management is a integrated list to record its activities and includes basic information on the field and kinds of cultivation, pesticide

	spraying and fertilization used in the cultivation process.
IPM	IPM is an abbreviation for Intergrated Pest Management, which is a management activity to prevent agricultural pest and weed development. IPM is the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified.
Raw material	Raw material means cultivated crops which have not yet processed after being harvested.
Half-finished products	Half-finished products mean products which have not yet completed after starting to process them.

IV. Selection of the fields

A. Environment of the fields	1. Location of the fields	<ul style="list-style-type: none"> • There shall not be pollution sources such as factories and fruit farms around the fields. • The fields shall be located at places where are not affected by drifts of agricultural chemicals from neighboring fields.
	2. Farm size	<ul style="list-style-type: none"> • It is desirable that the own farms and the contract farms shall have 2ha or larger connected cultivation area. • Drifts of agricultural chemicals from neighboring fields shall be limited. (There is no effect of agricultural chemical residues in crops on the fields.)
	3. Contamination preventive actions	<ul style="list-style-type: none"> • In order to prevent contaminants from neighborhood around the field, effective prevention actions such dividing fence or buffer zone shall be taken. • When crops are being cultivated in neighboring fields, risk assessment shall be taken as follows; <ul style="list-style-type: none"> To confirm what kind of crops have been cultivated in neighboring fields and whether the own cultivated crop has any risk of detection of agricultural chemicals. To assess risk of spray drift especially during harvest of own crops. To confirm agricultural chemicals which are scheduled and their criteria of usage.
	4. Management authority	<ul style="list-style-type: none"> • Management authority of the export production process companies (the export companies is used for the following document) reaches strongly to the own farms and the contract farms.

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B. Record of the fields history	1. Past Cultivation history	<ul style="list-style-type: none"> • The owned fields shall have records of crops for at least 1 year. • The name of crops shall be confirmed by tracing the records of cultivation back to a year ago. Troubles during cultivation shall be confirmed, and characteristics of the fields shall be understood.
	2. Record of used agricultural chemicals	<ul style="list-style-type: none"> • Annual planting plan and agricultural chemicals application plan should be established as much as possible. • The owned fields shall have records of used agricultural chemicals for at least 1 year. • It shall be confirmed if there were uses of high residual agricultural chemicals in soil by checking the records of used agricultural chemicals over the past years. • There shall be a record that states no use of prohibited agricultural chemicals both in Japan and in the cultivated country in the past.
C. Soil residue analysis	1. Test parameter	<ul style="list-style-type: none"> • The following parameters which residual levels are high in soil shall be tested for the levels of residues. • High residual agricultural chemicals such as DDT, BHC, drin pesticides (Dieldrin, Aldrin, Endrin), etc. • Hazardous heavy metals (mercury, cadmium, lead, copper, etc.), arsenic, etc. (For a reference) In the notification of Environmental Quality Standards (EQS) for soil pollution by the Environment Agency of Japan, cadmium, all cyanogen, organic phosphorus, lead, chromium(VI), organic arsenic, all mercury, copper, selenium, PCB, and other organic compounds are stated.
	2. Test frequency	<ul style="list-style-type: none"> • When new site are adopted, the test shall be conducted before planting . • In case of new fields and reuse fields, the test shall be conducted by the export companies or third party labs. • If high residual agricultural chemicals have not used and not detected by the analysis, it is not necessary to test any more.
	3. The method of sampling	<ul style="list-style-type: none"> • A sample of soil shall be taken from depth of 10cm at the center and the four corners of the fields for 500g each, and the total of 2.5Kg soil shall be analyzed by reduction method.
D. Water analysis	1. Test parameter	<ul style="list-style-type: none"> • It is confirmed that water and irrigation water resources used for the fields are satisfied the requirements of agricultural water standard set by the ministry of agriculture, forestry and fisheries of Japan. • High residual agricultural chemicals such as DDT, BHC, drin pesticides (Dieldrin, Aldrin, Endrin), etc. • Hazardous heavy metals (mercury, cadmium, lead, etc.), arsenic, etc.

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	2. Test frequency	<ul style="list-style-type: none"> • Water quality of the water resources shall be tested at least once a year before cultivation, and a record of the test shall be kept. • The test shall be conducted in the dry season after the first test. • In the case that industrial waste occurs close to the water resources of the fields, the test shall be conducted in each case to verify the safety.
	3. The method of sampling	<ul style="list-style-type: none"> • A sample of water shall be taken from each water source for 10L, and the sample shall be analyzed.
	4. Environment of water sources	<ul style="list-style-type: none"> • If waste water of plants, smoke of plants, and wastes are appeared in the environment around the fields, the effects to the fields shall be assessed immediately, and actions shall be taken. • It shall be verified that the water resources are satisfied the requirements of agricultural water in each area.
E. Possession of management level human resources	1. cultivation managemer	<ul style="list-style-type: none"> • Cultivation manager shall be a qualified person who has not only special knowledge about agricultural chemicals (including laws and regulations) both in Japan and in the producing countries, but also enough knowledge of preventing agricultural pest in Japan. The person can be taken advices about agricultural chemicals and agricultural pests by pesticide management trainers, extension agentsdealers and manufacturers. • The manager shall be a qualified person who has enough knowledge about growth and cultivation of crops. • One or more of qualified person shall belong to each field full- time and manage and keep records for necessary matters.
F. Criteria	1. Agricultural chemicals residues in soil	<ul style="list-style-type: none"> • When 0 . 5 p p m or more of DDT and BHC and 0 . 0 5 p p m or more of each drin pesticide are detected in the soil, the fields shall not be used. When less than 0 . 5 p p m of DDT and BHC and less than 0 . 0 5 p p m of each drin pesticide are detected in the soil, the level of agricultural chemical residue shall be verified by the final products. • Standard for agricultural grounds in Japan <ul style="list-style-type: none"> ➤ Cadmium : 1ppm ➤ Arsenic : 15ppm ➤ Copper : 125ppm ➤ Mercury : 15mg/kg ➤ Lead : 150mg/kg

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	2. Water quality	<ul style="list-style-type: none"> • Standard for agricultural water (paddy field) in Japan ➤ pH : 6.0 ~ 7.5 ➤ COD : Less than 6m g /L ➤ SS : Less than 100m g /L ➤ DO : More than 5m g /L 以上 ➤ T - N : Less than 1m g /L ➤ EC : Less than 0.3m S / c m ➤ Arsenic : Less than 0.05m g /L ➤ Zinc : Less than 0.5m g /L ➤ Copper : Less than 0.02m g /L
G. Others	1. Contract system	<ul style="list-style-type: none"> • In case of the contract farms, both the export companies and the producers shall have copies of the contract.
	2. Making of the fields layout plan	<ul style="list-style-type: none"> • The fields layout plan that state farms (including planted crops) and environment around the fields shall be owned.
	3. Management numbers	<ul style="list-style-type: none"> • A clear management number shall be given to each of the fields or division. • The management number shall be displayed clearly in the fields.

V. Selection of agricultural materials

A. Seeds, seedling, etc.	1. Suppliers	<ul style="list-style-type: none"> • Agricultural materials shall be purchased from suppliers whose purchasing methods and routes are clear. • Seedlings shall be purchased directly from suppliers who can guarantee the quality and attach certificates.
	2. Inventory management	<ul style="list-style-type: none"> • The records of purchasing shall be kept. • Quantity of purchase, use, and inventory shall be integrated and managed.

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	3. Seeds coated with agricultural chemicals	<ul style="list-style-type: none"> • If there are seeds coated with agricultural chemicals, the name of agricultural chemical, the purpose of use, and the safety information shall be got from the supplier, and the record shall be kept.
B. Management of machinery and agricultural chemical application equipments	1. Possession of own storage	<ul style="list-style-type: none"> • A fixed storage for agricultural equipments and materials must be owned to store seeds, seedlings, and agricultural equipments. • The machinery and the agricultural materials shall be stored separated from agricultural chemicals.
	2. Application equipments for agricultural chemicals	<ul style="list-style-type: none"> • The application machinery shall be checked, maintained, and changed oil once or more a year to keep the good performance to spray properly . All of the records shall be kept. • When application equipments are purchased, agricultural chemical type and so forth shall be considered to select the optimum application equipments. • To use measuring tools to measure agricultural chemical accurately. • To prepare buckets and water for safe where agricultural chemicals are prepared. • Protective clothing and gear for workers shall be always prepared.
	3. Inventory management	<ul style="list-style-type: none"> • Quantity of purchase, use, and inventory shall be integrated and managed. • Documents such as instruction manual and warranty for all equipment shall be sorted and kept.
	4. Use	<ul style="list-style-type: none"> • The machinery and the agricultural equipments shall be used only for the export companies or the fields.
	5. Cleaning of equipments	<ul style="list-style-type: none"> • A manual for cleaning equipments shall be made. Equipment shall be cleaned before and after its usage. Moreover, they shall be inspected to prevent agricultural chemicals from remaining on equipments after their usage. • If necessary, the protective clothing and equipment shall be cleaned after they are used. • The rinse water shall be discarded into uncultivated area.

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C. Fertilizer list	1 Confirmation of fertilizer quality	<ul style="list-style-type: none"> • Fertilizers shall be classified into organic fertilizer and chemical fertilizer, and a list of each group shall be made. The product name, the composition of raw materials, the manufacturer name, and the production date shall be recorded. • Quality guarantees or quality certificates shall be kept. These documents shall state certified component values and so forth • Organic fertilizers shall be assessed risk on pathogen contamination, weed seeds contamination, and incomplete composting etc. to prevent any risks before fertilizing. Do not use human sewage and raw excrement in the fields.
	2. Inventory management	<ul style="list-style-type: none"> • In case of fertilizers purchased from different places, quantity of purchase, use, and inventory shall be integrated and managed.
	3. Conditions for storage	<ul style="list-style-type: none"> • The fertilizers shall be stored away from cultivated crops, seeds and seedlings, packaging materials and pesticides. • The fertilizers shall be stored away from sunshine, mist, and rain.

VI. Management of agricultural chemicals

A. Purchasing of agricultural chemicals	1. Selection of agricultural chemicals	<ul style="list-style-type: none"> • The prohibited agricultural chemicals in Japan and in the production countries shall not be purchased. The registered agricultural chemicals in Japan and the positive list system in Japan shall be complied, and selected agricultural chemicals shall be purchased by discussions of the Japanese importers and the export companies. • For the records of purchased agricultural chemicals, active agents of the agricultural chemicals shall be stated by international standard names (name of ISO).
	2. Confirmation of suppliers	<ul style="list-style-type: none"> • Agricultural chemicals shall be purchased directly from official suppliers of imported agricultural chemicals or suppliers who have identified manufacturers and have quality guarantees.
	3. Record of import and purchase	<ul style="list-style-type: none"> • The records of import and purchase shall be kept. (e.g. exporting country, importer, distributor, product name, type of pesticide, volume, concentration, quantity, lot etc.)

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B. Quality confirmation of agricultural chemicals	1. Quality confirmation of agricultural chemicals	<ul style="list-style-type: none"> • Quality guarantees of the purchased agricultural chemicals shall be always got from the suppliers and kept. • The following information shall be stated on containers, packaging materials, etc. <ol style="list-style-type: none"> 1 . The registered number of the competent authorities 2 . International standard name (ISO name), type of active agent, content weight, and type of formulation. 3 . Name of applicable crops 4 . Usage 5 . Warning 6 . Others
	2.Appropriate usage of agricultural chemicals	<ul style="list-style-type: none"> • Standards for use (applied crops, target pest, dilution, use frequency, withdrawal period, etc.) of each agricultural chemical shall be confirmed.
	3. Requirements of user	<ul style="list-style-type: none"> • Cultivation manager shall know the standards for agricultural chemicals application very well and shall be able to instruct the method for preparation of dilution and the method for use the maintained application equipments of agricultural chemicals. • Agricultural chemicals can be applied, only in case of getting advice from those who can be confirmed their qualifications and competent to use pesticides.
C. Storage/disposal of agricultural chemicals	1. Receiving and shipping record of agricultural chemicals (Inventory management)	<ul style="list-style-type: none"> • When agricultural chemicals are taken from storages for application, the type and quantity of used agricultural chemicals shall be confirmed and recorded. • After spraying, the quantity of applied and surplus application mix, and unused agricultural chemicals shall be confirmed and recorded. Unused agricultural chemicals shall be collected and returned.
	2. Requirements of storage	<ul style="list-style-type: none"> • Storage of agricultural chemicals shall be locked, and to be away from any leakage and erosion of agricultural chemicals. The agricultural chemicals shall not be stored in conditions influenced by any weather conditions such as rain, wind, sunshine, temperature and humidity etc. • Storage of agricultural chemicals shall be independently away from any other materials, such as cultivated crops and fertilizers to prevent contamination.

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	<p>3. Disposal of surplus application mix and empty agricultural chemical containers</p>	<ul style="list-style-type: none"> • Surplus diluted application mix, and rinse water from washing agricultural chemical containers shall be used up or discarded with less concentrated in the places without influence on cultivated crops. The empty containers shall be collected to burn up or bring them collection system. In addition, the laws or regulations for discarding and storing surplus mix of agricultural chemicals in each area, if available, shall be obeyed.
<p>D. Records of used agricultural chemicals</p>	<p>1. Record of used agricultural chemicals</p>	<ul style="list-style-type: none"> • Information about agricultural chemicals application during cultivation such as chemical name, purpose of use, date of use, quantity, dilution rate, target crop, site name, operator's name, usage, withdrawal period, and special note shall be recorded. The records and related documents shall be kept for 3 years or longer.
	<p>2. Proper use of agricultural chemicals</p>	<ul style="list-style-type: none"> • Standard of agricultural chemicals application such as quantity per unit area, dilution rate, application method, the maximum times of use, and withdrawal period before harvesting (safe interval period) for each crop and type of chemical agricultural by discussing with Japanese importers shall be established and complied with. In addition, the state of compliance with the standards shall be reviewed.
	<p>3. Prediction of pest outbreak</p>	<ul style="list-style-type: none"> • A pest control program (annual pest control daily plan for each crops) shall be made and used. In addition, Integrated Pest Management (IPM) to reduce use of agricultural chemicals shall be facilitated.

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<p>E. Records of cultivation management</p>		<ul style="list-style-type: none"> • Cultivation and fertilizer management list shall include the following information and be kept for 3 years or longer. <ol style="list-style-type: none"> 1. Production record: Basic records such as date and time, site, kinds of crops. 2. Record of agricultural chemical application: Name of agricultural chemical, purpose of use, time of use, dilution rate, use quantity, special note. 3. Record of fertilization: Kinds of fertilizer, purpose, and quantity. 4. Daily report of work: Daily work related to cultivation management, etc. 5. Record of planting: Date and time, kinds of crops, quantity. 6. Record of weeding: Work by hands, work by machines, and record of herbicide application. 7. Weather and temperature 8. Record of previous crop 9. Signature of representative: Farmer, manager of agricultural chemical, cultivation management, raw material manager, etc 10. Special note: Record of pest outbreak
<p>F. Contamination preventive actions</p>	<p>1. Prevention of drift</p>	<ul style="list-style-type: none"> • Cultivation and agricultural chemical application of neighboring fields and environmental condition around the fields shall be checked and recorded, if necessary. • Advance communication, cooperation, and exchange of information among all the concerned parties around the site. • Causes of drift shall be considered and eliminations of drift shall be tried. Wind direction, application position, application method, equipment selection, buffer zone, dividing net or curtain shall be considered. • During agricultural chemicals application, the direction and the speed of the wind shall be considered to prevent drifting to other division in the same site and neighboring fields.
	<p>2. Organic fertilizer</p>	<ul style="list-style-type: none"> • When an organic fertilizer is used, the fertilizer shall be confirmed the safety. (e.g. free of human sewage sludge, contaminants derived from raw materials, pathogen contamination, weed seeds, etc)

VII. Harvest/ transport

A Testing of raw materials	1. Test parameter	<ul style="list-style-type: none"> • Before harvesting, agricultural chemical residue in raw materials shall be tested as many of expected chemicals as possible such as , used agricultural chemicals in the fields and neighboring fields and fruit farms. • • In case that the laws and regulations on agricultural chemical residue analysis are existed in each producer country, local area, those regulations shall be obeyed. • Using pesticides appropriately and observing their withdrawal period are confirmed by records of cultivation management.
	2. Result	<ul style="list-style-type: none"> • The accepted raw materials shall be able to harvest for processing. • In case of rejection, such field shall not be allowed for harvest and use of a raw material until the causes are investigated by the exporters and corrective actions are taken and verified.
B. Harvest	1. Harvest of raw materials	<ul style="list-style-type: none"> • The direction of the harvest shall be given based on the result of the test implemented before harvest by the exporter.
	2. Storage	<ul style="list-style-type: none"> • During storage of raw materials, agricultural chemicals shall not be used. And, contaminations by agricultural chemicals or other contaminants shall be avoided.
	3. Record of harvest	<ul style="list-style-type: none"> • Raw materials shall always have traceable harvest notification, records of the fields number, acreage, and quantity and other required certificates attached.
C. Transport	1. Transport of raw materials	<ul style="list-style-type: none"> • Transport vehicles must not be contaminated by agricultural chemicals and other contaminants. • When raw materials are transferred to plants after harvest, the raw materials must loaded not to mixed with other raw materials. In addition, it must be proved that the raw materials are harvested from the fields under the management by its records. (Refer to .B.3)

VIII. Processing

A. Testing of semi-finished product	1. Test parameter	<ul style="list-style-type: none"> Agricultural chemical residue analysis in semi-finished products shall be tested as much as possible including agricultural chemicals which are used at the fields and neighboring fields and fruit farms.
	2. Method of sampling	<ul style="list-style-type: none"> Agricultural chemical residues analysis shall be tested per management lot (fields, etc.)
	3. Result	<ul style="list-style-type: none"> The accepted lot shall be used for the finished product. In case of rejection, other semi-finished products from such rejected field shall not be allowed for use until the causes are investigated by the export companies and corrective actions are taken and verified. The rejected lot of semi-finished product shall be disposed immediately. In case that products are rejected due to agricultural chemical residue, documentation of procedure for actions against rejected semi-finished products and raw materials, disposal result, investigation of cause, and preventive action should be recorded and confirmed.
B. Inventory management of Semi-finished products and final products	1. Record of storage (semi-finished products and final products)	<ul style="list-style-type: none"> After semi-finished products and final products are stored, the products shall be managed not to get mixed with other semi-finished products and final products by separation of the place of origin and lot with labeling. For receiving and shipping of products in warehouse, record which can confirm inventory management shall be kept.

IX. Analysis of agricultural chemicals residues

A. Residue	1. Testing method	<ul style="list-style-type: none"> Methods by the Food Sanitation Law in Japan or the equivalent methods shall be used.
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analysis management	2. Academic background and experience of lab technician	<ul style="list-style-type: none"> Laboratory technician shall be who graduated from university or higher level or have technical knowledge of food, agricultural chemicals, and analysis, and are trained about related section, and work independently as a full-time person in charge.
	3.Requirements of analysis equipment	<ul style="list-style-type: none"> Laboratory shall have sufficient capacity for production volume and items.
B quality control of testing	1. Records of quality control	<ul style="list-style-type: none"> Constant and frequent internal quality control(spike samples etc.) shall be implemented and its records shall be kept. To attend external quality control scheme is prefer to improve of the accuracy of testing.

X.Traceability

A. Traceability	1. Management of tracking code	<ul style="list-style-type: none"> In each process, traceable records such as the fields number of raw materials and testing number of agricultural chemical residues analysis shall be stated clearly.
	2. Management of contamination prevention	<ul style="list-style-type: none"> During the receiving of raw materials, raw materials shall not be mixed with other raw materials in different vehicles. To avoid mixing of the raw materials from different fields, raw materials shall be processed in the order of receiving. Processin raw materials shall keep time interval between different lots of raw materials.
	3. Final shipping decision	<ul style="list-style-type: none"> For all results of agricultural chemical residue testing, people in charge of quality control management at the export companies shall approve and judge shipping.
	4. Records retention time	<ul style="list-style-type: none"> All records related to trace management shall be in order and kept for 3 years or longer.

XI. Others

A. Audit system	1. Audit rule	<ul style="list-style-type: none"> • The export companies shall audit farm management, system and accuracy of inspection, process management, document management, and so forth at least once a year.
B. Communication system	1. Actions at the time of accident	<ul style="list-style-type: none"> • Regardless of the own farms and the contracted farms, the communication tree of farmer to/from cultivation manager to/from the export companies shall be clearly stated. • If a sign of pest outbreak is seen, farmers shall ask cultivation manager of cultivation for directions and take actions quickly and properly. • Cultivation manager shall report the detail of accident and the used agricultural chemicals to the export companies immediately. • If there is a complaint relating to quality of produce, the complaint shall be reviewed, and then corrective actions shall be taken. Those actions shall be reported to the export companies. Moreover those series of actions shall be recorded and kept.
C. Quality assurance system		<ul style="list-style-type: none"> • The export companies must establish the system of good manufacturing practice (GMP) and the sanitation standard operating procedures (SSOP).

XII. Revision history

Rev. No.	Date	Contents
003	2006/03/07	Correction of mistake
005	2007/07/05	Harmonized with JGAP and EUREPGAP.
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