Caribbean Community

EDICT OF GOVERNMENT

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CRS 22 (2010) (English): Achar, Amchar and Kuchela

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CARICOM REGIONAL STANDARD

Specification for achar, amchar and kuchela

CRS 22: 2010

Caribbean Community

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Committee representation

This CARICOM Regional Standard was prepared under the supervision of the Regional Technical Committee for Foods (RTC #3) by the Sub-Committee for Amchar and Kuchela (hosted by CARICOM Member State, Guyana), which at the time comprised the following members.

Members	Representing
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Ms. Seraiah Validum	Food and Drug Department
Mr. Gary Mendonca	University of Guyana
Ms. Rozanna Charles	Guyana Consumers Association
Mr. Nazim Abedin	Consumers Advisory Bureau
Mr. Richard Parasram	Guyana Marketing Corporation
Mr. Ram Prashad	Prestige Manufacturing
Ms. Andrea Mendonca **(Technical Secretary)**	Guyana National Bureau of Standards

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Foreword

This CARICOM Regional Standard has been prepared through the CARICOM Regional Organisation for Standards and Quality (CROSQ) to outline quality and acceptability requirements for the products known and traded within the CARICOM as achar, amchar and kuchela.

The manufacture and trade of condiments made from pickled tropical fruits and or vegetables within the CARICOM is increasing due to the commercialisation of these fruits and vegetables and the increased demand in the global food trade. This market growth has also enabled CARICOM processors to produce achar, amchar and kuchela and other pickled fruits and vegetables from designated fruits and vegetables on a commercial scale. It has therefore become necessary to formulate a CARICOM standard to support the trade in these products.

Achar, amchar and kuchela are pickled condiments and it is very unlikely that the entire contents of the package will be consumed on the first opening; hence the product should be stored and kept without spoilage after it has been opened.

Traditionally, these condiments were made as acidified foods, of pH less than 4.6, so that they could be stored without refrigeration and without spoilage after opening. It is likely that these condiments will be refrigerated; therefore, they can be made as either low acid or acidified foods.

The requirements of achar, amchar or kuchela are different depending on whether the product is an acidified food or a low-acid food.

This standard was approved by the Thirty-first Meeting of the Council for Trade and Economic Development on 29 November - 3 December 2010.

In the development of this standard, assistance was derived from the following:

a) Codex Alimentarius Commission, CODEX STAN 160 – 1987 – Codex Standard for Mango Chutney;

b) Codex Alimentarius Commission, CODEX STAN 192 – 1995 – General Standard for Food Additives;

c) Codex Alimentarius Commission, CODEX STAN 234 – 1999 – Recommended Methods of Analysis and Sampling;

d) Codex Alimentarius Commission, CAC/RCP 24 - 1979 – Recommended International Code of Hygienic Practice for Low-Acid and acidified Low –Acid Canned Foods;

e) Codex Alimentarius Commission, CAC/RCP 43 – 1995 – Code of Hygienic Practice for the Preparation and Sale of Street Foods (Regional Code – Latin America and the Caribbean);

f) Codex Alimentarius Commission, CAC/RCP 40 – 1993 – Code of Hygienic Practice for Aseptically Processed and Packaged Low-Acid Foods;

g) Codex Alimentarius Commission, CODEX STAN 1- 2005 – General Standard for the Labelling of Prepackaged Foods;

h) International Organization for Standardization, ISO-2859 Part 1 Sampling procedures for inspection by attributes.

1 Scope

This standard applies to the products known as achar, amchar and kuchela which are prepared from edible fruits such as green or unripe mangoes (*Mangifera indica*), golden apple *(Pommecythere spp)*, june plum (*Spondias spp*), tamarind *(Tamarindus indica)* and chalta or elephant fruit *(Dillenia indica),* as the predominant ingredients and blended with spices and additives prior to packaging.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CARICOM Regional Standard, CRS 5, Labelling of Pre-packaged Foods

CODEX Alimentarius Commission, Recommended International Code of Practice – General Principles of food Hygiene (CAC/RCP 1 – 1969, Rev 3-1997)

CODEX Alimentarius Commission, Code of Hygienic Practices in the preparation and sale of street foods (Regional Code for Latin America and The Caribbean) (CAC/RCP 43 – 2001)

CODEX Alimentarius Commission, Standard for Mango Chutney (CODEX STAN 160 – 1987)

Public Health and Food Storage and Prevention of Infestation standard

World Health Organization, Guidelines for Drinking Water Quality

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1
acid
ingredient used to reduce and control the pH of the finished product, normally including natural vinegar, citric and acetic acids and in some cases citrus juices

3.2
acidified food
foods that have an equilibrium pH of 1 to 4.6

NOTE This level of acidity will not support the growth of micro-organism or spores in the food product. Hence, once this level of acidity is maintained in the food, the product is not prone to spoilage from the growth of micro- organisms even after opening.

3.3
achar
acidic fruit condiment that has been shredded or comminuted, which is dehydrated before being blended with spices, salt, curry and or black roasted curry and where oil is used as the pickling medium and preservative

NOTE Black roasted curry is also known as garam masala.

3.4
amchar
condiment which is made from sliced, mature, firm, unripe mangoes as the main ingredient

NOTE The preferred variety of mango that is selected for this product is the “long” or Vert (*Mangifera verticulata*) variety which has increased fibre and pulp.

3.5
antioxidant
additive that is used to prevent the vegetable oils from becoming oxidised and causing a rancid taste in the product

3.6
chalta
elephant apple (*Dillenia indica*)
olive green, spherical, tropical fruit with a cabbage like structure consisting of layers of pulp held together by fibre, that has a tart taste, a diameter of 18 cm to 25 cm and weighs approximately 500 g

3.7
condiment
generic name for fruits blended with acids and spices

3.8
cooking
application of heat to the product resulting in destruction of the enzymes in the fruit and achieving a firm and consistent texture of the pieces of fruit

NOTE Cooking is done after the fruit that has been prepared for achar, amchar or kuchela is combined with the spices, salt, curry or garam masala, oil and or acid. Alternatively, the enzymes may be destroyed by exposing pieces of the fruit that have been impregnated with a sodium chloride solution to direct sunlight.

3.9
firming agent
additive that may be used to control the texture of the finished product

NOTE Calcium chloride is the common firming agent used.

3.10
kuchela
condiment usually made from shredded or comminuted young mangoes in which the seeds have not been fully formed

NOTE Where mature fruits are used the pulp or flesh is separated from the seeds and then shredded or comminuted.

3.11
low-acid food
food that has an equilibrium pH of 4.6 and higher values

NOTE At this acidified range, the product is prone to spoilage because this low-acid level will support the growth of micro-organisms and spores. In such cases, control of the water activity in the product or the use of refrigeration to reduce the temperature will help to prevent spoilage.

3.12
preservative
additive that is normally used in the product to prevent the growth of micro-organisms

NOTE Sodium benzoate is the common preservative used.

3.13
spices and herbs
seasoning normally used to enhance the aroma and flavour

EXAMPLE These include hot peppers and or chillies, cumin, fenugreek, turmeric, ginger, coriander seeds, onion, curry powder, garam masala and garlic or any other combinations that the manufacturer may choose to use in the product.

3.14
tamarind (*Tamarindus indica*)
flat or flattened brown, beanlike pod that is irregularly curved, 5 cm to 15 cm in length and 2 cm to 3 cm in diameter encasing a sticky, sweet and sour flesh

3.15
oil
mustard oil or vegetable oil or a blend of mustard oil and vegetable oil

NOTE Mustard oil is preferred because it has a preservative effect and adds a characteristic mustard odour to the product.

3.16
potable water
water fit for human consumption as established in the latest edition of the "Guidelines for Drinking Water Quality" of the World Health Organization (Volumes 1 and 2) or established by national legislation which shall take precedence

3.17
water activity
level of moisture that determines the growth of micro-organism under the intended conditions of manufacturing, storage and distribution

3.18
water activity of food
ratio between the vapour pressure of the food itself, when it is in equilibrium with the surrounding air, and the vapour pressure of distilled water under identical conditions

4 Product designations

4.1 Condiment

A condiment shall be defined as a product used as an appetizer, relish or as a spread for sandwiches. The taste can vary significantly from a sweet relish taste to an acidic or piquant taste, while the texture could vary from coarse to smooth.

4.2 Achar

A product classed as achar shall be a condiment in which the fruit pulp is separated from the seed (if mature) and grated, shredded or comminuted, and then water from the pulp is squeezed out or removed by other suitable methods. The dehydrated pulp is then blended with the other ingredients to make the final product.

NOTE The fruits include golden apple, tamarind, bilimbi, lime, mango and chalta.

4.3 Amchar

A product classed as amchar shall be made from green or unripe mangoes that are cut into 2 cm to 3 cm wide strips and then dehydrated by the sun or by other suitable means.

NOTE The pulp of the mango which is held together by the fibres from the outer part of the seed forms the major ingredient of the product. Hence the species of mangoes with fibrous seeds are the preferred type of mango for the production of this product. The alternative fruits, pommecythere, tamarind and chalta are prepared in a similar manner.

4.4 Kuchela

A product classed as kuchela shall be a condiment in which the mango pulp is separated from the seed (if mature) and grated, shredded or comminuted, and then the water from the pulp is squeezed out or removed by other suitable methods. The dehydrated pulp is then blended with the other ingredients to make the final product.

NOTE The alternative fruits, that is,. pommecythere, tamarind, bilimbi, lime and chalta may be prepared in a similar method to that of mango.

5 General Requirements

5.1 Composition

When drained of all liquids, the finished product shall contain not less than 60 % w/w of the main fruit ingredient in the product.

5.2 Processing

5.2.1 Achar

5.2.1.1 Mangoes that are used for preparing achar should be generally selected from among the less matured fruit.

NOTE In this case, the seed is not fully formed and the outer shell is still soft and can be crushed and communited along with the pulp of the fruit.

5.2.1.2 When the product is made from matured fruit, the pulp of the fruit shall be removed from the seed and shredded or comminuted. The water from the shredded pulp shall be removed by squeezing.

5.2.2 Amchar

Mangoes that are prepared for amchar shall be sliced with the fibrous seeds into 2 cm to 3 cm wide strips containing the flesh or pulp of the fruit. The inner white part of the seed shall be removed. The sliced mango shall then be dehydrated either in the sun or by other suitable methods and then mixed with other ingredients.

5.2.3 Kuchela

5.2.3.1 Mangoes that are used for preparing kuchela should be generally selected from among the less matured fruit.

NOTE In this case, the seed is not fully formed and the outer shell is still soft and can be crushed and comminuted along with the pulp of the fruit.

5.2.3.2 When the product is made from matured fruit, the pulp of the fruit shall be removed from the seed and shredded or comminuted. The water from the shredded pulp shall be removed by squeezing. The dehydrated pulp shall then be blended with other ingredients and cooked to make the final product.

5.3 Texture

The texture of the product shall be consistent throughout and shall be firm. The oil, acids and spices shall evenly coat and blend with the product.

5.4 Appearance

The appearance of the condiment shall be characteristic of the product. There shall be no visibile mould growth.

5.5 Flavour and aroma

The flavour and aroma of the condiment shall be characteristic of the product. The product shall be free from any rancid taste.

5.6 Contaminants

Contaminant limits shall be in accordance with CODEX STAN 160:1987, CODEX Alimentarius Commission Standard for Mango Chutney.

6 Essential composition and quality factors

6.1 Storage

6.1.1 General

Where a low-acid product is manufactured, it shall be clearly labelled “KEEP REFRIGERATED AFTER OPENING”.

NOTE 1 Traditionally achar, amchar and kuchela are pickled condiments that are kept without refrigeration after opening and are classified as acidified foods, where the equilibrium pH of the product is held below 4.6.

NOTE 2 The consumption of high acid foods can be problematic for some consumers hence a product with less acid will be preferable.

6.1.2 Safe- moisture level (water activity)

6.1.2.1 The method used to store the product, after it has been opened, shall determine the amount of water activity to be permitted in the product.

6.1.2.2 The water activity, when determined by the method specified in Annex A, shall be as follows:

a) where the finished product is meant to be stored without refrigeration after opening the seal of the cap, the water activity (a_w) must be less than 0.85; and

b) where the product is meant to be stored in refrigerated conditions after opening, the water activity (a_w) level may exceed 0.85.

NOTE The higher the water activity level in a product the greater are the probability for the growth of micro-organisms.

6.1.2.3 The water activity in the finished product should be determined by the method specified in Appendix A.

6.1.3 Acidity

6.1.3.1 The measured acidity level of the finished product shall depend on the mode of storage after opening.

5.1.3.2 The acidity, when determined by the method specified in Annex B, shall be as follows:

a) where the product is meant to be stored without refrigeration after opening, the equilibrium pH of the finished product shall be below 4.6 and shall be treated as an acidified food; or

b) where the product is meant to be stored under refrigerated conditions after opening, the equilibrium pH of the finished product may exceed 4.6 and be classified as a low -acid food.

7 Other permitted ingredients or food additives

7.1 Sodium benzoate or potassium benzoate can be used as a preservative to prevent the growth of spores and micro-organisms in the product.

NOTE Good Manufacturing Practice (GMP) requires that there be limitations in the usage of these preservatives. Measured as Benzoic Acid, the maximum limit for sodium benzoate as set by CODEX Alimentarius is 5 mg/kg of finished product.

7.2 In some cases the following additives may be included in the product:

a) citrus juice may be used for reducing the pH of the product and it also adds to the flavour;

b) cane sugar may be used to adjust the taste in the products that are tart and of exceedingly high acid content; and

c) vinegar may be used to reduce the pH of the product.

8 Contaminants

Contaminants may come from the ingredients and inputs or from equipment used in the processing.

NOTE Both are adequately covered in 8 of this standard and under the CODEX Alimentarius Commission Standard CAC/RCP-43 (2001), Code of Hygienic Practices in the preparation and sale of street foods (Regional Code for Latin America and The Caribbean).

9 Hygiene

9.1 General

9.1.1 The hygienic practices recommended for the manufacture of this product shall be in accordance with CAC/RCP 43– 1997 Rev 1-2001, Code of Hygienic Practice for the preparation and sale of street foods (Regional Code – Latin America and the Caribbean).

9.1.2 The general requirements for the hygienic practice for this product shall be as follows:

a) persons in contact with and or directly handling food, inputs or ingredients should be in a state of health complying with the Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP1 – 1969 (Rev 3 – 1997);

b) hair must be completely covered during food handling. Nails should be short and clean;

c) food handlers should wear appropriate clean clothing and protect themselves with an apron or other suitable garment, which should be changed regularly;

d) food handlers should not wear jewellery such as chains, rings or bracelets while handling food;

e) food handlers should be trained in hygienic handling of food and should demonstrate the necessary capacity to protect food at all times; and

f) utensils, dishes, glasses, water outlets, working surfaces and other surfaces should be cleaned and sanitized after each instance of food preparation.

9.2 Purchase of inputs and Ingredients

In manufacturing achar, amchar and kuchela, the minimum requirements for storage of inputs must be consistent with the Public Health and Food Storage and Prevention of Infestation standard. Where there is no standard the manufacturer shall follow the general purchasing guidelines:

a) inputs and ingredients from authorized suppliers or approved sources, under adequate storage conditions, stored on shelves, boxes or baskets and protected from contamination shall be purchased;

b) packaged ingredients that bear a manufacturer's name or guarantee shall be purchased. Food products that are unlabelled and or without a clearly stated shelf life, where appropriate shall not be purchased; and

c) only inputs and ingredients whose organoleptic properties that correspond to the specific characteristics and nature of fresh food or raw material that are required and that do not show signs of alteration and or adulteration shall be purchased.

9.3 Transport, reception and storage of inputs and ingredients

In manufacturing achar, amchar and kuchela, the minimum requirements for storage of inputs must be consistent with the Public Health and Food Storage and Prevention of Infestation standard. Where there is no standard the following general principles for the transport, receiving and storage of inputs and ingredients shall be followed:

a) the vehicle used to transport fruits and raw materials shall be clean and sanitized;

b) materials received must be kept in clean containers or packages and shall be stored in a clean and sanitized area to reduce and or eliminate the risk of contamination; and

c) packages and or containers with ingredients and raw materials shall be clearly labelled.

9.4 Requirements for the area or place of preparation

In manufacturing achar, amchar and kuchela, the following general principles for keeping the area or place of preparation in a clean and sanitary manner shall be followed:

a) the indoor production areas shall be designed and constructed in accordance with Section IV of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1 – 1969, Rev 3-1997);

b) the equipment shall be made of appropriate materials for easy cleaning and disinfecting as often as is necessary;

c) the water used for production and cleaning should be potable water; and

d) containers used for pesticides, fuels, paint and other toxic substances shall not be used for any purpose in the production area.

10 Packaging

10.1 Wide mouth container

10.1.1 The container used for packaging should be wide-mouthed so that a spoon or similar device can be used to take the product out of the container.

10.1.2 The container shall have the capability to withstand hot filling of the product.

10.2 Acid resistant covers or caps

The caps for the container shall be acid-resistant and when closed shall provide a hermetically sealed joint.

11 Labelling

11.1 Packaging for the retail trade

Each retail package of the product should be clearly and legibly marked in the language of the country in which the product is to be sold with the following information in accordance with CRS 5 – Labelling of Pre-packaged Foods:

a) brand name of product;

b) name of the product;

c) net contents of the product;

d) name and address of manufacturer and or distributor where applicable;

e) a list of the ingredients in descending order of quantity present in the product;

f) recommended “Best Before Date” for the use of the product;

g) instructions on use including the storage of the product after the package has been opened; and

h) nutritional labelling of the product.

11.2 Bulk or institutional packing

If the product is packed in bulk containers and meant for institutional trade, and more than one container is packed together, one label on the outermost package with the information listed in 11.1 will be acceptable.

12 Sampling and acceptance

12.1 Sampling for analytical tests

12.1.1 Sampling for analytical tests shall be carried out in a random manner. The number of items selected shall be in accordance with Table 1 which is derived from ISO 2859: Sampling procedures for inspection by attributes, using an Acceptable Quality Level (AQL) of 6.5 % and a Special Inspection Level, S3.

Table 1 — Number of items to be selected for analytical tests

Lot size	Sample size	Acceptance number	Rejection number
2 - 50	2	0	1
51 - 500	8	1	2
501 - 3200	13	2	3
3201 - 3500	20	3	4

NOTE 1 Sampling in accordance with Table 1 will identify products for inspection for appearance.

NOTE 2 S3 was chosen on the basis that all items in the lot would have received uniform treatment during processing or manufacture. The effectiveness of the sampling plans is dependent on the execution of quality control measures during preparation, production and storage, of achar, amchar and kuchela.

12.1.2 The batch selected should be 12 months old, after the product was packaged or should have reached the recommended “best before date” that is printed on the package.

12.2 Criteria for acceptance

Samples selected in accordance with the sampling plan of 12.1 shall be examined and shall comply with the requirements of 5 (General requirements), 6 (Essential composition and quality factors) and 11 (Labelling requirements).

NOTE Where the samples comply with all the requirements as stated above, the batch can be said to be in conformance with this standard.

Annex A
(informative)

Testing for water activity (a_w)

A.1 Introduction

A.1.1 The growth of harmful micro-organisms in food can be managed by controlling the water activity in the food products.

A.1.2 The water activity of a food is the ratio between the vapour pressure of the food itself, when it is in equilibrium with the surrounding air, and the vapour pressure of distilled water under identical conditions.

A.1.3 Water activity is measured by equilibrating the liquid phase water in the sample of food with the vapour phase water in the head space of a closed chamber and measuring the relative humidity of the head space.

A.1.4 There are two methods for measuring water activity in food products:

a) Chilled Mirror or Dewpoint Method; and

b) Electric Hydrometer.

A.1.5 The Electric Hydrometer method takes between 30 min to 90 min per test while the Chilled Mirror or Dewpoint Method takes 5 min.

A.2 Preparation of samples

a) Take the sample and separate the liquids from the solids by draining through a No.8 Sieve.

b) Work out the ratio of solid to liquid in the sample.

c) Take a known weight of the dry product and measure the corresponding ratio of liquid that was drained; add the two and blend until a consistent mixture of solids and liquid is achieved.

d) Load the prepared sample into the sampling cup of the Chilled Mirror or Dewpoint water activity testing machine; this seals the sample cup against the sensor block.

NOTE 1 The water activity reading is read directly from the machine.

NOTE 2 The measurement is based on temperature determination and calibration is not required. Load a salt solution of known water activity value to verify the proper functioning of the machine.

Annex B
(informative)

Testing for acidity (pH)

B.1 Introduction

The reference method that may be used to measure pH in is found in the United States Code of Federal Regulations, 21 CFR 114.90: Acidified Foods, subpart E – Production and Process Controls, Methodology Part 114, Sec 90.

B.2 Preparation of samples for testing

B.2.1 Rinse the drained solids with distilled water to remove any covering liquid.

B.2.2 Blend the solids to a uniform paste and measure the pH as described in B.3. If additional liquid is necessary to blend the samples, up to 20 parts of distilled water may be added per 100 parts of solid food sample.

B.2.3 Separate the liquid and solid components by draining the contents of the container for 2 min on a screen or sieve inclined at a 17 ° to 20 ° angle. Save each portion separately and be sure to record the weight of both the liquid and the solids; these will be used to determine the equilibrium pH.

NOTE A No. 8 Sieve is recommended.

B 2.4 Determine the pH of the liquid portion as described in B.3. If the liquid is very oily, then follow the procedure for oily foods as follows:

a) Oil and or grease in a food can coat and seal the membrane of the pH meter and interfere with proper pH measurement. If possible, any oil layer present in the food should be removed before pH testing.

b) Allow the oil to rise to the surface, remove it by skimming or pouring. If the oil cannot be separated easily, freezing and thawing the samples may break an emulsion and allow the oil to separate. Cooling the sample in a refrigerator may solidify the separated oil and facilitate its removal. Ensure to return the sample to room temperature before testing the pH.

B.2.5 To determine the “Equilibrium pH” of the samples, either blend fractions of solids and liquids in the same proportions found in the original container or simply blend the entire contents of the container to a uniform paste.

B.2.6 Test the pH as described in B.3.

B.3 Testing the food samples

B.3.1 After the meter has been turned on, allow the sample to stabilize as necessary and calibrate, begin by rinsing the probe with de-ionized or distilled water and blot the probe dry with lint free tissue paper.

B.3.2 Immerse the sensing tip of the probe in the sample and record the pH reading to the nearest 0.05 pH unit or the nearest 0.1 unit depending on the resolution of the meter. Allow at least 1 min for the meter to stabilize.

B.3.3 Rinse the probe, blot dry and repeat step B.3.2 on a fresh sample. The two readings should agree to within the accuracy limits of the meter.

End of document

CARICOM REGIONAL ORGANISATION FOR STANDARDS AND QUALITY

The CARICOM Regional Organisation for Standards and Quality (CROSQ) was created as an Inter-Governmental Organisation by the signing of an agreement among fourteen Member States of the Caribbean Community (CARICOM). CROSQ is the regional centre for promoting efficiency and competitive production in goods and services, through the process of standardization and the verification of quality. It is the successor to the Caribbean Common Market Standards Council (CCMSC), and supports the CARICOM mandate in the expansion of intra-regional and extra-regional trade in goods and services.

CROSQ is mandated to represent the interest of the region in international and hemispheric standards work, to promote the harmonization of metrology systems and standards, and to increase the pace of development of regional standards for the sustainable production of goods and services in the CARICOM Single Market and Economy (CSME), and the enhancement of social and economic development.

CROSQ VISION:

The premier CARICOM organisation for the development and promotion of an Internationally Recognised Regional Quality Infrastructure; and for international and regional harmonized CARICOM Metrology, Standards, Inspection, Testing and Quality Infrastructure

CROSQ MISSION:

The promotion and development of standards and standards related activities to facilitate international competitiveness and the sustainable production of goods and services within the CARICOM Single Market and Economy (CSME) for the enhancement of social and economic development

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