



**THAI AGRICULTURAL STANDARD**

**TAS 7021-2010**

# **SOFT SHELL MUD CRAB**

**National Bureau of Agricultural Commodity and Food Standards  
Ministry of Agriculture and Cooperatives**

**ICS 67.120.30**

**ISBN 978-974-403-716-9**

**UNOFFICIAL TRANSLATION**



**THAI AGRICULTURAL STANDARD**

**TAS 7021-2010**

# **SOFT SHELL MUD CRAB**

**National Bureau of Agricultural Commodity and Food Standards**

**Ministry of Agriculture and Cooperatives**

**50 Phaholyothin Road, Ladyao, Chatuchak, Bangkok 10900**

**Telephone (662) 561 2277 Fax (662) 561 3357**

**[www.acfs.go.th](http://www.acfs.go.th)**

**Published in the Royal Gazette Vol.127 Section 79D Special,**

**Dated 25 June B.E.2553 (2010)**

**Technical Committee on the Elaboration of Thai Agricultural Standard on  
Soft Shell Mud Crab**

- |  |                      |
|--|----------------------|
| 1. Assistant Professor Mayuree Chaiyawat   | Chairperson          |
| 2. Mr. Wanchai Srithongkum<br>Food and Drug Administration, Ministry of Public Health  | Member               |
| 3. Mr. Manat Larpphon<br>National Bureau of Agricultural Commodity and Food Standards  | Member               |
| 4. Mr. Kritapol Youngvanichset<br>Coastal Fisheries Research and Development Bureau,<br>Department of Fisheries                  | Member               |
| 5. Mrs. Nantiya Unprasert<br>Fish Inspection and Quality Control Division,<br>Department of Fisheries                            | Member               |
| 6. Ms. Pantip Suwansakornkul<br>Fishery Technological Development Division, Department of Fisheries                              | Member               |
| 7. Mr. Juta Mookdasanit<br>Faculty of Fisheries, Kasetsart University  | Member               |
| 8. Mrs. Amphai Harnkrivilai<br>Food Processing Industries Club, Federation of Thai Industries                                    | Member               |
| 9. Mr. Tanarat Tanacheevit<br>Thai Frozen Foods Association  | Member               |
| 10. Mr. Pol Polsen<br>Soft Shell Crab Club, Ranong   | Member               |
| 11. Associate Professor Nongnuch Raksakulthai  | Member               |
| 12. Assistant Professor Banchong Tiensongrusmee  | Member               |
| 13. Associate Professor Prasert Saisithi   | Member               |
| 14. Ms. Chitrlada Booncharoen<br>Office of Standard Development,<br>National Bureau of Agricultural Commodity and Food Standards | Member and Secretary |

(3)

Soft shell mud crab is a favourite dish consumed in Thailand with high potential for export. Therefore, in order to develop the quality and safety of soft shell mud crab for consumer acceptance and competitiveness in the global market, the Agricultural Standards Committee deems it necessary to establish a standard for soft shell mud crab.

This standard is based on the following document:

Mayuree Chaiyawat, Pattama Ratana-arporn and editor. B.E. 2550 (2007). Exploring a carapace soft shell crab. The Thailand Research Fund (TRF), Bangkok.



**NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES**

**SUBJECT: THAI AGRICULTURAL STANDARD:**

**SOFT SHELL MUD CRAB**

**UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)**

-----

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Soft Shell Mud Crab as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its quality, standard and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551 (2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on the Establishment of Thai Agricultural Standard: Soft Shell Mud Crab (TAS 7021-2010) as a voluntary standard, details of which are attached herewith.

Notified on 28 April B.E. 2553 (2010)  
(Mr. Theera Wongsamut)  
Minister of Agriculture and Cooperatives

# THAI AGRICULTURAL STANDARD

## SOFT SHELL MUD CRAB

### 1 SCOPE

This standard defines the required quality of soft shell mud crab that is traded as either fresh or frozen.

### 2 DEFINITIONS

For the purpose of this standard:

2.1 **Mud crab** means a crab of the family Portunidae, genus *Scylla*, namely orange mud crab (*S. olivacea* (Herbst, 1796)), purple mud crab (*S. tranquebarica* (Fabricius, 1798)), green mud crab (*S. paramamosian* (Estampador, 1949)), giant mud crab and mealy crab (*S. serrata* (Forsk., 1775)).

2.2 **Soft shell mud crab** means the crab referred to in 2.1 that has shed its shell and is covered with only a thin and soft cuticle.

2.3 **Fresh soft shell mud crab** means the soft shell mud crab that has been immersed in clean fresh water after harvesting in order to reduce contamination and saltiness, and stored at temperature near 0° C not more than 6 days with the Total Volatile Base Nitrogen (TVB-N) less than 15 mg/100 g of crab weight. This term includes live soft shell mud crab.

2.4 **Dressing** means the cutting of any part of soft shell mud crab such as apron, gills, eyes, antennae, mouth, stomach, etc.

2.5 **Frozen soft shell mud crab** means a fresh soft shell mud crab that is frozen by freezing process.

2.6 **Freezing process** means a quick freezing of soft shell mud crab by using special equipment to quickly form small ice crystals. The quick freezing process is regarded as complete when the core temperature of the product has reached -18 °C or below, and stored as such.

2.7 **Hypodermis or cuticle** means a layer of cells that forms the hard shell and carapace.

2.8 **Apron** means the abdominal covering on the ventral side of the crab to carry eggs by female crabs or to support the reproduction of male crabs.

2.9 **Contaminant** means any substance not intentionally added to food, which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry and veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination. The term does not include insect fragments, rodent hairs and other extraneous matter.

2.10 **Veterinary drug** means any substance applied or administered to any food producing animal, such as meat or milk producing animals, poultry, fish or bees, whether used for therapeutic, prophylactic or diagnostic purposes or for modification of physiological functions or behaviour.

2.11 **Residues of veterinary drugs** mean the veterinary drugs referred to in 2.10 including the parent compounds and/or their metabolites in any edible portion of the animal product, and include residues of associated impurities of the veterinary drug concerned.

2.12 **Foreign matter** means any substance that is not a part of soft shell mud crab such as algae, soil, sand, gravel or mud.

### **3 TYPES OF PRODUCT**

Products of soft shell mud crabs are classified into 4 types as follows:

3.1 fresh whole soft shell mud crab

3.2 fresh dressed soft shell mud crab

3.3 frozen whole soft shell mud crab

3.4 frozen dressed soft shell mud crab

### **4 QUALITY**

#### **4.1 MINIMUM REQUIREMENTS**

In all classes, soft shell mud crabs shall be as follows:

4.1.1 External appearance shall be of the type referred to in Section 3.

4.1.2 No obvious defects such as deformation of claws, walking and swimming legs, or any wound on the body.

4.1.3 No distinctive unnatural odour of fresh soft shell mud crab.

4.1.4 No foreign matters caused by improper hygienic practices found by visual inspection.

4.1.5 TVB-N does not exceed 15 mg/100 g.

#### **4.2 CLASSIFICATION**

Soft shell mud crabs are classified into two classes according to freshness, appearance, odour, flavour and taste. These characteristics are assessed by sensoric and physical examination of the appearance and colour of cuticle, the texture and colour of crab meat, and the odour of soft shell mud crab before and after steaming (see Tables A1 and A2).

##### **4.2.1 Extra class**

Soft shell mud crabs in this class shall be of superior quality. All required characteristics shall meet the scoring criteria at level 4 as shown in Annex A.

#### 4.2.2 Class I

Soft shell mud crabs in this class shall be of good quality below extra class, notably with all required characteristics meeting the scoring criteria at level 3 as shown in Annex A. Quality scoring shall be assessed by experts or persons trained in such examination.

## 5 SIZING

5.1 In case where there is no specific deal between buyers and suppliers, sizes of soft shell mud crab shall be defined as in Table 1.

**Table 1 Size of soft shell mud crab**

(Section 5.1)

Size	Weight (g/unit)	Quantity (unit/kg)
Small	70 – 100	≥ 10
Medium	>100 – 120	9 – 10
Large	>120 – 150	7 – 9
Extra large	> 150 – 200	5 – 6
Special extra large	> 200	3 – 4

#### 5.2 Sizing criteria

If there is no other requirement, each sample unit shall be weighed. Each container shall have only the uniform size and weight according to Table 1.

## 6 TOLERANCES

6.1 Quality tolerances of soft shell mud crab in each container shall be as follows:

#### 6.1.1 Extra class

The maximum of five percent by weight of soft shell mud crabs not satisfying the requirement of extra class is allowed. However, all required characteristics of those five percent shall not be less than the scoring criteria at level 3.

#### 6.1.2 Class I

The maximum of five percent by weight of soft shell mud crabs not satisfying the requirement of Class I is allowed. However, all required characteristics of those five percent shall fall under the scoring criteria at level 2.

#### 6.2 Size tolerances of soft shell mud crab in each container

Each container is allowed to have the maximum deviation of  $\pm 10$  g per crab, examined by random sampling, which shall not be less than 10% by weight of such container (but the total number of sample units shall not be less than 5).

## **7 ORIGIN OF PRODUCE**

Soft shell mud crabs in each container shall be from the same farm. Either catching area or origin of produce or both shall be indicated on a label or an aquatic animal movement document.

## **8 PACKAGING**

### **8.1 Uniformity**

Each container shall have only soft shell mud crabs of the same quality as in Section 4 and size as in Section 5.

### **8.2 Container**

8.2.1 Containers shall be appropriate and able to prevent contamination and to maintain the quality of soft shell mud crabs.

8.2.2 The containers shall be made of materials of non-water absorbent, clean, hygienic, and free of odour and foreign material.

8.2.3 The containers shall be durable for transportation, able to maintain the quality of soft shell mud crabs in order to make them safe for consumption.

8.2.4 In case the ice used for maintaining the temperature in the container during the production process and transportation comes into direct contact with soft shell mud crabs, it shall be produced from clean water that does not increase the contamination and in accordance with the requirements under the Thai Agricultural Standard: Code of Practice for Fish and Fishery Products VOLUME 1: General Requirements (TAS 7410).

## **9 CONTAMINANTS**

Maximum Limits (MLs) of contaminants in soft shell mud crab shall be in compliance with the relevant laws and regulations and the requirements under the Thai Agricultural Standards relating to contaminants.

## **10 RESIDUES OF VETERINARY DRUGS**

Residues of veterinary drugs in soft shell mud crab shall be in compliance with the relevant laws and regulations as well as the requirements under the Thai Agricultural Standards relating to residues of veterinary drugs.

## **11 FOOD ADDITIVES**

Food additives in soft shell mud crab shall be in compliance with the relevant laws and regulations and the requirements under the Thai Agricultural Standards relating to food additives.

## 12 HYGIENE

12.1 Soft shell mud crabs shall be harvested from the farm that has been certified in Good Aquaculture Practices (GAP) by an authorized agency.

12.2 Culturing and practices shall be complied with the requirements under the Thai Agricultural Standard on Code of Practice: General Principles of Food Hygiene (TAS 9023). Post-harvest handlings and transportation of soft shell mud crabs shall be carried out in a hygienic manner in order to prevent deterioration and contamination harmful to human health.

12.3 The soft shell mud crabs shall be complied with the microbiological criteria shown in Table 2.

**Table 2 Microbiological criteria for soft shell mud crab**

(Section 12.3)

Type	n	c	m	M
1. Total viable counts	5	3	$5 \times 10^5$ cfu/g	$10^7$ cfu/g
2. <i>Escherichia coli</i>	5	3	11 MPN/g	500 MPN/g
3. <i>Staphylococcus aureus</i>	5	2	$10^3$ cfu/g	$10^4$ cfu/g
4. <i>Salmonella</i> spp.	5	0	Not found in 25 g	-

**Remarks:**

*n* means the number of samples for inspection from each lot.

*c* means the maximum number of samples for which a quantity of the microorganisms higher than the level specified is allowed.

*m* means the quantity of microorganisms allowable in the sample.

*M* means the quantity of microorganisms found in the sample and is the reason for rejection of the lot.

*cfu/g* means colony forming unit per gram.

*MPN/g* means most probable number per gram.

In case where “M” is not specified, “m” and “c” shall be used as the criteria.

In case where “M” is specified and the quantity of microorganisms is greater than “m”, the total number of samples shall not be higher than “c” and the quantity of microorganisms found shall not be higher than “M”.

In case a manufacturer has a Quality Assurance System such as the Code of Practice: General Principles of Food Hygiene, or the Hazard Analysis and Critical Control Point System (HACCP), with satisfactory production history, the frequency of sampling for inspection may be reduced.

### 13 LABELLING

The soft shell mud crabs shall be labeled in accordance with the relevant laws. At least, the following information shall appear on the label or container in a manner that is legible, indelibly marked, and clear without false or deceptive information.

13.1 The name of the product “soft shell mud crab” and the species shall be indicated clearly.

13.2 Net weight in the metric system

13.3 If any food additive is used, its food additive class shall be shown with its specific name or International Numbering System (INS) according to the CAC/GL 36-1989 Codex Class Names and the International Numbering System for Food Additives or relevant laws and regulations.

13.4 The name and address of the manufacturer, importer, re-packer or distributor for domestic market and the name and address of the manufacturer, exporter, re-packer or distributor for export market, as the case may be.

13.5 Country of origin

13.6 Lot number or lot code

13.7 Date of manufacturing and/or “Best before date”

13.8 Consumption or storage instructions (optional)

13.9 In case the product is for the domestic market, the label shall be in Thai. If other language is used, the meaning shall correspond to Thai. In case the product is for export, the label shall be in compliance with trading partner requirements.

### 14 OFFICIAL INSPECTION MARK OR CERTIFICATION MARK

This provision shall be complied with the requirements of the Agricultural Standards Committee or the criteria set by inspection body or certification body.

### 15 METHODS OF ANALYSIS AND JUDGEMENT CRITERIA

15.1 Analytical methods

Soft shell mud crabs shall be examined by the methods given in Table 3 (Referring to the latest version).

**Table 3 Analytical methods for soft shell mud crab**

(Section 15)

<b>Requirement</b>	<b>Method of Analysis</b>	<b>Principle</b>
1. External appearances, defects, odour	Visual inspection	-

<b>Requirement</b>	<b>Method of Analysis</b>	<b>Principle</b>
(Section 4.1.1, 4.1.2, 4.1.3)		
2. Foreign matters caused by improper hygienic practices (Section 4.1.4)	Visual inspection	-
2. TVB-N (Section 4.1.5)	Conway micro-diffusion method <sup>1/</sup> or other equivalent methods	Titration
3. Freshness, appearance, odour, flavour and taste (Section 4.2)	Visual inspection	-
5. Weight (Section 5.1)	Weighing	Gravimetry
6. Total viable bacterial counts (Section 12.3)	BAM (Bacteriological Analytical Manual) or other equivalent methods	Microbiological Enumeration Method
7. <i>Escherichia coli</i> (Section 12.3)	BAM or other equivalent methods	MPN and microbiological testing
8. <i>Staphylococcus aureus</i> (Section 12.3)	BAM or other equivalent methods	Microbiological detection
9. <i>Salmonella</i> spp. (Section 12.3)	BAM or other equivalent methods	Microbiological detection

### 15.2 Judgement Criteria

The lot considered to be in compliance with this standard shall meet all requirements referred to in Sections 4, 5, 6, 9, 10, 11, and 12.

## APPENDIX A

## SCORING CRITERIA FOR QUALITY CLASSIFICATION OF SOFT SHELL MUD CRAB

Table A1 Scoring criteria for quality classification of fresh and frozen soft shell mud crabs

(Sections 4.2.1, 4.2.2, 6.1.1, and 6.1.2)

Characteristic	Description	Score Level
A.1.1 Cuticle and Meat	<ul style="list-style-type: none"> <li>- naturally complete body form according to the type specified in Section 3 with all claws and at least six walking and swimming legs</li> <li>- soft cuticle with natural colour of the type, species, sex and environment of soft shell mud crab</li> <li>- vivid and uniform colour</li> <li>- For live soft shell mud crabs, the cuticle is firmly and smoothly attached to the body.</li> <li>- thick, translucent and jelly-like crab meat</li> </ul>	4
	<ul style="list-style-type: none"> <li>- complete body form according to the type specified in Section 3</li> <li>- soft or slightly papery cuticle with slightly dark or faded colour</li> <li>- The cuticle is firmly attached to the body.</li> <li>- opaque and jelly-like crab meat</li> </ul>	3
	<ul style="list-style-type: none"> <li>- incomplete body form, walking and swimming legs</li> <li>- rough, and papery, or wrinkled cuticle</li> <li>- dry cuticle with dark or faded colour</li> <li>- The cuticle is not firmly attached to the body.</li> <li>- mushy, jelly-like, opaque to cream-coloured crab meat with less meat</li> </ul>	2
A.1.2 Odour	<ul style="list-style-type: none"> <li>- Natural odour of soft shell mud crab.</li> <li>- No objectionable odour.</li> </ul>	4
	<ul style="list-style-type: none"> <li>- Natural odour of soft shell mud crab with slightly fishy odour</li> </ul>	3
	<ul style="list-style-type: none"> <li>- Slightly objectionable odour such as muddy, fishy, ammonia odour</li> </ul>	2

**Table A2 Scoring criteria for quality classification of steamed soft shell mud crab**  
(Sections 4.2.1, 4.2.2, 6.1.1, and 6.1.2)

<b>Characteristic</b>	<b>Description</b>	<b>Score level</b>
A.2.1 Crab Meat	<ul style="list-style-type: none"> <li>- white and glossy</li> <li>- juicy</li> <li>- fibrous flesh able to form a lump</li> <li>- firm and elastic texture</li> </ul>	4
	<ul style="list-style-type: none"> <li>- white</li> <li>- juicy</li> <li>- moderately fibrous flesh almost unable to form a lump</li> <li>- moderately firm and elastic texture</li> </ul>	3
	<ul style="list-style-type: none"> <li>- yellowish white or pink</li> <li>- excessively mushy and non-fibrous flesh</li> <li>- soft and starch-like texture</li> </ul>	2
A.2.2 Odour	<ul style="list-style-type: none"> <li>- Natural odour of steamed crab.</li> <li>- No objectionable odour.</li> </ul>	4
	<ul style="list-style-type: none"> <li>- Natural odour of steamed crab with slightly fishy odour</li> </ul>	3
	<ul style="list-style-type: none"> <li>- Slightly objectionable odour such as muddy, fishy, ammonia odour</li> </ul>	2
A.2.3 Flavour and Taste	<ul style="list-style-type: none"> <li>- Sweet flavour of steamed crab</li> <li>- Sweet and not salty taste</li> </ul>	4
	<ul style="list-style-type: none"> <li>- Sweet flavour of steamed crab</li> <li>- Slightly salty taste</li> </ul>	3
	<ul style="list-style-type: none"> <li>- No sweet flavour of steamed crab.</li> <li>- Salty taste</li> </ul>	2

**APPENDIX B****UNITS**

Units and symbols used in this standard and units accepted by SI (International System of Units or le Système international d'unités) are as followed:

<b>Type of Measurement</b>	<b>Name of Unit</b>	<b>Symbol</b>
Volume	milliliter	ml
Mass	gram	g
	kilogram	kg
Temperature	degree Celsius	°C