



# **Preservatives in Kueh**

# Outline

- Food safety is a Joint Responsibility
- Introduction to the Food Regulations
- What are food additives and preservatives
- Use of preservatives in kueh
- Understanding the maximum levels for preservatives and applying these levels to kueh
- Differentiating kueh from flour confectionery

# Food Safety is a Joint Responsibility



**Government** sets regulations and provides enabling environment for joint responsibility. Communicates risk to protect consumers' health by providing information that empowers them to make informed food safety decisions

A supply of safe food for Singapore is a Joint Responsibility

**Industry** adopts food safety assurance and provides a supply of safe food (e.g. adopt food safety mgmt system)



**Consumers** are resilient to supply disruptions, responsible to make informed decisions and adopt good food safety practices.

# The industry has the responsibility to produce safe food

- Understand the requirements in the law
- Be familiar with the Food Regulations
  - permitted food additives and maximum permitted levels
  - maximum limits for contaminants
  - standards of identity for food
  - requirements for labelling and advertisement (including use of claims)
- Know what goes into the food that you produce
  - Use only permitted food additives and within the limits allowed

# Where can I download the Food Regulations?



<https://www.sfa.gov.sg/legislation?type=sale-of-food-act-chapter-283&page=1>

A Singapore Government Agency Website



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## Legislation

- Singapore Food Agency Act 2019 (Act 11 of 2019)
- Feeding Stuffs Act (Chapter 105)
- Fisheries Act (Chapter 111)
- Sale of Food Act (Chapter 283)**
- Wholesome Meat and Fish Act (Chapter 349A)
- Environmental Public Health Act

### Sale of Food Act (Chapter 283)

The Sale of Food Act is an Act for regulating food to ensure that food for sale is safe and suitable for human consumption and to promote public health, for ensuring the provision of information relating to food to enable consumers to make informed choices and for preventing misleading conduct in connection with the sale of food.

PDF (265KB)

**Food Regulations**  
*Regulations under Sale of Food Act*

PDF (533KB)

- Food (Amendment) Regulations 2022(**New**)
- Gazette Notification No. 2788 on Specifications for Nutri-grade Mark
- Food (Amendment No. 2) Regulations 2021
- Public Consultation:**





SALE OF FOOD ACT  
(CHAPTER 283, SECTION 56(1))

FOOD REGULATIONS

ARRANGEMENT OF REGULATIONS

PART I

PRELIMINARY

Regulation

- 1. Citation
- 2. Definitions

PART II

ADMINISTRATION

- 3. Fees
- 4. Analyst's certificates for perishable foods

PART III

GENERAL PROVISIONS

- 5. General requirements for labelling
- 6. Exemptions from regulation 5
- 7. Containers to be labelled
- 8. Hampers to be labelled
- 8A. Nutrition information panel
- 9. Prohibition on false or misleading statements, etc., on labels
- 9A. Exceptions from prohibitions on claims on labels
- 9B. Limitations on making particular statements or claims on labels
- 10. Date marking
- 10A. Removal, etc., of date marking prohibited
- 11. Claims as to presence of vitamins and minerals
- 12. Misleading statements in advertisements
- 13. Food and appliances offered as prizes
- 14. Imported food to be registered

*FOOD ADDITIVES*

- 15. Food additives
- 16. Anti-caking agents



The standards for food additives can be found here

## FOOD ADDITIVES

Regulations 15 to 28 covers the food additives regulated under the Food Regulations

### Food additives

**15.**—(1) Subject to paragraphs (2) and (3), no person shall import or manufacture for sale or sell any article of food which contains any food additive which is not permitted by these Regulations.

(2) Notwithstanding paragraph (1), any food may have in it or on it any permitted food additive of the description and in the proportion specified under these Regulations and whose purity conforms with the specification mentioned in paragraph (4) for the food additive.

*[S 695/2021 wef 01/10/2021]*

(3) Notwithstanding paragraph (1), any food containing as an added ingredient any specified food may contain any such permitted food additive of the description for and of an amount appropriate to the quantity of such specified food in accordance with these Regulations.

(4) No person shall import, sell, advertise, manufacture, consign or deliver any permitted food additive unless the purity of that food additive conforms with the specifications as provided in this Part. Where it is not so provided, the purity of the permitted food additive shall conform with the specifications as recommended by the Joint Food and Agriculture Organisation of the United Nations and World Health Organisation (FAO/WHO) Expert Committee on food additives.



SIXTH SCHEDULE

Regulation 21(2)

PERMITTED EMULSIFIERS AND PERMITTED STABILISERS

Acetylated mono-glycerides; lactated mono-diglycerides; tartaric acid glycerides; diacetyl tartaric acid glycerides; citric acid glycerides;

Agar;

Alginic acid; ammonium alginate; calcium alginate; potassium alginate; sodium alginate;

Arabinogalactan (larch gum);

Carrageenan;

Caseinate, sodium, calcium and potassium;

Cellulose, methyl, ethyl, methyl ethyl, hydroxy propyl and hydroxy propyl methyl derivatives of; carboxy methyl cellulose; croscarmellose sodium; enzymatically hydrolysed sodium carboxymethyl cellulose (cellulose gum, enzymatically hydrolysed);

Curdlan;

Cyclodextrins, alpha- and gamma-;

Dioctyl sodium sulphosuccinate;

Ethyl hydroxyethyl cellulose;

Furcelleran;

Gums, acacia, carob, gellan, ghatti, guar, karaya, tara, tragacanth, and xanthan;

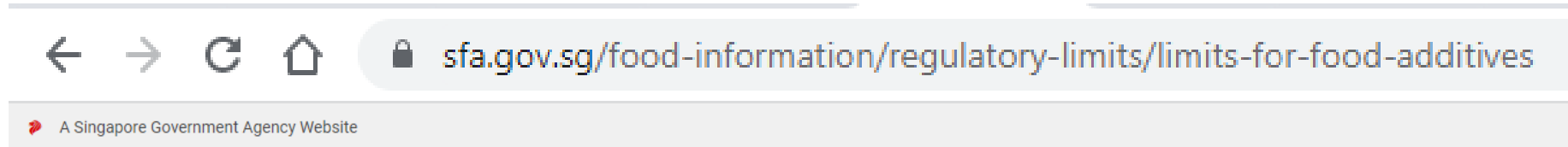
Konjac flour;

Lecithin;

The Third to Eighth Schedules and the Thirteenth and Seventeenth Schedules contains the lists of permitted food additives, grouped according to their technological functions. In this case, the Sixth Schedule contains the list of permitted emulsifiers and permitted stabilisers.



# How can I check if a food additive is permitted?



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Home | Food Information | Food Safety Regulatory Limits | Limits for Food Additives

## Food Safety Regulatory Limits

Overview on Food Safety  
Regulatory Limits

Limits for Food Additives

Food Additives

Limits for Incidental  
Constituents In Food



### Limits for Food Additives

#### Food Additives

Food additives are chemical substances which are intentionally added to food, typically in very small known amounts, in order to serve specific technological functions. Food additives can be derived from both natural sources or artificially synthesised. However, they do not include foreign substances arising from contamination or improper handling of food.

Only permitted food additives are allowed for use in food imported or manufactured for sale in Singapore.

Food Businesses may refer to the following resources for the list of permitted food additives and requirements.

- [List of Permitted Food Additives](#)
- [Food Additives Database Search Function](#)
- [Calculation Tool for Class II Chemical Preservatives](#)
- [Guidance Information on Requirements for Use of Food Additives](#)



Please also refer to  
Frequently Asked  
Questions at SFA's  
website at  
<https://www.sfa.gov.sg/faqs> [*select  
'Food Information'  
> 'Food Additives  
and Ingredients'*].

# What are Food Additives?

- Chemicals which are intentionally added to foods
  - In known quantities
  - To serve a technological function, e.g.
    - Colouring matter
    - Emulsifier
    - Stabiliser
    - **Preservative**
    - Anti-oxidant
    - Anti-caking agent
    - Anti-foaming agent
    - Sweetening agent
    - Flavour enhancer
  - May be natural or artificial



# What are preservatives?

- Preservatives are food additives that prevent or inhibit spoilage of food (due to fungi, bacteria, and other microorganisms) to extend its shelf life
- Some of the oldest preservatives known are salt and sugar, which preserve foods by reducing their water activity to the point that bacteria cannot grow. Similarly, vinegar lowers the pH.



# How are preservatives regulated in Singapore?

Under the Food Regulations, there are 3 classes of preservatives:

Class I	Class II	Class III
"Natural" preservatives, including common food ingredients and certain natural food acids	Chemical preservatives, includes both synthetic and natural ones, that are usually used in small amounts	Only applies to dimethyl dicarbonate
Examples: salt, vinegar, sugar, propionic acid, lactic acid, citric acid	Examples: sulphites, benzoic acid, sorbic acid, methyl para-hydroxybenzoate	Dimethyl dicarbonate
No maximum levels are specified, however industry should only use the lowest possible level necessary to accomplish the desired effect	May only be used in certain foods up to the maximum levels specified in the Fourth Schedule of the Food Regulations	Only allowed to be used in certain beverages, up to the maximum levels specified in Fourth Schedule the Food Regulations

*Please refer to Annex for the list of permitted preservatives under Food Regulations.*

# The use of preservatives in kueh

Class II chemical preservatives must not be added to kueh

Kueh is

- Made for sale with a short shelf-life
- Displayed and sold at room temperature
- Intended to be sold to consumers and consumed within the same day (or the next if refrigerated).

# The use of preservatives in kueh

Some kueh have fillings/toppings. SFA understands that there is a need to use Class II chemical preservatives for these fillings/toppings as they are manufactured in bulk for use over a period of time.

When using Class II chemical preservatives, check that the levels added to the fillings/toppings are within the maximum levels specified in the Fourth Schedule of the Food Regulations

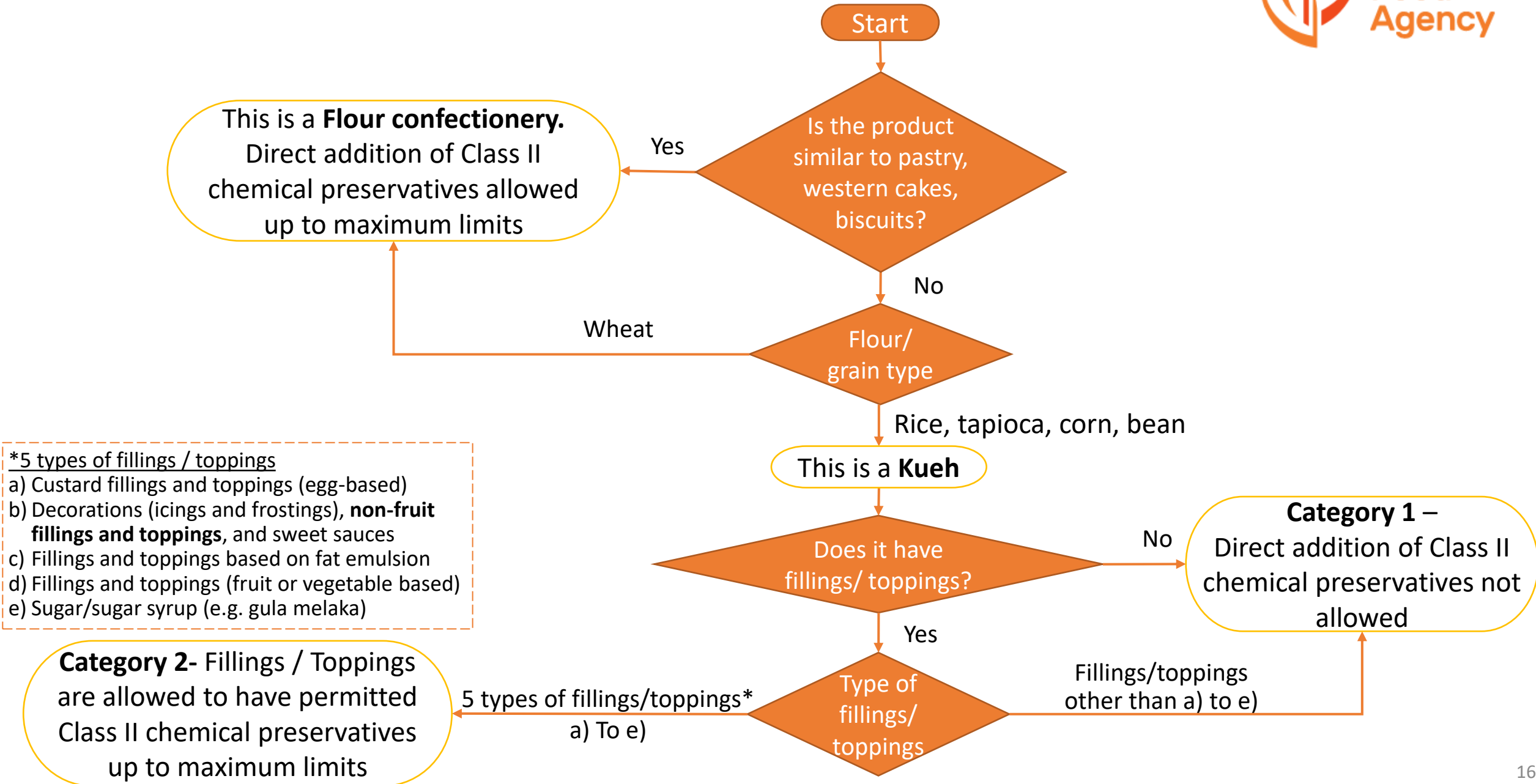
# Differentiating kueh from flour confectionery

- Some foods (examples below) may have "kueh" in their naming, but are regarded as flour confectionery
  - product characteristics similar to the examples of "pastry, cakes and biscuits" under Regulation 54 "Flour confectionery"

Similar to Pastry	Similar to Western Cakes	Similar to Biscuits
Puffs (e.g. curry puffs, samosa)	Pancakes (e.g. Mr Bean Pancakes, Min Jiang Kueh, Lempeng pisang)	Asian biscuits and cookies (e.g. kueh bangkit, kueh suji, kueh sepit, shell of kueh pai tee)
Doughnuts (e.g. Fried dough products like Yu Char Kueh/You Tiao, Ham Chim Peng, Jeneket, Vadai)	Kueh bakar	<div style="border: 1px solid black; background-color: yellow; padding: 5px;"> <p><b>Reg 54.—(1) Flour confectionery, including <b>pastry, cakes and biscuits</b>, shall be the product, cooked or uncooked, of a mixture of cereals and other foodstuffs, and shall exclude bakery products.</b></p> </div>
Pineapple tarts	Kueh bahulu	
	Kek lapis / Kueh lapis (Indonesian style layer cake) 	



# Flowchart to differentiate kueh from flour confectionery



# What is a "filling"?

Edible mixtures used to fill the cavity in the preparation of another food item

Ang ku kueh with  
mung bean paste  
(Glutinous rice flour "skin"  
with mung bean paste core)



The mung bean paste fills the cavity of the ang ku kueh  
"skin"/dough → the mung bean paste is the filling

Pumpkin kueh



The pumpkin pieces are dispersed throughout the kueh  
and does not fill any cavity in the kueh → the pumpkin  
pieces are not considered to be the filling

# Examples of fillings and toppings under the Food Regulations

\*The levels in the third column apply if only one Class II chemical preservative is used in the filling/topping. If two or more Class II chemical preservatives are used in the same product, the 100% rule applies.

Category name under Food Regulations	Examples	Maximum permitted level* for Class II chemical preservatives under the Food Regulations
Fillings and toppings (fruit or vegetable based)	Coconut filling, Soon Kueh filling, “Koo Cai” filling, Red bean paste, Lotus paste, Strawberry filling	Sulphur dioxide: 350ppm Methyl para-hydroxy benzoate: 800ppm Benzoic Acid : 800 ppm Sorbic Acid : 450 ppm
Custard fillings and toppings (egg-based)	These are typically sweet fillings or toppings that are cooked or thickened with egg.	Benzoic Acid : 1000 ppm Sorbic Acid : 1000 ppm
Decorations (icings and frostings), non-fruit fillings and toppings, and sweet sauces	These products are typically flavoured sweet fillings or toppings that may not have any actual fruit present (e.g. strawberry flavoured filling that is predominantly comprised of sugar or syrup and added with artificial strawberry flavouring)	Benzoic Acid : 1500 ppm Sorbic Acid : 1000 ppm
Fillings and toppings based on fat emulsion	These products are typically “cream” type of fillings and toppings that do not have dairy cream in them, but are actually made of emulsified vegetable fats.	Benzoic Acid : 1000 ppm Sorbic Acid : 1000 ppm
Sugar/sugar syrup	Gula Melaka	Sulphur dioxide 70ppm

# Understanding the limits for Class II chemical preservatives in the Fourth Schedule

- Maximum levels of Class II chemical preservatives allowed to be used in food is listed in the Fourth Schedule of the Food Regulations
- The number in the column is the maximum level if only one Class II chemical preservative is used in the food
- Units are expressed in **parts per million** (ppm) = milligrams/kilogram (mg/kg)
  - E.g. 1 kilogram of red bean paste can have a maximum of 800 milligrams of benzoic acid

## FOURTH SCHEDULE — *continued*

Selected Foods	Maximum amount of Chemical Preservative in Parts per Million					
	Chemical Preservative No. 1	2	3	4	5	6
	Calculated as Sulphur dioxide	Benzoic acid	Methyl para-hydroxy benzoate	Sorbic acid	Sodium nitrite	Sodium nitrate
Cooked molluscs, crustaceans and echinoderms		2,000		2,000		
Crustaceans, uncooked	100 (in the edible portion)					
Custard fillings and toppings (egg-based)		1,000		1,000		
Decorations (icings and frostings), non-fruit fillings and toppings, and sweet sauces		1,500		1,000		
Desserts, fruit based, milk and cream	100	1,000		1,000		
Drinking chocolate concentrate		700	700			
Fat spread				2,000		
Fillings and toppings based on fat emulsion		1,000		1,000		
Fillings and toppings (fruit or vegetable based)	350	800	800	450		
Fish, smoked and cured					10	

# Use of two or more Class II chemical preservatives in the same food - "the 100% rule"

If two or more preservatives are used in the same food (e.g. filling), the sum of percentages of the preservatives must not exceed 100%

- Calculation tool available on SFA's website

$$\frac{\text{Amount of Chemical Preservatives X added (ppm)}}{\text{Maximum permitted level of Chemical Preservative X (ppm)}} + \frac{\text{Amount of Chemical Preservatives Y added (ppm)}}{\text{Maximum permitted level of Chemical Preservative Y (ppm)}} + \dots \times 100\% \leq 100\%$$

**Reg 19(3)(b)(ii)** - Any specified food in relation to which 2 or more Class II chemical preservatives are specified in Part I of the Fourth Schedule may contain an admixture of those chemical preservatives if, when the quantity of each such chemical preservative present in that food is expressed as a percentage of the maximum quantity of that chemical preservative appropriate to that food in accordance with Part I of that Schedule, the sum of those percentages does not exceed 100.



QR code to calculation tool

# Example calculation 1 : Red bean paste with 2 Class II chemical preservatives

- Red bean paste contains Benzoic acid at 300 ppm and Sorbic acid at 250 ppm
- Both these preservatives are added below the maximum levels in the Fourth Schedule
- Applying the 100% rule
  - $(300/800 + 250/450) \times 100\% = 93.1\%$
- Sum of percentages does not exceed 100% => **Allowed for use**

## Calculate It Yourself: Maximum Levels for Class II Chemical Preservatives

Note: Please key in use levels into empty white cells only. Cells coloured in grey indicate that the particular Class II chemical preservative is not permitted for use in that food category.

**Result**  
**Combination not permissible** : Please reduce the use level of 1 or more Class II chemical preservatives to meet Total % of 100 or less  
**Combination permissible** : The use level of Class II chemical preservatives meets the Total % of 100 or less

Selected Foods	Maximum amount of Chemical Preservative in Parts per Million						Combination	
	Chemical Preservative No. 1	2	3	4	5	6	Total %	Result
	Calculated as Sulphur dioxide	Benzoic acid	Methyl para-hydroxy benzoate	Sorbic acid	Sodium nitrite	Sodium nitrate		
Fillings and toppings (fruit or vegetable based)		300.0		250.0			93.1	Combination permissible

Maximum level of Class II chemical preservatives allowed in fillings & toppings (fruit or vegetable based):  
 Benzoic Acid : 800 ppm  
 Sorbic Acid : 450 ppm



# Example calculation 2 : Lotus bean paste with 2 Class II chemical preservatives

- Lotus bean paste contains Benzoic acid at 300 ppm and Sorbic acid at 300 ppm.
- Both these preservatives are added below the maximum levels in the Fourth Schedule
- Applying the 100% rule
  - $(300/800 + 300/450) \times 100\% = 104.2\%$
- Sum of percentages exceeds 100 => **Not allowed for use**

## Calculate It Yourself: Maximum Levels for Class II Chemical Preservatives

Note: Please key in use levels into empty white cells only. Cells coloured in grey indicate that the particular Class II chemical preservative is not permitted for use in that food category.

Result

**Combination not permissible** : Please reduce the use level of 1 or more Class II chemical preservatives to meet Total % of 100 or less

**Combination permissible** : The use level of Class II chemical preservatives meets the Total % of 100 or less

Selected Foods	Maximum amount of Chemical Preservative in Parts per Million						Combination	
	Chemical Preservative No. 1	2	3	4	5	6	Total %	Result
	Calculated as Sulphur dioxide	Benzoic acid	Methyl para-hydroxy benzoate	Sorbic acid	Sodium nitrite	Sodium nitrate		
Fillings and toppings (fruit or vegetable based)		300.0		300.0			104.2	Combination not permissible

Maximum level of Class II chemical preservatives allowed in fillings & toppings (fruit or vegetable based):  
 Benzoic Acid : 800 ppm  
 Sorbic Acid : 450 ppm



## **If you use preservatives in fillings and toppings OR purchase fillings and toppings in bulk, take note of these points**

- Ensure that you understand what goes into the kueh, including the amount of preservatives in the fillings and toppings
  - Clarify with the supplier on the specific composition of any products added into the kueh
- Use only permitted preservatives; if using Class II chemical preservatives, do not exceed the maximum levels specified in the Fourth Schedule of the Food Regulations

# Annex

# List of Permitted Preservatives under Food Regulations

Class I	Class II	Class III
(i) common salt (ii) sugars (iii) vinegar or acetic acid, lactic acid, ascorbic acid, erythorbic acid, citric acid, malic acid, phosphoric acid, tartaric acid, or propionic acid or the calcium, potassium or sodium salts of any of the acids specified in this subparagraph (iv) ethyl alcohol or potable spirits	(i) Sulphur dioxide, sulphurous acid or any of its sodium, potassium or calcium salts (ii) Benzoic acid, and its sodium and potassium salts (iii) Methyl parahydroxybenzoate and its sodium salt (iv) Sorbic acid and its sodium, potassium or calcium salts (v) Nitrites of sodium or potassium (vi) Nitrates of sodium or potassium	Dimethyl dicarbonate

- For Class I chemical preservatives, no maximum levels are specified, however industry should only use the lowest possible level necessary to accomplish the desired effect.
- Please refer to the Fourth Schedule of the Food Regulations for the list of foods and the maximum permitted levels for the use of the Class II and Class III chemical preservatives.