Title: WET SOUP CONCENTRATES

Abstract: A retorted liquid soup concentrate package (of about 70 to 100g contents) expressible from the package when opened and dilutable with boiling or near boiling water (at a dilution ratio water/concentrate of from 1.9:1 to 2.5:1) to a lump free ready to eat soup form at least 55°C (preferably 60 to 65°C) and a target volume less than 400mls (preferably 250-300mls).
TECHNICAL FIELD

The present invention relates to marketable products capable of being conveniently converted to a hot ready to serve form.

BACKGROUND

There is an increasing emphasis on convenience in the preparation of foods. This is also the case with soup products.

Dry powder type soups are known. These frequently require either (i) mixing with cold water and thereafter heating or (ii) mixing with hot water. Care is required particularly with option (ii) to ensure some degree of consistency without lumps in the resultant product.

We perceive a premium attaching to packaged wet soup forms where at least some (and preferably most) of the content has been in line puree or broth derived. Such a wet soup type product has the prospect of being marketed as originating from natural components with a minimum of unnecessary or out of line processing steps.

Such a packaged wet concentrate product that we envisage (and this excludes instant dry powder soup product forms) desirably will not require a final heating step on a stove top in a microwave or the like. We envisage such a product as benefiting from an ability to be out of package diluted with boiling water or the like to a hot ready to serve form.

The present invention accordingly recognises the desirability of providing and has as an object the provision of a liquid including concentrate of a soup, which can preferably be removed from a container for dilution with hot water to an instant hot “ready to serve” form.

BRIEF DESCRIPTION OF THE INVENTION

The present invention in one aspect involves a wet soup in a container capable of reconstitution with hot water to provide an instant soup. Examples include 70-100 g wet soup sachets (e.g. foil sachets) capable of being reconstituted with added boiling water in a mug to form a ready to eat or serve hot soup.

As used herein the term “and/or” means “and” or “or” or where appropriate both.
As used herein the term "(s)" following a noun means as is appropriate the singular or plural or both forms of that noun.

As used herein the term "ready to serve" or "ready to eat" means a soup ready to consume.

As used herein the term "in line" in respect of a food stuff and/or food stuff flavouring derived from one or more of the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish means a procedure akin to that of a normal start to finish cooking procedure, i.e. without being processed to a dry powder form. For example (optionally with the addition of at least water), in the case of vegetables and fruits, it can involve the preparation of a puree that is never totally dried and, in the case of meats, fish and shellfish, can include the preparation of a broth that is never totally dried which yet which, in each case, with optional water content reduction and/or free water absorption and/or other viscosity and/or perceived viscosity treatment, can nonetheless be filled into an appropriate container in a suitable temperature range (ideally cold or cool filled if any viscosity and/or perceived viscosity increasing agent(s) may give rise to undue thickening within the container if hot filled), be sealed therein and still later be diluted with boiling water to some targeted viscosity or perceived viscosity.

In another aspect the invention is a soup concentrate product comprising or including

a sealed container,

a liquid including soup concentrate adapted to be diluted by boiling or near boiling water to a ready to serve soup form, the concentrate being within the container,

wherein said concentrate is capable of being expressed, poured or otherwise removed from the container once opened,

and wherein the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to achieve a soup, to a target volume less than 400 mls at a temperature of at least 55°C.

Preferably the concentrate is or includes a puree and/or broth.

Preferably the concentrate has been cold or cool (e.g. at ambient temperature(s)) filled into the container prior to sealing.

Preferably the sealed container of concentrate has been retorted after sealing of the container.
Preferably the container bears instructions to dilute the content of the container with boiling (or near boiling water) to provide such a soup.

Preferably the concentrate has a texturiser and/or thickener at least one of (i) a suitable starch and/or starch derivative and (ii) a suitable fruit and/or vegetable fibre.

Preferably the concentrate includes (added) water.

Preferably the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water or near boiling water to achieve a target soup volume substantially lump free within the range of from 200 to 350 mls at a temperature of at least 55°C.

Preferably the concentrate has a starch and/or starch derivative inclusion and the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to achieve a substantially lump free soup to a target volume less than 400 mls at a temperature of at least 55°C.

Preferably the concentrate is of a weight of from 70g to 100g (more preferably from 80g to 90g) (most preferably about 85g).

Preferably the dilution ratio of water to concentrate is in a range of 1.5:1 and above. Preferably the dilution ratio of water to concentrate range is not above 5:1.

Preferably the dilution ratio of water to concentrate is at least 1.9:1.

Preferably the dilution ratio of water to concentrate is in the range of 1.9:1 to 2.5:1.

Preferably the target volume with the use of boiling water the temperature will be at least 60°C (more preferably from 60 to 65°C).

In another aspect the invention is a retorted soup product comprising or including

- a sealed container,

- a water and pomace, pomance fibre or pomace fibre derivative including concentrate adapted to be diluted by boiling or near boiling water, the concentrate being within the container,

wherein said concentrate is capable of being expressed, poured or otherwise removed from the container once opened,

and wherein the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in
excess to that of the liquid including concentrate thereby to achieve a substantially lump
free soup to a target volume less than 400 mls at a temperature of at least 55°C.

In still another aspect the invention is a retorted soup product comprising or
including

a sealed container,

a water and citrus fibre including soup concentrate adapted to be diluted by
boiling or near boiling water, the concentrate being within the container,

wherein said concentrate is capable of being expressed, poured or otherwise
removed from the container once opened,

and wherein the concentrate without heating and at an ambient temperature
within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in
excess to that of the liquid including concentrate thereby to achieve a soup to a target
volume less than 400 mls at a temperature of at least 55°C,

and wherein the container bears instructions to dilute the content of the container
with boiling (or near boiling water) to provide such a soup.

In another aspect the invention is a packaged wet form food and retorted
concentrate where the concentrate itself is capable of dilution with boiling water, or near
boiling water, to the form of a ready to serve soup, said concentrate comprising or
including

a food stuff and/or food stuff flavouring derived from one or more of the group
consisting of vegetables, fruits, fungi, mammalian and poultry meats fish and shellfish,
water (whether added and/or inherently in any ingredient),
a viscosity and/or perceived viscosity increasing ingredient or ingredients,
on optionally a bulking and/or texturising ingredient or ingredients,
on optionally a flavouring agent or flavouring agents,
on optionally an emulsifier or emulsifiers,
on optionally a preservative or preservatives,
on optionally a colouring agent or agents,
on optionally a stabiliser or stabilisers, and
on optionally a pH adjustment agent or agents.

In yet another aspect the invention is a packaged and retorted wet form food
concentrate where the concentrate itself is capable of dilution with boiling water, or near
boiling water to the form of a ready to serve soup, said concentrate comprising or including

a food stuff and/or food stuff flavouring in line derived from one or more of the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish,

water (whether added and/or inherently in any ingredient),
a viscosity and/or perceived viscosity increasing ingredient or ingredients,
on Optionally a bulking and/or texturising ingredient or ingredients,
on Optionally a flavouring agent or flavouring agents,
on Optionally an emulsifier or emulsifiers,
on Optionally a preservative or preservatives,
on Optionally a colouring agent or agents,

In another aspect the invention is a packaged and retorted wet form food concentrate where the concentrate itself is capable of dilution with boiling water, or near boiling water to the form of a ready to serve soup, said concentrate comprising or including

a food stuff and/or food stuff flavouring in line derived from one or more of the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish,

water (whether added and/or inherently in any ingredient),
a viscosity and/or perceived viscosity increasing ingredient or ingredients,
on Optionally a bulking and/or texturising ingredient or ingredients,
on Optionally a flavouring agent or flavouring agents,
on Optionally an emulsifier or emulsifiers,
on Optionally a preservative or preservatives,
on Optionally a colouring agent or agents,
on Optionally a stabiliser or stabilisers, and
 optionally a pH adjustment agent or agents.

Preferably the dilution ratio of water to concentrate is in the range 1.5:1 to 5:1 and most preferably 1.9:1 to 2.5:1.

Preferably the concentrate has been retorted.

Preferably in said packaged wet form food concentrate said food stuff and/or food stuff flavouring is distinct from the viscosity and/or perceived viscosity increasing
ingredient or ingredients although in some forms, particularly those based upon a tomato
puree, the same ingredient can give rise to satisfying both requirements.

Preferably said concentrate is of a soup and the mass of the concentrate in the
package is less than 100 gms (most preferably about 85 gms).

In some forms of the present invention the packaged wet form food concentrate
may not be retorted in which case preferably it is in a substantially sterile form owing to
the inclusion of a preservative or preservatives and/or appropriate pH adjustment agent or
agents.

Preferably whatever form of the concentrate preferably it includes a viscosity at
the time of packaging that enables the filling of the package and the subsequent sealing
thereof, the opening and expression from the package of the concentrate at an ambient
temperature (such as between 10 to 30°C inclusive) and/or the dilution of the concentrate
with hot water to a soup consistency where the viscosity in that diluted form is that
desirable for a soup of that kind.

Viscosity and/or perceived viscosity increasing agent(s) are selected preferably
from the following:

**Starches:**

Native
Physically modified
Chemically modified
From origins Wheat, Potato, Corn, Waxy Maize, Tapioca

**Gums, etc.:**

Locust Bean Gum
Pectins (inc. different types)
MCC
CMC
Guar

**Other:**

Citrus Fibre
Pea Flour
Pumpkin Powder
Other dried fibres (cereal, vegetable, fruit)
Fat mimetic
Wet vegetable purees

Some of these options can also act as bulking and/or texturising and/or free water absorption agents.

In some forms of the present invention the viscosity and/or perceived viscosity increasing ingredient or ingredients can include an ingredient adapted to absorb water of the concentrate thereby bestowing a perceived viscosity increasing effect. Examples of such an agent is a dry citrus fibre (for example, any one or more of lemons and/or oranges) or fibres such as those of the tomato.

In other forms however the agent can be one that modifies the physical form of the concentrate by a gel or other forming characteristic that directly or indirectly has an effect on viscosity and/or perceived viscosity.

Such gel providing agents can include appropriate starches capable of being used in a procedure which does not generate excessive gel or thickening prior to filling of the container and its sealing and/or post such filling and sealing and prior to expression or pouring or otherwise being removed from the container.

It should be appreciated that it is envisaged desirable to allow the container to be emptied prior to mixing with the hot water although, in some less preferred forms, if desired, the container can have provision for receiving the dilution volume in total or in part prior to the expression, pouring or other removal from the container of the fully or partly diluted product.

Preferably the parameters of viscosity are any of those hereinafter described.

We envisage a desirability of being able to express or otherwise remove the concentrate for a soup from a container (such as a retortable container such as a retort pouch pack) to immediately be diluted in a cup, bowl, jug with boiling, or near boiling water, to provide, with a minimum of lump development, a final ready to serve product.

Because we perceive an advantage in requiring no further heating apart from the sensible heat captured in the water to provide the dilution, the sensible heat to be transferred to the mass of the concentrate preferably must deliver the diluted product to a consumable temperature.

An ideal temperature we envisage for such a ready to eat soup is in the range of at least 55°C and, most preferably from 60 to 65°C. We envisage that with boiling water and a water including concentrate (and taking into account the likely heat loss into a cup
or other such container at ambient temperatures) the ratio of boiling water or near boiling water to concentrate on a weight for weight basis must be at least 1.9:1.

We have also determined that a desirable serving size, if to provide a soup, is in the range of 250 to 300 ml and for dilution to an optimal serving temperature, we envisage a preferred mass of the concentrate to be of the order of about 85 g.

In still another aspect the present invention is a process for in line producing a concentrate in a container capable of dilution with boiling or near boiling water to a hot ready to serve soup, said process comprising or including the steps of preparing a dilutable wet concentrate puree and/or broth of an ingredient or ingredients selected at least from

(i) the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish, and optionally also (ii) one or more viscosity and/or perceived viscosity increasing agent, and

filling and sealing a quantity of the dilutable wet concentrate into a suitable container, (and optionally retorting the container sealed concentrate), the process being further characterised by any one or more of:

(i) the mass of the concentrate in the container is from 70 to 100 gms (preferably about 85 gms),

(ii) the concentrate is cold or cool filled into the container prior to its sealing,

(iii) the concentrate without the heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to achieve a soup, to a target volume less than 400 mls at a temperature of at least 55°C,

(iv) the dilution instructed on the pack provides at least a ready to serve soup of a temperature and viscosity appropriate for such a soup, and/or

(v) the sealed concentrate has been retorted.

In a further aspect the present invention consists in a product made by a process as aforesaid.

In still a further aspect the present invention consists in the use of a product and/or concentrate of any form in accordance with the present invention, such use involving dilution with boiling or near boiling water.
Ideally such use is with boiling water but having regard to the heat sink that a container such as cup, bowl, jug or the like may provide the temperature can be below boiling provided however the hot water is initially at boiling or at a temperature preferably within 10 and most preferably a few degrees of boiling.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Preferred forms of the present invention will now described with reference to the accompanying drawings in which

**Figure 1** is a generic flow diagram of the process of the present invention, and

**Figure 2** is an example of that process for a chicken and vegetable soup.

**DETAILED DESCRIPTION OF THE INVENTION**

In the preferred form of the present invention the container is preferably a retort pouch type pack rather than other container forms. Nevertheless it is still within the scope of the present invention to include containers which can be a can or the like.

A suitable retortable pouch pack is that known as the Greenseas Pouch albeit preferably with modification to shape to aid product removal after opening (e.g. by cutting, tearing, etc.).

The concentrate of the present invention is to be readily reconstituted to the correct dilution and serving temperature by the addition of an instructed volume of boiling water (e.g. on the package, by means of instruction to empty into a cup and fill the cup with stirring with boiling water).

The pack size will be in the range 70 g to 100 g (about 85 g) which can be made to a (preferably 200 to 350 ml (e.g. 300 ml)) serving with boiling water to reach a desired temperature at least 55°C and preferably around 65°C.

Tomato based concentrates we have found to provide suitable viscosity characteristics for this type of product. Tomato paste lends itself to this application well as it readily dilutes with hot or cold water without any tendency to form lumps. It is also very temperature stable.

Another content suitable for providing such viscosity and textural characteristics is the use of fruit (e.g. Tomato) and vegetable fibres. Such products are used currently in drink and food formulations. Their properties include some independence to temperature and acidity. These fibres are available as commercial preparations or directly from food-
grade waste. Such content alone or in conjunction with conventional thickeners, such as
starches and gums (or any other suitable means), can provide the textural and mouthfeel
characteristics some products require.

Any product developed to meet aims for products of our invention, because of the
large amount of water to be added by the consumer, requires as little as possible water
addition during manufacture. One way of controlling free water in a recipe whilst
conferring textural advantages is the addition of citrus fibre.

With respect therefore to the annexed drawing (Figure 1) the following
considerations of the process are to be kept in mind.

Area Notes:
1. **INGREDIENTS:**
   (A) **GENERAL**
   Colour/Flavour Delivery
   Effect on Viscosity
   Requirements for Preparation before the kettle stage.

(B) **FUNCTIONAL INGREDIENTS:**
Presence of starch as a post process thickener only
Citrus fibre as a water rententive agent
Some flavouring ingredients are also functional (e.g. tomato paste)
Need to slurry starch, slurry other dries if water availability allows
Higher starch levels cause problems with reconstitution
Functional ingredients can be limited in use by their organoleptic character

2. **AT THE KETTLE:**
Which ingredients need cooking? (micro / enzymic / flavour)
Which ingredients are fragile and need to be added last / reduced mixing speed?
How well will the ingredients integrate? (fat / lumping / sink / float)
How thick will the mix be after each addition? (try to thicken late)
Do we have water available to slurry/wash out skips/thin mix for pumping?
What effect does heat have on functional / other ingredients?
What is the final viscosity (can we pump it? - At any given temperature)
What limits are there on hold time (change in viscosity/micro stability/flavour/colour)?
Temperature maintenance during transfer?
Need to keep kettle temps below 60°C if starch is used – else thickens too much.

3. **AT THE FILLER:**
Need to keep filler temps below 60°C if starch is used – else thickens too much
Particle suspension
Product separation / thickening
Maximum hold times (as at kettle)

10 Limitations imposed by packaging format?
Headspace
Weight control
Temperature maintenance during filling
Must work within viscosity limits of factory preparation / transfer capability.

4. **THERMAL PROCESSING:**
Initial Temperature
Initial Viscosity
Final Viscosity

20 Protection of product quality
Attainment of commercial sterility (depends acidity/initial loading of ingredients)

5. **RECONSTITUTION / CONSUMPTION:**
Higher starch levels cause problems with reconstitution

25 Ease of reconstitution with boiling water
Homogeneity of mix achieved (no lumps)
Adequate final temperature is achieved by a minimum 1:1.9 ratio of product:boiling water
Flavour / Texture / Colour etc.
Ease of Removal from pouch – often the limiting factor for final product thickness.

30 Figure 2 shows a preferred flow diagram for a chicken and vegetable soup.
The contents of Figures 1 and 2 are here included by way of reference.
Example 1

**Tomato Soup**

Ingredients: Concentrated Tomatoes (85%) (contains 394g of tomatoes per 100g), sugar, onions, salt, herbs (including Basil), butter, acidity regulator (Sodium Bicarbonate), black pepper, spice.

The instructions [as also for the other examples] to be included on the container is preferably to:

1. Squeeze contents of sachet gently into 300ml mug.
2. Add boiling water, filling mug half way and stir for 10-15 seconds.
3. Fill to the top with further boiling water, stir again and enjoy.

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<th>Nutrition Information</th>
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<td>Servings per package: 1</td>
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<td>Serving size: 300g* (i.e. when diluted with boiling water to 300 ml)</td>
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<tr>
<td>Protein</td>
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<td>Fat, Total</td>
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<tr>
<td>- Saturated</td>
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<tr>
<td>Carbohydrate</td>
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<tr>
<td>- Sugars</td>
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<tr>
<td>Dietary Fibre</td>
<td>3.0g</td>
<td>1.0g</td>
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<tr>
<td>Sodium</td>
<td>1110mg</td>
<td>370mg</td>
</tr>
<tr>
<td>Lycopene</td>
<td>23.9mg</td>
<td>8.0mg</td>
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</table>

Example 2

**Creamy Corn and Chicken**

Ingredients: Corn (69%), water, chicken (7%), red pepper, chicken flavour (contains wheat, milk, flavour enhancer (621)), Tapioca Thickeener (1442), sugar, salt, parsley.

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<td>- Saturated</td>
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<tr>
<td>Carbohydrate</td>
<td>12.9g</td>
<td>4.3g</td>
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<tr>
<td>- Sugars</td>
<td>2.3g</td>
<td>0.8g</td>
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<tr>
<td>Dietary Fibre</td>
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<tr>
<td>Sodium</td>
<td>1130mg</td>
<td>375mg</td>
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Example 3

Spicy Thai Noodle Soup

Ingredients: Water, vegetables (onions, carrots, peas, red pepper, potatoes), wheat pasta (24%), herbs (lemongrass, Coriander, parsley), red chillies, chicken flavours (contain milk, sesame oil, flavour enhancers (621, 627, 631)), dietary fibre (citrus fibre), yeast extract, salt, sugar, natural onion flavour, white pepper, colours (160, 101), soy oil, traces of egg & barley.

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<td>Carbohydrate</td>
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<tr>
<td>Sodium</td>
<td>1110mg</td>
<td>370mg</td>
</tr>
<tr>
<td>Lycopene</td>
<td>23.9mg</td>
<td>8.0mg</td>
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</table>

Example 4

Minestrone

Ingredients: Concentrated tomatoes, wheat pasta, carrots, potatoes, green beans, sugar, salt herbs, yeast extract, spinach, white wine vinegar, cheese, acidity regulator (sodium bicarbonate), traces of fish, egg & barley.

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<th>AVG Quantity Per Serving</th>
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<td>Protein</td>
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<td>Fat, Total</td>
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<td>- Saturated</td>
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<td>Carbohydrate</td>
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<td>Lycopene</td>
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CLAIMS:

1. A soup concentrate product comprising or including
   a sealed container,
   a liquid including soup concentrate adapted to be diluted by boiling or near boiling
   water to a ready to serve soup form, the concentrate being within the container,
   wherein said concentrate is capable of being expressed, poured or otherwise
   removed from the container once opened,
   and wherein the concentrate without heating and at an ambient temperature
   within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in
   excess to that of the liquid including concentrate thereby to achieve a soup, to a target
   volume less than 400 mls at a temperature of at least 55°C.

2. A product of claim 1 wherein the concentrate is or includes a puree and/or broth.

3. A product of claim 1 or 2 wherein the concentrate has been cold or cool (e.g. at
   ambient temperature(s)) filled into the container prior to sealing.

4. A product of any one of the preceding claims that has been retorted after sealing
   of the container.

5. A product of any one of the preceding claims wherein the container bears
   instructions to dilute the content of the container with boiling (or near boiling water) to
   provide such a soup.

6. A product of any one of the preceding claims the concentrate has a texturiser
   and/or thickener at least one of (i) a suitable starch and/or starch derivative and (ii) a
   suitable fruit and/or vegetable fibre.

7. A product of any one of the preceding claims wherein the concentrate includes
   water.

8. A product of any one of the preceding claims wherein the concentrate without
   heating and at an ambient temperature within the range 10 to 30°C can, if desired, be
   diluted with boiling water or near boiling water to achieve a target soup volume
   substantially lump free within the range of from 200 to 350 mls at a temperature of at
   least 55°C.

9. A product of any one of the preceding claims wherein the concentrate has a starch
   and/or starch derivative inclusion and the concentrate without heating and at an ambient
   temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a
   volume in excess to that of the liquid including concentrate thereby to achieve a
substantially lump free soup to a target volume less than 400 mls at a temperature of at least 55°C.

10. A product of any one of the preceding claims wherein the concentrate is of a weight of from 70g to 100g.

11. A product of claim 10 wherein that weight is from 80g to 90g.

12. A product of claim 11 wherein that weight is about 85g.

13. A product of any one of the preceding claims wherein the dilution ratio of water to concentrate is in a range of 1.5:1 and above.

14. A product of claim 13 wherein the dilution ratio of water to concentrate range is not above 5:1.

15. A product of claim 14 wherein the dilution ratio of water to concentrate is at least 1.9:1.

16. A product of any one of the preceding claims wherein the dilution ratio of water to concentrate is in the range of 1.9:1 to 2.5:1.

17. A product or concentrate of any one of the preceding claims wherein at the target volume with the use of boiling water the temperature will be at least 60°C.

18. A product or concentrate of claim 31 wherein the temperature will be from 60 to 65°C.

19. A **retorted soup product** comprising or including

   a sealed container,

   a water and pomace, pomance fibre or pomace fibre derivative including concentrate adapted to be diluted by boiling or near boiling water, the concentrate being within the container,

   **wherein** said concentrate is capable of being expressed, poured or otherwise removed from the container once opened,

   **and wherein** the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to achieve a substantially lump free soup to a target volume less than 400 mls at a temperature of at least 55°C.

20. A **retorted soup product** comprising or including

   a sealed container,

   a water and citrus fibre including soup concentrate adapted to be diluted by boiling or near boiling water, the concentrate being within the container,
wherein said concentrate is capable of being expressed, poured or otherwise removed from the container once opened,

and wherein the concentrate without heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to achieve a soup to a target volume less than 400 mls at a temperature of at least 55°C,

and wherein the container bears instructions to dilute the content of the container with boiling (or near boiling water) to provide such a soup.

21. A packaged wet form food and retorted concentrate where the concentrate itself is capable of dilution with boiling water, or near boiling water, to the form of a ready to serve soup, said concentrate comprising or including

  a food stuff and/or food stuff flavouring derived from one or more of the group consisting of vegetables, fruits, fungi, mammalian and poultry meats fish and shellfish,
  water (whether added and/or inherently in any ingredient),
  a viscosity and/or perceived viscosity increasing ingredient or ingredients,
  optionally a bulking and/or texturising ingredient or ingredients,
  optionally a flavouring agent or flavouring agents,
  optionally an emulsifier or emulsifiers,
  optionally a preservative or preservatives,
  optionally a colouring agent or agents,
  optionally a stabiliser or stabilisers, and
  optionally a pH adjustment agent or agents.

22. A packaged and retorted wet form food concentrate where the concentrate itself is capable of dilution with boiling water, or near boiling water to the form of a ready to serve soup, said concentrate comprising or including

  a food stuff and/or food stuff flavouring in line derived from one or more of the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish,
  water (whether added and/or inherently in any ingredient),
  a viscosity and/or perceived viscosity increasing ingredient or ingredients,
  optionally a bulking and/or texturising ingredient or ingredients,
  optionally a flavouring agent or flavouring agents,
  optionally an emulsifier or emulsifiers,
optionally a preservative or preservatives,
optionally a colouring agent or agents,
optionally a stabiliser or stabilisers, and
optionally a pH adjustment agent or agents.

23. A product or concentrate of claim 21 or 22 wherein the dilution ratio of water to concentrate on a weight basis is to be at least 1.5:1.

24. A product or concentrate of claim 23 wherein said ratio is at least 1.9:1.

25. A product or concentrate of claim 23 or 24 wherein said dilution ratio is below 5:1.

26. A product or concentrate of claim 25 wherein the dilution ratio is from 1.5:1 to 2.5:1.

27. A product or concentrate of any one of claims 21 to 26 wherein target diluted volume is from 200 to 350 mls.

28. A product or concentrate of claim 23 wherein said target volume is from 250-300 mls.

29. A product or concentrate of any one of claims 21 to 28 wherein the concentrate is of a weight from 70 g to 100 g.

30. A product or concentrate of claim 29 wherein the concentrate is of a weight from 80 g to 90 g.

31. A product or concentrate of claim 30 wherein said weight is about 85 g.

32. A product or concentrate of any one claims 21 to 31 wherein the concentrate has been cool or cold filled into the container prior to the sealing thereof.

33. A product of any one of claims 21 to 32 wherein the sealed container has been retorted.

34. A product or concentrate any one of the preceding claims wherein a suitable starch or starch derivative is present.

35. A product of any one of claims 21 to 34 wherein a suitable fruit and/or vegetable fibre is present.

36. A product or concentrate of claim 35 wherein the fibre present is at least one of (a) a dry citrus fibre (b) that of the tomato and/or (c) vegetable fibre.

37. A product of any one of claims 1 to 36 wherein viscosity and/or perceived viscosity increasing agent(s) selected from one or more the following are present:

Native starch or starches,
Physically modified starch or starches,
Chemically modified starch or starches,
Starch or starches originating from Wheat, Potato, Corn, Waxy Maize and/or Tapioca,
Locust Bean Gum,
Pectins (inc. different types),
MCC,
CMC,
Guar Gum,
Citrus Fibre,
Pea Flour,
Pumpkin Powder,
Dried fibres (cereal, vegetable and/or fruit),
Fat mimetic,
Apple pomace, and
Wet vegetable purees.

38. **A process for in line producing a concentrate in a container** capable of dilution with boiling or near boiling water to a hot ready to serve soup form, said process comprising or including the steps of

*preparing* a dilutable wet concentrate puree and/or broth of an ingredient or ingredients selected at least from

(i) the group consisting of vegetables, fruits, fungi, mammalian and poultry meats, fish and shellfish, and optionally also (ii) one or more viscosity and/or perceived viscosity increasing agent, and

*filling and sealing* a quantity of the dilutable wet concentrate into a suitable container, (and optionally retorting the container sealed concentrate), the process being further characterised by any one or more of:

(ii) the mass of the concentrate in the container is from 70 to 100 gms (preferably about 85 gms),

(iii) the concentrate is cold or cool filled into the container prior to its sealing,

(iv) the concentrate without the heating and at an ambient temperature within the range 10 to 30°C can, if desired, be diluted with boiling water in a volume in excess to that of the liquid including concentrate thereby to
achieve a soup to a target volume less than 400 mls at a temperature of at least 55°C,

(v) the dilution instructed on the pack provides at least a ready to serve soup of a temperature and viscosity appropriate for such a soup, and/or

(vi) the sealed concentrate has been retorted.

39. A **product** made by a process of claim 38.

40. A product of claim 39 wherein the dilution instructed is not outside the range of from 1.5:1 to 5:1.

41. A product of claim 39 wherein the dilution instructed corresponds to within the range from about 1.9:1 to about 2.5:1.

42. **The use of a product** of any one of claims 1 to 37, 39, 40 or 41, such use involving dilution with boiling or near boiling water.
EXAMPLE OF FLOW DIAGRAM FOR A CHICKEN & VEGETABLE SOUP

- MEAT
  - DICE 10mm CUBES
  - TEMPER TO 0-4°C
- VEGETABLES
  - DICE 10mm POTATOES
  - FROZEN PEAS
  - PURÉE CARROTS
- DRY MIX FLAVOURING G
  - DRY MIX SALT, SUGAR
  - PEPPER, HERBS
  - SLURRY STARCH
- PRE-FORCED FUNCTIONALING G
  - DRY MIX EMULSIFIER WITH OTHER DRIED
- WITH OTHER G
  - PRE-MIX COLOURS WITH A LITTLE WATER

KETTLE

MIX-USE AGITATION AT 30% THROUGHOUT
HEAT-COOK MEAT, THEN TURN OFF HEAT FOR REMAINDER OF PREP
ORDER OF ADDITION: MEAT, VEG, FLAVOURS, COLOUR, STARCH SLURRY, FIBRE
AVAILABLE WATER- ENOUGH TO SLURRY STARCH, BUT NOT ENOUGH TO SLURRY ALL DRIED
MAX HOLD TIME- 2 HOURS FROM BATCH COMPLETE TO FINISH FILLING (AMBIENT PREP- MICRO RISK)
FINAL VISCOSITY- CHECKED TO BE WITHIN TRANSFER LIMITATIONS

FILLER G

FILLING TEMP- 10-30°C. IF COLDER WILL BE TOO THICK, IF HOTTER WILL BE SHORTER HOLD TIME
VISCOOSITY- WITHIN FILLING LIMITS
MAX HOLD TIME- ONE HOUR FROM FILLING TO START OF RETORT PROCESS
SUSPENSION- NO ISSUES IF FILLER BOWL STIRRER IS RUNNING
PACKAGING- NO ISSUES WITH STANDARD FORMAT

RETORT G

INITIAL TEMP- MINIMUM 10°C
VISCOOSITY- PROVEN PROCESS AT WORST CASE
FUNCTIONAL- CONTAINS UNGELATINISED STARCH INITIALLY, SO THICKENS DURING PROCESSING

RECONSTITUTION

REMOVAL FROM PACKAGING- OK AT THIS LEVEL OF STARCH/FIBRE
FLAVOUR/COLOUR ETC- GOOD PRODUCT ACHIEVED
EASE OF MIXING- READILY MIXES WITH BOILING WATER, NO LUMPS FORMED
FINAL TEMPERATURE- CORRECT 1:2.5 RATIO, SO FINAL TEMPERATURE IS AS REQUIRED AT 65°C.

FIGURE 2
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl.: A23L 1/39, 1/40

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

WPIDS CA FSTA: soup concentrate paste puree liquid semi-liquid wet container sachet can pouch packet tube

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<td>X</td>
<td>US 3676154 A (GEORGE GLASSER et al) July 11 1972 Whole document</td>
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</table>

☐ Further documents are listed in the continuation of Box C  X  See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the priority date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, trial, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

**Date of the actual completion of the international search**

27 August 2004

**Date of mailing of the international search report** 08 SEP 2004

**Name and mailing address of the ISA/AU**

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Form PCT/ISA/210 (second sheet) (January 2004)
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<td>NZ 527423 (HEINZ WATTIES LTD). 25 June 2004 (Abstract)</td>
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</table>
**INTERNATIONAL SEARCH REPORT**

**Box No. II** Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. □ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. □ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. □ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III** Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The claims are considered to lack unity *a posteriori*.

See Supplemental Box III for details

1. □ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ✗ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. □ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. □ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

□ The additional search fees were accompanied by the applicant's protest.

□ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)
Supplemental Box III
(To be used when the space in any of Boxes I to VII is not sufficient)

Continuation of Lack of Unity.

The unifying feature of the claims is a wet soup concentrate, or soup paste, in a sealed container that can be diluted with boiling water to make a ready-to-drink-soup.

It is apparent from the prior art cited in this report that such a soup pastes is not a novel feature. Therefore the claims are not unified by any special technical feature.

Each independent claim therefore defines a separate invention. There are therefore 6 separate inventions defined by the independent claims 1, 19, 20, 21, 22 and 38.

Moreover, at least some of the independent claims themselves define multiple inventions in that they define a series of soup pastes comprising independent ingredients, the only common ingredient being water and the only common treatment being retorting the concentrate in a sealed container. These features are also disclosed in the prior art of D2. See particularly claims 21, 22 and 38.
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX