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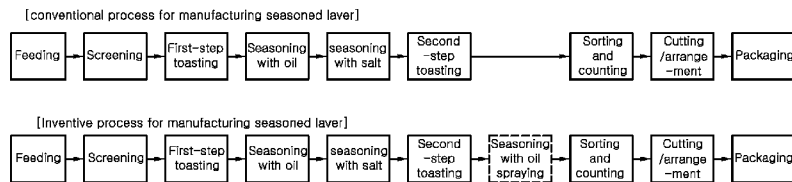
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(54) **Title:** METHOD FOR MANUFACTURING SEASONED LAVER



(57) **Abstract:** The present invention provides a method for manufacturing seasoned laver, the method comprising the steps of: 1) toasting dried laver in a toasting tunnel at 50~200°C for 2-3 seconds; 2) applying oil to a surface of the laver resulting from step 1), and seasoning the oil-applied laver with salt; 3) further toasting the seasoned laver of step 2) in a toasting tunnel at 200~400°C for 5-7 seconds; 4) spraying and applying oil to the surface of the laver resulting from step 3).



## Description

### Title of Invention: METHOD FOR MANUFACTURING SEASONED LAVER

#### Technical Field

[1] The present invention relates to a method for manufacturing seasoned laver, and more particularly, to a method for manufacturing seasoned laver, which can improve the quality of seasoned laver by using an oil spray device during processing.

[2]

#### Background Art

[3] Among seaweed side dishes, laver is a favorite of people, young and old, men and women. At home, seasoned laver prepared by applying sesame oil to laver, sprinkling a suitable amount of salt thereon and toasting the laver is usually taken.

[4] Generally, processed laver products include dried laver and seasoned laver. As used herein, the term "seasoned laver" refers to one made by treating dried laver with oil and seasoning, table salt or the like. Toasting temperature, heat treatment conditions and time for manufacturing a seasoned laver product should be suitably controlled according to the product, and the product should have its own color and flavor and should be free from off-flavor and off-odor.

[5] A conventional method for manufacturing seasoned laver comprises: toasting dried laver; applying a mixture of two or more oils (corn oil, sesame oil, perilla oil, grapeseed oil, olive oil, canola oil, etc.) to the toasted laver by passing the laver through rollers made of sponge; seasoning the surface of the oil-applied laver with salt; and further toasting the seasoned laver at a temperature between 200°C and 400°C.

#### Disclosure of Invention

##### Technical Problem

[6] However, the conventional method for manufacturing seasoned laver as described above has a disadvantage in that sesame oil or perilla oil loses its natural flavor during the high-temperature toasting process after application thereof.

##### Solution to Problem

[7] Accordingly, the present inventors have conducted studies to minimize the loss of flavor, which is the disadvantage of the conventional method for manufacturing seasoned laver, and increase the preference of seasoned laver, and, as a result, have recognized that the loss of oil flavor is great after second-step toasting in the conventional method for manufacturing seasoned laver. Based on this recognition, the present inventors have found that, when a specific amount of oil such as sesame oil, perilla oil or the like is additionally sprayed onto the surface of laver by an oil spray

device after second-step toasting, seasoned laver having a rich flavor can be obtained, thereby completing the present invention.

[8] Therefore, it is an object of the present invention to provide a method for manufacturing seasoned laver using an additional oil spray device.

[9] Another object of the present invention is to provide seasoned laver having an improved quality, manufactured by the above method.

[10] To achieve the above objects, the present invention provides a method for manufacturing seasoned laver, the method comprising the steps of:

[11] 1) toasting dried laver in a toasting tunnel at 50~200°C for 2-3 seconds;

[12] 2) applying oil to the surface of the laver resulting from step 1) and seasoning the oil-applied laver with salt;

[13] 3) further toasting the seasoned laver of step 2) in a toasting tunnel at 200~400°C for 5-7 seconds;

[14] 4) spraying and applying oil to the surface of the laver resulting from step 3); and

[15] 5) sorting the laver resulting from step 4), and cutting, arranging and packaging the screened laver.

[16] The present invention also provides seasoned laver manufactured by the above method.

### **Brief Description of Drawings**

[17] FIG. 1 shows a comparison between a conventional method for manufacturing seasoned laver and a method for manufacturing seasoned laver according to the present invention.

[18] FIG. 2 shows a process in which an oil spray device according to the present invention is used.

[19] FIG. 3 shows an oil spray device that is used in the present invention.

[20] FIG. 4 shows the results of sensory evaluation for seasoned laver manufactured by a conventional method and seasoned laver manufactured by the method of the present invention.

[21]

### **Mode for the Invention**

[22] Hereinafter, the present invention will be described in further detail.

[23] The present invention provides a method for manufacturing seasoned laver, the method comprising the steps of:

[24] 1) toasting dried laver in a toasting tunnel at 50~200°C for 2-3 seconds;

[25] 2) applying oil to the surface of the laver resulting from step 1) and seasoning the oil-applied laver with salt;

[26] 3) further toasting the seasoned laver of step 2) in a toasting tunnel at 200~400°C for

5-7 seconds;

[27] 4) spraying and applying oil to the surface of the laver resulting from step 3); and

[28] 5) sorting the laver resulting from step 4), and cutting, arranging and packaging the sorted laver.

[29] In the present invention, the dried laver is preferably fed sheet by sheet to a conveyor at a rate of, for example, 80-100 sheets per minutes, by an automatic feeder.

[30] The dried laver fed to the conveyor is passed through a foreign matter detection unit to remove unsuitable dried laver having foreign matter or holes.

[31] The oil that is used in step 2) may be one or a mixture of two or more selected from the group consisting of corn oil, sesame oil, perilla oil, grapeseed oil, olive oil and canola oil, but is not limited thereto. Generally, the oil is a mixture of about 90-99 wt% of corn oil or canola oil and about 1-10 wt% of one or more selected from among sesame oil, perilla oil, grapeseed oil and olive oil.

[32] In step 2), preferably, 1-2.5 g of the oil is applied per sheet of the dried laver, and then 0.5-1 g of salt is applied to the surface of the laver having the oil applied thereto. Specifically, 100-250 g of the oil and 50-100 g of salt are applied per 100 sheets (about 260 g) of dried laver.

[33] Step 2) is performed using sponge rollers. Specifically, while the toasted laver is passed through upper and lower sponge rollers wet with oil, the oil is applied to the laver by the pressure of the upper and lower sponges.

[34] The laver having the oil applied thereto in step 2) makes it possible to achieve the savory flavor of the toasted oil and laver due to a synergistic effect between the laver and the oil during second-step toasting of step 3). In addition, the oil applied to the laver in step 2) has the effect of fixing salt to the laver surface, and thus the loss of the seasoned salt is reduced, thereby ensuring uniform taste quality.

[35] In step 4), oil is sprayed onto the surface of the laver, toasted in step 3), using an oil spray device. Specifically, oil is finely sprayed onto the laver surface in an amount of 0.1-0.5 g per sheet of dried laver.

[36] As described above, according to the present invention, the flavor of seasoned laver can be enhanced by supplementing the loss of oil after second-step toasting by the use of the oil spray device.

[37] If oil is applied to laver after second-step toasting with conventional sponge rollers in place of the spray device, the seasoned salt will be lost because the salt adheres to the sponge rollers, and thus a designed salinity cannot be achieved. Also, in this case, the crispy laver after second-step toasting will be broken by the pressure of the upper and lower sponge rollers, or will become damp due to the excessive penetration of the oil into the laver.

[38] However, when the oil spray device as disclosed in the present invention is used,

there is an advantage in that, because oil in the storage tank of the spray device is selectively replaced, it is easy to selectively use desired oil, compared to the sponge roller method in which sponge should be squeezed to remove absorbed oil or sponge itself should be replaced. In addition, there is an advantage in that the amount of oil applied can be controlled by adjusting the shape of a spray nozzle, the exposure time, etc. Also, the flavor of oil, which was lost by heat during second-step toasting, can be supplemented by applying oil to the laver surface after second-step toasting using the oil spray device.

[39] Herein, the amount of oil applied in step 4) is preferably 0.1- 0.5 g per sheet of dried laver. If 0.1 g or less of oil is sprayed onto the laver surface after second-step toasting, rich seasoned flavor, which is the purpose of the present invention, cannot be obtained, and if 0.5 g or more of oil is sprayed, an excessive amount of the oil will be applied to the seasoned laver, and thus the laver will become too damp before packaging.

[40] The present invention also provides seasoned laver manufactured by the above-described method.

[41] Seasoned laver manufactured by the above-described method is counted according to the intended use, weighed, cut, and then packaged.

[42] Seasoned laver according to the present invention is preferably packaged within 1 minute after the oil spraying step so that the crispness of the laver will not be reduced.

[43] Hereinafter, the present invention will be described in further detail with reference to examples. However, these examples are provided for a better understanding of the present invention and are not intended to limit the scope of the present invention.

[44] Examples

[45] Example 1: Manufacture of seasoned laver

[46] Dried laver, raw material, stored in a low-temperature storehouse at -5°C was automatically fed sheet by sheet to a conveyor, and then screened through a foreign matter detection unit. The screened laver was toasted in a toasting tunnel at 50~200°C for 3 seconds (first-step toasting), and then passed through sponge rollers to apply 2.1 g of a 9:1 mixture of corn oil and sesame oil to the laver sheet (260 x 190 cm; about 2.6 g). Then, the laver having the oil applied thereto was seasoned with 0.5 g of salt, after which it was further toasted in a toasting tunnel at 350°C for 6 seconds (second-step toasting).

[47] After second-step toasting, 0.3 g of sesame oil was finely sprayed and applied to the laver surface using an oil spray device, thereby manufacturing seasoned laver.

[48] The manufactured seasoned laver sheets were divided into groups, each consisting of 10 sheets according to the intended use, and weighed, cut, and then packaged.

[49] Experimental Example 1: Sensory evaluation of seasoned laver

[50] Sensory evaluation for a conventional laver product (trade name: Hat-

ba-sac-jae-rae-kim (for lunch box use) manufactured by CJ CheilJedang) and the seasoned laver product manufactured by the process of Example 1 was performed by 60 panelists (25-34-year-old women). The results of the evaluation were rated on a five-point scale in terms of preference characteristics and intensity characteristics. As detailed items, whether the flavor and savory taste of the laver products are perceived and the overall preference were evaluated. The results are shown in Table 1 below and FIG. 4.

[51] The results of quality evaluation by the panelists indicated that the value of the overall taste preference of the conventional seasoned laver was an average of 3.67 points and the value of the overall taste preference of the seasoned laver of the present invention was an average of 3.72 points, which was higher than that of the conventional seasoned laver.

[52] In the results of the final preference, the preference of the conventional seasoned laver was 41.7%, and the preference of the seasoned laver of the present invention was 58.3%, which was higher than that of the conventional seasoned laver.

[53] In the detailed characteristics, the savory flavor intensity of oil, the flavor intensity of laver and the flavor preference were stronger in the seasoned flavor product of the present invention, and the overall flavor of the seasoned laver product of the present invention was enhanced.

[54] **Table 1: Mean values of detailed characteristics and analysis of significant difference**

Characteristics	Conventional		Invention		Significant difference
	Mean	TOP 2%	Mean	TOP 2%	
Overall taste preference	3.67	63.3	3.72	65.0	0.659
Appearance preference	3.87	73.3	3.87	70.0	1.000
<b>Flavor preference</b>	<b>3.67</b>	<b>56.7</b>	<b>4.07</b>	<b>78.3</b>	<b>0.003</b>
Texture preference	3.72	66.7	3.70	60.0	0.892
Aftertaste preference	3.62	56.7	3.65	63.3	0.771
Laver flavor preference	3.63	63.3	3.82	65.0	0.101
Oil savory flavor preference	3.72	63.3	3.87	71.7	0.315
Salty taste preference	3.32	48.3	3.52	53.3	0.224
Umami preference	3.55	50.0	3.70	61.7	0.192
Crispness preference	3.90	70.0	3.95	80.0	0.689
<b>Laver flavor intensity</b>	<b>3.25</b>	<b>38.3</b>	<b>3.53</b>	<b>51.7</b>	<b>0.016</b>
<b>Oil savory flavor intensity</b>	<b>3.43</b>	<b>48.3</b>	<b>3.90</b>	<b>71.7</b>	<b>0.001</b>
Salty taste intensity	3.45	51.7	3.35	41.7	0.527

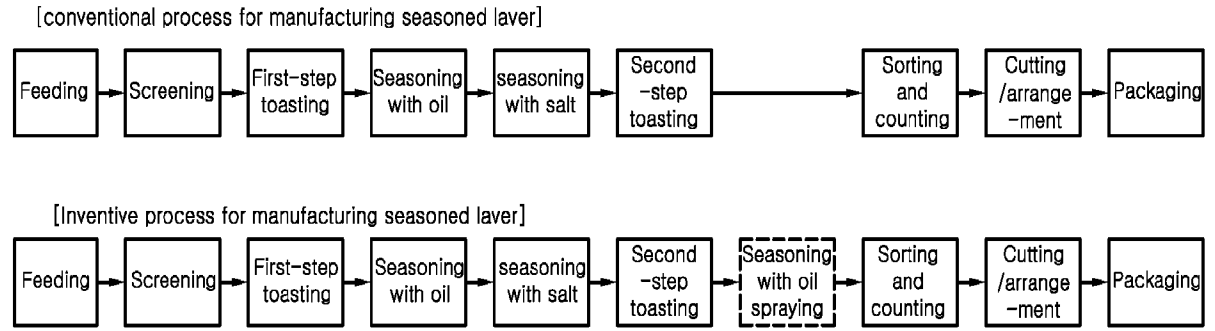
[56]

[57] As described above, according to the method for manufacturing seasoned laver according to the present invention, the loss of flavor, which is the disadvantage of the conventional method for manufacturing seasoned laver, can be minimized, and thus seasoned laver having a good flavor can be provided.

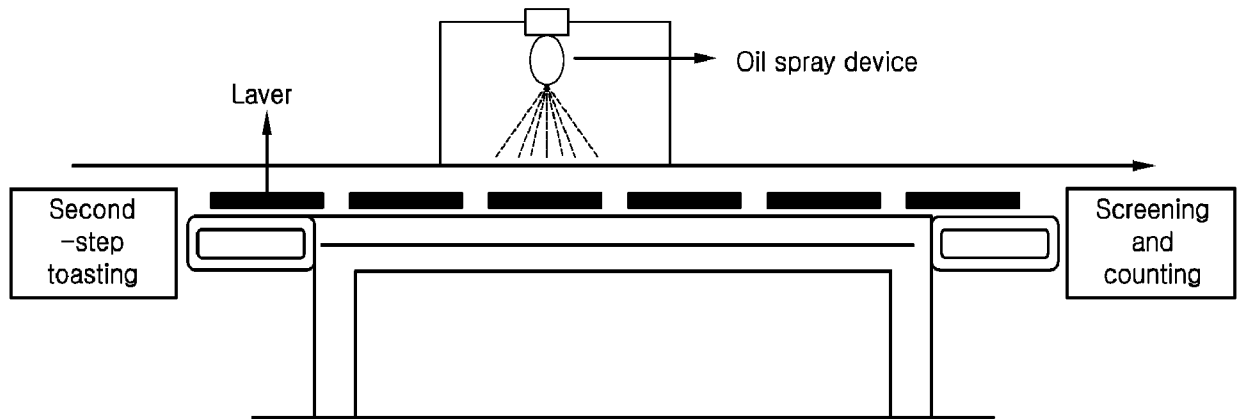
## Claims

- [Claim 1] A method for manufacturing seasoned laver, the method comprising the steps of:
- 1) toasting dried laver in a toasting tunnel at 50~200°C for 2-3 seconds;
  - 2) applying oil to a surface of the laver resulting from step 1), and seasoning the oil-applied laver with salt;
  - 3) further toasting the seasoned laver of step 2) in a toasting tunnel at 200~400°C for 5-7 seconds;
  - 4) spraying and applying oil to the surface of the laver resulting from step 3); and
  - 5) sorting the laver resulting from step 4), and cutting, arranging and packaging the sorted laver.
- [Claim 2] The method of claim 1, wherein the oil in steps 2) and 4) is one or a mixture of two or more selected from the group consisting of corn oil, sesame oil, perilla oil, grapeseed oil, olive oil and canola oil.
- [Claim 3] The method of claim 1, wherein the oil in steps 2) and 4) is sesame oil or perilla oil.
- [Claim 4] The method of claim 1, wherein an amount of the oil that is applied to the laver surface in steps 2) is 1-2.5 g per sheet of the laver.
- [Claim 5] The method of claim 1, wherein an amount of the salt that is applied to the laver surface in steps 2) is 0.5-1 g per sheet of the laver.
- [Claim 6] The method of claim 1, wherein spraying and applying oil to the surface of the laver in step 4) is performed using an oil spray device.
- [Claim 7] The method of claim 6, wherein the oil is spray and applied to the laver surface in an amount of 0.1-0.5 g per sheet of the laver.
- [Claim 8] Seasoned laver manufactured according to the method of any one of claims 1 to 7.

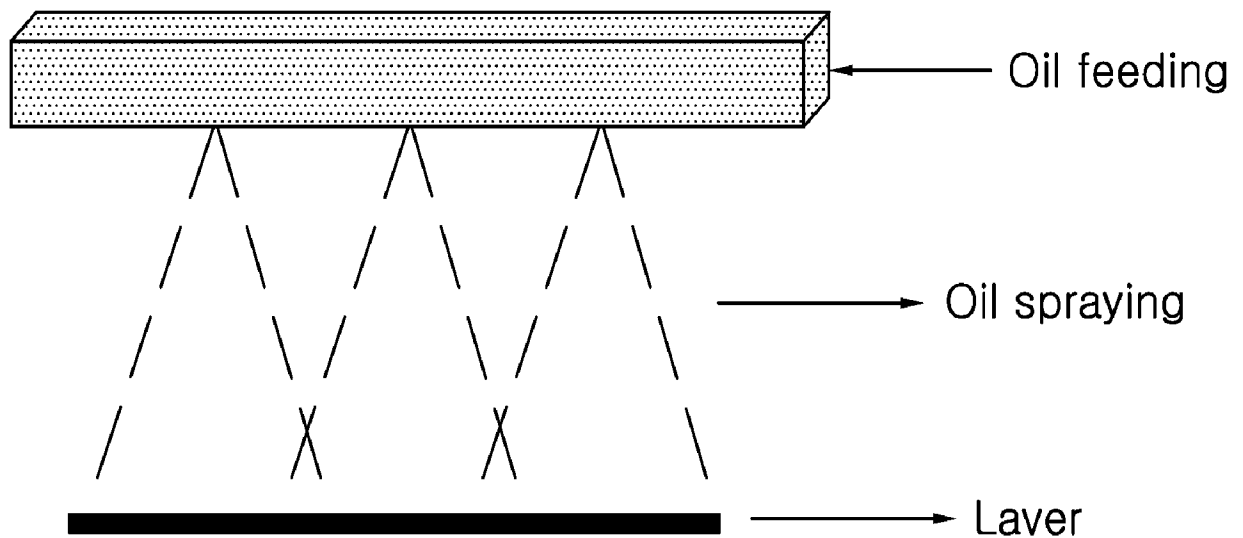
[Fig. 1]



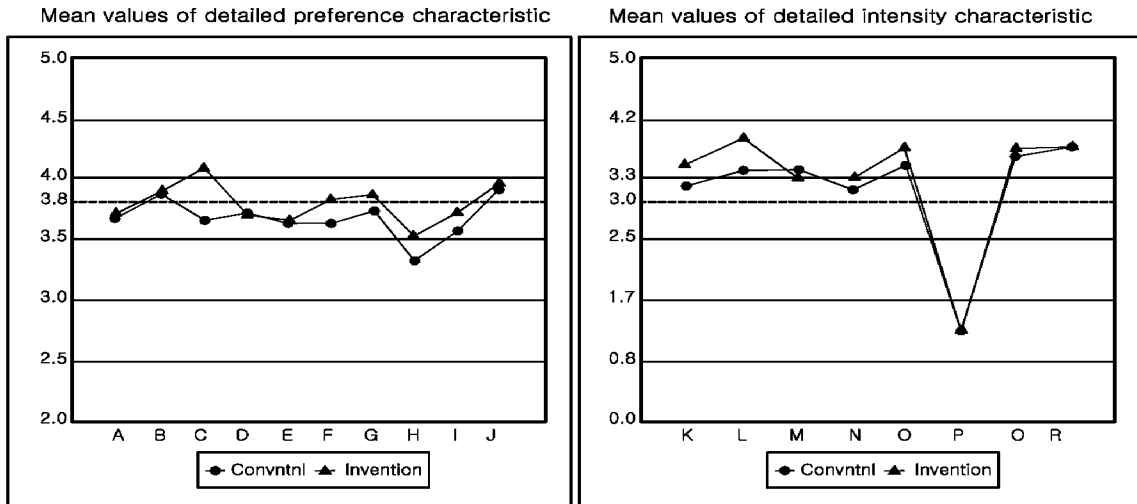
[Fig. 2]



[Fig. 3]



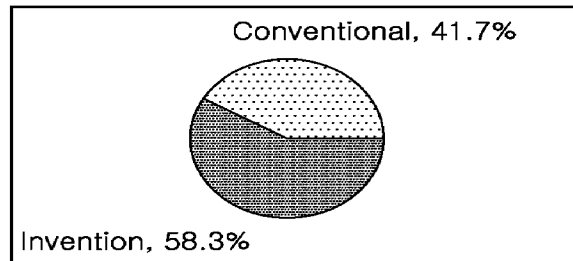
[Fig. 4]



Legend

Index	Characteristic
A	Overall taste preference
B	Appearance preference
C	Flavor preference
D	Texture preference
E	After taste preference
F	Laver flavor preference
G	Oil savory flavor preference
H	Salty taste preference
I	Umami preference
J	Crisp preference
K	Laver flavor intensity
L	Oil savory flavor intensity
M	salty taste intensity
N	Umami intensity
O	Oily degree
P	Off-flavor/off-odor intensity
Q	Crisp intensity
R	Laver thickness preference

Final preference



Preference scale

5pts	Very good
4pts	Slightly good
3pts	Moderate
2pts	Not particularly good
1pts	Not good at all

Intensity scale

5pts	Very intense
4pts	Slightly intense
3pts	Moderate
2pts	Not particularly intense
1pts	Not intense at all

**A. CLASSIFICATION OF SUBJECT MATTER****A23L 1/337(2006.01)i, A23L 1/325(2006.01)i**

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)  
A23L 1/337; A23L 3/3472; A23L 1/325Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Korean utility models and applications for utility models  
Japanese utility models and applications for utility modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
eKOMPASS(KIPO internal) & Keywords:seasoned laver, toasting laver, canola oil, olive oil, oil spray, lavar**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20-2011-0006163 U (KIM, TAE HYUN) 22 June 2011 see page04, [0025] - page06, [0062]; claim 1 ~ 7.	1-8
A	KR 10-1316046 B1 (SC HE MEE CO., LTD.) 07 October 2013 see abstract, page05 [0014] - page07, [0067]; claim 1 ~ 8, figures 1.	1-8
A	KR 10-0455994 B1 (KIM, SUNG DUK) 06 November 2004 See the whole document	1-8
A	KR 10-2004-0103072 A (KIM, CHOUL OUNG) 08 December 2004 See the whole document	1-8
A	KR 10-2013-0053071 A (RYUU, KI TAEK et al.) 23 May 2013 See the whole document	1-8

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

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Date of the actual completion of the international search

31 July 2015 (31.07.2015)

Date of mailing of the international search report

**03 August 2015 (03.08.2015)**

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/KR2015/003034**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 20-2011-0006163 U	22/06/2011	None	
KR 10-1316046 B1	07/10/2013	None	
KR 10-0455994 B1	06/11/2004	None	
KR 10-2004-0103072 A	08/12/2004	None	
KR 10-2013-0053071 A	23/05/2013	None	