



**LomaSalt®**

The Tasty Way of  
Sodium Reduction



**Dr. Paul Lohmann®**

**High value mineral salts**

[www.lohmann4minerals.com](http://www.lohmann4minerals.com)

# Salt is the most precious of all Jewels which the Earth gives us.

Justus von Liebig, German chemist

Table salt or cooking salt, commonly known simply as “salt”, is chemically referred to as sodium chloride (NaCl). Salt is one of the oldest foodstuffs and earliest technological food additives of humans. In earlier times, salt was a necessary preservative, especially for perishable food. In many cases, adding salt was the only method available to store food through the winter or in times of need.

Adding salt can both reinforce and inhibit taste components of a food item. As such, salt to a large extent contributes to the taste profile of food. Salt intensifies the hearty taste and is an important ingredient in spicy, as well as, sweet foodstuffs. The preserving nature of salt is based on the fact that it draws water out of the food and dehydrates it, thereby inhibiting microorganisms growth requiring water (reduction of water activity).

Traditional fish and meat products, such as salted herring, cured meat, ham or salami, and even some vegetable products, such as sauerkraut, are produced by adding salt, or rather preserved through the use of salt.

## Salt and its Functions in Food

Food	Function of Salt
Bread	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Controls fermentation process and yeast growth</li><li>◆ Texture/dough treatment: stabilizes starch/protein complex</li><li>◆ Preservation/impact on <math>a_w</math>-value</li></ul>
Breakfast cereals	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Stabilizes texture/product structure</li></ul>
Margarine and spreads	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Preservation/impact on <math>a_w</math>-value</li><li>◆ Controls frying performance in some products</li></ul>
Sauces/pickled vegetables	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Preservation/impact on <math>a_w</math>-value</li><li>◆ Maintains consistency of preserved vegetables from storage to filling</li><li>◆ Prevents vinegar from turbidity</li></ul>
Salty snacks	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Improves texture of extruded products</li><li>◆ Carrier for spices and flavorings (easy dosing and improved flowability)</li></ul>
Meat products	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Preservation/impact on <math>a_w</math>-value (e.g. cured meat)</li><li>◆ Impact on proteins – increases water retention capacity</li><li>◆ Influences texture</li></ul>
Cheese	<ul style="list-style-type: none"><li>◆ Flavoring</li><li>◆ Reduces metabolic activity of starter culture bacteria</li><li>◆ Impact on enzymatic activity, thus important function in the maturing process of some cheese varieties</li><li>◆ Rind formation/impact of proteins/structure</li></ul>



## Sodium

WHO recommends a reduction in sodium intake to reduce blood pressure and risk of cardiovascular disease, stroke and coronary heart disease in adults by a reduction to < 2 g/day sodium (5 g/day salt).<sup>2</sup>

Sources from scientific literature agree that sodium alone is responsible for the increase in blood pressure – not chloride. Potassium, on the other hand, lowers the blood pressure.<sup>3,4</sup>

In this context, food producers are asking one question in particular: How can such a drastic reduction be delivered not at the expense of food quality and food attractiveness? Dr. Paul Lohmann® reveals new ways how the food industry effectively achieves it's sodium reduction objectives with LomaSalt®.

## Potassium

An increased potassium intake may reduce blood pressure, decrease risk of cardiovascular disease, have beneficial effects on bone-mineral density, and mitigate the negative consequences of high sodium consumption. Most populations around the world consume less than the recommended levels of potassium amongst others an increased consumption of convenience food could promote this deficit.<sup>5</sup>

### Health Claims<sup>1</sup>

- ◆ Potassium contributes to the maintenance of normal blood pressure
- ◆ Potassium contributes to normal functioning of the nervous system
- ◆ Potassium contributes to normal muscle function

The successful implementation of the sodium as well as the potassium recommendations would have an important public health impact through reductions in morbidity and mortality, improvement in the quality of life of millions of people, and substantial reductions in health-care costs.<sup>5,6</sup>

Increased potassium intake reduces systolic and diastolic blood pressure in adults.<sup>5</sup>



## Salt and Health

The daily amount of salt a human body can ingest and metabolize averages only approx. 0.25 g.<sup>7</sup> However, the actual average consumption of salt per day is up to 50 times higher worldwide, i.e. between 9 and 12 g, in some Asian countries even more.<sup>7,8</sup> The regular consumption of such large amounts of salt can cause a number of diseases.<sup>7</sup>

### **Diseases and secondary diseases related to frequent salt consumption.<sup>6,7,9</sup>**

- ◆ High blood pressure
- ◆ Cardiovascular diseases (e.g. a stroke)
- ◆ Kidney diseases
- ◆ Eye diseases

A link between salt consumption or increased sodium intake and raised blood pressure has been verified in several studies.<sup>9,10</sup>

The “Global Strategy on Diet, Physical Activity and Health” already passed by the WHO (World Health Organization) in 2004, identified increased salt consumption as one of the main contributing factors in the development of specific, non-transmittable diseases such as high blood pressure and related secondary diseases.<sup>11</sup>

## Sodium and Potassium Intake Recommendation

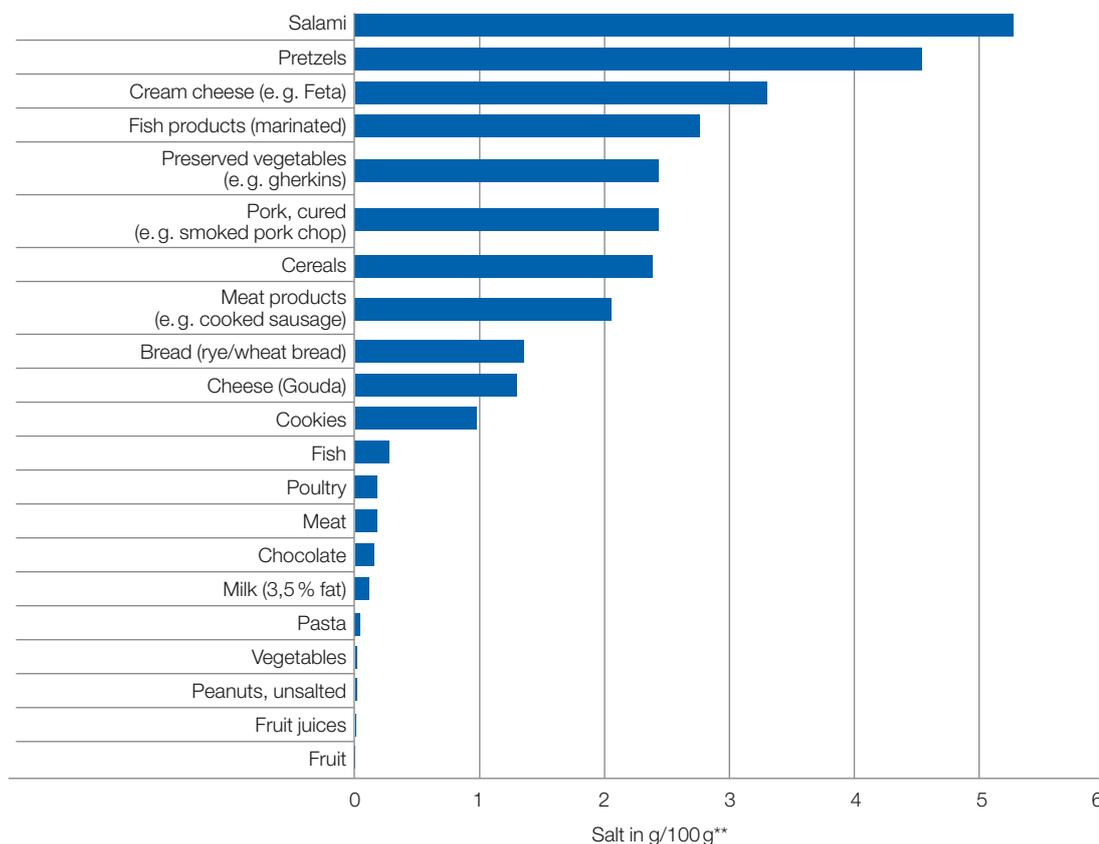
	Salt	Sodium	Potassium
Ø Daily intake	9 – 12 g	3.5 – 5 g	800 mg
WHO Recommendation <sup>5</sup>	< 5 g	< 2 g	> 3 g
NRV <sup>12</sup>	6 g	2.4 g*	2 g

WHO – World Health Organization

NRV – Nutritional Reference Value (Regulation EU No. 1169/2011)

\*Calculated value from salt content

## Salt Content in Food<sup>13</sup>



\*\* calculated mean values



# LomaSalt® – Our Product Range

Product	RS 100	RS 50 Classic	RS 50 Neutral
Product No.	524010510	524010170	524010500
Reduction in sodium if table salt is replaced 100% with LomaSalt	-100%	-50%	-50%
Content Na/100g	0g	approx. 20g	approx. 20g
Content K/100g	approx. 50g	approx. 15g	approx. 15g
Content Mg/100g	–	approx. 0.25g	approx. 0.25g
Content I/100g	–	–	–
Additives	Anti-caking agent silicon dioxide	Anti-caking agent magnesium carbonate	Anti-caking agent magnesium carbonate
Special properties	<ul style="list-style-type: none"> <li>◆ Sodium-free</li> </ul>	<ul style="list-style-type: none"> <li>◆ Typically salty taste</li> <li>◆ Especially suited for food with neutral pH-value</li> <li>◆ Easy handling</li> <li>◆ Also suitable to be used in a saltshaker</li> </ul>	<ul style="list-style-type: none"> <li>◆ Typically salty taste</li> <li>◆ Particular suitable for food with an acidic character</li> </ul>
<b>Our application tests show a particular suitability for:</b>			
Cream cheese			+
Vegetarian juices			++
Dips			++
Snacks		+	
Peanuts		+	
Popcorn		+	
Crackers		+	
French fries		+	
Bread/bakery goods		+	
Cooked sausages	+	++	
Ham		+	
Mashed potatoes	++	+	
Fish products		+	
Milk products		+	
Seasoning agent		+	
Any type of processed food	+	+	+



		Innovative composition		
RS 50 Extra	RS 50 Classic with Iodine	2.0	2.0 Basis	Table Salt
524010490	524010610	524010880	524010940	
- 50 %	- 50 %	- 50 %	up to - 50 %, must be proportionally mixes with NaCl or curing salt	-
approx. 20g	approx. 20g in a saltshaker and consumed like common salt	approx. 20g	approx. 20g*	approx. 40g
approx. 19g	approx. 15g	approx. 23g	approx. 23g*	-
-	approx. 0.25g	approx. 0.4g	approx. 0.4g*	-
-	5.5 mg/100g	-	-	-
-	Potassium iodide (0.007 %) or potassium iodate (0.004 %) with the anti-caking agent magnesium carbonate	-	-	Anti-caking agent
<ul style="list-style-type: none"> <li>◆ Typically salty taste</li> <li>◆ Also suitable to be used in a saltshaker</li> </ul>	<ul style="list-style-type: none"> <li>◆ Iodine-fortified mix which can contribute to maintaining the iodine requirement</li> </ul>	<ul style="list-style-type: none"> <li>◆ Typically salty taste</li> <li>◆ Premium blend for highest demands in taste and sensory authenticity</li> <li>◆ Also suitable to be used in a saltshaker</li> </ul>	<ul style="list-style-type: none"> <li>◆ Premium blend for highest demands in taste and sensory authenticity</li> </ul>	-
++		++	+++*	
		+	++*	
++	+	++	+++*	
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++		++	+++*	
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LomaSalt® products can be used in all food applications instead of common cooking salt.

+ well suited

+++ very well suited

\* 1:1 mixture with NaCl

\*\* mixture with curing salt

# Opportunities for Sodium Reduction

	Advantages	Difficulties
Remove table salt	<ul style="list-style-type: none"> <li>◆ Fast and efficient physical relief</li> </ul>	<ul style="list-style-type: none"> <li>◆ Considerable taste implications, hardly feasible</li> <li>◆ Shelf-life of food may not be guaranteed</li> </ul>
Incremental reduction of table salt	<ul style="list-style-type: none"> <li>◆ Efficient physical relief within a defined time period</li> <li>◆ Possibility to become familiarized with the taste</li> </ul>	<ul style="list-style-type: none"> <li>◆ Taste implications</li> <li>◆ Risk of a “relapse” if conventionally salted food is consumed</li> </ul>
Replace table salt with flavor enhancer (e.g. glutamate)	<ul style="list-style-type: none"> <li>◆ Little taste implications</li> <li>◆ Taste of other components is enhanced possibility of an „umami“ taste</li> </ul>	<ul style="list-style-type: none"> <li>◆ Risk of allergies</li> <li>◆ Declaration of negative associated additives</li> </ul>
Replace table salt with mineral salts	<ul style="list-style-type: none"> <li>◆ Attractive taste of food product is maintained</li> <li>◆ Preservation is still given</li> <li>◆ Additional fortification of product with other minerals is possible (K, Mg, Ca, etc.)</li> </ul>	–

## Sodium Reduction with LomaSalt®

LomaSalt® products are blends of various mineral salts and can be used to replace table salt.

LomaSalt® varieties contain less sodium than regular table salt – starting from a reduction of about 50 %, up to having a 100 % sodium-free product. They all have the familiar salty taste in terms of saltiness as well as intensity.

LomaSalt® products are successfully being applied, for example, in producing sodium-reduced bakery goods. Other possible applications are meat and sausage products, fish products, salty snacks, milk products, as well as ready-to-eat meals and spice mixtures. Or it can simply be used in the saltshaker replacing common salt.

## Advantages of LomaSalt®

- ◆ Sodium-reduced mineral blend
- ◆ 50 – 100 % less sodium
- ◆ Authentic alternative to cooking salt with the familiar salty taste
- ◆ No off-taste
- ◆ Free of
  - ◆ Glutamates
  - ◆ Lactose
  - ◆ Gluten
  - ◆ Yeast/other flavor enhancers (e.g. amino acids)
  - ◆ GMO
  - ◆ Allergens
- ◆ Suitable for vegetarian and vegan lifestyle
- ◆ Kosher/halal
- ◆ All ingredients are approved by EU Food Law
- ◆ Easy handling
- ◆ Same dosing as common cooking salt
- ◆ Rich in potassium



## Health Claims<sup>1</sup>

- ◆ Potassium contributes to the maintenance of normal blood pressure
- ◆ Potassium contributes to normal functioning of the nervous system
- ◆ Potassium contributes to normal muscle function

## Labeling and Claims for sodium-reduced Products

Nutrition claims	Condition of use <sup>14</sup>	
	Sodium content in 100 g or 100 ml	Salt content in 100 g or 100 ml
Low in sodium Low in salt	max. 0.12g	max. 0.3g
Very low in sodium Very low in salt	max. 0.04g	max. 0.1g
Sodium-free Salt-free	max. 0.005g	max. 0.0013g
Reduced sodium content	Reduction in sodium/salt content of at least 25 % compared to a similar product	

# Dr. Paul Lohmann® – Your competent Partner for high value Mineral Salts



With over 130 years of producing mineral salts that meet the highest quality standards, we have established ourselves as the leading global supplier to the pharmaceutical, biopharmaceutical, nutritional supplement, food and personal care industries.

## Our Expertise

- ◆ GMP and DIN EN ISO 9001:2015 certified production sites
- ◆ FSSC 22000/ISO 22000 certified
- ◆ Successfully inspected production site in Emmerthal by FDA (U.S. Food and Drug Administration) in the context of FSMA (food safety modernization act)
- ◆ Tailor-made and innovative solutions for customer requests
- ◆ Highly qualified experts in R&D lab and application technology with long-term experience and a wide variety of possibilities to develop new products and applications
- ◆ Joint product and application development together with our customers
- ◆ Our manufactured products are exclusively Made in Germany
- ◆ A wide range of more than 400 various mineral salts
- ◆ Products in compliance with the most relevant pharmacopoeias (Ph.Eur., USP, BP), food codices (FCC, E-numbers, etc.) and customer specific requirements

- ◆ Regulatory documentation (CEP, ASMF, etc.)
- ◆ REACH compliance on request
- ◆ Wide range of production equipment
- ◆ Processes according to HACCP
- ◆ Social and environmental standards (DIN EN ISO 50001, Sedex)
- ◆ High purities can be realized under certified requirements

## Modification

- ◆ Physical properties
- ◆ Chemical properties
- ◆ Packaging
- ◆ Labeling



## References

- <sup>1</sup> COMMISSION REGULATION (EU) No 432/2012 establishing a list of permitted health claims made on foods, other than those referring to the reduction of disease risk and to children's development and health
- <sup>2</sup> WHO. Guideline: Sodium intake for adults and children. Geneva, World Health Organization (WHO), 2012
- <sup>3</sup> EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA): Scientific Opinion on the substantiation of health claims related to foods with reduced amounts of sodium and maintenance of normal blood pressure (ID 336, 705, 1148, 1178, 1185, 1420) pursuant to Article 13(1) of Regulation (EC) No 1924/2006 1. EFSA Journal 2011;9(6):2237
- <sup>4</sup> Buchwald, M.: Kalium - Eine Übersicht über die physiologischen Wirkungen (An overview of physiological effects). Deutsche Lebensmittel- Rundschau, 104; 8/2008, pp. 372-376
- <sup>5</sup> WHO. Guideline: Potassium intake for adults and children. Geneva, World Health Organization (WHO), 2012
- <sup>6</sup> Tien Wong, Paul Mitchell: The eye in hypertension. Lancet 2007; 369: 425-35
- <sup>7</sup> Feng J. He, Graham A. MacGregor: Reducing Population Salt Intake Worldwide: From Evidence to Implementation. Progress in Cardiovascular Diseases 52 (2010) 363-382
- <sup>8</sup> Ian J. Brown, Ioanna Tzoulaki, Vanessa Candeias, Paul Elliott: Salt intakes around the world: implications for public health. Intern. Journal of Epidemiology 2009;38:791-813
- <sup>9</sup> He FJ, Pombo-Rodrigues S, Mac Gregor GA. Salt reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality BMJ Open 2014;4
- <sup>10</sup> Sacks, F.M. et al.: Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. N Engl J Med, Vol. 344, No. 1 (2001)
- <sup>11</sup> WHO: Global Strategy on Diet, Physical Activity & Health. [http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy\\_english\\_web.pdf](http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf); access on 26 June 2011, 13:30
- <sup>12</sup> REGULATION (EU) No 1169/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the provision of food information to consumers
- <sup>13</sup> Der kleine Souci · Fachmann · Kraut, Lebensmitteltablelle für die Praxis, 4. Auflage, 2009
- <sup>14</sup> Regulation (EC) No. 1924/2006 on nutrition and health claims made on foods

The information given in the document corresponds to our current knowledge. We warrant in the frame of our General Terms and Conditions of Sale that our products are manufactured in accordance with the specifications. However, we disclaim any liability with regard to the suitability of our products for a particular purpose or application or their compatibility with other substances. Tests have to be performed by the customer who also bears the risk in this respect. Nothing herein shall be construed as a recommendation to use our products in conflict with third parties' rights.

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