



Aquamin™ - natural marine minerals for health

A Natural Multi-Mineral Complex

Introduction to Aquamin

Delivering enhanced nutrition, naturally



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Marigot Ltd – Company Origin & Outlook

- Natural Food ingredients manufacturing company
- Established in 1993
- Focussed on scientifically evaluating our unique mineral source
- Dedicated R&D Program to investigate efficacy in humans
- Pioneering the inclusion of marine multi-minerals in foods & beverages
- Global sales – 32 countries – through exclusive distribution network
- Member of The Marigot Group, “the Natural Network”



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What is Aquamin?



- Aquamin is a natural multi-mineral ingredient
- Raw material: red algae (Lithothamnion species)
- Found in just three locations in the world.
- The plant regenerates itself continuously.
- Aquamin delivers clinically proven health benefits.



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Aquamin – Product Details

- Aquamin is a unique marine **multi-mineral complex**,
 - offering bio-active calcium and magnesium (+ 72 trace minerals)
 - for effective mineral fortification of foods, beverages & dietary supplements.
-
- Aquamin's raw material is **red ALGAE**, found only in certain locations
 - during its growth phase it absorbs essential nutrients from the sea
 - Sustainable source - only mature form harvested - **NOT** live material.
-
- Aquamin is **100% sea-plant based**,
 - derived from calcified "**Lithothamnion**" species
 - harvested by Marigot Ltd under exclusive license.

Marine vegetation is 10-20 times richer in minerals than land vegetables



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Farming & Production Facilities

- Farming facilities in South-west Ireland & North West Iceland
- Food certified production plant in Malvern, Worcester, UK
- Company Head Office - Carrigaline, Cork Ireland, including technical applications and development laboratory



Bildudalur, & Iceland's "Table Mountain"



Production Plant in UK



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Westfjord Facility, Iceland



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Licensing Information

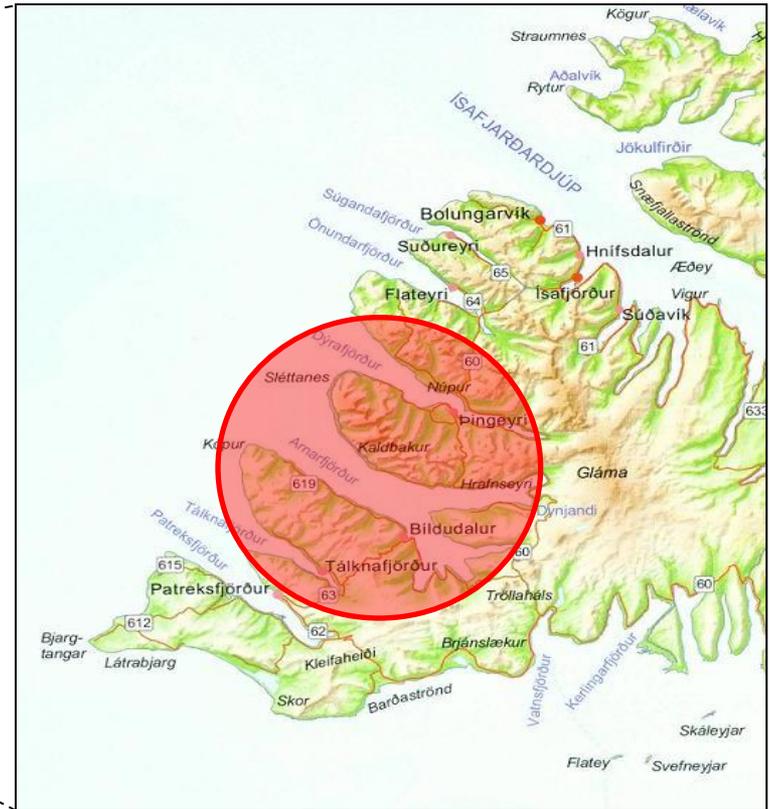
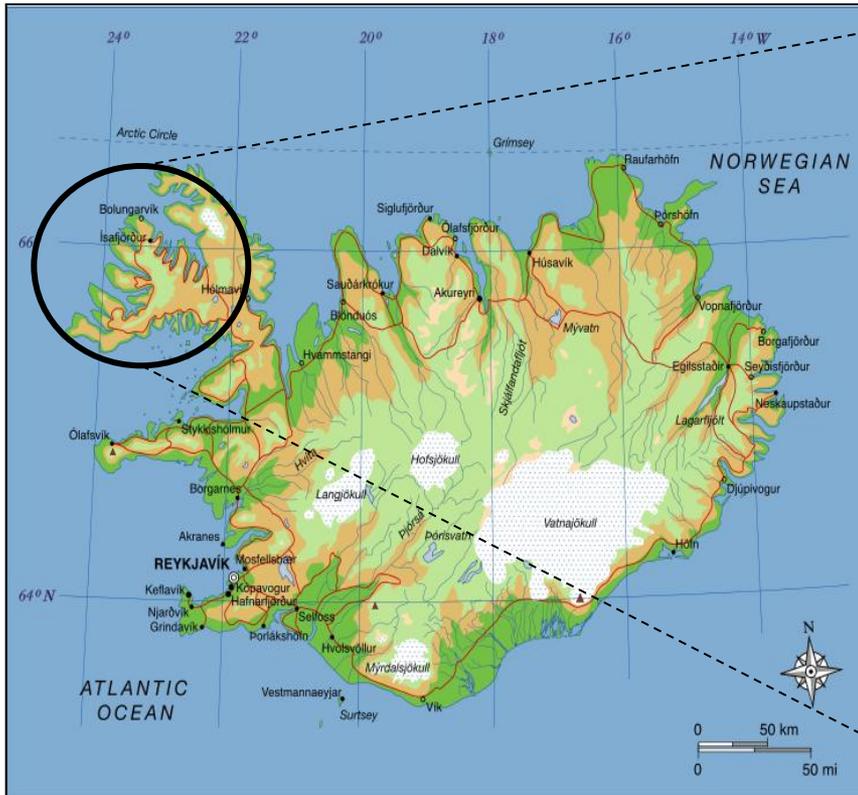
- 30 year extraction license was granted in 2003.
- Licensed to harvest 85,000 tonnes per annum.
- Total available material in excess of 21.8m tonnes.
- Additional surveys have identified more than 70m tonnes.
- Throughout the lifetime of our licence, if we were to harvest our maximum per annum quota, this would only account for 0.3% of the currently discovered deposits.



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Iceland – 66° North – Population
318,452 (2011)

Icelandic Westfjords – Material
Location





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Sustainable & Responsible Approach

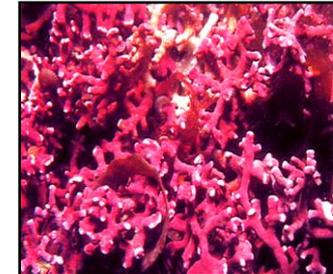
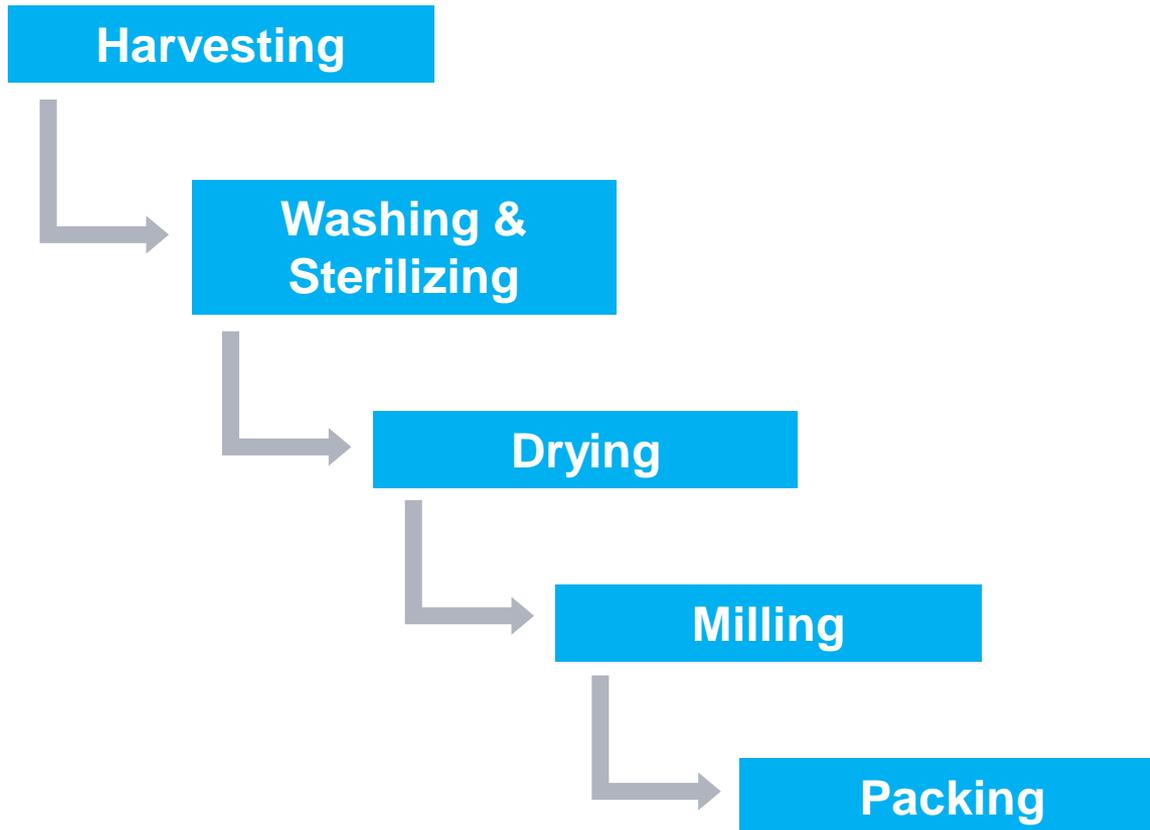


- ✓ Aquamin is a truly sustainable marine ingredient
- ✓ Careful approach to harvesting ensures safety, reliability and traceability
- ✓ Marigot's extensive sustainability management program is supported by Environmental authorities and organic certification bodies.
- ✓ The natural regeneration of our unique mineral source and all components of the surrounding ecosystems is guaranteed.



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Production Process





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Manufacturing Process

Material harvested using vacuum dredging



Washing and
Drying



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Multi Mineral Complex

- Calcium
- Magnesium
- Phosphorous
- Sulphur
- Iron
- Boron
- Fluoride
- Sodium
- Cobalt
- Copper
- Zinc
- Selenium
- Molybdenum
- Iodine
- Manganese
- Nickel

Total of 74 Trace Minerals



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Product Range

Aquamin F (food grade)

(33% Calcium; 2% Magnesium)

Aquamin S (beverages)

(17.5% Calcium; 1% Magnesium)

Aquamin TG (tablet grade)

(30% Calcium; 2% Magnesium)

Aquamin SOLUBLE (clear drinks)

(12% Calcium; 1% Magnesium)

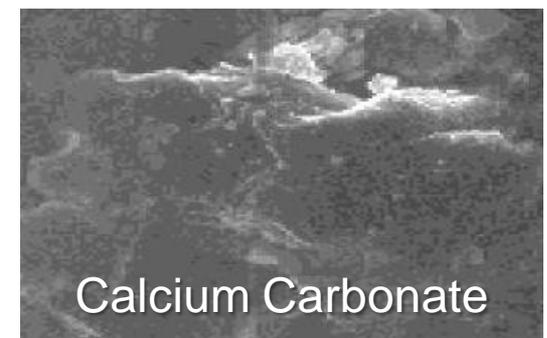
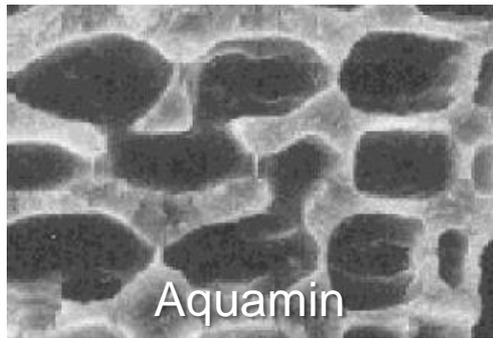
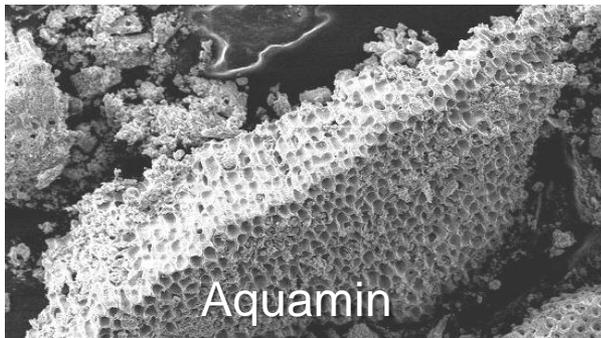
Complete range for all food, beverage & nutraceutical applications



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Uniquely different Physical Properties

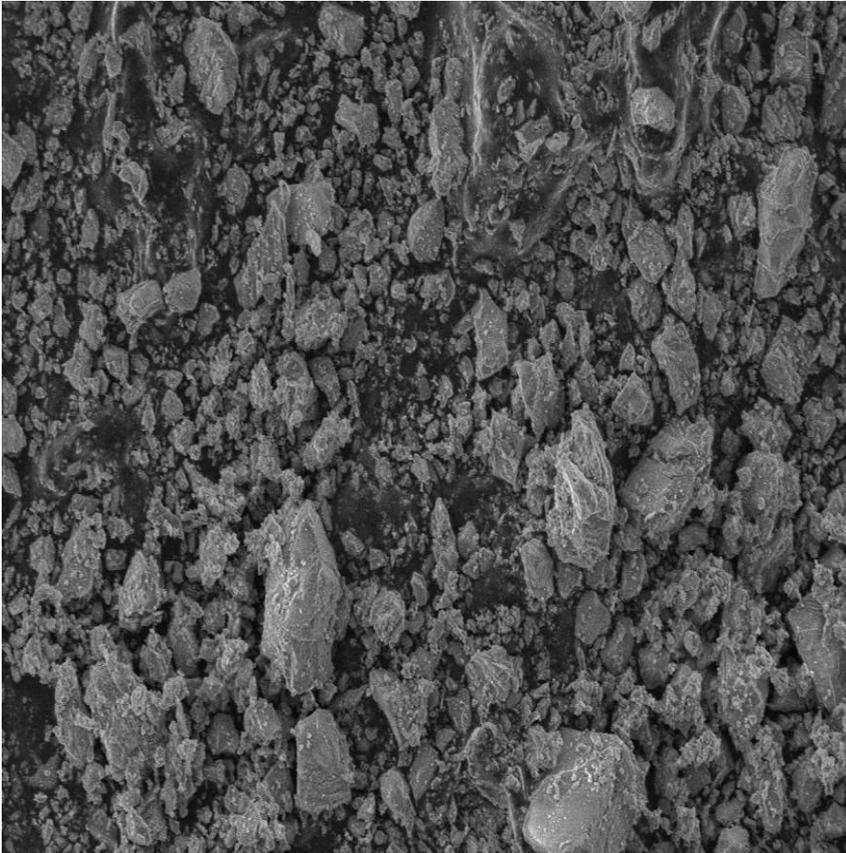
- Plant derived marine minerals
- Unique open porous filaments
- Hydrates easily – smooth texture
- Non-sandy/Non-chalky behaviour
- Slow release buffering capacity
- Thermostable to 350° C
- Promotes β -crystal formation
- Tasteless, Off-white powder
- Non-Hygroscopic
- Stays in suspension longer





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Calcium Carbonate Properties vs Aquamin



- Mined Land Mineral – single component - Ca
- Non-porous Structure
- Sandy, Chalky or Gritty Taste
- Not Easily broken down
- Astringent, Dry texture
- Unwanted Mouthfeel Properties



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Components and Structure of Aquamin

Mineral

Calcite

Aragonite*

Vaterite*

Lattice Structure

Orthorhombic

Rhombohedral

Hexagonal

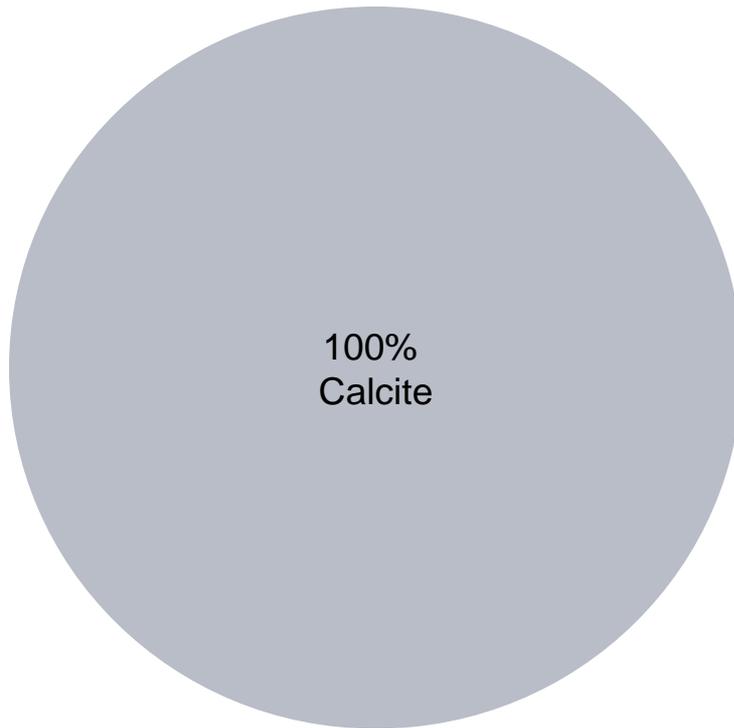
*Aragonite and Vaterite are polymorphs of Calcite



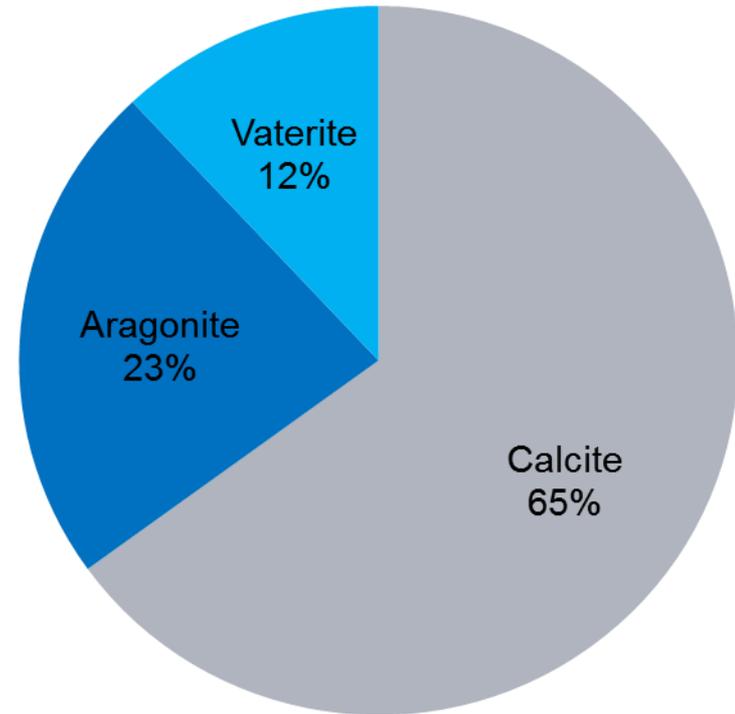
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Structure of Aquamin vs Calcium Carbonate - Polymorphs

Calcium Carbonate



Aquamin





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Unique Characteristics - Review

Distinctive **physical and chemical structure**, offering:

- Superior organo-leptic qualities
- Enhanced texture
- Lower sedimentation
- Reduced astringency
- Improved mouth feel

Proven in independent studies in
foods & beverages

Rare **biochemical functionality**, shown to impact bone, joint & digestive health:

- PTH Suppression (long & short term)
- Anti-inflammatory activity($\text{TNF}\alpha$, $\text{IL-1}\beta$)
- Pain & Stiffness Reduction (OA)
- Bone Formation enhancement



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Quality Certification

- USA FDA “GRAS” recognized
- Kosher certified
- Halal certified
- EU Health Certified
- Certified for use in organic food systems (EU)
- Non Genetically Modified (Non-GMO)
- ISO and HACCP certified manufacturing facilities
- Farmed & Sustainable mineral source



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Labelling Declaration Examples – NOT an E Number

- Lithothamnion seaweed - Natural Mineral Source
- Contains – Sea Minerals
- Contains “Aquamin” *Lithothamnion Calcareum* – a natural calcium source.
- Seaweed derived Calcium source
- Natural Calcium Source – Lithothamnion Calcareum
- “Aquamin”- Calcium - A natural, lactose free source of calcium and other trace minerals.



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Aquamin USP's

- 100% natural, marine-based plant material
- Marine ingredients have higher mineral content than land vegetables
- Not Just Calcium BUT a Multi mineral complex (74 trace minerals)
- Unique physiological and chemical properties
- Multiple application areas (bone & joint health, digestive comfort)
- Product functionality supported by science
- Highly functional - Clean Label & All Natural – Clean Tasting mineral
- Complete range of ingredients for all food, beverage and nutraceutical applications.

Delivering enhanced nutrition, naturally



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Examples of Consumer Products

Aquamin has been successfully incorporated into a wide selection of foods, beverages & dietary supplement products to companies internationally.

