

Regenasure®
GLUCOSAMINE



**Safe,
reliable
and
versatile.**

Choose the vegetarian glucosamine
product you can trust.

Cargill®



Safe, reliable sourcing lets you confidently incorporate the highest quality glucosamine into your supplements.

Regenasure® glucosamine from Cargill is a North American produced, vegetarian glucosamine. With rigorous management of raw material inputs, it is produced entirely by Cargill, in accordance with HACCP principles and Good Manufacturing Practices (GMPs), using a patented fermentation process free from the use of organic solvents.

Our secure supply eliminates concerns related to the seasonality of shellfish or competing demand for raw materials and ensures you consistent product availability. All of this is done so you receive a glucosamine of the highest quality from a safe and reliable producer.





Support at every stage

When you select Cargill as your glucosamine supplier, a dedicated Regenasure® glucosamine team can partner with your in-house team at every product development stage. Support is available in product formulation, testing and scale-up production, supply chain and risk management, and regulatory insights.

A leader in glucosamine research

Cargill has been a leader in glucosamine research and continually pursues cutting-edge research to support glucosamine, providing valuable support for its customers and the dietary supplement industry.

Ask us about the latest research on glucosamine and how you can use cutting-edge science to support your business.

Flexibility in formulations

Regenasure® glucosamine can be easily incorporated into tablets, capsules, beverages, dry beverage powders, nutrition bars and other formulations.

- Free from shellfish allergen labeling requirements
- Suitable for vegetarians
- Kosher Pareve (and Kosher for Passover) and Halal certified

- Geographic approvals¹

- ▶ GRAS (Generally Recognized As Safe) status for specified uses, with the flexibility to support a Supplement Facts or Nutrition Facts label in the U.S. market
- ▶ Within the European Union, approved for the use in supplements and PARNUTS products
- ▶ Have successfully worked with customers to provide access to Natural Health Products Master File for Canada
- ▶ Available in several SE Asian countries
- ▶ Approved for the use in therapeutic goods in Australia

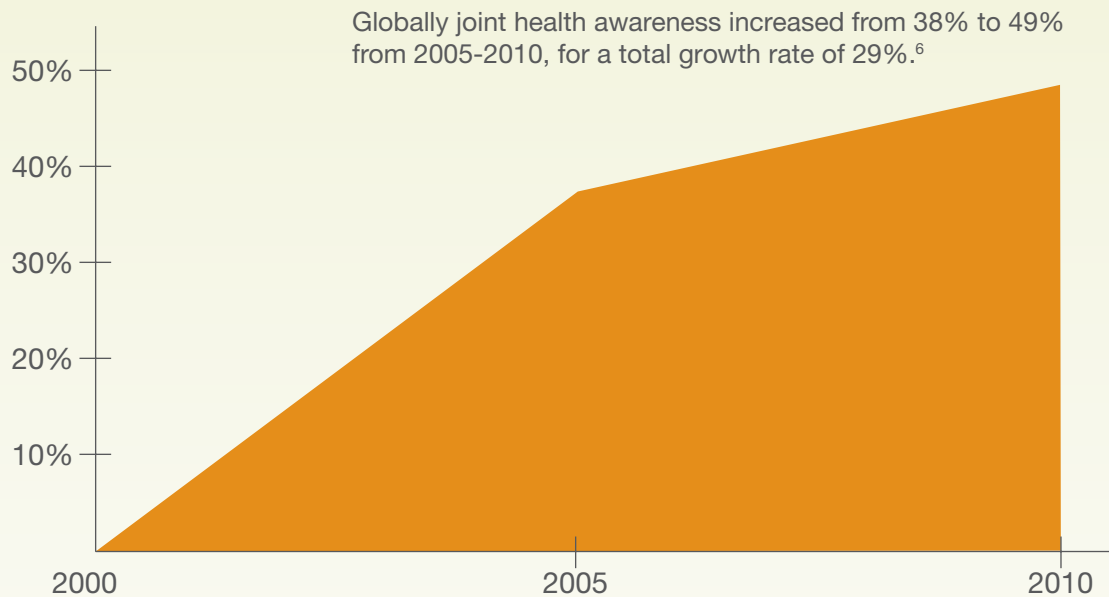
High consumer interest in glucosamine

Glucosamine is currently used by millions who believe it promotes joint health to support an active lifestyle.

- Globally, joint health awareness increased from 38% to 49% from 2005-2010, for a total growth rate of 29%²
- The “joint pain and stiffness” supplement segments (as defined by National Products Insider) are the 4th most popular supplements on the market today²

¹Use of glucosamine in various applications subject to local regulations, please contact a sales representative for information pertaining to your geography.

²Bend and Flex: The global market for joint health supplements. Natural Products Insider Joint Health Market Trends. Sept 2012



- Coupling the rising incidence of obesity with an increasingly aging population points to the need for innovative joint health products.⁵
- Global sales of food and beverage products positioned for bone and joint health totaled U.S. \$13.8 billion.³
- Overall, global growth for bone and joint positioned food and beverages have remained fairly static, yet there are a few key countries showing dynamic growth. India has seen a five-fold increase, Czech Republic recorded growth of 171% while Austria, China and the Netherlands saw their sales double in 2010.³

The first vegetarian glucosamine produced in North America, now available across the globe

Conceived and developed by the Cargill team in Eddyville, Iowa, U.S., Regensure[®] glucosamine is produced using an innovative technology that has resulted in multiple patents.

Regensure[®] glucosamine is available in geographies across the globe, ensuring availability and minimal lead times.



Consumers care about the source of their supplements

- Although readily available for supplements, not all glucosamine is alike. Research shows consumers have confidence in North American sourced ingredients.⁴
- Additionally, Cargill manages all aspects of the supply chain resulting in an ingredient you can feel confident in using.

³Euromonitor, 2012

⁴ Nutritional Supplement Topline Report, 2012 Cargill proprietary study

⁵“Global Burden of Disease Study 2010” The Lancet

⁶NMI, Bend and Flex. Global Market for Joint Health Supplements, September 2012



REGENASURE® GLUCOSAMINE SPECIFICATIONS

Manufactured to meet the monograph specifications of the United States Pharmacopoeia-National Formulary (USP-NF) for Glucosamine Hydrochloride

Off-white powder

Compressible

Excellent solubility and dispersion: 24% w/w at 20°C in water

Suitable for high speed processing

Easily formulated with common binders such as microcrystalline cellulose, Povidone, and hypromellose (HPMC)

Works well with PVA coating or OPADRY white

Salt/bitter note typical of glucosamine products

Bulk density targets g/ml

Powder		Granular	
Untapped	0.5-0.7	Untapped	0.69-.81
Tapped	0.6-0.9	Tapped	0.79-91

Angle of repose: 30-37° (free-flowing)

Packaging

Bag in a box	25 Kg (55 lbs)
Bulk bag	Custom sizes available (450-1000 Kg)

Stable for 3 years from date of manufacture

Forms

Glucosamine HCl Empirical formula: $C_6H_{13}NO_5$ HCl

Glucosamine salt, Sulfate Potassium Chloride “glucosamine sulfate”

Empirical formula: $C_{12}H_{28}N_2O_{14}SK_2Cl_2$



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Learn more by visiting Regensure.com
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Cargill is an international producer and marketer of food, agricultural, financial and industrial products and services. Founded in 1865, the privately held company employs 142,000 people in 65 countries. Cargill helps customers succeed through collaboration and innovation, and is committed to applying its global knowledge and experience to help meet economic, environmental and social challenges wherever it does business.