pHresh

Technologies, LLC

Exclusively Licensed to Market and Distribute "acidic calcium sulfate"
Food and Feed Applications
U.S. Patent #6,436,891

pHresh Technologies, LLC

pHresh 10.0 is:

- A is a strong liquid acidifier “acidic calcium sulfate” **with little or no acidic taste** having multiple applications.
- Very effective at **preventing enzymatic browning** of fruits and vegetables, and as a **replacement for vinegar** in sauces and may be used for all acidified foods, **sauces, dressings, bakery items, or any ready to eat food**.
- Also well suited to be used as an **acidifier for** both carbonated and still **beverages** having application in fruit flavored and fruit based beverages to dairy based beverages.

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pHresh 10.0 is:

- Used to reduce or **eliminate retort, pasteurization, and refrigeration**.
- Used for **preservation of high moisture products** which eliminates the need for freezing or refrigeration of typically frozen products.
- Effective in eliminating or preventing **Listeria, Salmonella, E. Coli, and Staph bacteria, among others**.
- **GRAS status** and is made from all naturally occurring ingredients. pHresh 10.0 must appear on product labels as Acidic Calcium Sulfate.
- **Less corrosive** than other strong acids and **SAFE** to handle.

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- Contains near-saturated, saturated, or super-saturated calcium, sulfate anions or variations thereof
- Contains "**complex ions**" containing calcium, sulfates, and/or variations thereof

"**Complex**" – a composition wherein individual constituents are associated

"**Associated**" – constituents are bound to one another covalently or non-covalently, the latter as a result of hydrogen bonding or other inter-molecular forces

"**Constituents**" - may be present in ionic, non-ionic, hydrated or other forms

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- Reaction is non-violent and is not exceedingly exothermic
- Reaction is easily controlled and easily reproduced.
- Each ingredient and combination thereof has been reviewed by the U.S. Food and Drug Administration ("U.S. FDA") and determined to be "generally recognized as safe" ("GRAS")
- Each ingredient may be added directly to food, as governed by the Code of Federal Regulations (CFR).

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- Each ingredient in “pHresh” can be used as processing aids in food and in food contact applications
- Each ingredients use is limited only by product suitability and Good Manufacturing Practices ("GMP")
- The “pHresh” prepared in accordance to U.S. Patent #6,436,891, and in compliance with FDA, is safe for human and animal consumption, safe for processing aids, and safe in food contact applications.

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Theoretical Understanding of ACS Formation

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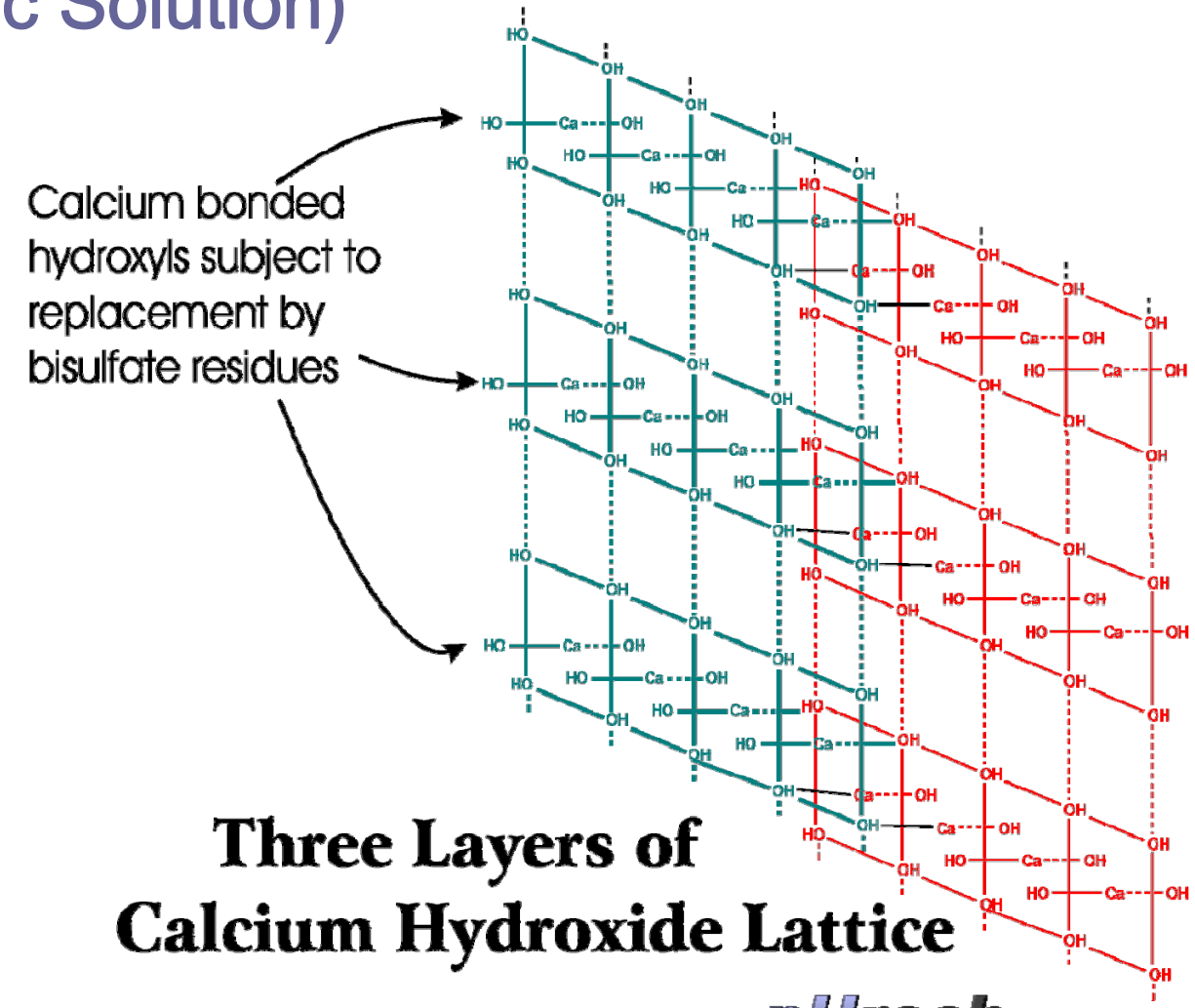
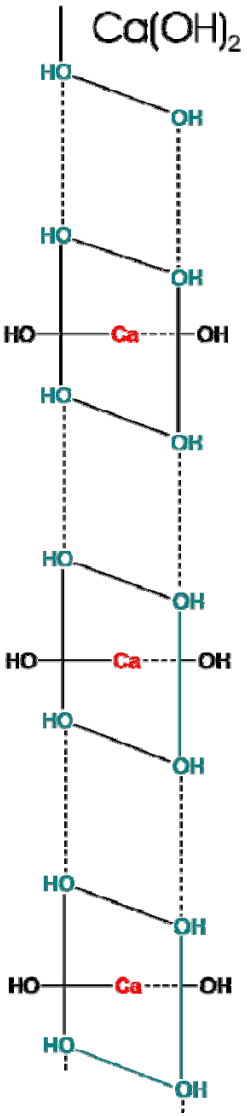
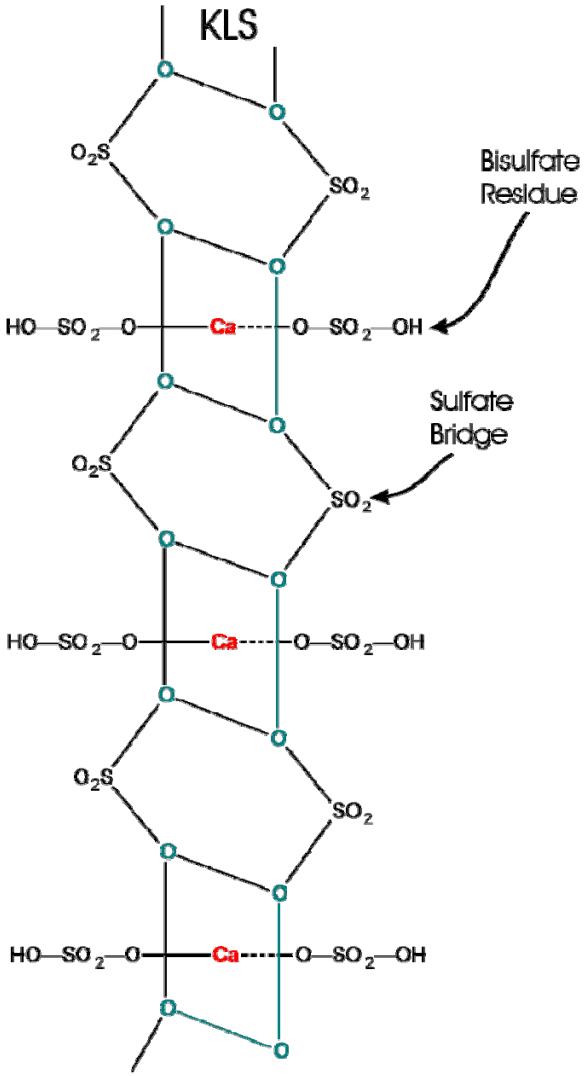
Face of Calcium Hydroxide Solute Exposed to Solvent (Acidic Solution)



A



B



"A" - Edge of a calcium hydroxide crystal with two thirds of the calcium ions removed.

"B" - Active principle of acidic calcium sulfate or KLS as currently understood.

Arrangement of calcium and oxygen atoms is exactly what is seen in calcium hydroxide.

Other lattice types (e.g. calcium carbonate, calcium sulfate) don't have this arrangement of key atoms.

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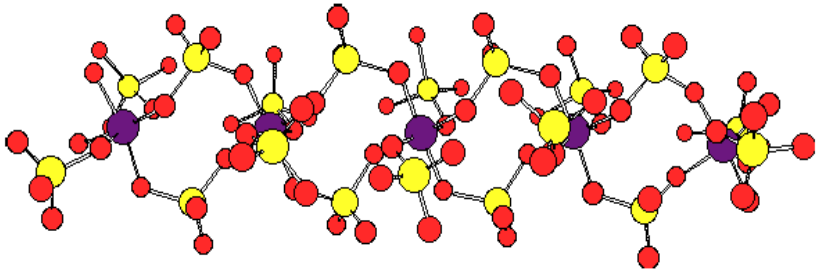
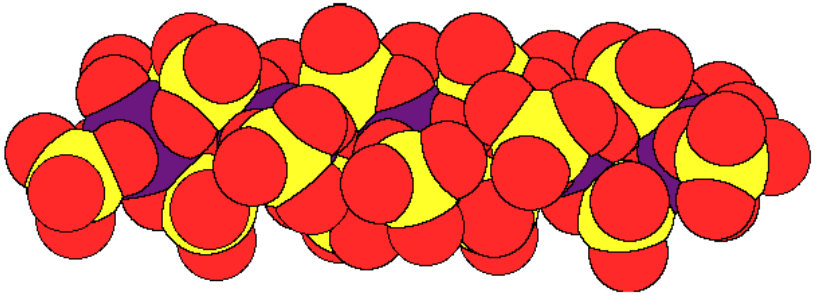
"Acidic Calcium Sulfate" Ion Complex

- Oligomeric ion complex held together by chelated rings with sulfate bridges
- Complex appears to function as a large anion
- Ion complex is surrounded by a large solvation sphere Each calcium has four associated H3O+ ions, thus ACS is very acidic
- Bisulfate ions are exchangeable, allowing the ACS anion to cap proteins, thus reducing relative corrosive effects to meat and skin and some metals





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