

Walsh, Melinda K

From: Craig Robinson <crobinson@floratine.com>
Sent: Wednesday, July 06, 2016 3:01 PM
To: McMurry, Stephen W
Subject: New Proposed Term

Stephen,

Our in-house chemist sent me this additional information on Calcium Glucoheptonate. Let me know if you have any other questions.

Craig

Here is some historical information about calcium glucoheptonate:

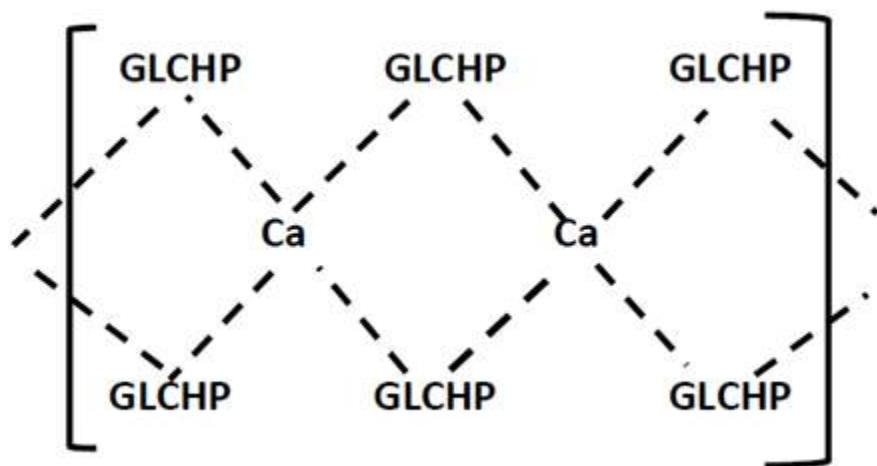
Patent No.	Year issued		
3,033,900	1962	Method of production	
3,053,673	1960	Use in oil wells	
4,210,455	1970	Use in cement	
3,022,343	1962	Chelating Capacity	

Our calcium glucoheptonate products were first used in the 1988 -89 season.

Numerous trials and extensive use on golf courses for 25 years has proven to be very effective at releasing Ca ++ from the soil. The following table relates the kind of results we see from the use of our products. The Ca++ release is between 5 and 7 times the amount of calcium applied. This is the ultimate purpose for our use in turf management – to “mine” calcium from the soil profile for uptake and use by the plant.

State	Date	Application Rate	Ca ++ Released from Soil	Multiple of release
CA	2002	10.7 oz/1000 sq ft or 21 ppm	156 ppm	7.4
CA	2003	13 oz/1000 sq ft or 26 ppm	167 ppm	6.4
TX	2006	2 oz/1000 sq ft or 11.8 ppm	65 ppm	5.5
AZ	2012	6 oz/1000 sq ft or 12 ppm	78 ppm	6.5

Because of the “multiples of release” of Ca++ there has to be a greater level of complexing than a single calcium glucoheptone molecule. My best guess of the structure of the calcium glucoheptonate is a weakly bonded ring of calcium atoms and glucoheptonate molecules. An example of this 3-D molecule in 2-D might look like this:



(where GLCHP = the glucoheptonate sugar)

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Rooted in Science

From: McMurry, Stephen W [<mailto:stephen.mcmurry@uky.edu>]
Sent: Friday, July 01, 2016 9:31 AM
To: Craig Robinson
Cc: Katie Laney (klaney@nmda.nmsu.edu)
Subject: RE: New Proposed Term

Craig

We have placed the item on the agenda. However, we do have one question about all glucoheptonates. A statement was made that it looks like the structures are linear, and not a ring. According to AAPFCO definitions, a chelate and chelating agent would form a five or six member ring structure. So is this truly a chelate or is the metal cation being complexed?

The question above was addressed to the group but no one answered. This will be a question we have, if it can be answered prior to the meeting that would be great.



Stephen McMurry

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From: Craig Robinson [<mailto:crobinson@floratine.com>]

Sent: Thursday, June 30, 2016 5:13 PM

To: McMurry, Stephen W

Subject: RE: New Proposed Term

Hello, Just checking to see if our proposal made it on the agenda?

Have a Happy Independence Day!

Craig

From: McMurry, Stephen W [<mailto:stephen.mcmurry@uky.edu>]

Sent: Tuesday, June 07, 2016 3:42 PM

To: Craig Robinson

Subject: RE: New Proposed Term

Craig

I will send this out to the T&D Committee and if they do not have issues it will be placed on the August agenda. Thanks for the submittal.



Stephen McMurry

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From: Craig Robinson [<mailto:crobinson@floratine.com>]
Sent: Tuesday, June 07, 2016 4:30 PM
To: McMurry, Stephen W
Subject: New Proposed Term

Stephen,

I have attached some of the documents. This link is a powerpoint with information about chelates and Glucoheptonates, in particular. Please let me know if you need anything further. Can this be included in the August meeting?

<http://www.fluidfertilizer.com/Forum%20Presentations/2008/2008%20Fresno%20Fluid%20Workshop%20Presentations/Vatren%20Jurin.pdf>

Thanks,

Craig Robinson

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