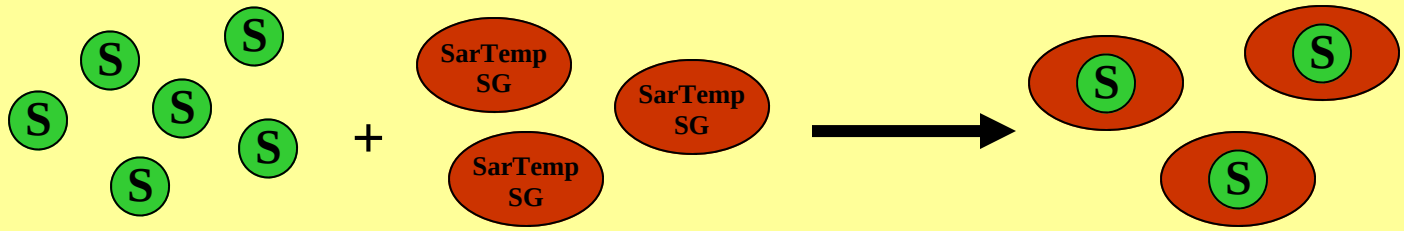
SarTemp® SG

SarTec® Corporation continues to provide
SarTemp® SG with **Sulfur Guard™** to cattle feeders!

SarTemp® SG with **Sulfur Guard™** contains all of the original ingredients contained in **SarTemp®**, plus additional ingredients which form insoluble complexes with sulfide ions. **SarTemp® SG** with **Sulfur Guard™** ties up the sulfur so it can no longer accumulate in the rumen gas bubble.



Sulfur in the rumen + SarTemp® with Sulfur Guard™ → Trapped Sulfur

Inorganic sulfur toxicity has always been a problem in the feedlot industry. Sulfur can be present in feed ingredients and in water. Today, with the increased feeding of distiller's grains (which may contain varying amounts of sulfur on a day to day basis), it is even more important to try and mitigate the effects of too much sulfur.

Sulfur is a required nutrient for beef cattle, however, too much sulfur in the diet can quickly become toxic. One of the first signs of cattle sulfur toxicity is reduced feed intake, which quickly translates into reduced gains and efficiency. As more sulfur is ingested, the animal may experience serious health effects such as restlessness, diarrhea, muscle twitching, dyspnea, inactivity or

Some uses of this product are covered by U.S. Patent No. 5,279,838 and 7,544,376, other patents are pending.

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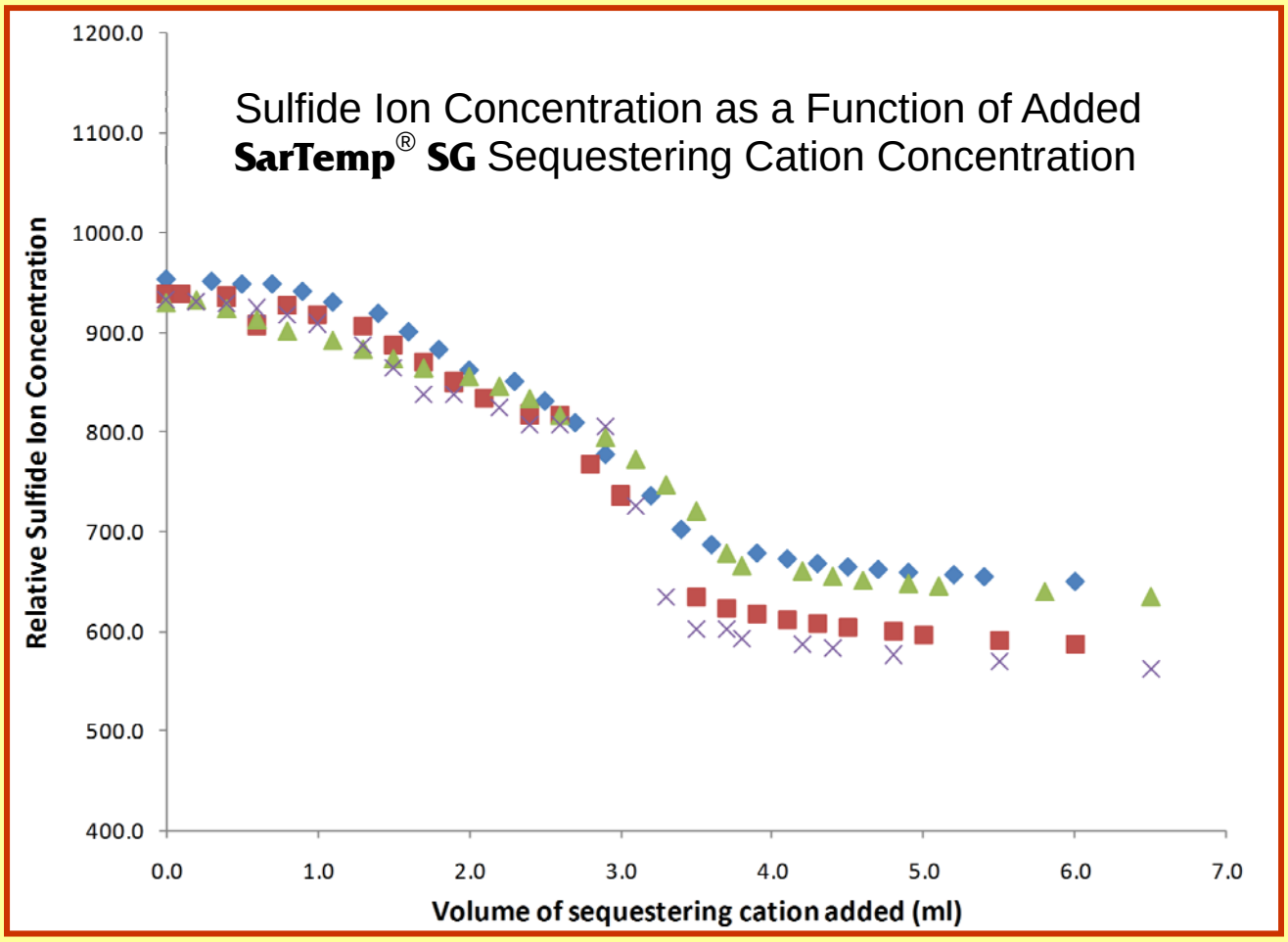
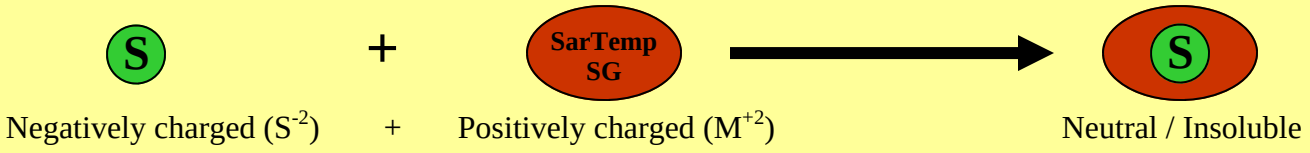
SarTemp® SG with **Sulfur Guard™**

Effects on sulfur in rumen fluid



The graph above shows…

Rumen fluid samples were collected from fistulated animals. The sulfur concentration of the rumen fluid was measured and adjusted to a normalized concentration of 200 mMol sulfide anion. Different cationic species were investigated for their ability to bind with and sequester sulfur (sulfide anion) contained in the rumen fluid. The above graph is a plot of some of the species used to sequester free sulfur in rumen fluid. As sequestering species are added to the rumen fluid, the concentration of free sulfur (sulfide anion) decreases. This is due to the nearly irreversible complexation of the negatively charged sulfur anions with the positively charged elements in **SarTemp® SG** with **Sul-**



SarTemp® SG with **Sulfur Guard™**
Effects on feed intake

	Control	SarTemp® SG
Number of head	23	23
Start wt, lb	972.45	966.05
End wt, lb	1133.30	1147.50
DMI, lb/hd/day	22.07	23.18
ADG, Lb/hd/day	3.45	3.58
Feed Efficiency (DM/gain)	6.41	6.48

In order to determine the feed intake effects of adding **SarTemp® SG** with **Sulfur Guard™** to feedlot finishing diets, a research trial was performed at the North Dakota State University Carrington Research Extension Center under the direction of Professor Vern Anderson.

In this trial, forty-six Angus based feeder calves were blocked by sex (heifers and steers) and assigned within block to one of two treatments. One group (one pen of steers and one pen of heifers) was fed **SarTemp® SG** with **Sulfur Guard™**, mixed into the feedlot supplement. The supplement contained minerals, vitamins, Rumensin (300 mg/hd/d), and carrier feed products including corn, barley sprouts, and distillers grains. The other group (control) was fed the same supplement and diet without **SarTemp® SG** with **Sulfur Guard™**.

The cattle that received the **SarTemp® SG** with **Sulfur Guard™** treatment had substantially increased dry matter intake and average daily gains. The cattle were finished and shipped after 48 days on feed.

Product Research Feeding Trial Summary

Trial # - Description	ADG (lb/day)	Efficiency (Feed lbs/Gain lbs)	Type of Processing	Trial Location
1 - **SarTemp**	3.34	5.2	DRY ROLL	University of California, El Centro
1 - Control	3.48	5.33	DRY ROLL	
1 - % Improvement	-4.2	2.5	DRY ROLL	
2 - **SarTemp**	3.8	5.87	DRY ROLL	University of Nebraska,
2 - Control	3.41	6.47	DRY ROLL	
2 - % Improvement	11.4	9.3	DRY ROLL	
3 - **SarTemp**	2.5	9.01	DRY ROLL	University of Nebraska,
3 - Control	2.24	9.59	DRY ROLL	
3 - % Improvement	11.6	6	DRY ROLL	
4 - **SarTemp**	3.7	5.46	DRY ROLL	University of California, El Centro
4 - Control	3.26	5.91	DRY ROLL	
4 - % Improvement	13.5	7.6	DRY ROLL	
5 - **SarTemp**	3.48	5.81	DRY ROLL	Texas Tech University
5 - Control	3.35	6.1	DRY ROLL	
5 - % Improvement	3.9	4.8	DRY ROLL	
Trials 1-5 Avg % Improvement	**ADG 7.2**	**Efficiency 6.1**	**DRY ROLL**	
6 - **SarTemp**	3.39	4.97	STEAM FLAKE	University of California, El Centro
6 - Control	3.26	5.05	STEAM FLAKE	
6 - % Improvement	4	1.6	STEAM FLAKE	
7 - **SarTemp**	3.44	6.44	STEAM FLAKE	Independent Feedlot
7 - Control	3.36	6.58	STEAM FLAKE	
7 - % Improvement	2.4	2.1	STEAM FLAKE	
8 - **SarTemp**	3.77	5.06	STEAM FLAKE	Texas Tech University
8 - Control	3.64	5.16	STEAM FLAKE	
8 - % Improvement	3.6	2	STEAM FLAKE	
Trials 6-8 Avg % Improvement	**ADG 3.3**	**Efficiency 1.9**	**STEAM FLAKE**	

SarTemp® SG with **Sulfur Guard™** contains the same formulation included in the original **SarTemp®**, plus extra ingredients which are designed to sequester sulfur ions with which they come into contact. This means that you are getting the same University and Commercial feedlot proven technology as before, only now it is improved.

SarTec® Corporation - From the developers of saponin technology for the cattle industry.

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