

## Acidic Calcium Sulphate

INTERVENTION SUMMARY	
<b>Status</b>	Currently Available
<b>Location</b>	Packaging/Retail
<b>Intervention type</b>	Incorporated into meat products
<b>Treatment time</b>	Storage life of product
<b>Regulations</b>	Approved in US, not in EU or Australia
<b>Effectiveness</b>	Not yet clearly identified
<b>Likely Cost</b>	Not known
<b>Value for money</b>	Difficult to ascertain.
<b>Plant or process changes</b>	Minimal
<b>Environmental impact</b>	None known
<b>OH&amp;S</b>	None known
<b>Advantages</b>	Acts on packaged product, so removes risk of recontamination
<b>Disadvantages or Limitations</b>	Possible organoleptic effects Considered a food additive so must be declared in the labelling.

## Acidic Calcium Sulphate

Acidified calcium sulphate (ACS) works by inactivating bacteria on contact and/or prevents further replication (bacteriostatic effect). As well as effecting decreases in initial counts of any pathogens, this has the potential to extend the shelf life of the treated food and is suitable for applications in ground meat and meat products.

Published research studies have concentrated more on the inactivation of bacteria using ACS combined with lactic acid in ground beef (Zhao *et al.* 2004) or with lactic or propionic acid in hot dogs (Nunez *et al.*, 2004).

ACS is the basis for commercial food additives called Safe<sub>2</sub>O<sup>®</sup> RTE 01, RTE 03 and ACS 50, produced by Mionix, which consist of a complex blend of sulfuric acid, calcium sulfate, calcium hydroxide, and an organic acid (eg. lactic acid) adjusted to a final pH of ~1.5. Current research using Safe<sub>2</sub>O is primarily directed at the control of *Listeria monocytogenes* in processed and ready-to-eat meat products such as roast beef, corned beef and hot dogs. ACS has received approval in the US (USDA/FSIS 2004). There are minimal organoleptic effects if applied at the concentrations recommended by the manufacturer (see Mionix Corporation website).

### Proponent/Supplier Information

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### References

USDA/FSIS (2004), Safe and suitable ingredients used in the production of meat and poultry products. FSIS Directive 7120.1 Amendment 6, USDA-FSIS.

Nunez de Gonzalez, M., Keeton, J. T., Acuff, G. A., Ringer, L. J., Lucia, L. (2004) Effectiveness of acidic calcium sulfate with propionic and lactic acid and lactates as postprocessing dipping solutions to control *Listeria monocytogenes* on frankfurters with or without potassium lactate and stored vacuum packaged at 4.5°C. Journal of Food Protection **67**: 915-921.

Zhao, T., Doyle, M. P., Kemp, M. C., Howell, R. S., Zhao, P. (2004) Influence of freezing and freezing plus acidic calcium sulfate and lactic acid addition on thermal inactivation of *Escherichia coli* O157:H7 in ground beef. Journal of Food Protection **67**: 1760-1764.