NOSB NATIONAL LIST
FILE CHECKLIST

LIVESTOCK

MATERIAL NAME:  #10 Magnesium Sulfate

✓  NOSB Database Form

✓  References

✓  MSDS (or equivalent)

✓  TAP Reviews from:  Marta Engel, Lynn Brown, and William Zimmer
Material Name: #10 Magnesium Sulfate

Please use this page to write down comments, questions, and your anticipated vote(s).

COMMENTS/QUESTIONS:

1. In my opinion, this material is:
   _____ Synthetic _____ Non-synthetic.

2. This material should be placed on the proposed National List as:
   _____ Prohibited Natural _____ Allowed Synthetic.
TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: 3 Sept 5, 1995

Name of Material: Magnesium Sulfate
Reviewer Name: MARTHA W. ENGEL, DVM

Is this substance Synthetic or non-synthetic? Explain (if appropriate)

Both

If synthetic, how is the material made? (please answer here if our database form is blank)

This material should be added to the National List as:

✓ Synthetic Allowed ___ Prohibited Natural

or, ___ Non-synthetic (This material does not belong on National List)

Are there any use restrictions or limitations that should be placed on this material on the National List?

FOR EXTERNAL USE ONLY

Please comment on the accuracy of the information in the file:
Under additional comments I give more information on health care uses. Not well defined in file. I don't know the mode of action.

Any additional comments? (attachments welcomed)
MgSoy has 3 modes of action: externally in hot pack it will reduce inflammation & swelling. Orally it is a laxative, but in excess can cause dehydration and if it is a CNS depressant and muscle relaxant and in high doses can cause death.

Do you have a commercial interest in this material? ___ Yes; ___ No

Signature Martha W. Engel, DVM Date 9/4/95
Please address the 7 criteria in the Organic Foods Production Act:
(comment in those areas you feel are applicable)

(1) the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;

Not likely

(2) the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment;

Not likely – naturally occurring substance. Won't be used in large enough quantities to cause any problem with imbalances.

(3) the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;

Probably not.

(4) the effect of the substance on human health;

Best to be used externally only. Not generally a problem.

(5) the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock;

Large quantities on the soil might be imbalancing. Only a small amount used for external application not likely to cause a problem.

(6) the alternatives to using the substance in terms of practices or other available materials; and

Could use herbal poultices or just hot packs to draw out infection and inflammation.

(7) its compatibility with a system of sustainable agriculture.

Yes, it is.
TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: July 3

Name of Material: Magnesium Sulfate
Reviewer Name: Lynn R Brown

Is this substance Synthetic or non-synthetic? Explain (if appropriate)

Synthetic

If synthetic, how is the material made? (please answer here if our database form is blank)

This material should be added to the National List as:

X Synthetic Allowed ______ Prohibited Natural

or, ____ Non-synthetic (This material does not belong on National List)

Are there any use restrictions or limitations that should be placed on this material on the National List?

Please comment on the accuracy of the information in the file:

Any additional comments? (attachments welcomed)

(carries be used as a feed supplement to provide a source of magnesium and sulfur)

Do you have a commercial interest in this material? ____ Yes; X No

Signature Lynn R Brown Date 6/16/95
Please address the 7 criteria in the Organic Foods Production Act:
(comment in those areas you feel are applicable)

(1) the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;

None

(2) the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment;

Should pose no problem.

(3) the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;

Little likelihood of problem.

(4) the effect of the substance on human health;

Proper care with livestock will pose no threat to human health.

(5) the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock;

(6) the alternatives to using the substance in terms of practices or other available materials; and

(7) its compatibility with a system of sustainable agriculture.

Compatible with sustainable agriculture.
TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: July 3

Name of Material: Magnesium Sulfate
Reviewer Name: Dr. William A. Zimmer D.V.M.

Is this substance Synthetic or non-synthetic? Explain (if appropriate)
Both - KSO4/MgSO4 combinations and pure MgSO4

If synthetic, how is the material made? (please answer here if our database form is blank)
Chemical processing of KSO4/MgSO4 deposits + processing of magnesium

This material should be added to the National List as:
✓ Synthetic Allowed    ___ Prohibited Natural

or, ___ Non-synthetic (This material does not belong on National List)

Are there any use restrictions or limitations that should be placed on this material on the National List?

No

Please comment on the accuracy of the information in the file:
Also useful as a soil fertilizer on sandy or low magnesium soil, generally in the form of KSO4 + MgSO4 (i.e. SulfoMag)

Any additional comments? (attachments welcomed)
Animal use: 1. Potential for use as an anionic salt for dairy cows and as a highly available source of magnesium for grass hays in beef cattle.
2. Topical use for reducing inflammation.

Do you have a commercial interest in this material? ___ Yes; ___ No

Signature: William A. Zimmer Date: 6-4-85
Please address the 7 criteria in the Organic Foods Production Act:  
(comment in those areas you feel are applicable)

(1) the potential of such substances for detrimental chemical interactions with other 
materials used in organic farming systems;

unknown for many, excessive use of sulfur will
increase requirements for copper, zinc, etc.

(2) the toxicity and mode of action of the substance and of its breakdown products or
any contaminants, and their persistence and areas of concentration in the
environment;

high levels added to feed can cause transient diarrhea,
sulfur may persist as SO4.

(3) the probability of environmental contamination during manufacture, use, misuse
or disposal of such substance;

(4) the effect of the substance on human health;

natural laxative, high doses can cause diarrhea,
used in enema preparations.

(5) the effects of the substance on biological and chemical interactions in the
agroecosystem, including the physiological effects of the substance on soil
organisms (including the salt index and solubility of the soil), crops and livestock;

very soluble source of magnesium and sulfur sulfur,
highly available.

(6) the alternatives to using the substance in terms of practices or other available
materials; and

many alternative sulfur sources for soils and animals
other sources of magnesium for animals but not for soils
as available to plants (sulfate) no known alternatives at farm
rates for some ani.

(7) its compatibility with a system of sustainable agriculture.

very compatible especially for dairy
crop systems, non chemical anionic salt sources
Common Name: Magnesium Sulfate

Chemical Name: 

Code #: Other

N. L. Category: Synthetic Allowed

**Chemistry**

Composition: MgSO₄•7H₂O

Properties: Small colorless crystals, usually needle-like, with a cooling, saline, bitter taste. Freely soluble in water, slowly soluble in glycerin, and sparingly soluble in alcohol. Solutions are neutral.

How Made: Exists naturally as mineral: epsomite (MgSO₄•7H₂O) or kieserite (MgSO₄•H₂O). Some magnesium sulfate is recovered from waste brines from the potash industry and natural brines. Magnesium sulfate is also produced synthetically by dissolving magnesium oxide, hydroxide or carbonate in sulfuric acid (synthetic) solution and evaporating it to crystallization.

**Use/Action**

Type of Use: Livestock

Use(s): Health care. Considered to be a new animal drug by the FDA, depending on its intended use.

**Status**

OFPA
N. L. Restriction: Category 2

EPA, FDA, etc
Registration

Directions
Safety Guidelines
State Differences

Historical status
International status
2119(m)1: chem. inter.

2119(m)2: toxicity

2119(m)3: manufacture Low environmental impact from the brine produced material.

2119(m)4: humans

2119(m)5: biology

2119(m)6: alternatives

2119(m)7: compatible

References

AU: Grings, E.E.; Males, J.R.
TI: Performance, blood and ruminal characteristics of cows receiving monensin and a magnesium supplement.
CN: DNAL 49-J82

AU: Reid, R.L.; Baker, B.S.; Vona, L.C.
TI: Effects of magnesium sulfate supplementation and fertilization on quality and mineral utilization of timothy hays by sheep.
CN: DNAL 49-J82
MATERIAL SAFETY DATA SHEET
MAGNESIUM SULFATE

SECTION I - Product Identification

PRODUCT NAME: MAGNESIUM SULFATE
FORMULA: MgSO4.7H2O
FORMULA WT: 246.5
CAS NO.: COMMON SYNONYMS: EPSOM SALT

Precautionary Labeling

N/A

SECTION II - Hazardous Components

N/A

SECTION III - Physical Data

BOILING POINT: N/A  VAPOR PRESSURE @ 20C (MM HG): N/A
MELTING POINT: 75C  VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY: 1.67  EVAPORATION RATE: N/A
(H2O=1)  (BUTYL ACETATE=1)
SOLUBILITY(H2O): SOLUBLE  PERCENT VOLATILES BY VOLUME: N/A
APPEARANCE & ODOR: EFFORESENT CRYSTALS

SECTION IV - Fire and Explosion Hazard Data

FLASH POINT: NONFLAMMABLE
FLAMMABLE LIMITS: UPPER - N/A %  LOWER - N/A %
FIRE EXTINGUISHING MEDIA
ANY SUITABLE FOR SURROUNDING MATERIALS
SPECIAL FIRE-FIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS
UNUSUAL FIRE AND EXPLOSION HAZARDS
MAY EMIT TOXIC FUMES ON THERMAL DECOMPOSITION

SECTION V - Health Hazard Data

THRESHOLD LIMIT VALUE (TLV/TWA): NONE ESTABLISHED
TOXICITY: ORL-RBT LD50: 3 G/KG
EFFECTS OF OVEREXPOSURE
CAN CAUSE EYE AND SKIN IRRITATION. DUST INHALATION MAY IRRITATE
UPPER RESPIRATORY PASSAGES. MAGNESIUM INTOXICATION.
EMERGENCY AND FIRST AID PROCEDURES
SKIN: WASH WITH SOAP/WATER, GET MEDICAL ASSISTANCE.
EYES: WASH WITH WATER, GET MEDICAL ASSISTANCE.
INHALATION: REMOVE TO FRESH AIR, GET MEDICAL ASSISTANCE.
ingestion: GET MEDICAL ATTENTION.
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE

SECTION VI - Reactivity Data

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STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATIBILITIES: N/A
DECOMPOSITION PRODUCTS: SOX

SECTION VII - Spill and Disposal Procedures

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
Sweep up and containerize

SECTION VIII - Protective Equipment

Provide adequate general ventilation.
Protect eyes and skin with safety goggles and gloves.

SECTION IX - Storage and Handling Precautions

Store in cool, dry, area.

SECTION X - Transportation Data and Additional Information

Melting point: begins to lose water at 75°C

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N/A = Not Applicable OR Not Available
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