



Pure Form of MSM

A demanding market for premium quality ingredients in the animal nutrition market supports a branded ingredient strategy. Now more than ever consumers are questioning the safety of the products they provide their horses. By using PurforMSM, horse owners can be assured they are using the highest quality MSM available!

Methylsulfonylmethane (MSM) is created naturally through the earth's sulfur cycle when phytoplankton and algae die and decompose, releasing sulfur compounds into the atmosphere where they are transformed to DMS. In the presence of ozone and sunlight, DMS is converted to DMSO and MSM. Both are water-soluble and return to the earth's surface in rain water and are absorbed by vegetation and ultimately eaten by animals. These sources contain very small amounts of MSM, typically < 1 ppm, with the highest concentration in mammal's milk at 8.2 ppm. Therefore, all commercially available MSM must be manufactured because the amounts found naturally are too small to be extracted.

Benefits of PurforMSM® for Equine Supplementation

The equine body is approximately 0.15% sulfur by weight, with sulfur being considered an essential nutrient in the growth and maintenance of horses.

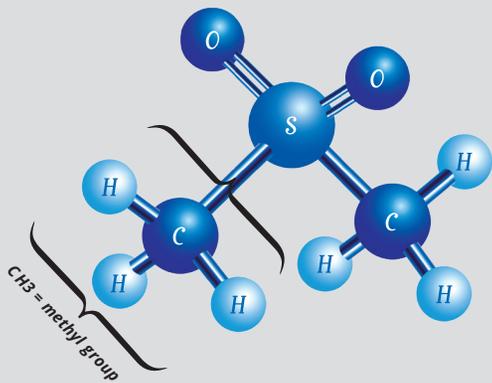
Sulfur plays a critical role in the formation of many important and vital organic molecules essential to normal healthy function. It plays an important role in supporting healthy hair, skin and hooves.

Studies suggest that PurforMSM may also provide some protection from oxidative stress and inflammatory -induced injury caused by exercise.

Inorganic forms of sulfur such as sulfates provide only a minor source of sulfur. Therefore, the most effective dietary sources of sulfur are when it is present as an organic form such as PurforMSM.



MSM is 34.06% elemental sulfur, 25.52% carbon, 6.42% hydrogen and 34% oxygen.



Dosage Range

PurforMSM® can be taken daily over a long period of time to help maintain good health.

PurforMSM®

Typical diets or supplements containing PurforMSM should provide daily amounts listed in the table below.

	1-6 Weeks	7+ Weeks
Equine	20 grams / day	10 grams / day



PurforMSM[®] Specification

Item SKU#	30020	30520
Appearance	White Flake	White Powder
Volatile Purity	>99.8%	>99.8%
Melting Point	109.5°C ± 1.0°C	109.5°C ± 1.0°C
Water Content	< 0.1%	< 0.1%
DMSO Content	<0.05%	<0.05%
U.S. Sieve	Designation 12: NLT 98% through	Designation 40: NLT 95% through
Bulk Density	NLT 0.68 g/ml	NLT 0.72 g/ml
Tap Density	NLT 0.78 g/ml	NLT 0.81 g/ml
Expiration	5 years from production date	

PurforMSM[®]

Is made to strict production specifications. Consistency is guaranteed by process control, monitored at every stage of production, followed by extensive analytics.

Rigorous Analyticals Verify Consistent Identity and Purity

Volatile Purity by HRGC

> 99.8%

This is a highly specific quantitative method for determining the volatile purity of MSM. This method was developed with the process of manufacturing MSM in mind. It is more specific than HPLC (High Performance Liquid Chromatography).

Melting Point

109.5°C ± 1.0°C

Extremely pure compounds have a distinct melt point. Non-volatile impurities will cause a non-distinct melt point that may be higher or lower than the acceptable value. Liquid will form when performing a melt point of impure product, but some solid material will remain at the melt point temperature, producing a larger range.

Water Content

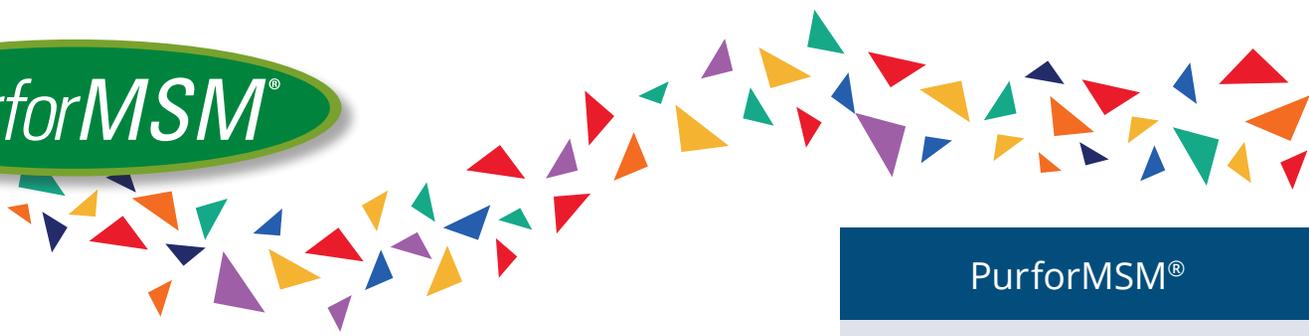
< 0.1%

Water content by Karl Fischer Titration is preferred for MSM. Other methods such as loss on drying and using a moisture balance can give erroneous results, as some of the MSM may be driven off by the heat, giving higher results than actual.

DMSO Content

< 0.05%

Freedom from residual DMSO is verified by the HRGC method used for volatile purity. The HRGC method was developed with this in mind. When performing this test a "spiked" sample is also run to verify that DMSO would be detected by the instrument.



Purification Method

Crystallization and distillation are the two methods that are used to purify MSM. Distillation is recognized by chemical engineers and other experts as the superior method. Members of the Bergstrom Nutrition staff pioneered the distillation process. MSM purified by distillation uses heat to separate impurities and by-products of manufacturing based on their unique boiling points. MSM's boiling point of 478° F (248° C) allows pure MSM to be isolated from solution. In distillation, purity is not dependent on the quality of water or raw material. In addition to being a very pure product, distilled MSM has a low moisture content, which reduces the risk of microbial contamination and product degradation.

In contrast, MSM purified by crystallization uses a wash and centrifuge process to separate impurities and by-products introduced during manufacturing. As crystals form, occlusions develop that can entrap contaminants present in the solution. The purity of the crystals depends on the quality of the water and the raw materials used in manufacturing.

Commitment to Quality

Consistent quality and purity is our goal. That's why PurforMSM® is produced in the only single-purpose MSM production facility in North America that's compliant with Good Manufacturing Practices (GMP), and ISO 9001:2008 registered. No pesticides or herbicides are involved in the raw materials or the manufacturing process. There are no Genetically Modified Organisms (GMOs) used in this product. Further, to ensure a purity level of 99.9%, we confirm every batch through an independent laboratory and report the findings on a detailed certificate of analysis. PurforMSM® complies with the EU definition of Feed Material per Commission Regulation 575 / 2011, Section 13.9.1.

About Balchem

Balchem employs over 1,000 people worldwide across four business segments and our products positively impact approximately 1.3 billion people every year. Balchem solves today's challenges to shape a healthier tomorrow. Our branded animal ingredient, PurforMSM®, is developed through a unique four-stage distillation process that ensures optimal purity, quality and consistency. PurforMSM is manufactured exclusively at our dedicated, cGMP-compliant, ISO-registered facility in the USA, which provides batch-specific traceability.

PurforMSM®

Impurities Reduced by
4 Stage Distillation

- Benzene
- Phenol
- Arsenic
- Lead
- Heptane
- Mercury
- Cadmium

99.9% Distilled PurforMSM



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