



# Cutting edge nutraceutical products

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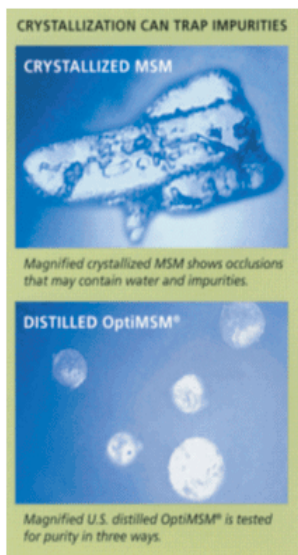
## About the quality of MSM (methylsulfonylmethane)

MSM is a well-established dietary supplement, and is used quite frequently by owners of racehorses. MSM helps racehorses to recover more rapidly after an intensive run, and they are less prone to injuries. In recent years, through the research and efforts of Professor Stanley Jacob, MSM has become a major player in the fight against chronic pain.

Originally, all MSM was produced in the US by Bergstrom Nutrition (previously Cardinal Nutrition). Bergstrom Nutrition is the only dedicated GMP MSM production facility in the world, eliminating the risk of contamination from toxins like benzene, toluene or pesticides.

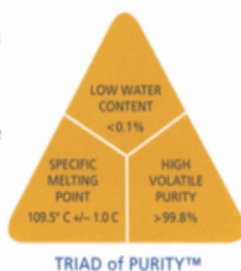
Bergstrom's MSM is called OptiMSM. In the past several years, however, MSM is also produced in plants in China and India and Canada and is imported into the US and EU under the same generic name but for prices that are less than one-fifth of the Bergstrom Nutrition made MSM.

OptiMSM is pharmaceutical grade quality MSM, and is produced by the method of distillation. This process removes any potential impurities, leaving only pure MSM, i.e. OptiMSM. The quality is supported by a certificate of analysis for each batch produced, which shows that bacteria and yeasts are absent. The concentrations of heavy metals, an important potential contaminant, is specified to be absent near the analytical levels of detection (for mercury, for example, at less than 0.001 parts per million).



### DISTILLED FOUR TIMES FOR OPTIMAL PURITY.

Bergstrom Nutrition sets the standard with ultra-pure OptiMSM. We start with the best quality raw materials and distill OptiMSM to remove as much water as possible. By heating it to a specific boiling point, Bergstrom separates pure MSM from both *volatile* and *non-volatile* contaminants.



Other producers use the crystallization method, which is a less expensive production process. In this process, the MSM is dissolved in water and then dried, trapping any contaminants present in the water. This MSM comes with certificates of analysis in which the absence of yeast, bacteria and fungi is often not guaranteed, and the concentrations of heavy metals is shown as a generic group at less than 20 parts per million.



### HOW DISTILLATION REMOVES CONTAMINANTS

#### Boiling Point

- 3164° F Lead
- 1409° F Cadmium
- 1135° F Arsenic
- 674° F Mercury

Impurities with high boiling points, such as heavy metals, remain in the bottom of the distillation vessel (left figure).

#### 478° F MSM Pure distilled OptiMSM

MSM is separated from impurities, then condensed as a highly purified liquid that is then cooled into its final form (right figure).

- 360° F Phenol
- 209° F Heptane
- 176° F Benzene

Contaminants with boiling points below that of MSM are removed as distillation temperatures approach MSM's boiling point

The photo in the right shows OptiMSM® after distillation. It is pure, i.e., free of contaminants. The left photo shows the contaminants left behind during the distillation process mostly comprised of heavy metals. These contaminants are all still present in the crystallization method, and although this cheaper MSM may look white and the manufacturer may claim "> 99% pure MSM", small quantities of heavy metals and other contaminants will be present in this imported MSM.

The bottom line is that heavy metals in OptiMSM® are guaranteed to be thousands of times lower than the levels in the cheaper import MSM. While it is not possible for consumers to verify this, selecting OptiMSM is a sure way to guarantee that you buy pure, clean MSM.