



# Hydrous Calcium Sulphate

## Food and Pharmaceutical Grade

USG Food Grade Gypsum - F&P Grade ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ), the dihydrate form of Calcium Sulphate, is made by fine grinding high purity white gypsum containing about 20% water of crystallization.

In increasing volume, USG Calcium Sulphate products serve the food, beverage and pharmaceutical industries as an economical source of supplemental calcium. It is used in enriched breads, cereals, baking powder, yeast foods, bread conditioners, canned vegetables and artificially sweetened jellies and preserves.

In beer manufacturing, the calcium iron, together with the needed buffering action as provided by proper water correction, promotes proper gelatinization of the starch in the cooker mash, as well as protein degradation and starch conversion. Thus yield in the main mash is increased. In addition the colour of the wort is improved, and better precipitation and flocculation of undesirable protein complexes are achieved. The result is a paler, smoother tasting beer with improved stability and shelf life.

For pharmaceutical applications, calcium sulphate is extensively used as a diluent serving as an excellent inert extender while it supplies dietary calcium.

USG Food Grade Gypsum is certified Halal and suitable for consumption by Muslims.

USG Food Grade Gypsum is guaranteed to meet the specifications of Food Chemical Codex and National Formulatory as listed below.

Calcium Sulphate is an approved additive on the Food and Drug Administration GRAS (generally recognized as safe) list of food additives. Approvals for the use of calcium sulphate in specific food products for nutritional and functional uses are listed in FDA Regulations, Title 21, Food and Drugs, Parts 1 to 199.

**Specifications of USG Food Grade Gypsum**

CaSO <sub>4</sub> 2H <sub>2</sub> O	> 97%
Iron	< 100 ppm
Fluoride	< 0.003% w/w (30 ppm max)
Selenium	< 0.003% w/w (30 ppm max)
Arsenic	< 3 ppm
Heavy metals (as Pb)	< 10ppm

Water Loss 250C	20%
Brightness index – min	84.4
Oil Absorption	23.5
Specific Gravity	2.32
<u>Bulk density – pcf</u>	
Loose	42.0
Compacted	70.0

**Bulking values**

Lbs per solid gallon	19.38
Solubility (70 F) per 100cc of H <sub>2</sub> O:	0.26 grams
PH – 10% slurry	7.3
Refractive Index	1.52

**Particle size**

Through 100 mesh	100% minimum
Through 325 mesh	93% minimum
Average particle size	12 to 15 microns

**Typical Analysis**

	<b>Analysis of USG Food Grade Gypsum:</b> <small>Batch 29, 24<sup>th</sup> February 2005</small>	<b>Method of analysis</b>	<b>FCC Specifications</b>	<b>National Formulary Specifications</b>
<b>Fluoride</b>	<b>&lt;0.002%</b>	FCC IV	<0.003%	<0.003%
<b>Selenium</b>	<b>&lt;0.003%</b>	Consulchem G039, ICP-OES	<0.003%	<0.003%
<b>Iron</b>	<b>19.4 ppm</b>	Consulchem G039, ICP-OES	-	<100ppm
<b>Heavy metals (as Pb)</b>	<b>&lt;10 ppm</b>	FCC IV	<10 ppm	<10 ppm
<b>Arsenic</b>	<b>&lt;1 ppm</b>	BO 2001 Limit test for Arsenic	<3 ppm	<3 ppm
<b>Loss on Drying</b>	<b>19.90%</b>	FCC IV		
<b>Assay (as CaSO<sub>4</sub>.2H<sub>2</sub>O)</b>	<b>102%</b>	FCC IV	98% min	98% min
<b>Particle Size:</b>				
<b>Retained on 150 um</b>	<b>0%</b>			
<b>Retained on 45 um</b>	<b>22.5%</b>			