

Please direct inquiries to:

Chevron Phillips Chemical Company LP  
Mining Chemicals  
10001 Six Pines Drive  
The Woodlands, TX 77380  
Phone: (832) 813-4876  
Facsimile: (832) 813-4971  
U.S. and Canada toll free: 1-800-858-4327



## ORFOM® Grade 3 Tannin

ORFOM® Grade 3 Tannin is modified, cold water soluble quebracho tannin used commercially in the hydro-metallurgical leaching of zinc to reduce deposition of sulfur on the remaining sphalerite. This leads to improved leaching and higher recovery. The Grade 3 tannin also inhibits the disposition of sulfur in the autoclave and flash cooling tower. Some ores contain high levels of bentonite cays leading to high pulp viscosity due to clay minerals. ORFOM® Grade 3 Tannin can significantly reduce the pulp viscosity due to clay minerals. ORFOM® Grade 3 Tannin is beneficial in fluorite (fluorspar) flotation. It is used to depress calcite flotation leading to improved concentrate grades. Tannin use is not recommended for molybdenum recovery. ORFOM® Grade 3 Tannin is recommended for high chloride environments and has similar solubility and functionality as our ORFOM® Grade 2 Tannin.

### APPLICATION:

**AUTOCLAVE LEACHING-** Orfom® Grade 3 Tannin dissolves easily in water. The solution strength can be adjusted as necessary to provide convenient dosages. Typical dosage is 0.4 – 1.0 kg/ton of ore.

**THINING-** ORFOM® Grade 3 Tannin dosage rates will vary depending upon the clay content of the ore. Typical dosages will be 0.25 – 1.0 lbs. /ton (125-500 g/MT) of ore.

**CALCITE DEPRESSION-** The dosage will be dependant upon flotation conditions. Typical dosages would range from 0.1 – 2 lbs. /ton (50-1000g/MT) of ore.

### BENEFITS:

ORFOM® Grade 3 Tannin can improve metal recovery in autoclave leaching. ORFOM® Grade 3 Tannin can reduce sulfur disposition in autoclaves and flash cooling towers. ORFOM® Grade 3 Tannin can be used to reduce viscosity in pulps and slurries.

### AVAILABILITY:

ORFOM® Grade 3 Tannin is currently available in 500 kg. (1102 lb.) super sacks (bulk bags).

### MATERIAL HANDLING:

Avoid contact with eyes, skin and clothing. Store in well ventilated area. Store in a closed container. Protect from moisture. Product is hygroscopic and may adsorb moisture from the air. This may result in handling difficulties. Refer to the Material Safety Data Sheet for complete safety and health information.

Typical Composition (1)	Value
Specific Gravity, 68°F (20°C), gm/cc	1.38
Bulk Density (approximate), gm/cc (lbs./ft <sup>3</sup> )	0.67 (41.8)
Solubility gm/L	> 1000
Viscosity, m Pa*s @ 30°C - 400 gm/L solution	30
Note: Viscosity varies significantly with concentration and moderately with temperature.	
(1) Not tested for or reported for individual lots. For informational purposes only.	

MSDS # CPC00050

Revision Date: 10.07.2008



Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question and is further advised against relying on the information contained herein as it may relate to any specific use or application. It is the ultimate responsibility of the user to ensure that the product is suited and the information is applicable to the user's specific application. Chevron Phillips Chemical Company LP does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or the product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself. Further, information contained herein is given without reference to any intellectual property issues, as well as federal, state or local laws which may be encountered in the use

thereof.

Such questions should be investigated by the user.