

## **Kol-Seal Lost Circulation / Extender Additive**

### **Description**

Kol-Seal\* is a light weight granular solid with a specific particle size distribution for maximum bridging efficiency. It provides an economical cementing system with low-density, lost circulation control and superior scouring action.

Kol-Seal extender serves several purposes as a cement additive. While it is primarily used as a lost circulation additive, it also extends the slurry yield. In turbulent-flow fluids such as scavenger slurries or chemical washes, Kol-Seal provides scouring action helping to remove excessive gelled mud from the formation because of its hardness.

Kol-Seal's effectiveness in controlling lost circulation is due to the particle size distribution. The larger and medium size Kol-Seal particles bridge forming a network which retains the finer particles. Thus, a dense deposit is formed which is completely sealed by the cement.

Kol-Seal extender can be used to lower the slurry density and increase the slurry yield while still providing the set cement with good compressive strength. The reduction of slurry density is primarily the result of Kol-Seal's low specific gravity which reduces the slurry weight, thereby reducing the hydrostatic pressure on the weak zone. Large amounts of water are not required for Kol-Seal used as an extender.

### **Advantages**

- Kol-Seal is not soluble in petroleum fluids.
- Kol-Seal's melting point is in excess of 1000 degrees F (538 degrees C) and therefore its use is not limited by well temperatures and does not soften at high temperatures.
- Slurries containing Kol-Seal have higher compressive strength at all ages than slurries containing other lost circulation and cementing additives.
- Kol-Seal does not appreciably change the thickening time of cement.
- Kol-Seal is compatible with most other cement additives.
- Kol-Seal does not require complicated mixing equipment or procedures.

### **Application**

Kol-Seal is used as an extended to provide a light weight, high yield slurry. Because of its insolubility and low surface area, Kol-Seal does not require large amounts of

additional water. (The additional use of water with most extenders materially reduces the strength of the cement.)

The concentration of Kol-Seal may vary from 5 to 50 pounds per sack of cement. The usual proportion is 12.5 to 25 pounds per sack of cement since higher concentrations may cause mixing problems and bridge-off the float equipment or the annulus. Each 10 pounds of Kol-Seal added to cement will increase the slurry yield by .17 cubic feet per sack of cement, including water. Normally 1 gallon of water is used for each 25 pounds of Kol-Seal.

### **Field / Laboratory Properties**

Thickening time—Kol-Seal is an inert solid. The small amount of additional water used does not appreciably change the thickening time. Existing thickening time data for a particular cementing system can be used.

Compressive strength—Laboratory tests indicate that Kol-Seal cement has a higher compressive strength than other available low-density or lost circulation slurries at the equivalent slurry density, although the strength is less than that of the same cement system without extenders.

Compatibility—Since Kol-Seal is inert, there are no known or anticipated compatibility problems with cement additives. Bentonite can be used with Kol-Seal, but it is not required to prevent gravitational separation of the Kol-Seal.

Field mixing procedure—The use of Kol-Seal in cement does not require complicated mixing equipment or procedures. The additive should be dry blended with the cement when continuously mixing. Kol-Seal should be added last when batch mixing.

### **Physical Properties & Hazards**

Specific gravity: 1.30

Absolute density: 80.8 lbs/ cubic ft.

Melting point: greater than 1000 degrees F

Water requirement: 1 gal/ 25 lbs.

Absolute volume occupied by 1 lb.: 0.0926 gal.

Health hazard: eyes

Physical hazard: dust

Flash point: 200 degrees F

PH: 0

\*Only the principal, immediate hazards are indicated here. Complete information on health hazards, protective equipment, handling precautions, environmental hazards and disposal is listed in the current Weldril Material Safety Data Sheet for this product.

Kol-Seal is available in 50 lb. multi-wall polyethylene lined bags, 2,200 lb. IBC's or bulk.

## Specification Sheet

Trade name: Kol-Seal

Description: Ground coal, black solid

Raw material: Bituminous coal

Chunky (2" X 0)

Low ash (9-10%)

Low sulfur (4-5%)

Low moisture (no more than 6%)

Test item: screen sieve analysis (standard sieve analysis, ASTM D4749-87)

<u>Mesh Size</u>	<u>Specification</u>	<u>Range Analysis Results</u>
6	0-6%	5.0%
12	25-40%	30.9%
30	25-40%	33.6%
60	10-20%	16.4%
100	5-15%	7.3%
200	1-10%	5.5%
Pan	5-15%	6.4%

Surface moisture (ASTM 3302-91, Procedure 8, Air dry oven):

<u>Specification</u>	<u>Range Analysis Results</u>
3.5% maximum	2.85%

Bulk density: 50# per cubic foot  
Water requirement: 1 gallon per 25 pounds  
Solubility: Insoluble in oil  
Softening temperature: Greater than 1000 degrees F

Bag specification: 50 pound bag  
Type: Pasted Valve  
Size: 19" X 5.5" X 23"  
Construction: 1/5 HDPE, 3/50 NK  
Printing: 1 color, 1 side, blue/black  
Lustergrip

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