

# M-I SEAL

**M-I SEAL\*** lost-circulation material (LCM) is an all-purpose additive designed to reduce severe lost circulation as well as minor seepage losses.

The product is effective when drilling highly porous matrix formations that are fractured or vugular. M-I SEAL material is a specialized blend of flake, granular, and fibrous materials, thus making it considerably more effective than using only single types of LCM. The material composition of M-I SEAL allows it to be used in virtually all lost-circulation applications and loss-prevention situations without the need to combine or blend other LCM. M-I SEAL lost-circulation material is available in fine, medium and coarse blends.

### Typical Physical Properties

Physical appearance .....	Blend of flake, fibrous and granular particles
Particle size:	
Fine .....	20% retained on a 20 mesh screen
Medium .....	20% retained on a 12 mesh screen
Coarse .....	20% retained on a 8 mesh screen

### Applications

M-I SEAL lost-circulation material is designed to plug void spaces or channels, thereby preventing or reducing whole mud losses to porous, vugular or fractured formations. M-I SEAL material has a wide range of particle sizes and shapes to enhance its plugging or SEALing ability.

For minor or slow seepage mud losses, M-I SEAL material may be added directly to the active mud system through the mud hopper. For most loss situations, normal treatments call for concentrations ranging from 5 to 20 lb/bbl (14 to 57 kg/m<sup>3</sup>). For severe losses, higher concentrations may be required to reduce losses to the formation.

For severe loss situations, it is recommended that M-I SEAL LCM be used as a slug or batch treatment. For these treatments, the slug or "pill" should be spotted adjacent to either the casing shoe or at the bottom of the hole, depending on the location of the loss zone. Afterwards, the pill should remain in place for several hours to allow time for the zone to SEAL and heal.

For pill and slug treatments, normal concentrations of M-I SEAL material range from 15 to 30 lb/bbl (43 to 86 kg/m<sup>3</sup>) as higher concentrations >30 lb/bbl (86 kg/m<sup>3</sup>) normally are not more effective. Batch treatments are often preferred to treating the entire system in an effort to minimize shaker losses and avoid bypassing shaker screens, thereby reducing mud contamination from drill solids.

M-I SEAL lost-circulation material has applications in both water-base and oil-base muds. For oil-base mud systems, large treatments with M-I SEAL material will require increased treatments with surfactants to prevent water-wetting of solids.

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### Advantages

- Effective and economical lost-circulation material blend
- One-sack blend does not require other LCMs to be effective
- Chemically inert- does not affect mud chemistry
- Contains a wide range of particles and shapes, allowing M-I SEAL material to plug porous sands and carbonate sections, as well as fractured and vugular zones

### Limitations

- As with most LCM, M-I SEAL material will be removed by the shale shaker. To prevent M-I SEAL material from being discarded, shakers must be bypassed or unusually large screens must be used.
- M-I SEAL material has the potential to biodegrade once added to the mud system. Consequently, it is recommended to add a biocide to the mud system when M-I SEAL material is being used.

### Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions as described in the Material Safety Data Sheet (MSDS).

### Packaging and Storage

M-I SEAL lost-circulation material is packaged in 50-lb (22.7-kg) multi-wall paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.



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