



ARTECH TECHNOLOGIES INC  
*Superior Abrasion Resistant Materials*

# ACTCHEM<sup>®</sup> TRUEFLOW

## Mixing and Installation Instructions

The mixing of ACTCHEM<sup>®</sup> TRUEFLOW (TF) products is critical to its performance, and particular attention must be paid to the following procedures. This procedure provides the mixing and installation instruction for the following ACTCHEM<sup>®</sup> CASTABLES:

ACTCHEM<sup>®</sup> 45 TF  
ACTCHEM<sup>®</sup> 75 TF  
ACTCHEM<sup>®</sup> 85 TF

### STORAGE

ACTCHEM<sup>®</sup> TF Castable Products are supplied as a single component containing aggregate and binder. These castables are packaged in moisture-resistant bags; however, they must be stored on pallets in a dry location to prevent increased aging rates.

Due to pressure and settlement in storage, it is possible for the materials to become compacted. These lumps can be broken down by hand. However, hard lumps indicate some setting has occurred due to moisture. *Do not use partially reacted castable.*

### MIXING

It is absolutely critical to the mixing of ACTCHEM<sup>®</sup> TF that the correct mixer is used. Paddle type mixers rotating on a horizontal shaft will provide enough energy to mix the product quickly and with lower water demand. Mixers rotating around a vertical shaft will require higher water and longer mixing times. The mixer size should be such that each batch of material is installed within 30 minutes after mixing.

All mixing equipment must be clean and dry. Contaminants, such as Portland cement, can adversely affect the setting rate and physical characteristics of ACTCHEM<sup>®</sup> TF Castables.

Proper dust masks, eye protection, and rubber gloves should be used by all mixing and installing personnel.

Additional equipment needed includes:

- An accurate water measuring device with precise gradations clearly shown
- Trowels for leveling off the poured lining
- Pouring chutes shall be used when possible
- Clocks to measure mixing times, one per mixer

For best results, dry material, water, and ambient temperatures should be held between 50°F and 80°F during mixing and curing.

The ACTCHEM<sup>®</sup> BONDING SYSTEM can accommodate a wide range of water additions without sacrificing the ASTM abrasion resistance values. However the bulk density and cold crushing strength values are reduced at water levels above the optimum. Best results are obtained when installers use just enough water to allow the castable to flow properly.

Installers should check bag weights, then calculate and measure water requirements before mixing. Use only clean, potable water with a pH between 6 and 8. Refer to datasheets provided for respective water requirements.



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The mixer operator should add the dry ACTCHEM<sup>®</sup> TF to the mixer and dry mix the material at a low speed for one minute. To reduce the loss of fine powders, cover the top of the mixer with a polyethylene cover.

After dry mixing the first batch, the mixer operator should begin by adding the lowest recommended water amount. Mixing times are critical. **The minimum wet mixing time is seven minutes.** To reduce fine powder losses, mix at a low speed for the first 2 minutes or until the material is damp before switching to medium speed.

Initially, the mix will look dry. At 1.5 - 2.0 minutes, a distinct change will occur, and the mix will start to mix together. At 3.5 minutes, the mix will still look too dry and have gravel like appearance. At 3.5 - 5.0 minutes, the material will knit together. After 7 minutes, stop the mixer and observe the flow characteristics. The mix should slump quickly and start to de-air. Never add more water until the mixing times have expired.

If the material appears too dry or does not flow properly at this point, add water in 0.2% increments, staying within the recommended water range for the product. Include another two minutes of mixing after each addition.

Over mixing should be avoided as this creates too much friction heat in the mix and can cause premature setting times. Once the desired consistency is reached, note the water level as a starting point for subsequent batches.

### INSTALLATION

ACTCHEM<sup>®</sup> TRUEFLOW Castables can be installed by casting, pumpcasting, and shotcrete methods.

Prior to casting ACTCHEM<sup>®</sup> TF, the anchorage systems and formwork should be checked to confirm they are free of grease and contaminants. All metallic anchoring should be coated to allow for expansion of the metal. The formwork should be secured in location to ensure it does not move during installation. Any porous backup material should be waterproofed to prevent absorption of water from the ACTCHEM<sup>®</sup> TF Castable.

ACTCHEM<sup>®</sup> TF should be allowed to de-air 2-3 minutes before casting. Then, pour the material at a steady rate behind the formwork, preferably using a pouring chute. On completion of the casting, the final level of the castable will fall due to further de-airing. The top surface of the castable should be covered by wet burlap, plastic, or mold oil to prevent the formation of surface skin during the de-airing process. If necessary, add more product to top off the lining to the final desired level. Then, return the covering to the exposed surfaces. This will prevent water evaporation for proper cement hydration and maximum properties.

Do not attempt to produce a smooth surface with vibration or excessive troweling. This will cause the fines to rise, seal the surface and slow down the drying process.

ACTCHEM<sup>®</sup> TF Castables must be protected from freezing from the time of placement until the full thickness has been dried to a minimum 250°F (120°C). ACTCHEM<sup>®</sup> that freezes prior to the removal of free moisture can crack.

The lining should not be disturbed until the material has cured for a minimum of 18 hours. The formwork should not be stripped for 24 hours after casting to allow full bonding of the system.

### DISCLAIMER

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