

ACTCHEM®

Superior Abrasion Resistant Materials

The Actchem product line offers refractory materials that have exceptional strength and abrasion resistance. We design our materials with only the most important characteristics in mind:

- Superior Abrasion Resistance
- Insensitivity to Minor Water Variations
- Consistent properties
- Stability in the Presence of Water

1 ABRASION RESISTANCE

The superior abrasion resistance of Actchem 85 can be exemplified in Table 1 after firing to various temperatures. The abrasion resistance is locked in after the material has taken a complete set.

2 WATER TOLERANCE

The strength and abrasion resistance of Actchem products are relatively insensitive to water addition as shown in Table 2. Increasing water contents tend to make the material stickier.

Table 1: Actchem 85 Properties as a Function of Curing and Heat Treatment

	Cold Crush Strength (psi)	C-704M Abrasion Loss (cc)
24 hr Air Cure	5,000	≤ 5.0
48 hr Air Cure	10,000	≤ 4.0
Dried 230°F	15,000	≤ 3.0
Fired 1500°F	>25,000	≤ 2.5

Table 2: Water Sensitivity of Actchem 85 (after firing to 1500°F)

Water (%)	Cold Crush Strength (psi)	C-704M Abrasion Loss (cc)
4.25	>25,000	2.0
4.50	>25,000	2.1
4.75	>25,000	2.4
5.00	>25,000	2.4

3 CONSISTENT PROPERTIES

The abrasion resistance of Artech's materials is consistent throughout the thickness of the material. Therefore, as the material wears, the properties remain constant.

4 STABLE IN PRESENCE OF WATER

Once the material has completely set, vessels lined with Actchem products can be hydro-tested without affecting the properties of the material. They can also be exposed to water after firing without affecting the integrity of the lining.

5 RAPID FIRING

The abrasion resistance properties for Actchem products are nearly optimized when dried to 250°F (120°C). Thin Linings (less than 2" thick rammed with Actchem products (45, 75, 85, FS) can be fired from ambient to operating temperature at 100°F (55°C) per hour.



6 GUNNING INSTALLATIONS

Actchem 45, 75, 85 and FS can also be installed by gunning. This installation technique does tend to change the properties of the materials as shown in Table 3.

Table 3: Actchem 85 Gunning vs. Ramming Data (after firing to 1500°F)

	Gunned	Rammed
Density (pcf)	170	180
Linear Change (%)	-0.4	-0.4
Cold Crush (psi)	>12,000	>25,000
Abrasion C-704M (cc)	<6	<3

7 SLUMPING RESISTANCE

Actchem 45, 75, 85 and FS are designed to be installed overhead in areas where vibration is present. The materials must be mixed to the proper consistency and installed with the appropriate anchoring system for this application.

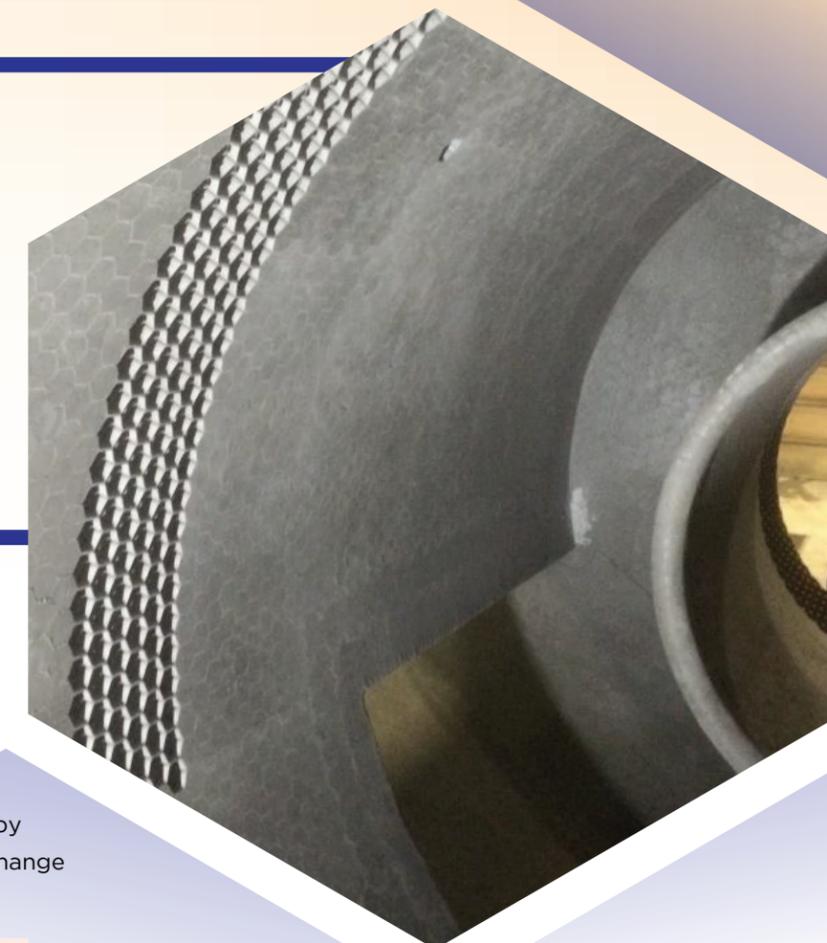
8 EASE OF INSTALLATION

Actchem 45, 75, 85 and FS are designed for easy installation into all refractory anchoring systems by handpacking. The material can also be installed using pneumatic rammers. In addition, our materials have a long working time, which greatly reduces material waste.

It is recommended that these products be mixed with a high intensity mixer, such as a Hobart mixer, for at least five minutes. Other mixers can be used, but this may affect the mixing time and the amount of water required.

ACTCHEM® products can be used in a wide variety of applications and industries requiring superior abrasion resistance.

Actchem 45, 75, 85 and Actchem FS have the unique properties of slumping resistance and their ability to be installed easily by hand packing, ramming, or gunning.



Actchem® Products* Technical Data

Method of Application	Actchem 45	Actchem 45 VC	Actchem 45 TF	Actchem 75	Actchem 75 VC	Actchem 85	Actchem 85 VC	Actchem FS
Vibration Cast		●			●		●	
Hand Pack	●			●		●		●
Self Flow			●					
Gunned	●			●		●		●
Physical Properties								
Max Service Temperature, °F (°C)	2700 (1482)	2700 (1482)	2700 (1482)	2300 (1260)	2800 (1538)	2300 (1260)	2800 (1538)	2000 (1093)
Abrasion Loss, cc ASTM C704M	≤ 6 cc	≤ 7 cc	≤ 7 cc	≤ 4 cc	≤ 4 cc	≤ 3 cc	≤ 4 cc	≤ 10 cc
Density, lb/ft³								
Fired at 230 °F (110 °C)	147	139-147	141-147	172	155-165	180-188	183-188	126
1500 °F (815 °C)	142	138-149	139-145	170	155-165	178-186	180-186	123
Cold Crushing Strength, psi ASTM C133								
Fired at 230 °F (110 °C)	>10,000	>10,000	>7,000	> 10,000	>8,000	15,000	>13,000	>8,000
1500 °F (815 °C)	>15,000	>14,000	>12,000	> 20,000	>15,000	>15,000	>13,000	>10,000
Permanent Linear Change, %								
Fired at 230 °F (110 °C)	0.0 to -0.2	0.0 to -0.1	Nil	0.0 to -0.1	0.0 to -0.1	-0.1 to -0.2	Nil	Nil
1500 °F (815 °C)	-0.2 to -0.3	-0.2 to -0.3	-0.2 to -0.4	-0.2 to -0.4	-0.2 to -0.4	-0.2 to -0.4	-0.4	-0.0 to -0.3
Chemical Analysis, %								
Alumina - Al ₂ O ₃	46.2	43.4	48.5	75.0	80.0	83.4	85.8	14.3
Silica - SiO ₂	46.4	49.2	46.5	16.7	13.0	7.9	8.3	80.3
Calcium Oxide - CaO	3.2	3.3	3.2	3.1	2.4	2.3	2.4	3.1

* Other Actchem products are available for your specific application. Please consult an Artech representative for details.



ACTCHEM® Superior Abrasion Resistant Materials

Refractory Product Line

- Actchem 45
- Actchem 45 VC
- Actchem 45 TF
- Actchem 75
- Actchem 75 VC
- Actchem 75 TF
- Actchem 85
- Actchem 85 VC
- Actchem 85 TF
- Actchem FS



100 Chesterfield Business Pkwy
Suite 200
Chesterfield, MO 63005
1-636-681-1449
info@actchem-usa.com
www.actchem-usa.com



ACTCHEM REFRACTORY PRODUCT LINE