



Specialty Waterproofing at Hydroelectric Dam

The John Day Dam is located in the state of Oregon on the Columbia River. In 2020 the Army Corps of Engineers put a repair job out to bid to address a variety of situations, including leaks that were occurring in a number of the galleries (openings or passageways within the dam). The general contractor that won the bid brought in a specialty waterproofing contractor for the leak seal portion of the job.

Powerful Polymers

The Army Corp of Engineers specified a flexible polyurethane for the specialty waterproofing due to the fact that it would be injected into dynamic joints and cracks (joints and cracks that contract and expand with weather conditions).

The leak seal technicians chose Spetec PUR F400 from Alchemy-Spetec. This product features 100% elongation. If you install a rigid product in a dynamic joint or crack it will fail at the first movement. In addition to its flexible nature, Spetec PUR F400 is also hydrophobic. Hydrophobic polyurethanes have excellent chemical resistance and superior longevity. In addition, Spetec F400 features a field adjustable set time (when you have cold water, with varying volumes, this is essential so you can either penetrate small cracks with a slower set time or shut down gushing leaks with a faster set time).

The Bureau of Reclamation and the Army Corp of Engineers have approved Spetec PUR F400 for use on their structures. This durable repair material has been successfully installed in many of their dams and locks.



Physical Properties - Uncured - (appearance white liquid)

SPETEC PUR F400		
Viscosity at 77°F (25°C)	(ASTM D4878-98)	±340cps (±0.34 Pa·s)
Flash Point	(ASTM D1310-86)	>302°F (>150°C)
Density	(ASTM D3505-96 [2000])	1.067 ± 0.005 oz/ft ³ (1.068 ± 5.006 g/m ³)

Physical Properties - Cured

SPETEC PUR F400		
Tensile Strength	(ASTM D3574-03)	290psi (20 bar)
Elongation at break	-	±100%

Properties will vary depending on application conditions.

Painless Procedure

One of the classic rules of grouting cracks and joints is to pull off the crack or joint half the thickness of the wall and drill at a 45° angle. However, when you get over 3' thick it is not necessary to pull off the crack or joint more than 1.5'. The crew followed these guidelines when injecting the resin.

On thicker structures leaking cold water at high volumes, it is imperative to be able to adjust the set times in the field. Gen ACC is the accelerator for Spetec PUR F400 and is added at a ratio of 1% all the way up to 10%. The more you add the quicker the product polymerizes. The crew adjusted the set times according to properties of each leak.

They also soaked AP Oakum in Spetec PUR F400, and packed it into the wider cracks and high volume leaks. Depending on the situation, the oakum is sometimes packed in before the injection or packed in simultaneously as a second crew member fills the void with the first crew member is injecting the resin.

Rapid Result

Within a matter of days, the leaks in the galleries were successfully remediated. The general contractor was then able to move on to other parts of their project, on budget and on schedule.

About Alchatek

Alchatek is an international leader in the manufacture and supply of chemical grouts and construction products for Geotechnical, Leak Seal, and Seawall Repair applications. Providing solutions from its headquarters in Tucker, Georgia and its manufacturing facility in Reno, Nevada, Alchatek specializes in advanced construction technologies for sealing leaks, stabilizing soils, lifting concrete, and protecting infrastructure and seawall structures. To best serve its customers, Alchatek is organized onto three divisions:

The Leak Seal Division combines a full system offering of polymer chemical grouts and equipment with perhaps the most experienced technical team in the industry. It specializes in preventing water ingress through concrete infrastructure including parking garages, culverts, basements and foundations, and sewer manholes.

The Geotechnical Division offers a complete line of single component products for soil stabilization as well as two component polyurethane foams for concrete lifting, void filling, and stabilization of infrastructure. This includes lifting sunken structures such as warehouse floors, back into place.

Seawall Repair Network® is the only national network of certified contractors in the repair, preservation, and protection of Seawalls waterfront barriers. Its proprietary methods and materials are environmentally friendly and safe for use in all marine environments and provide a non-destructive solution for seawall repair at 80% less than the cost of replacement.

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