KINGFIELD
CONSTRUCTION PRODUCTS

Viperflex is a low viscosity, specially formulated acrylate gel used to seal leaks, restore waterproofing and modify soils.

VIPERFLEX™

Acrylate Gel Injection Material

PRODUCT DATA – **v3.02.06.15**

Description

Viperflex is a liquid, chemically cured modified acrylate gel used for sealing leaks in below grade structures and for soil modification. Viperflex is comprised of three components - Viperflex, a liquid acrylate emulsion; ViperTea a triethanolamine accelerator and ViperCat, an ammonium persulphate catalyst. When combined, these components polymerize into a non-toxic, impermeable, highly durable, flexible gel. Polymerization can be controlled from 5 seconds to over 2 hours, ensuring Viperflex polymerizes to gel form when and where it is necessary. Controlled polymerization enables deep soil penetration to immediate crack sealing.

Viperflex's low viscosity allows it to penetrate very fine structural cracks (0.1mm) and flow wherever water may flow. Viperflex is utilized to seal off water infiltration into structures such as subway stations, tunnels, mines, dam walls, parking garages, manholes, elevator pits and various other below grade structures through the establishment of a gel membrane on the positive side of a structure and through the permeation of cracks and voids within concrete.

Viperflex can also be used for soil modification to solidify soils for erosion control or other various soil modification purposes.

Advantages

Features	Benefits
Low viscosity	Flows like water. Penetrates fine cracks in concrete (0.1mm) sealing them to effectively block water infiltration. Effectively permeates and modifies soils to fit multiple project conditions.
Applicator controlled cure times.	**Versatility in application including immediate crack sealing for high flow rate leaks, waterproofing membrane restoration to deep soil permeation for soil modification purposes.**
Will not emulsify and degrade.	Polymerized gel will not separate and degrade ensuring the long term effectiveness of the application. In polymerized gel form Viperflex is stable, non-toxic and irreversible.
Superior physical strength, durability and longevity.	**Acrylate gels are the strongest polymerized gels available exhibiting superior durability over freeze/thaw cycles, hydration cycles and vibration/movement.**
Superior chemical resistance. Impervious to hydrocarbons.	Resistant to most soil contaminates, Viperflex retains its physical properties in the harshest environments ensuring long term effectiveness.
Corrosion inhibitor additive	**Viperflex not only stops water intrusion but also prevents further damage from corrosion by coating steel reinforcing and halting oxidation.**

Applications

Viperflex is a versatile and highly effective chemical grout. Preventing water ingress into structures is its primary application; however it is also effective for soil modification purposes.

Viperflex also contains a corrosion inhibitor additive that effectively coats steel and halts oxidation.

Leak Sealing

Vipeflex is used for sealing leaks in below grade structures by injecting directly into leaking cracks and injection to the positive side of a structure. Viperflex can be injected directly into active water leaks and is resistant to wash out.

Application procedure for leak sealing

Typically, holes are drilled at a 45º angle to intersect a leaking crack at sufficient depth to fill as much of the crack as possible with material.

Restorative Waterproofing Membrane

Viperflex is used as a restorative waterproofing membrane by injecting to the positive side of a structural wall, concrete floor or roof slab. This process creates a restorative, impervious gel waterproofing membrane to restore the integrity of a damaged membrane or create a new membrane where none had existed. This process can also be used for preventative maintenance of a structure in areas where future leakage may occur.

Application procedure for restorative waterproofing membranes

Holes are drilled in regular intervals, typically 6 ft. – 12 ft. on center. Distance between holes may be lengthened by increasing the duration of Viperflex polymerization time. Verify counterflow of Viperflex at adjacent drill ports and continue the process until complete area coverage is achieved.

Soil Modification

Viperflex can be used to increase the bearing strength of soils and render them impermeable. Suitable applications include stabilization of soils, confinement of hazardous materials, erosion control and various other soil modifications which require increased strength of the soils and/or impermeability.

Viperflex mixing procedure

It is recommended to utilize a pump that is specialized for the injection of plural component chemical grouts with two separate liquid hoppers. All equipment must consist of stainless steel or plastic components. Polymerization times (gel times) can be adjusted so that the material will gel in time to provide optimum performance depending on the nature of the injection.

Pumping is 1:1 by volume Hopper A with Hopper B.

Hopper A: Fill with 5 gallons of clean water and slowly mix in 16oz of ViperCat (Catalyst: ammonium persulfate)

Hopper B: Fill with 2.5 gallons of clean water and 2.5 gallons of Viperflex. Mix in 16oz of ViperTea (Accelerator: triethanolamine). This ratio yields a basic one minute polymerization time. More ViperTea speeds up setting time, less ViperTea slows down setting time. Add in small doses.

- Reaction times can increase due to changes in the temperatures of the material in the soil. (Higher temp. = faster or shorter gel time. Lower Temp. = slower or longer gel time.)
- pH of water used to mix Hopper B can affect cure times. Clean potable water should be used for mixing material and for cleaning pump.
- Reaction time is slower when injecting into cracks.

Physical properties

	Viperflex
Appearance	Amber liquid
Viscosity	1-2 cps (Brookfield RVT spindle 6, 50 rpm)
Tensile Strength*	100 – 300 PSI
Elongation*	250% - 350%
Toxicity*	Non-toxic

*Polymerized

Product Data

	Viperflex
Weight / drum	440 lb. / 44 lb. (200 kg / 20 kg)
Volume / drum	50 gal. / 5 gal. 192 L / 19.20 L
Transport	Freight Class: 77.5 Hazard Class: 6.1 Motor and airfreight OK
Storage	Dry location between 55 – 90 F (13 – 32 C)

Cleaning

Utilize a non-solvent based cleaner.

Health and safety

Review the MSDS. Always wear OSHA approved personal protective equipment (PPE). Always utilize safe handling procedures when working with non-polymerized components.

CAUTION: Do not use aluminum equipment near the ViperTea and ViperCat, they are not compatible with aluminum.

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