



ConduFlow®: *A low dust approach
to electrical and utility grounding*

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Introduction

SAE's ConduFlow® is a low dust, carbonaceous conductive pourable backfill that is used for a variety of applications that range from utility pole to pad mount transformer installation and tower grounding to shallow cathodic protection systems. Engineered to protect ground electrodes and reduce material costs. SAE's ConduFlow is a long-term solution that virtually eliminates corrosion, ensures long-term reliable grounding and serves as a theft deterrent.

Key Benefits:

- Quick and easy installation
- Low dust and pourable material
- Virtually eliminates metal corrosion up to 99.9%
- Extends the life of the grounding system
- Liquid adheres will to native material

Refer to Table 1 for an overview of the physical properties of the ConduFlow® conductive pourable backfill:

Table 1: Physical Properties

PROPERTY	TYPICAL VALUE	UNIT	TEST METHOD
SLURRY DENSITY	1176	kg/m ³	SAE Inc. Standard 104
	1.176	g/cm ³	
	73.49	lbs/ft ³	
CURED DENSITY	1076	kg/m ³	SAE Inc. Standard 111
	1.076	g/cm ³	
	67.17	lbs/ft ³	
VOLUME	0.017	m ³	SAE Inc. Standard 104
	0.600	ft ³	
WATER PERMEABILITY	8.3 x 10 ⁻⁶	cm/sec	ASTM 5084 (2.6 psi)
ELECTRICAL CORROSION RESISTANCE			
COPPER	100	%	SAE Inc. Standard 100
STEEL	100		
GALVANIZED STEEL	99.68		
COMPATIBILITY			
COPPER	Yes		SAE Inc. Standard 100
STEEL	Yes		
GALVANIZED STEEL	Yes		
ENVIRONMENTAL IMPACT			Ontario Regulation 558/00 (Leachate Testing)]
FREEZE-THAW WITHSTAND	30	years	SAE Inc. Standard 102

Product Specifications

Manufactured using conductive, polymeric compound that adheres well to native materials and has a low permeability to water. ConduFlow® pourable conductive backfill can be used for a variety of applications which include utility pole, pad mount transformer, tower grounding applications and shallow cathodic protection systems. In addition, SAE's ConduFlow® is designed to withstand some of the toughest weather conditions, as it continues to perform in situ for the life of a utility pole, pad mount transformer or tower with no degradation despite freezing and thawing.

Refer to Table 2 and Table 3 for ConduFlow® product properties and testing results.

Table 2: Electrical Properties

PROPERTY	TYPICAL VALUE	UNIT	TEST METHOD
RESISTANCE	0.92	Ω	SAE Inc. Standard 105
RESISTIVITY	33.25	Ω·cm	SAE Inc. Standard 105

Table 3: Material Properties

PROPERTY	TYPICAL VALUE	UNIT	TEST METHOD
PHYSICAL STATE (UNCURED)	Dark Blue Slurry (ConduFlow®) Grey Powder (Curing Agent)		
PHYSICAL STATE (CURED)	Black Solid		
ODOR	None		
WORKING TIME	15 - 45	minutes	
SETTING TIME	24	hours	
CURE TIME (90% CURE)	4	weeks	
CURE TIME (100% CURE)	9 - 10	weeks	
FLOW RATE	7000	g/min	SAE Inc. Standard 109 (funnel with 1.5" diameter opening)

ConduFlow® is also environmentally neutral. It sets to form a solid that does not leach, dissolve or migrate into the soil or water. A table of toxicity characteristic leaching procedure (TCLP) results for ConduFlow® material is included in Table 4 below.

Table 4: Leachate (TCLP) Results

Leachate Data (TCLP Procedure) based on Regulation 558 performed by Testmark Laboratories Ltd.

Constituent	ConduFlow® TCLP CONCENTRATION (mg/L)	USEPA Maximum Contaminant Level (mg/L)
Arsenic	< 0.010	0.010
Barium	0.246	2.000
Boron	0.130	2.000 [†]
Cadmium	< 0.001	0.005
Chromium	0.026	0.100
Lead	< 0.01	0.015
Mercury	< 0.001	0.002
Selenium	< 0.01	0.050
Silver	< 0.01	0.100*
Uranium	< 0.01	0.030
Fluoride	0.376	2.000*
Nitrate (as Nitrogen)	< 0.01	10.000
Nitrite (as Nitrogen)	< 0.05	1.000
Cyanide	< 0.05	0.200

[†] No MCL established; value shown is USEPA's Lifetime Drinking Water Health Advisory.

* No MCL established; value shown is USEPA's secondary drinking water standard.

Note: < denotes less than method detection limit (MDL).

“In today’s cost-conscious, eco-friendly and technology-driven environment, alternatives to traditional backfill and utility pole grounding are in demand to maintain expansive below-ground networks. SAE recognizes growing customer needs for better grounding options and continues to develop innovative products that better meet market demands.”

- **Todd Sirola,**
CEO, SAE Inc.

Installation and Application

ConduFlow® pourable backfill material is installed as a liquid and cures as a solid. With an expected in-service time that is up to 20x the industry standard, electrode corrosion is virtually eliminated.

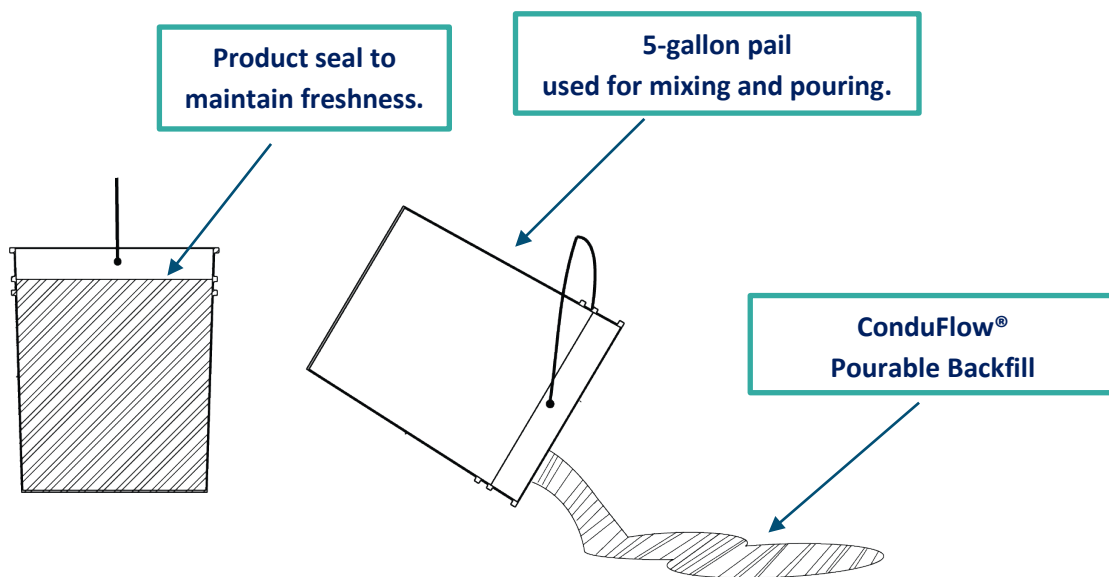


Figure 1: ConduFlow® Product Application

Conclusion

When it comes to safe and reliable grounding – go with the flow. Not only does ConduFlow® eliminate health and safety concerns associated with traditional powdered backfill materials, it also eliminates 95%-100% copper, steel and galvanized steel corrosion. Unlike traditional backfills, it won't wear away or require regular maintenance deployment—making quick work for both you and your team of installers.

SAE Inc.

Founded in 1990, SAE Inc. (SAE) is a leading manufacturer that specializes in electrical grounding and cathodic protection. SAE provides reliability for critical systems that cannot tolerate service interruption and has 28 years of experience grounding structures and a proven track record of eliminating lightning-related outages. In addition to the ConduDisc®, SAE also manufactures a variety of conductive backfill products used for electrical grounding: Conducrete®, ConduFlow® and ConduForm™. We also provide full-service electrical grounding design and engineering. For more information visit SAE's website at www.saeinc.com.

Glossary

ConduFlow®: Low dust, pourable conductive material, normally used as a backfill for electrical grounding applications to assist with the dissipation of surcharge.

Leachate: Acid that has percolated through a solid and leached out some of the constituents.



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