

# Ground Enhance Material

**Kumwell**  
Grounding & Lightning Protection System

**Kumwell MEG** is maintenance-free and will never leach or wash away, once cured it will become a highly “conductive concrete” that performs in all soil conditions irrespective of the presence of water and maintain a constant level of low resistance grounding system.

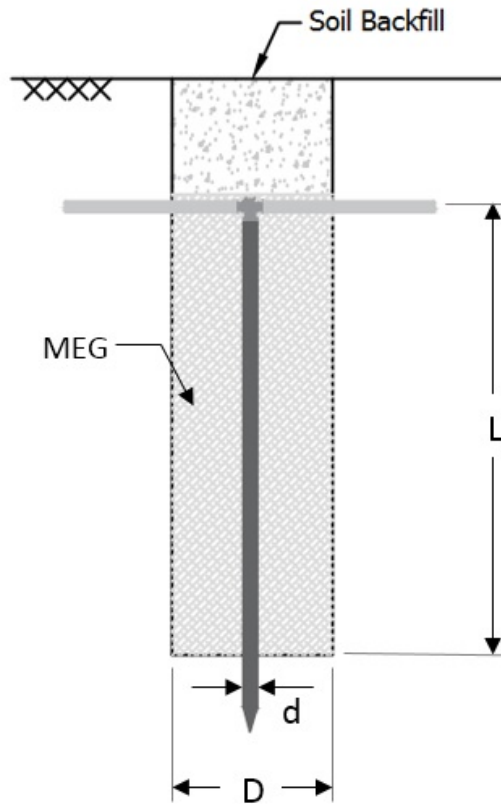


Tested according to IEC 62561-7 and certified by DEKRA, the application is in accordance with requirements of IEEE standard 80-2000 with an extreme low resistivity.

- Very Low Resistivity 0.03 Ohm-m  
(After mixed and cured)*
- Permanent*
- Maintenance Free*
- Protect Conductors from Corrosion*
- Environment Friendly (Non-Toxic)*

Code No.	Weight / bag (lbs / kg.)
GRMEG - 25 LBS	25 / 11.5
GRMEG - 55 LBS	55 / 25

# Ground Enhance Material



## MEG Deep Ground Well

**In case of high soil resistivity and small area;**

Recommended to use deep ground rod encase by earthing enhancing compound.

- Hole Diameter  $\varnothing$  20 – 30 cm
- Hole Depth 6 – 12 m

**Note: Deep ground rod is not appropriate for lightning protection system**

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## MEG Deep Ground Well



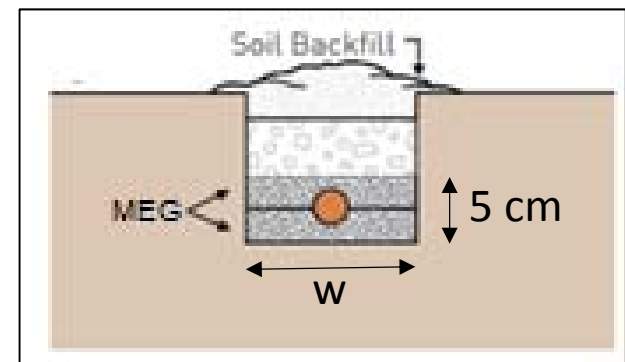
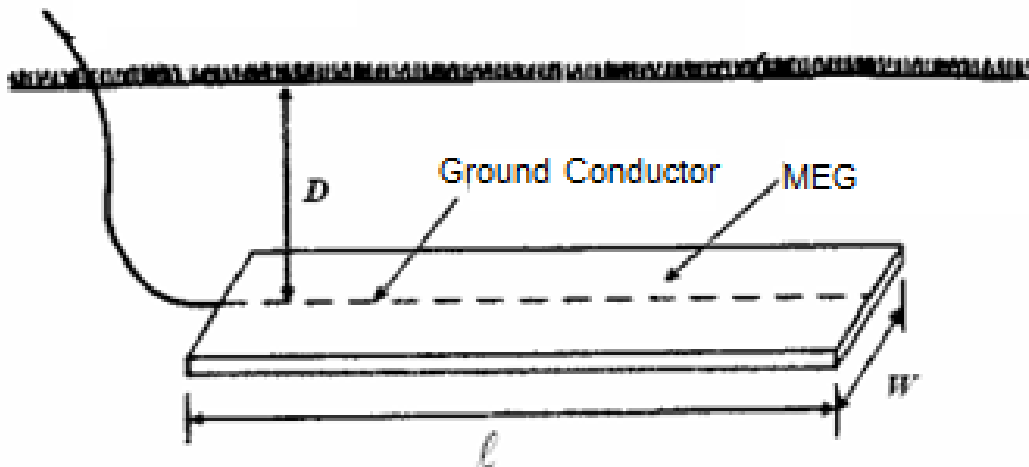
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## MEG Trench

In case of rocky area such as mountain or hilltop where difficult or impossible to driven the ground rod.

Recommended to make a trench and install ground conductor horizontally and encased by earthing enhancing compound.

- Width of Trench 20 – 30 cm
- Burial Depth 30 – 50 cm
- Earth Enhancing Compound Thickness 5 cm



# Ground Enhance Material

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Grounding & Lightning Protection System

## MEG Trench



# Ground Enhance Material

## Test Report & Certificate

**DEKRA** Certification B.V.  
Huisman 1051, 6025 MJ Arnhem, The Netherlands  
P.O. Box 1040, 6002 EA Arnhem, The Netherlands  
Tel: +31 (0) 481 632000 Fax: +31 (0) 481 631000

**KEMEUR**  
DEKRA Group

### TEST REPORT

**Test Report Number:** 217511800

**Customer:** K.M.L. Technology Co., Ltd.

**For the Product:** Lightning protection system component (LPSC) earthing enhancing compound

**Type/Model Number:** More Effective Grounding / GRMEG-25 LBS, GRMEG-55 LBS

**Reference Standard:** Requested according to IEC 62561-7 (Edition 1.0, 2011-11)

**Objective:** To verify the satisfaction of the product under the test according to IEC 62561-7 (Edition 1.0, 2011-11) standard

**Test Location:** ISO-laborato De Schakker 1 Quatidade King Av. Prof. Dr. Casaca

**Test Duration:** Sítio 12 Talede Taparubá 2780-994 PORTO SALVO PORTUGAL  
November 27, 2014 – February 16, 2015

**Checked by:** *K.A.*  
Mr. Kallipong Chansawan  
(Supervisor Laboratory)

**Approval by:** *[Signature]*  
Mr. Anoop Rana  
(Head of Central Laboratory)

**Checked and approval by:** *[Signature]*  
Mr. Gert Mackenbach  
(Project Manager of DEKRA)

DEKRA Certification B.V.  
Huisman 1051, 6025 MJ Arnhem  
P.O. Box 1040, 6002 EA Arnhem  
The Netherlands  
T +31 (0) 481 632000 F +31 (0) 481 631000  
www.dekra-certification.com

Report No. 217511800

**DEKRA Test Report**  
**IEC 62561-7**

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Tel: +31 (0) 481 632000 Fax: +31 (0) 481 631000

### TEST CERTIFICATE

**Issued to:** K.M.L. Technology Co., Ltd  
26/2 MOO.10 Banglen, Bangyal,  
Nonthaburi 11140  
THAILAND

**For the product:** Lightning Protection System Components (LPSC) – Earthing Enhancing Compound

**Trade name:** KUMWELL

**Type/Model:** MEG (More Effective Grounding), GRMEG-25 LBS and GRMEG-55 LBS

**Manufactured by:** K.M.L. Technology Co., Ltd  
26/2 MOO.10 Banglen, Bangyal,  
Nonthaburi 11140  
THAILAND

**Requirements:** IEC 62561-7:2011

**Remarks:** The product meets the requirements.

This Test Certificate is granted on account of an examination by DEKRA, the results of which are set forth in a confidential file no 217511800.

The examination has been carried out on one single specimen of the product, identified by the manufacturer. The Attestation does not include an assessment of the manufacturer's production. Conformity of the production with the specimen tested is the responsibility of DEKRA.

Arnhem, 20 April 2015      Number: 2175118/15

**DEKRA Certification B.V.**  
Mr. G. J. Zeebroad  
Managing Director

**W. P. M. Barends**  
Certification Manager

Printing of publication of this certificate and adjoining reports is allowed.

DEKRA Certification B.V. - Huisman 1051, 6025 MJ, Arnhem P.O. Box 1040, 6002 EA, Arnhem, The Netherlands  
T +31 (0) 481 632000 F +31 (0) 481 631000 www.dekra-certification.com Company registration 26032058

**DEKRA Certificate**  
**IEC 62561-7**

**INTERNATIONAL TESTING SERVICE CO., LTD.**  
1213/388 Ladprao B4 Ladprao Rd Phlatphla, Wangtonglang  
Bangkok 10310  
Tel 0-2559-20559 Fax 0-2559-2096  
E-mail : [sale@itest-lab.com](mailto:sale@itest-lab.com) web site : [www.itest-lab.com](http://www.itest-lab.com)

**Client Name :** K.M.L. TECHNOLOGY, LTD.  
**Address :** 26/2 MOO.10 BANGLEN, BANGYAL, NONTHABURI 11140  
**DATE:** 26-August-2014

**Test Report No. :** R-T-1408-218  
The sample submitted by client as below  
**Sample Name :** MEG  
**Sample Description :** MORE EFFECTIVE GROUNDING  
**Collect sampling date :** -  
**Collect sampling by :** -  
**Date Received :** 26-August-2014  
**Testing Date :** 26-August-2014 to 09-September-2014

**Test Results 1**

Test Item(s)	Method*	Unit	LOQ**	Results	Standards
Cadmium (Cd)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.005	0.42	100
Copper (Cu)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.087	286	2,500
Cobalt (Co)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.006	1.73	8,000
Lead (Pb)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.061	2.30	1,000
Nickel (Ni)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.029	19.2	2,000
Zinc (Zn)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	0.177	18.2	5,000
Iron (Fe)	Digestion, ICP method <sup>[1][3][5]</sup>	mg/kg	-	6,607	-
Sulfur (S)	ASA,SSSA,1982	mp/kg	-	703	-

Notes:  
\* Method [1] United States Environmental Protection Agency, A Multi-Element Inductively Coupled Plasma Atomic Emission Spectrometry Method, EPA 8210-A  
\* Method [2] United States Environmental Protection Agency, Chromium, Hexavalent (Cr(VI)) EPA Method 7000A, 1992  
\* Method [3] United States Environmental Protection Agency, Microwave Assisted Acid Digestion of Aquatic Samples and Tissues, SW-846 Method 3015A, 2007  
\* Method [4] United States Environmental Protection Agency, Microwave Assisted Acid Digestion of Sediments, Sludge, Soil and Dredge, SW-846 Method 3015A, 2007  
\* Method [5] United States Environmental Protection Agency, Inductively Coupled Plasma Atomic Emission Spectrometry, SW-846 Method 8000C, 2007  
\*\* LOQ: Limit of Quantitation (EPA 8210-A section 7.6)  
\*\*\* Standard: (http://www.ccp.com.sg/standards/asa/asa\_sssa\_1982.pdf) (http://www.itest-lab.com)

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The Results shown in this test report refer only to the sample(s) tested unless otherwise stated  
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**Non-Contamination**  
**Report**