

# GEM Ground Enhancement Material

## Power Utilities



Ground Enhancement Material (GEM) is a superior conductive material that solves your toughest grounding problems. It is the ideal material to use in areas of poor conductivity, such as rocky ground, mountain tops and sandy soil. GEM dramatically reduces earth resistance and impedance measurements. Furthermore, GEM may reduce the size of the grounding system where conventional methods are unsatisfactory. Once installed, GEM is maintenance-free, not requiring periodic charging or the presence of water to maintain its conductivity.

Third-party testing has been completed to verify that GEM conforms to IEC® 62561-7. This standard introduces a benchmark for electrical performance and corrosion of earth enhancement materials that has been absent from the industry to date.

nVent ERICO offers GEM Calculator software that provides resistivity values for common GEM applications and can help estimate the amount of GEM required for an installation. It operates in four languages - English, Spanish, French and German - and performs calculations in Imperial or Metric units. The GEM Calculator is available for download on our website at [erico.com](http://erico.com).

## FEATURES

Maintains constant resistance for the life of the system once in its set form

Performs in all soil conditions even during dry spells

Does not require periodic charging treatments or placement

Does not require the continuous presence of water to maintain its conductivity

Fully sets within 3 days, fully cures within 28 days

Does not dissolve, decompose, or leach out with time

Non-corrosive

Reduces vandalism and theft since conductors are hard to remove from concrete

Easy-to-handle 25 lb (11.3kg) bags or buckets

Requires only one person to install

Exceeds IEC® 62561-7 which sets the benchmark for corrosion, leaching, sulfur content, and other environmental regulations

Complies to the U.S. Environmental Protection Agency (EPA) Toxicity Characteristic Leaching Procedure (TCLP), EPA test method 1311

Can be installed using trench or ground rod backfill methods

## SPECIFICATIONS

**Unit Weight:** 11.360 kg

Table 1/1

| Catalog Number | Article Number | Packaging                       |
|----------------|----------------|---------------------------------|
| GEM25A         | 163670         | Bag with handles                |
| GEM25ABKT      |                | Plastic bucket with locking lid |

Estimated Linear Feet of Ground Conductor Covering with Each Bag of GEM

| Trench Width | Total Thickness of GEM |         |         |
|--------------|------------------------|---------|---------|
|              | 10.2 cm                | 12.7 cm | 15.2 cm |
| 10 cm        | 1.0 m                  | 0.8 m   | 0.7 m   |
| 15.2 cm      | 0.7 m                  | 0.5 m   | 0.4 m   |
| 20.3 cm      | 0.5 m                  | 0.4 m   | 0.3 m   |
| 25.4 cm      | 0.4 m'                 | 0.3 m   | 0.3 m   |
| 30.5 cm      | 0.3 m                  | 0.3 m   | 0.2 m   |

Suggested Specifications

| Parameter             | Recommended Values                                                                                                                                                                                                                                    | Test Method                                                                                            |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Standards Compliance  |                                                                                                                                                                                                                                                       | Full compliance to IEC 62561-7 EPA Toxicity Characteristic Leaching Procedure (TCLP), test method 1311 |
| Leaching              | Arsenic < 1.5 mg/L, Barium < 60 mg/L, Cadmium < 0.15 mg/L, Chromium < 3.0 mg/L, Lead < 1.5 mg/L, Mercury < 0.06 mg/L, Selenium < 1.0 mg/L                                                                                                             | EC 62561-7 EN 12457-2                                                                                  |
| Sulfur Content        | < 2%                                                                                                                                                                                                                                                  | ISO 14869-1                                                                                            |
| Resistivity           | <2 Ω-cm for powder <20 Ω-cm for mixed and cured material                                                                                                                                                                                              | Compressed powder according to ASTM G187-12 Mixed and cured per ASTM D991-89                           |
| Corrosion Performance | For copper-plated earth electrodes, the polarization resistance shall be > 8 Ω x m <sup>2</sup> for aggressive environments For galvanized earth electrodes, the polarization resistance shall be > 7.6Ω x m <sup>2</sup> for aggressive environments | IEC 62561-7, Sec 5.5, aggressive environment                                                           |
| Flexural Strength     | 300-450 psi [2070-3100 kPa]                                                                                                                                                                                                                           | ASTM C293                                                                                              |
| Compressive Strength  | 100-200 psi [690-1390 kPa] after 672 hours curing time                                                                                                                                                                                                | ASTM C109                                                                                              |

| Estimated Bags of GEM for Backfilling Around Ground Rods to a Density of 63.5 lb/ft <sup>3</sup> (1,017 kg/m <sup>3</sup> ) |             |    |     |    |     |    |     |    |   |    |     |    |     |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|----|-----|----|-----|----|-----|----|---|----|-----|----|-----|
| Diameter of Hole                                                                                                            |             | ft | m   | ft | m   | ft | m   | ft | m | ft | m   | ft | m   |
| Inches                                                                                                                      | Centimeters | 5  | 1.5 | 6  | 1.8 | 8  | 2.4 | 10 | 3 | 15 | 4.6 | 20 | 6.1 |
| 4                                                                                                                           | 10.2        | 2  |     | 2  |     | 2  |     | 3  |   | 4  |     | 5  |     |
| 6                                                                                                                           | 15.2        | 3  |     | 3  |     | 4  |     | 5  |   | 8  |     | 10 |     |
| 8                                                                                                                           | 20.3        | 5  |     | 6  |     | 8  |     | 9  |   | 14 |     | 18 |     |
| 10                                                                                                                          | 25.4        | 7  |     | 9  |     | 12 |     | 14 |   | 21 |     | 28 |     |
| 12                                                                                                                          | 30.5        | 10 |     | 12 |     | 16 |     | 20 |   | 30 |     | 40 |     |

### WARNING

nVent products shall be installed and used only as indicated in nVent's product instruction sheets and training materials. Instruction sheets are available at [www.nvent.com](http://www.nvent.com) and from your nVent customer service representative. Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death and/or void your warranty.

⚠ WARNING: This product can expose you to chemicals including silica and hexavalent chromium, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



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