



Material Safety Data Sheet
GSC Energy Pro Pipe
All Grades - All Colors - All Materials

Section 1 - Product and Company Identification

Product Name: GSC Energy Pro Polyethylene Pipe
Product Description: Polyethylene Pipe (various colors, and with and without external color stripes, and with and without internal color layer)
Product Use: Component for conveying gases, liquids and other fluid media
Company Identification: Geothermal Supply Company, Inc
106 Cherry Street Horse Cave, Kentucky 42749
Phone: 270-786-3010 Fax: 270-786-4136
Website: www.geothermalsupply.com
24 hr Emergency #: CHEMTREC - 1-800-424-9300

Section 2 - Composition / Information on Ingredients

<u>Ingredient Name</u>	<u>CAS Number</u>	<u>Amount</u>
Polyethylene	9002-88-4	> 96% by weight
Polyethylene Hexene Copolymer	25213-02-9	> 96% by weight
Polyethylene Butene Copolymer	25807-34-7	> 96% by weight
May include Carbon Black	1333-86-4	0 - 4% by weight
May include Cadmium Sulphide Pigment	1306-23-6	< 0.1% by weight
May include Lead Chromate Pigment	1344-37-2	0 - 1% by weight
May include Flux Calcined Diatomaceous Earth	68855-54-9	< 1% by weight
May include Crystalline Silica (Cristobalite)	14464-46-1	< 1% by weight

Section 3 - Hazards Identification

Emergency Overview:

Physical Appearance

- ◆ Black Polyethylene pipe
- ◆ Black Polyethylene pipe with external longitudinal contrasting color stripes
- ◆ Black Polyethylene pipe with contrasting internal color layer
- ◆ Yellow Polyethylene pipe
- ◆ Yellow Polyethylene pipe with external longitudinal contrasting color stripes
- ◆ Polyethylene pipe is supplied in Straight Lengths, Coils and Loops

Hazards of Product:

- ◆ This Product is NOT a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
- ◆ Injury or Death can result from product falling from a height or unexpected movement during Storage, Unloading or Handling. Call 1-270-786-3010 for Unloading Guidelines or Obtaining Unloading Guidelines from www.geothermalsupply.com
- ◆ Product Surface can be slippery especially if there is water, snow or ice on the surface. Do Not walk on product
- ◆ May contain an ingredient that can cause cancer. See Section 11, not expected to be harmful if all recommendations in this MSDS are followed. See Section 7 and Section 8.
- ◆ *EYE:* Not expected to cause prolonged or significant eye irritation If this material is heated, Thermal burns may result from Eye contact
- ◆ *SKIN:* Contact with the skin is not expected to cause prolonged or significant irritation or cause an allergic skin response. If this material is heated, Thermal burns may result from Skin contact.
- ◆ *INHALATION:* Not expected to be harmful if inhaled. If this material is heated, Fumes may be unpleasant and produce Nausea and irritation of the Upper Respiratory Tract.
- ◆ *INGESTION:* Not expected to be harmful if Swallowed.



Material Safety Data Sheet
GSC Energy Pro Pipe
All Grades - All Colors - All Materials

Section 4 - First Aid Measures

- Eye Contact:** *Hot Material:* Flush eyes with plenty of cold water for at least 15 minutes. Do Not remove contact lenses if worn. Seek Medical Assistance for mechanical removal of this material from the eye. The use of flush fluid, other than water, is Not recommended.
Cold Material: Flush eyes with plenty of cold water. Get Medical Assistance if irritation occurs.
- Skin Contact:** *Hot Material:* If burned by contact with hot material, flush skin immediately with large amounts of cold water. If possible, submerge area in cold water. No attempt should be made to detach polymer adhering to skin or to remove clothing attached with molten material. Thermal burns require Immediate Medical Assistance.
Cold Material: Wash with Soap and Water.
- Inhalation:** If affected by fumes from heated material, remove from source of exposure and move the affected person into fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Get Medical Assistance.
- Ingestion:** Do Not induce vomiting unless directed to do so by Medical Personnel. Never give anything by mouth to an Unconscious person. If large quantities of this material are swallowed, Call a Physician Immediately.

Section 5 - Fire Fighting Measures

- Product Flammability:** May be combustible at High Temperatures
- | | | | |
|-------------|-----------|-----------------|----------------|
| NFPA | Health: 0 | Flammability: 1 | Instability: 0 |
| HMIS | Health: 0 | Flammability: 1 | Instability: 0 |
- Auto-Ignition Temperature:** Greater than 343°C (649°F)
- Flash Point:** Above 300°C (572°F) decomposition occurs and flash fumes may occur.
- Products of Combustion:** Products of combustion are carbon oxides (CO, CO₂). May also contain low levels of aldehydes, ketones, organic acids or hydrocarbons.
- Unusual Fire/Explosion Hazards:** High dust concentrations have a potential for combustion or explosion. This material is Not explosive as defined by established regulatory criteria.
- Fire Fighting Media & Instructions:** In case of Fire, use water spray (fog), foam or dry chemicals. Do Not use water jet.
- Protective Clothing (Fire):** Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and Full turnout gear

Section 6 - Accidental Release Measures

- Protective Measures:** Eliminate source of ignition in vicinity of spilled material
- Spill Management:** If heated material is spilled, allow it to cool before proceeding with disposal methods. Shavings, chips or segments from cutting and cooled, spilled heated material may cause a slipping hazard. Isolate and contain to prevent entry into sewers and waterways. Sweep or vacuum shavings, chips, segments and cooled heated material and place in appropriate containers for disposal. Recycle where possible. Use appropriate safety equipment.
- Reporting:** USA regulations may require reporting spills of this material that could reach any surface waters. Reports spills to local authorities and/or the National Response Center at 1-800-424-8802 as appropriate or required.

Section 7 - Handling and Storage

Read and Observe all precautions published GSC1209-EP1005 *Heat Fusion Joining and Procedure Manual for HDPE PE4710* and GSC1209-EP1006 *Unloading Guidelines for GSC Energy Pro Polyethylene Pipe*. Call 1-270-786-3010 to obtain copies or go to www.geothermalsupply.com.

- Precautionary Measures:** Avoid heated material contact with eyes, skin and clothing. Avoid breathing vapor or fumes from heated material.
- Unusual Handling Measures:** Potentially toxic/irritating fumes may evolve from heated material. At high temperatures, above 177°C (350°F), polyethylene can release vapors and gases that are irritating to mucous membranes of the eyes, mouth, throat and lungs. These substances may include acetaldehyde, acetone, acetic acid, formic acid, formaldehyde and acrolein. Based on animal data and limited epidemiological evidence, NTP, IARC(2A) and OSHA have listed formaldehyde as a probable human carcinogen. Following all recommendations within this MSDS should minimize exposure to thermal processing emissions.



Material Safety Data Sheet
GSC Energy Pro Pipe
All Grades - All Colors - All Materials

Section 8 - Exposure Controls and Personal Protection

Exposure Limits:	<u>Component</u>	<u>Exposure Limits</u>	<u>Form</u>
	Particulates (Insoluble) Not Otherwise Specified (PNOS)	10 mg/m ³ TWA8 ACGIH	Inhalable fraction Particulate matter containing no asbestos and crystalline silica < 1%
		3 mg/m ³ TWA8 ACGIH	Respirable fraction Particulate matter containing no asbestos and crystalline silica < 1%
		5 mg/m ³ TWA8 OSHA	Respirable Fraction
		15 mg/m ³ TWA8 OSHA	Total Dust
Personal Protection:	<i>Respiratory Protection:</i>	Use NIOSH-Approved respirator if unable to control airborne dust, fumes and vapor	
	<i>Ventilation:</i>	Local exhaust ventilation is recommended for control of airborne dust, fumes and vapor especially in confined areas.	
	<i>Other Protective Equipment:</i>	Wear gloves and suitable eye protection	
Engineering Controls:	If dust is generated, provide local exhaust ventilation to keep exposure to airborne contaminants below exposure limits.		

Section 9 - Physical and Chemical Properties

Physical State and Appearance:	Polyethylene pipe is supplied in straight lengths, coils and loops as black polyethylene pipe, or black polyethylene pipe with external longitudinal contrasting color stripes, or black polyethylene pipe with contrasting internal color layer or yellow polyethylene pipe, or yellow polyethylene pipe with external longitudinal contrasting color stripes.
Odor:	Negligible
pH:	NA
Vapor Pressure:	NA
Vapor Density (air = 1):	NA
Boiling Point:	NA
Solubility (in water)	Insoluble in Water
Melting Point:	100-135°C (212-275°F)
Specific Gravity:	0.93 - 0.99
Density:	0.93 - 0.99 g/cm ³

Section 10 - Stability and Reactivity

Chemical Stability:	This material is considered stable under ambient temperature and pressure and normally anticipated storage and handling conditions.
Conditions to Avoid:	Avoid heating above recommended processing temperature.
Incompatibility with other Materials:	None
Hazardous Decomposition Products:	Carbon oxides
Hazardous Polymerization:	Hazardous polymerization will Not occur

Section 11 - Toxicological Information

Immediate Health Effects:	
Acute oral toxicity:	LD50 / Not known
Acute dermal toxicity:	LD50 / Not known
Acute inhalation toxicity:	LD50 / Not known
Eye irritation:	Not expected to be irritating to the eyes
Skin irritation:	Not expected to be irritating to the skin



Material Safety Data Sheet
GSC Energy Pro Pipe
All Grades - All Colors - All Materials

Section 11 - Toxicological Information . (Continued)

Sensitization: Dermal - not a sensitizer / human

Additional Toxicological Information:

- ◆ This product contains POLYMERIZED OLEFINS. During thermal processing (>177°C; >350°F) polyethylene can release vapors and gases (aldehydes, ketones and organic acids) that are irritating to the mucous membranes of the eyes, mouth, throat and lungs. Generally these irritant effects are transitory. However, prolonged exposure to irritating off – gases can lead to pulmonary edema. Formaldehyde (an aldehydes) has been classified as a probable human carcinogen by NTP, IARC(2A) and OSHA based on animal data and limited epidemiological evidence.
- ◆ Pigments containing carbon black, lead chromate, nickel, antimony or titanium compounds may have been incorporated into this product. The International Agency for Research on Cancer (IARC) has classified carbon black as a Group B carcinogen (possibly carcinogenic to humans) based on sufficient evidence in animals and inadequate evidence in humans. However, the pigments in this product are bound in a polymer matrix that severely limits its extractability, bioavailability and toxicity. The lead chromate pigment is also silica-encapsulated as well as bound in a polymer matrix. None of these pigments is likely to cause adverse health effects under recommended conditions of use.
- ◆ Product marked “NSF-61” is safe for use with Potable Water (drinking water for human consumption).

Section 12 - Ecological Information

Ecotoxicity: This material is Not expected to be harmful to aquatic organisms.

Environmental Fate: This material is Not expected to be readily biodegradable.

Mobility: This product has Not been found to migrate through soils.

Persistence & Degradability: This product does Not readily degrade. Under normal oxidation conditions, >99% of polyethylene will remain intact after exposure to microbial actions. Product will slowly change (embrittle) in the presence of sunlight, but will Not full break down. Product buried in landfill has been found to be stable over time. No toxic degradation products are known to be produced.

Other Ecological Information: Wildlife may ingest waste cuttings, shavings, segments or chips. Although Not toxic, such materials may physically block the digestive system, causing starvation or death.

Section 13 - Disposal Considerations

**Disposal Consideration
/ Waste Information:**

Recycle to process if possible. Waste cuttings, segments, chips and shavings should be swept up or vacuumed and placed in appropriate containers for disposal and to avoid runoff into waterways.

This product as manufactured is a non-hazardous waste but may become contaminated upon use.

If this material must be discarded, depending upon use and application, it may meet criteria as hazardous waste as defined by the US EPA under RCRA (40 CFR 261) or other State or Local Regulations.

Consult an environmental professional to determine if local, regional or national regulations would classify this material or contaminated material as hazardous waste.

Use only approved transporters, recyclers, treatment, storage or disposal facilities.

Dispose of in accordance with all applicable National, State, Provincial and Local regulations.



Material Safety Data Sheet

GSC Energy Pro Pipe

All Grades - All Colors - All Materials

Section 14 - Transport Information

US DOT:	Not regulated as hazardous material or dangerous goods for transportation.
ICAO / IATA:	Not regulated as hazardous material or dangerous goods for transportation.
IMO / IMDG:	Not regulated as hazardous material or dangerous goods for transportation.
RID / ADR:	Not regulated as hazardous material or dangerous goods for transportation.
TDG:	Not regulated as hazardous material or dangerous goods for transportation.
Other Transportation Information:	The description shown may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

Section 15 - Regulatory Information

SARA 311/312 Categories:	Immediate (acute) health effects	No
	Delayed (chronic) health effects	No
	Fire hazard	No
	Sudden release of pressure hazard	No

Reactivity hazard No

Regulatory Status:

<u>Country</u>	<u>Inventory</u>	<u>Status</u>
Australia	AICS	All components are included or otherwise exempt from inclusion on this inventory.
Canada	DSL NDSL	All components are included or otherwise exempt from inclusion on this inventory.
China	IECS	All components are included or otherwise exempt from inclusion on this inventory.
European Union	EINECS ELINCS NLP	All components are included or otherwise exempt from inclusion on this inventory.
Japan	ENCS	All components are included or otherwise exempt from inclusion on this inventory.
Korea	ECL	All components are included or otherwise exempt from inclusion on this inventory.
Philippines	PICCS	All components are included or otherwise exempt from inclusion on this inventory.
United States	TSCA	All components are included or otherwise exempt from inclusion on this inventory.

Regulatory Lists:

01 = CA Prop 65	14 = FDA 175	27 = IARC Group 2B	40 = TSCA Section 4
02 = LA RTK	15 = FDA 176	28 = IARC Group 3	41 = TSCA Section 5(a)
03 = MA RTK	16 = FDA 177	29 = IARC Group 4	42 = TSCA Section 8(a) CAIR
04 = MN Hazardous Substance	17 = FDA 178	30 = NTP Carcinogen	43 = TSCA Section 8(a) CAIR
05 = MJ RTK	18 = FDA 179	31 = OSHA Carcinogen	44 = TSCA Section 8(d)
06 = PA RTK	19 = FDA 180	32 = OSHA Highly Hazardous	45 = WHMIS - IDL
07 = CAA Section 112 HAPs	20 = FDA 181	33 = RCRA Waste Appendix VIII	46 = Germany D TAL
08 = CWA Section 307	21 = FDA 182	34 = RCRA Waste D-List	47 = Germany WKG
09 = CWA Section 311	22 = FDA 184	35 = RCRA Waste P-List	48 = DEA List 1
10 = DOT Marine Pollutant	23 = FDA 186	36 = RCRA Waste U-List	49 = DEA List 2
11 = FDA 172	24 = FDA 189	37 = SARA Section 311/312	
12 = FDA 173	25 = IARC Group 1	38 = SARA Section 313	
13 = FDA 174	26 = IARC Group 2	39 = TSCA 12 (b)	

The following components of this material are found on the regulatory lists indicated:

Polyethylene	4
May Include: Carbon Black	1, 3, 4, 5, 6, 27, 45
May include: Lead Chromate Pigment	1, 3, 4, 5, 6, 25, 26, 30, 34, 38, 39, 45, 46



Material Safety Data Sheet
GSC Energy Pro Pipe
All Grades - All Colors - All Materials

Section 15 - Regulatory Information. (Continued)

CERCLA reportable quantities (RQ) / SARA 302 threshold planning quantities (TPQ):

<i>Component</i>	<i>Component RQ</i>	<i>Component TPQ</i>	<i>Product RQ</i>
May include: Lead Chromate Pigment	10 lbs	None	1000 lbs

WHMIS Classification:

This product is Not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

Section 16 - Other Information

Notice to Reader:

NOTICE: This Material Safety Data Sheet is based on data considered to be accurate at the time of its preparation, but despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. The information on this MSDS was obtained from sources that we believe are reliable. However, the information is provided without warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal are beyond our control and may be beyond our knowledge. For this and other reasons, GSC, Inc. does Not assume responsibility and expressly disclaims liability for loss, damage, injury or expense arising out of or in any way connected with handling, storage, use or disposal of this product, or resulting from abnormal use, or resulting from any failure to follow appropriate practices, or from hazards inherent in the nature of the product. If the product is used as a component in another product or system, this MSDS information may not be applicable.

< END of MSDS >