



MATERIAL SAFETY DATA SHEETS

1. Plastic Product and Company Identification

Trade Name : GWC FIBRE

Main Resin Base Name : HDPE (High Density Polyethylene)
extrusion grade.

Synonyms : None

Product Code : GWC FIBRE: Nature

Use : Weaving, Furniture Component, Basket

DISTRIBUTOR : The Good World Company of Man S.A
Centro Commercial Plaza Florencia,
Guachipelin, Escazu, San Jose
Costa Rica

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2. Composition/ Information on Ingredients

| <u>Component</u> | <u>% By Weight</u> |
|------------------|--------------------|
| HDPE | 91 - 100 |
| Other Base Resin | 0 - 9 |
| Pigments | 2 - 5 |
| Additives | 0.05 - 0.5 |

3. Hazard Identification

| |
|--|
| Emergency Overview Synthetic Fiber – No Odor No harmful in contact with body Recyclable |
|--|

Potential Health Effect / Health Hazard Identification

Acute Exposure

Eye : No harmful

Skin : No harmful

Ingestion : Choking Hazard

Inhalation : No harmful

Known Synergists : None known

Explosion Hazard : None known

Fire Hazard : None known
Corrosion Hazard : None known

4. Exposure Control / Personal Protection

Respiratory Protection : None
Skin Protection : None
Eye Protection : None

5. First Aid Measures

Eye Contact : No harmful
Skin Contact : No harmful
Ingestion : No harmful
First Aid Facilities : None

6. Fire Fighting Measures

Flammable, material will burn in a fire.
Extinguishing Media : All are acceptable.
Cool container with water spray.

7. Handling and Storage

Handling : Avoid scratch with sharp tools
Storage : Store in dry area

8. Physical and Chemical Properties

Odor : None
Physical State : Solid
pH : Not applicable
Vicat Softening Point : 84.25 °C
Solubility in Water : Not Soluble
Water Absorption : 51 ppm Weight
Density : 0.9545 g/cm³
Flammability : 19.9 mm/min
Tensile Strength : 33.44 Mpa
Elongation at Break : 772.6 %
Charpy Impact Strength : 84.80 Kj/m²
Yield Stress(compressive) : 48.91 Mpa
Coefficient of Thermal- : 108 x 10⁻⁶/K
Expansion (30-60)oC

9. Stability and Reactivity

| Chemical Stability: | Chemical Resistant | Change in Weight (%) | Change in Volume (%) |
|---------------------|---------------------------------|----------------------|----------------------|
| | a. Sea Water (pH 7.6) | 0.0216 | 0.2279 |
| | b. Swimming Pool Water (pH 7.1) | 0.0259 | 0.2507 |
| | c. 2 % Detergent (pH 7.6) | 0.0115 | 0.4206 |

| | | |
|--|--------|--------|
| d. 5 % Citric acid | 0.0023 | 0.1260 |
| e. 5 % NH ₄ OH (ammonium hydroxide) | 0.0076 | 0.1426 |
| f. 20 % Sulfuric acid | 0.0006 | 0.2403 |

Condition to Avoid : No recommendation
 Incompatibility With Other Material : None
 Hazardous Decomposition Material : None

10. Toxicological Information

Water : None reported
 Eye Effects : No harmful
 Skin Effects : No harmful
 Inhalation Effects : No harmful
 Ingestion Effects : Choking Hazard

11. Ecological Information

Ecotoxicity : No toxic
 Persistence : No harmful

12. Disposal Consideration

Disposal Consideration : GWC Fibre should be recycled

13. Transportation

| Regulations | Shipping Name | Hazard Class | Packing Group | U.N.Number |
|-------------|----------------|----------------|----------------|----------------|
| U.S.D.O.T. | Not applicable | Not applicable | Not applicable | Not applicable |
| ICAO / IATA | Not applicable | Not applicable | Not applicable | Not applicable |
| IMO / IMDG | Not applicable | Not applicable | Not applicable | Not applicable |
| ADR | Not applicable | Not applicable | Not applicable | Not applicable |

14. Regulatory Information

U.S Federal Regulations

EPA TSCA Inventory : All ingredients listed
 SARA Section 313 : Not Applicable, this product do not contain toxic chemicals
 U.S.D.O.T. Regulations : See section 13.

U.S. State Regulations

California Proposition 65 : Not applicable, VIRO[®] does not meet toxic criteria
 State Right-to-Know Laws : All ingredients listed

Canadian Regulations

Domestic Substance List : All ingredients listed
 WHMIS : Not applicable, VIRO[®] does not meet toxic criteria
 Transportation of Dangerous Goods (TDG) : Not applicable.

GWC Fibre does not meet dangerous goods criteria.

EEC Regulations

Classification : Not applicable,
 GWC Fibre does not meet harmful criteria
 Symbol : No symbol
 Risk Phrases : Not applicable
 Safety Phrases : Not applicable

15. Other Information

NFPA 740 Hazard Rating : Health – 0, Flammability – 3, Reactivity – 0,
 Special – None
 HMIS® Hazard Rating : Health – 0, Flammability – 3, Reactivity – 0,
 Protective Equipment - None Recommended Use
 : GWC Fibre is use as weaving for home, garden
 and interior furniture component. Not for food.

This MSDS has been prepared with data from Singapore Productivity Standard Board (PSB Singapore), Raw material suppliers and government publications. Information herein is accurate to the best of our knowledge. We do not suggest violation of any existing patents or give permission to practice any patented invention without license.

| MECHANICAL PROPERTIES | | | | PHYSICAL PROPERTIES | | | |
|--|-------|---------|---------------|---|--------|------------|--------------|
| TEST TYPE | VALUE | UNIT | TEST METHOD | PROPERTY | VALUE | UNIT | TEST METHOD |
| Tensile Strength | 33.44 | MPa | ASTM D638-98 | Density | 0.9545 | g/cubic cm | ASTM D792-98 |
| Elongation at break | 772.6 | % | ASTM D638-98 | Flammability (burning rate of sample) | 19.9 | mm/min | ASDH D635-98 |
| Tesile Modulus | 957 | MPa | ASTM D638-98 | Water absorption | 51 | ppm weight | ASDH D570-95 |
| Yield Stress | 24.55 | MPa | ASTM D638-98 | Chemical Resistance (Change in Weight) | | | |
| Charpy Impact Strength | 84.80 | KJ/m2 | ISO 179-97 | a. Sea water (pH 7.6) | 0.0216 | % | ASDH D543-95 |
| Shore D Hardness (1 second) | 67.8 | | ASTM D2240-95 | b. Swimming pool water (pH 7.1) | 0.0259 | % | ASDH D543-95 |
| Shore D Hardness (15 second) | 58.3 | | ASTM D2240-95 | c. 2 % detergent (pH 7.6) | 0.0115 | % | ASDH D543-95 |
| Vicat Softening Point (50 N load) | 84.25 | °C | ASDH D1525-95 | d. 5 % citric acid | 0.0023 | % | ASDH D543-95 |
| Flexural Modulus | 2.036 | MPa | ASDH D790-98 | e. 5 % NH4 OH (ammonium hydroxide) | 0.0016 | % | ASDH D543-95 |
| Flexural Strength | 29.24 | MPa | ASDH D790-98 | f. 20 % sulfuric acid | 0.0006 | % | ASDH D543-95 |
| Compressive Strength | 169.7 | MPa | ASDH D790-98 | Chemical Resistance (Change in Volume) | | | |
| Yield Stress (Compressive) | 48.91 | MPa | ASDH D790-98 | a. Sea water (pH 7.6) | 0.2279 | % | ASDH D543-95 |
| Heath Deflection Temperature (120° C/Hour) | 46.4 | °C | ASDH D790-98 | b. Swimming pool water (pH 7.1) | 0.2507 | % | ASDH D543-95 |
| Glass Transition Temperature | -95 | °C | DSC | c. 2 % detergent (pH 7.6) | 0.4206 | % | ASDH D543-95 |
| Coefficient of Thermal Expansion | | | | d. 5 % citric acid | 0.1260 | % | ASDH D543-95 |
| 30-60 °C | 108 | 10 -6/K | ASTM E831-93 | e. 5 % NH4 OH (ammonium hydroxide) | 0.1426 | % | ASDH D543-95 |
| 100-113 °C | 750 | 10 -6/K | ASTM E831-93 | f. 20 % sulfuric acid | 0.2403 | % | ASDH D543-95 |

ACCELERATED WEATHERING TEST

Polyrod made **GWC** products were tested for accelerated weathering by the Singapore Productivity and Standards Board in accordance with the test methods issued by the International Organization for Standardization (ISO) and the American Society for Testing and Materials (ASTM). The test condition and results are as follows:

Test Method:

1. ISO 4892- 2: 1994

Test Condition

Apparatus used: Xenon test Beta LM

Operating Cycle: 5 mins rain followed by 25 mins rainfree

Light source (Continuous): Xenon lamps NHE 2200

Filter system: Xenochrome 300 in suprax cylinder

UV irradiance: $80 \pm 5 \text{ W/m}^2$ at 300 to 400 nm

Black standard temperature: $55 \pm 5^\circ \text{C}$ (dry cycle)

Air temperature in test enclosure: $30 \pm 3^\circ \text{C}$

Relative humidity in test enclosure: $75 \pm 5\%$

Test duration: 2000 hours



2. ISO 105A02: 1993

"Grey Scale for Assessing Change in Color"

3. ASTM D523- 89 (Reapproved 1999)

"Specular Gloss"

Geometry: 60°

4. Accelerated Weathering (Xenon Arc) Test

| Test Duration (Lighthouse) | Results |
|----------------------------|---|
| 1000 | No change in color (Grey Scale 5) 99.2% gloss retention |
| 2000 | No change in color (Grey Scale 5) 113.4% gloss retention |

Remarks: The Grey Scale for assessing color change ranges from 1 to 5:

5. No perceived difference in color between the tested and untested specimens
Greatest contrast in color between the tested and untested specimens.