



## 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 La Quinta 106,  
Ulloa de Lagunilla, Heredia, San Jose  
Costa Rica

Email: : info@goodworldcompany.com

Contact : 506 2262 0011

### 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/cm<sup>3</sup>  
Flammability : 19.9 mm/min  
Tensile Strength : 33.44 Mpa  
Elongation at Break : 772.6 %  
Charpy Impact Strength : 84.80 Kj/m<sup>2</sup>  
Yield Stress(compressive) : 48.91 Mpa  
Coefficient of Thermal- : 108 x 10<sup>-6</sup>/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 <sub>4</sub> 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<sup>®</sup> 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<sup>®</sup> 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	712.6	%	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	<b>Chemical Resistance (Change in Weight)</b>			
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	<b>Chemical Resistance (Change in Volume)</b>			
Yield Stress (Compressive)	48.91	MPa	ASDH D790-98	a. Sea water (pH 7.6)	0.2219	%	ASDH D543-95
Heath Deflection Temprature (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
<b>Coefficient of Thermal Expansion</b>				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 NKE 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:  $60^\circ$

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.

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