



TECHNICAL DATA SHEET (TDS)

HDPE GEOMEMBRANE SHEET

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1. PRODUCT DESCRIPTION

HDPE Geomembrane Sheet is a premium-quality impermeable membrane manufactured from high-density polyethylene (HDPE) resin combined with carbon black, antioxidants, UV stabilizers, and processing aids. The product is engineered to provide exceptional chemical resistance, environmental stress crack resistance, UV durability, and long-term waterproofing performance in demanding containment applications.

Manufactured using advanced flat-die extrusion technology, HDPE geomembranes offer consistent thickness, high tensile strength, excellent puncture resistance, and outstanding weatherability, making them ideal for environmental, mining, industrial, agricultural, and civil engineering projects.

2. FEATURES & BENEFITS

- Excellent waterproofing performance
- Superior chemical resistance
- Outstanding UV resistance
- High environmental stress crack resistance (ESCR)
- Excellent tensile strength
- High puncture resistance
- Excellent elongation properties
- Low permeability
- Long service life
- Resistant to acids, alkalis, and salts
- Excellent weldability
- Root penetration resistance
- Weather resistant
- Freeze-thaw resistant
- Low maintenance
- Cost-effective installation



3. TYPICAL APPLICATIONS

Environmental Engineering

- Municipal landfills
- Hazardous waste landfills
- Industrial waste containment
- Leachate ponds
- Wastewater lagoons

Mining Industry

- Heap leach pads
- Tailings storage facilities
- Process ponds
- Evaporation ponds
- Secondary containment

Water Management

- Reservoir lining
- Irrigation canals
- Water storage tanks
- Stormwater ponds
- Drinking water reservoirs*

(*When certified for potable water applications.)

Agriculture

- Fish ponds
- Shrimp farms
- Aquaculture ponds
- Irrigation reservoirs
- Agricultural lagoons

Civil Engineering

- Tunnel waterproofing
- Foundation waterproofing
- Retaining structures
- Dam waterproofing



- Canal lining

Industrial Applications

- Chemical storage areas
- Oil & gas containment
- Secondary spill containment
- Power plants
- Industrial wastewater treatment

4. PRODUCT COMPOSITION

Component	Content
High Density Polyethylene Resin	95–97%
Carbon Black	2–3%
Antioxidants	<1%
UV Stabilizers	<1%
Processing Additives	Trace

5. STANDARD DIMENSIONS

Property	Typical Range
Thickness	0.50 mm – 3.00 mm
Roll Width	Up to 8.0 m
Roll Length	According to thickness
Surface	Smooth / Textured
Color	Black (standard)

Other dimensions are available upon request.



6. TECHNICAL SPECIFICATIONS

The following values are typical and based on GRI GM13 requirements.

Property	Test Method	Unit	Typical Value
Density	ASTM D1505	g/cm ³	≥0.940
Tensile Strength at Yield	ASTM D6693	kN/m	≥15
Tensile Strength at Break	ASTM D6693	kN/m	≥27
Elongation at Yield	ASTM D6693	%	≥12
Elongation at Break	ASTM D6693	%	≥700
Tear Resistance	ASTM D1004	N	≥125
Puncture Resistance	ASTM D4833	N	≥320
Carbon Black Content	ASTM D4218	%	2.0–3.0
Carbon Black Dispersion	ASTM D5596	Category	A1–A3
Oxidative Induction Time (Standard OIT)	ASTM D3895	min	≥100
High Pressure OIT	ASTM D5885	min	≥400
Stress Crack Resistance	ASTM D5397	hr	≥500
UV Resistance	ASTM D7238	% Retained	≥55
Water Vapor Permeability	ASTM E96	g/m ² /day	Extremely Low
Water Absorption	ASTM D570	%	<0.1

7. PHYSICAL PROPERTIES

Appearance

Black smooth or textured membrane

Material

High Density Polyethylene (HDPE)

Specific Gravity

0.94–0.97 g/cm³



Melting Point

Approximately 125–135°C

Service Temperature

-60°C to +80°C

Maximum Intermittent Temperature

100°C

Water Absorption

Negligible

Permeability

Practically impermeable

Electrical Conductivity

Non-conductive

8. CHEMICAL RESISTANCE

Excellent resistance to:

- Sulfuric Acid
- Hydrochloric Acid
- Nitric Acid (dilute)
- Sodium Hydroxide
- Potassium Hydroxide
- Calcium Hydroxide
- Saline Solutions
- Fertilizers
- Sewage
- Leachate
- Most industrial chemicals



Excellent resistance against:

- Mold
- Bacteria
- Fungi
- Soil chemicals
- Corrosion

Chemical compatibility should be confirmed for highly concentrated or specialized chemicals.

9. UV & WEATHER RESISTANCE

HDPE geomembrane incorporates premium carbon black and antioxidant packages providing:

- Excellent UV stability
- Outstanding weather resistance
- Long-term outdoor durability
- Excellent ozone resistance
- Freeze-thaw stability
- Minimal aging

10. INSTALLATION

Installation should be performed by trained technicians using approved hot wedge welding or extrusion welding equipment.

Recommended procedures include:

- Proper surface preparation
- Controlled seam welding
- Vacuum testing
- Air pressure testing
- Spark testing (where applicable)
- Destructive and non-destructive seam testing



Installation should comply with applicable ASTM and GRI guidelines.

11. STORAGE

Store rolls:

- On a flat surface
- In original packaging
- Away from sharp objects
- Protected from excessive heat
- Under cover when possible

Do not stack rolls beyond the manufacturer's recommendations.

12. QUALITY CONTROL

Each production batch undergoes routine quality testing including:

- Thickness verification
- Density testing
- Tensile testing
- Tear resistance
- Puncture resistance
- Carbon black content
- Carbon black dispersion
- Oxidative Induction Time (OIT)
- Dimensional inspection
- Visual inspection



13. STANDARDS

Manufactured and tested in accordance with applicable international standards including:

- GRI GM13
- ASTM D5199
- ASTM D5994
- ASTM D6693
- ASTM D4833
- ASTM D5397
- ASTM D3895
- ASTM D5885
- ASTM D4218
- ASTM D5596
- ASTM D1505
- ASTM D1004

14. ADVANTAGES OVER CONVENTIONAL LINERS

- Lower permeability
- Superior chemical resistance
- Longer service life
- Better UV resistance
- Excellent weldability
- Reduced maintenance
- High mechanical strength
- Superior environmental protection
- Cost-effective lifecycle performance

15. TYPICAL SERVICE LIFE

When properly installed and protected, HDPE geomembranes can provide a service life exceeding **50 years**, depending on environmental conditions, exposure, and application.

16. PACKAGING

Available in roll form.



Typical packaging includes:

- Protective wrapping
- Identification labels
- Roll number
- Batch number
- Thickness identification
- Quality inspection label

Custom packaging is available upon request.

17. WARRANTY

Products are manufactured under stringent quality management systems and supplied in accordance with agreed specifications. Warranty terms are subject to the applicable sales agreement and project-specific requirements