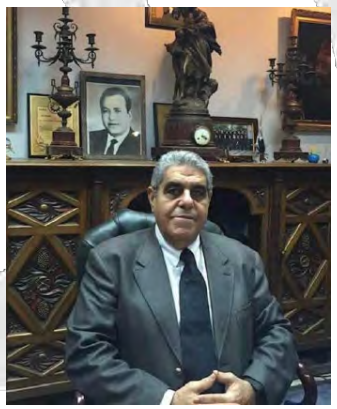
Hyma Plastic Company Profile

Who Are We

Founded in 1975, Hyma Plastic is a leading manufacturer of various polyethylene film products in the region. Our core business is allocated to producing Agriculture, Geomembrane and Packaging products using the finest materials & most advanced machines.

Hyma Plastic takes pride in its 50 plus years' experience, offering The highest quality products and excellent services to its customers. We aim to always innovate and implement the latest technology in our processes for the most optimal performance.

Eng. Mohamed Fahmy
Founder

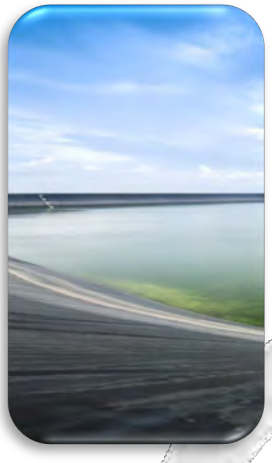


Eng. Samy Mohamed Fahmy
Chairman

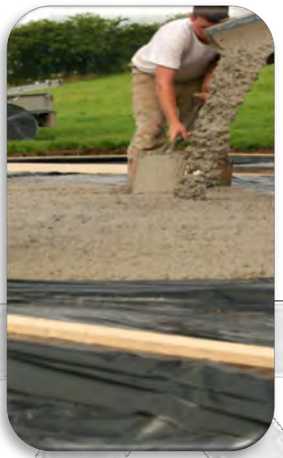
What We Do

Hyma Plastic specializes in four main product categories. Our unique material recipes ensure the unrivaled Hyma quality and life time that comes with our reputation.

AGRI
Agriculture



GEO
Geomembrane



INCO
Infrastructure & construction

PACK
Packaging

MISSION & VISION

MISSION

To maintain and consolidate our leading position in plastic manufacturing, supply, and services in the Egyptian and African & European Markets .
Our aim is for Hyma Plastic to be regarded as the supplier of choice for the highest quality products across the market, growing our global cliental and providing them with the most premium polyethylene films available .

VISION

To provide our customers with the best polyethylene products, by fully supporting their business plans and future expansions, thus creating value and achieving a “Win-Win ” long-term partnership.
We aim to grow with our business partners by giving our full support towards their future business plan and expansion. Hyma plans on achieving this by offering the finest products and our unrivaled customer service which is here to stay even after years of buying or products.

A FEW CLIENTS

Hyma Plastic has achieved a number of life long relationship with some of the most important multinational companies in Egypt and around the world .

Backed by years of excellent customer service and exceptional products, We at Hyma Plastic have achieved high levels of trust with most of our clients .

- GEO HD PREMIUM
- GEO HD
- GEO HD X
- GEO LL PREMIUM
- GEO LL
- GEO LL X
- GEO HT
- GEO EVA
- GEO FPP

PLASTIC

Construction Films

DPM

Transparent Films

Warning Tapes

QUALITY & CERTIFICATES

At Hyma Plastic quality is one of our top priorities. To ensure the excellent quality promised Hyma has put together one of the largest plastic quality control laboratories in Egypt and the Middle East. In addition to our central laboratory, we have equipped every manufacturing warehouse with its own lab to test every roll we produce .

Some of the quality standards we abide by include but are not limited to :

- ISO global standards
- ASTM International Standards
- European Standards (EN)
- Customer-Specific Requirements

A few of the hundreds of certificates achieved throughout the years .

Hyma Plastic Catalogue

HYMA PLASTIC

Founded in 1975, Hyma Plastic is a leading manufacturer of various polyethylene film products in the region. Our core business is allocated to producing Agriculture, Geomembrane and Packaging products using the finest materials & most advanced machinery.

With a production capacity of over 68,000 tons annually, Hyma Plastic is the market leader of Polyethylene film products in Africa and the Middle East. Our global presence can be observed in a number of mega projects, from gold mining to airport runways... spanning all continents.

Contents

Since 1975

GEO LL X

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GEO LL PREMIUM

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GEO

As manufacturers of HDPE & LLDPE Geomembrane liners that are used in multiple sites around the world, we have a lifetime of technical Knowledge in our field. We boast our in-house laboratories for the continuity of our worry-free GEO product that will put your mind at ease, no matter the scale of a project.

Hyma Plastic is fully in compliance & accredited the ISO 9001, ISO 14001, TRI, SGS & CE Certifications. For over 25 years, Hyma Plastic has been one of the key geomembrane manufacturers in the African & Middle Eastern markets, with our GEO Liners making projects possible around the world from North America all the way to Europe & Asia.

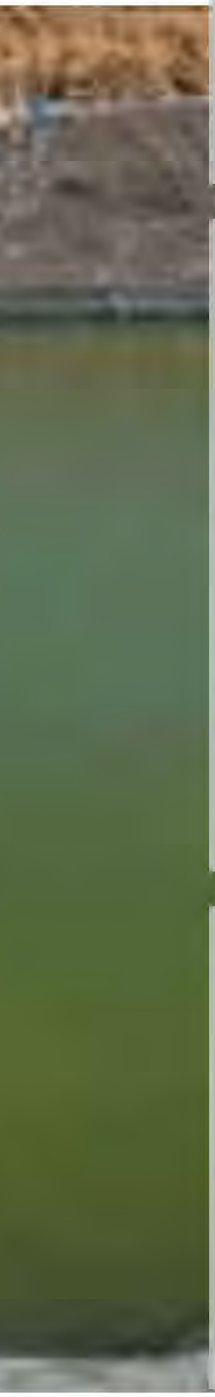
Contents

GEO

GEO LOCK

GEO WELD

GEO HD X



APPLICATIONS

- Pond liners
- Construction insulation
- Aquaculture
- Fish farming
- Waste water Plants
- Water Treatment plants
- Floating covers
- Landfills

GEO HD X

Elevate your short-term aquatic ventures and small-scale projects with GEO HD X geomembranes, featuring warranties up to 5 years. Specially crafted for efficiency without compromising on quality, GEO HD X offers a tailored solution for aquaculture and temporary water containment needs. Ideal for setting up temporary fish ponds or constructing short-term water reservoirs, this HDPE geomembrane excels in strength, durability, and chemical resistance.

Engineered for robust performance, GEO HD X boasts a standardized quality that ensures consistency and reliability in every application. Dive confidently into the world of aquaculture and small-scale projects, knowing that GEO HD X is your professional choice for cost-effective and reliable short-term lining solutions.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	
Maximum	Maximum	Embossed	
3000 microns	**8.0 Meters**		

GEO HD

APPLICATIONS

Pond liners
Artificial lakes
Mining TSF
Construction insulation
Aquaculture
Fish farming
Waste water Plants
Water Treatment plants
Canal Lining
Oil & Gas Containment
Floating covers

GEO HD

High-Density Polyethylene (HDPE) geomembranes stand as the preeminent choice globally, distinguished by their robust UV and temperature resistance, cost-effectiveness, durability, and exceptional chemical resilience.

Hyma Plastic's GEO HD liners consistently surpass the stringent criteria outlined in the Geosynthetic Research Institute's GM13 specifications. Globally recognized, Hyma's GEO HD liners find application in diverse contexts, including pond liners, secondary containment units, floating covers, and numerous other critical applications. Elevate your projects with the superior quality and reliability of Hyma Plastic's GEO HD liners.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
3000 microns	**8.0 Meters**		

GEO HD PREMIUM

APPLICATIONS

- Pond liners
- Artificial lakes
- Mining TSF
- Construction insulation
- Aquaculture
- Fish farming
- Waste water Plants
- Water Treatment plants
- Canal Lining
- Oil & Gas Containment
- Floating covers
- Landfills

GEO HD PREMIUM

Explore the pinnacle of environmental protection with GEO HD Premium geomembranes, setting global standards with warranties up to 25 years. Meticulously engineered for demanding applications, these liners leverage cutting-edge technology, integrating Artificial Intelligence into production for unparalleled precision. Trust in perfection across various applications such as pond liners, secondary containment units, floating covers, and more, as GEO HD Premium redefines excellence in containment solutions.

Our state-of-the-art manufacturing facilities employ industry-leading machinery seamlessly integrated with Artificial Intelligence, ensuring a level of perfection that transcends traditional benchmarks.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
3000 microns	**8.0 Meters**		

GEO LL X

APPLICATIONS

- Pond liners
- Artificial lakes
- Construction insulation
- Fish farming
- Waste water Plants
- Water Treatment plants
- Farm Water Storage
- Floating covers

GEO LL X

Introducing GEO LL X, the ideal choice for short-term applications necessitating moderate chemical resistance, excellent strength, and heightened flexibility. Tailored as a fundamental liner, GEO LL X excels in delivering essential performance without unnecessary complexities. Its streamlined design guarantees ease of use and swift implementation, making it a preferred option for diverse applications.

GEO LL X is specifically crafted for farm water storage needs, offering a no-nonsense geomembrane that meets the essential requirements for containment while prioritizing cost-effectiveness. Elevate your agricultural endeavors with a reliable and straightforward solution designed to ensure optimal performance in farm water storage applications.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	
3000 microns	**8.0 Meters**		

GEO LL

APPLICATIONS

- Pond liners
- Artificial lakes
- Construction insulation
- Aquaculture and fish farming
- Water Treatment plants
- Canal Lining
- Oil & Gas Containment
- Landfill caps & closures
- Leach pads
- Sites with difficult access
- Sites with coarse or soft sub grades

GEO LL

LLDPE liners were introduced to address the principal shortcomings of HDPE which is its relative lack of flexibility. LLDPE polymers are more flexible and less prone to brittle stress cracking.

Co-engineered with leading minds in polymer manufacturing globally, GEO LL's unparalleled flexibility goes beyond conventional norms, enabling precise conformity to intricate terrains. This makes it the ultimate choice for critical applications in water treatment facilities, such as landfill liners, pond constructions, and environmental protection initiatives. The advanced molecular structure ensures superior puncture resistance, providing durability in the face of demanding conditions. Choose GEO LL for a professional solution that meets the highest standards in water treatment infrastructure.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
3000 microns	**8.0 Meters**		

GEO LL Premium

APPLICATIONS

- Dam Lining
- Pond liners
- Artificial lakes
- Construction insulation
- Water Treatment plants
- Canal Lining
- Oil & Gas Containment
- Landfill caps & closures
- Leach pads
- Aquaculture and fish farming
- Sites with difficult access
- Sites with coarse or soft sub grades

GEO LL

Introducing GEO LL Premium, the epitome of excellence among our LLDPE liners. Crafted from proprietary formulations, this liner embodies a highly flexible material that resists punctures and tears with unparalleled sophistication.

Tailored for critical applications such as dam lining and environmental protection, GEO LL Premium seamlessly adapts to diverse terrains, providing an impermeable barrier that stands resilient against environmental stressors. The superior flexibility of GEO LL Premium ensures precise adaptation to the intricate contours of dam surfaces, mitigating the risks of leaks and ensuring enduring durability.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
3000 microns	**8.0 Meters**		

EVA Geomembrane

APPLICATIONS

- Covered applications
- PVC membrane replacements
- Subway
- Covered reservoir
- Waterproof layer of swelling clay
- Wet collapsed loess
- Wet collapsed loess
- Preventing leakage in roadbed
- Seawater or freshwater feed field
- Mining applications
- Gardens applications
- Drainage applications

GEO LL

Discover the superior qualities of Hyma's EVA Geomembranes, renowned for their inherent softness, ease of handling, and welding capabilities. These liners stand out by offering heightened resistance to tears and punctures when compared to LLDPE counterparts. Allow us to introduce GEO EVA, our avant-garde Ethylene Vinyl Acetate (EVA) Geomembrane, meticulously designed to redefine containment solutions with unparalleled versatility.

GEO EVA excels in flexibility and durability, positioning itself as the preferred choice for a diverse array of applications. Whether utilized in tunnel lining, pond construction, or wastewater containment, GEO EVA seamlessly adapts to varied terrains, delivering a robust and impermeable barrier.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
1000 microns	**7.0 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
2500 microns	**8.0 Meters**		

FPP Geomembrane

APPLICATIONS

- Coal Mining
- Floating covers
- Lagoons
- Construction insulation
- Potable Water
- Canal Lining
- Reservoirs
- Bioswales
- Primary containment applications
- Waste water treatment
- Ponds

GEO FPP

Flexible polypropylene liners offer enhanced softness & flexibility compared to other types of liners. These geomembrane liners usually are used for their elongation, cold temperature resistance, long-term UV stability, and advanced chemical resistance.

Hyma's FPP geomembrane offers high degrees of flexibility and have a broad melting transition which allows them to be thermally seamed with a wide range of seaming equipment.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
1000 microns	**7.0 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
2500 microns	**8.0 Meters**		

GEO HT

APPLICATIONS

- Power plants
- Ash Pond Liners
- Geothermal Energy Projects
- Chemical Processing Plants
- Thermal Energy Storage
- Mining Applications
- Oil & Gas Containment
- Industrial Water Treatment
- Leach pads
- Waste To Energy Facilities
- Sites With Increased Temperatures

GEO LL

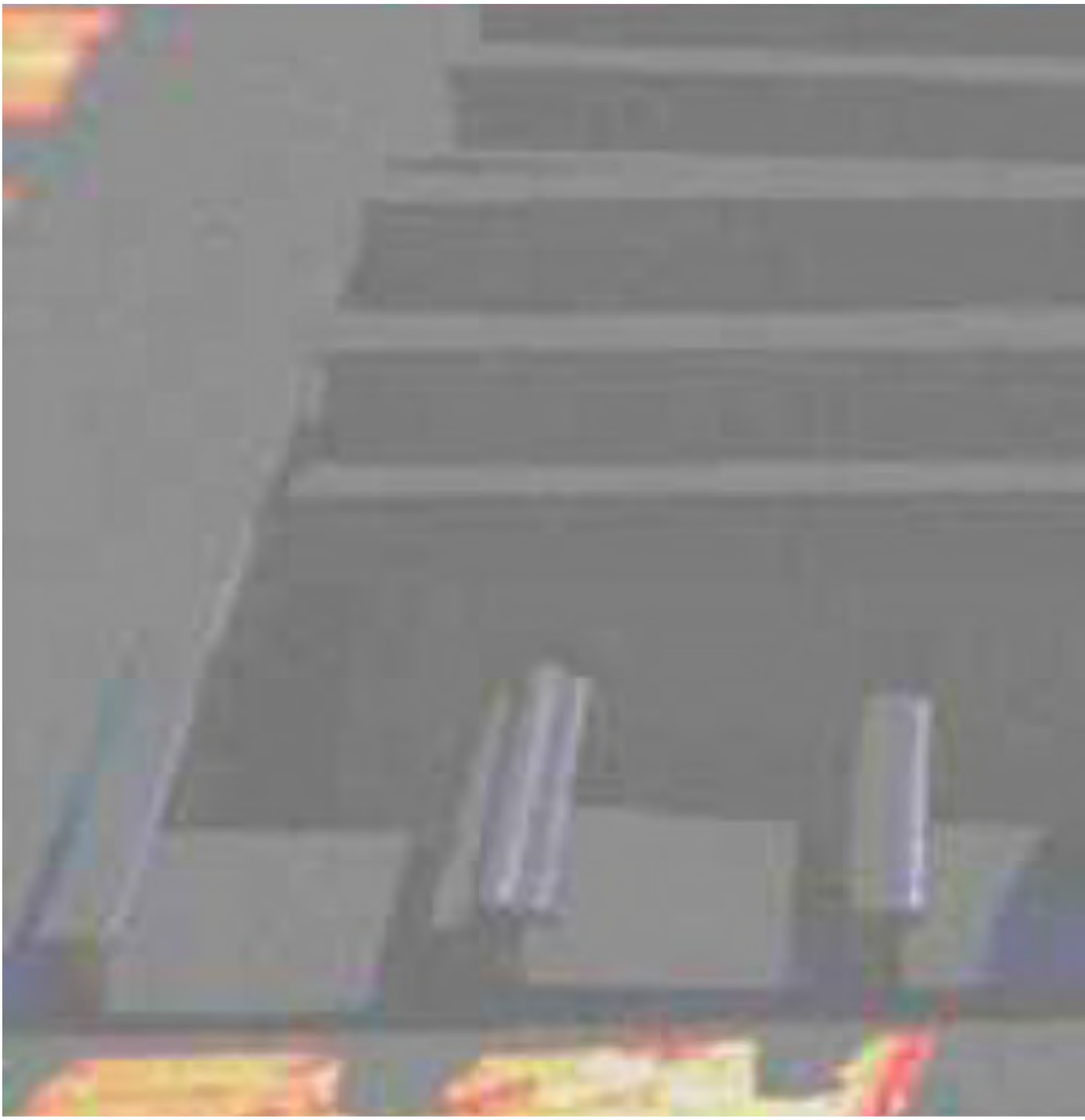
Introducing GEO HT, the unparalleled choice for lining in extreme temperature conditions, capable of withstanding temperatures exceeding 105°C. Tailored for resilience in elevated temperatures and harsh environmental conditions, GEO HT Liners boast unique properties that render them suitable for specialized applications. This geomembrane excels in providing a robust barrier against the challenges posed by high temperatures and harsh chemical conditions.

GEO HT's advanced composition ensures secure containment of hot liquids, positioning it as the optimal choice for critical applications in the oil and gas industry, power generation, and geothermal energy projects. Its resistance to high temperatures makes it indispensable in power plants, particularly for applications such as ash pond liners and thermal energy storage systems.

PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
Minimum	Minimum	Smooth	Black
500 microns	**2.8 Meters**	Textured	White
Maximum	Maximum	Embossed	Other
3000 microns	**8.0 Meters**		

GEO LOCK



APPLICATIONS

GEO lock bodies are used for a number of applications, these include but are not limited to:

-Concrete installation
-Walls insertion
-Connecting Geomembrane liners
-Waste water tunnels
-Water canals
-sewage systems
-Bridges

GEO LL

Hyma's GEO Lock is an HDPE moulded body that acts to attach Hyma's Geomembrane to concrete, enhancing mechanical properties by providing maximum anchorage.

GEO Lock has a 3 parallel T-anchors arrangements to be inserted into the wet concrete for mechanical anchorage. Prevents damage to the concrete caused by vibrations, thus providing longer lifetimes.

PROPERTIES

MATERIAL	COLOUR
HDPE	BLACK

GEO WELD

APPLICATIONS

GEO Weld welding rods are generally used in extrusion welding on polyolefin geomembrane such as:

-HDPE geomembrane

-LLDPE geomembrane

-FPP geomembrane

GEO LL

Hyma's GEO Weld is used in extrusion welding for welding the edges of overlapping geomembrane liners to form a continues bond. It has a polyethylene based formulation giving it a high welding ability and good compatibility with all types of Geomembranes produced by Hyma.

The molten exudate causes the surfaces of the sheets to fuse and after cooling the entire weld region cools and permanently bonds together. GEO weld can also be used for Patches, Seams around pipes, Difficult seams with poor accessibility and Sump Bottoms and corners

PROPERTIES

THICKNESSES	HYMA LINER COMPATIBILITY	ROLL LENGTH	COLOURS
4.0 mm 5.0 mm	Compatible With All Hyma Plastic Liners	500 M	Black Other

Geomembrane products

HYMA PLASTIC

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ENGLISH

HYMA PLASTIC

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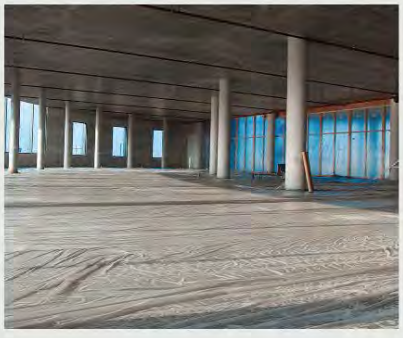


Construction Films

Vapour Barrier Films

Transparent PE Films

Since 1975

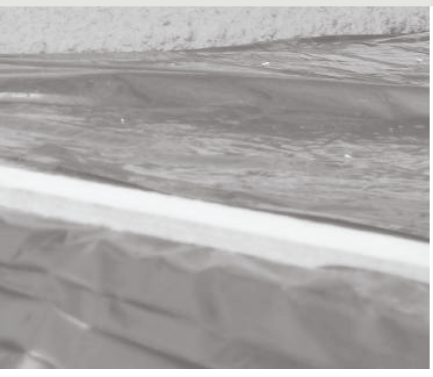
Pipe Sleeves

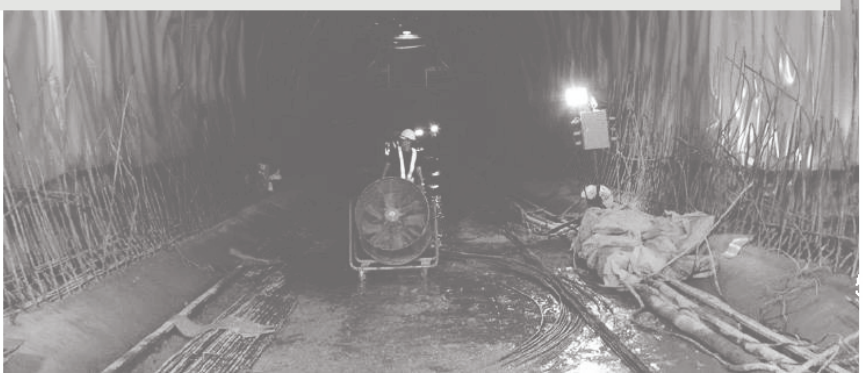
Warning Tapes

INCO

Hyma Plastic provides the Infrastructure & Construction industries with some of the finest PE films to suit many different situations. Our Vapour barriers are used in Europe and many other countries, while our warning tapes are used across the globe.

Our INCO products are guaranteed to fulfill construction requirements for our customers around the world, no matter the conditions or the intensity of use.





CONSTRUCTION FILMS

OVERVIEW

Introducing our cutting-edge Construction Films, meticulously engineered to redefine performance in the construction industry. These films are crafted with precision to provide unmatched strength, durability, and versatility on the job site. Whether used for temporary enclosures, moisture barriers, or surface protection, our LLDPE Construction Films deliver reliable performance in a wide range of applications.

APPLICATIONS

- Water insulation
- Waste material storage
- Leak prevention
- Construction insulation
- Branding and displaying
- Painting
- Protection from fluids
- Floor covering

PROPERTIES

THICHNESSES	WIDTHS	AVAILABLE EXTRAS	COLOURS
From 30 µ To 400 µ	From 1 M To 14 M	ANTI OXIDANTS ANTI UV PRINTING	Black White Other

VAPOUR BARRIERS

OVERVIEW

A vapour barrier is a film added to buildings in most parts of the world to act as an insulation for fluids. It also helps drain any fluids that may leak into the building due to moisture in the air and other thermal conditions.

Hyma's Vapour Barrier films are specially designed polyethylene membrane that acts as both an insulation layer and a vapour barrier. These films are manufactured with special care to reduce punctures and tears.

APPLICATIONS

Water insulation

Vapour protection

Vapour insulation

Preventing leakage within building

Moisture drainage

Moisture Proof film

PROPERTIES

THICHNESSES	WIDTHS	AVAILABLE EXTRAS	COLOURS
From 200 µ To 400 µ	From 1 M To 14 M	ANTI OXIDANTS ANTI UV PRINTING	White Green Other

TRANSPARENT PE FILMS

OVERVIEW

Hyma Plastic's Transparent PE Films are manufactured out of pure or recycled PE resins. These films are recommended for their clarity and ease of handling.

Our Transparent PE Films can be used as building covers, Insulations from moisture and liquids or to protect items during the construction and transport phases of a project.

APPLICATIONS

Water insulation

Vapour protection

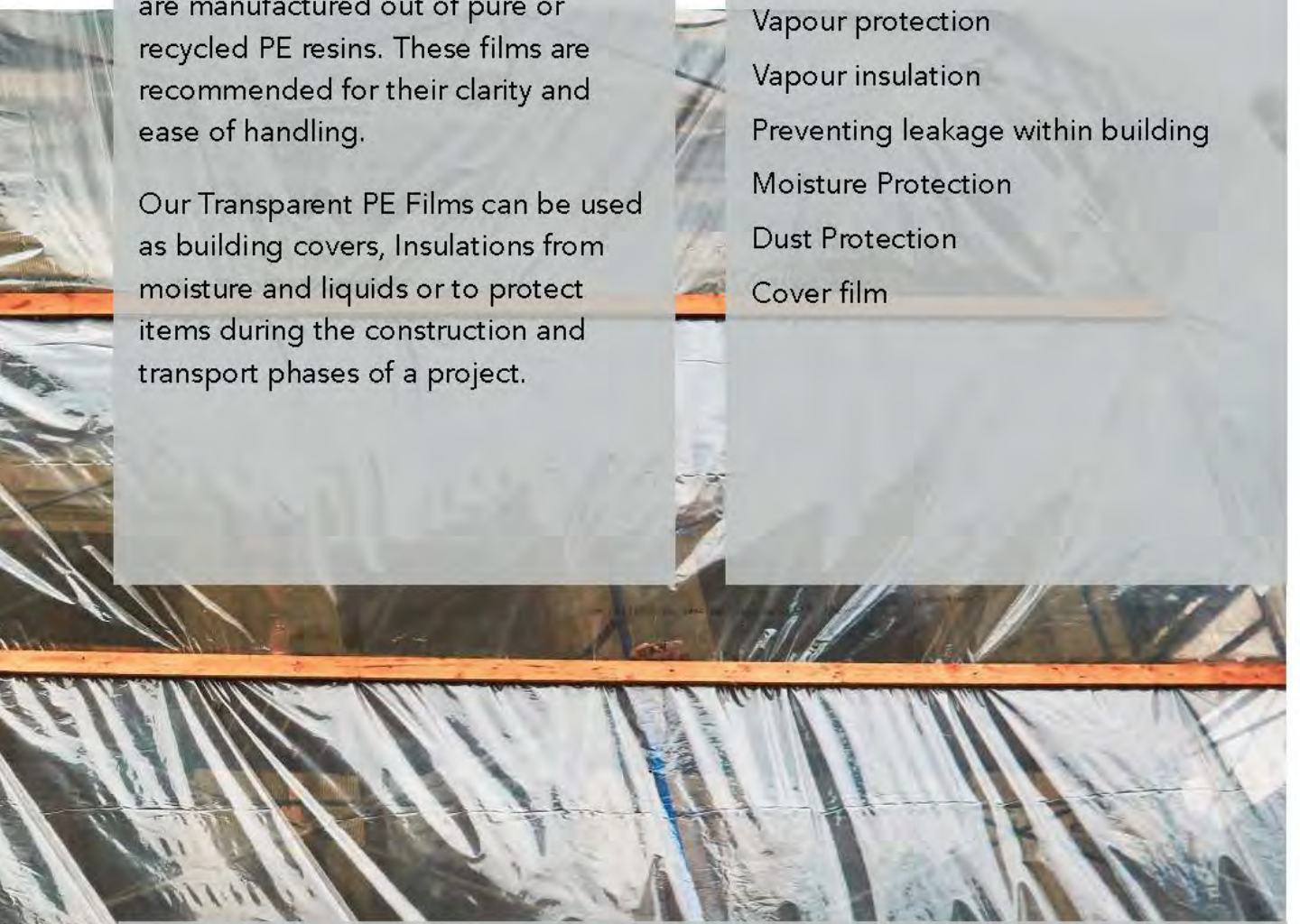
Vapour insulation

Preventing leakage within building

Moisture Protection

Dust Protection

Cover film



PROPERTIES

THICHNESSES	WIDTHS	SURFACE FINISH	COLOURS
From 200 µ To 400 µ	From 1 M To 14 M	Smooth	Transparent

OVERVIEW

Hyma's Sleeve is a PE tubular film of low-density polyethylene slipped over and fitted to a pipe at the time of laying for an easy, durable & cost effective insulant.

It is used to supplement the basic pipe coating in certain cases of highly corrosive soils or in the presence of stray currents and to isolate the pipe from the surrounding environment.

Hyma's sleeves can last up to 25 years, when installed correctly.

APPLICATIONS

Wrapping or slip over of:

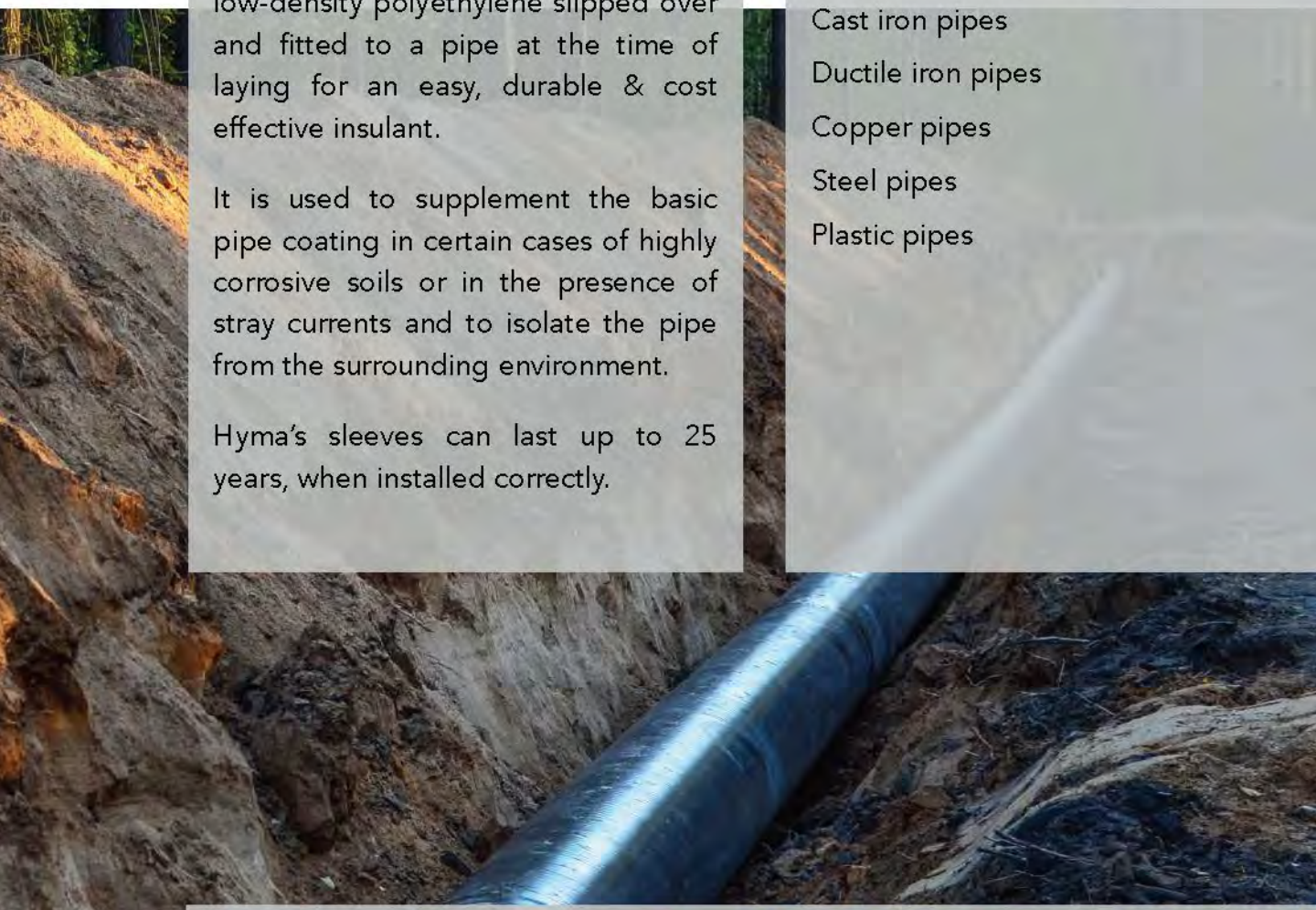
Cast iron pipes

Ductile iron pipes

Copper pipes

Steel pipes

Plastic pipes



PROPERTIES

THICHNESSES	WIDTHS	LENGTH	COLOURS
From 100 µ To 500 µ	From 0.3 M To 8.0 M	AS PER YOUR REQUEST	Black Blue Other

Certificates & Test Reports

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4422

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13362:2005

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Re certification audit due before 26/02/2024

Issue 2. Certified with SGS since26/04/2018.

Authorised by

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Luís Neves
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
Pólo Tecnológico de Lisboa, 6 piso 0, 1600-513 Lisboa – Portugal
T: +351 217104200; F: +351 217157527
e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4422

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane HDPE & LLDPE	0,5 - 3	Fluid barriers in the construction of canals

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Certificate of Conformity of the Factory Production Control
1029 – CPR – EG20/4423

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13491:2004 + EN 13491:2004/A1:2006

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Re certification audit due before 26/02/2024

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e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4423

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane HDPE & LLDPE	0,5 - 3	Fluid barriers in the construction of tunnels and underground structures

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4424

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13492:2004 + EN 13492:2004/A1:2006

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

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SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
Pólo Tecnológico de Lisboa, 6 piso 0, 1600-513 Lisboa – Portugal
T: +351 217104200; F: +351 217157527
e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4424

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane HDPE & LLDPE	0,5 - 3	Fluid barriers in the construction of liquid waste disposal sites, transfer stations and secondary containment

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4425

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13493:2005

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Re certification audit due before 26/02/2024

Issue 2. Certified with SGS since26/04/2018.

Authorised by

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Luís Neves
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
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e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control
1029 – CPR – EG20/4425

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane HDPE & LLDPE	0,5 - 3	Fluid barriers in the construction of solid waste storage and disposal sites

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Certificate of Conformity of the Factory Production Control
1029 – CPR – EG20/4426

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 15382:2013

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Re certification audit due before 26/02/2024

Issue 2. Certified with SGS since26/04/2016.

Authorised by

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Luís Neves
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
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Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4426

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane HDPE & LLDPE	0,5 - 3	Fluid barriers in infrastructure works, e.g. roads, railroads, runways of airports

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Certificate of Registration

This certificate has been awarded to

HYMA PLASTIC - HYMA FOAM

Head Office : 22 Obour Building, Salah Salem St., Nasr City, Cairo - Factory: Mansouria , Imbaba , Giza, Egypt

in recognition of the organization's Quality Management System which complies with

ISO 9001:2015

The scope of activities covered by this certificate is defined below

Manufacture of Plastic Products

Certificate Number 33997/A/0001/UK/En			
Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
27 May 2021	**6**	**21 January 2024**	**5**
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
28 May 2021	**0**	**22 January 2009**	**n/a**

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by

On behalf of the Schemes Manager

CERTIFICATE OF REGISTRATION

SIS CERT.™

We Do Not Sell, We Certify!

This Certificate has been awarded to

Hyma Plastic - Hyma Foam

Head office: 22 Obour Buildings, Salah Salem St., Nasr city, Cairo, Egypt
Factory: Kilo 28, Misr Alex Desert Road, Industrial zone, Abo Rawash, Giza, Egypt

In recognition of the organization's Management System
which complies with

ISO 9001:2015 (QMS)

The scope of activities covered by this certificate is defined below

Manufacturing of Food Stuff Flexible Packaging
Polyethylene & Geomembrane

EA Code: 14

Certificate Number: **SISEGYQ12202086742**
Date of Issue of Original Certificate: **21.12.2020**
Date of Issue of latest certificate: **21.12.2022**
Expiry Date: **20.12.2023**
Re-certification Due on: **20.12.2023**

Managing Director

Note: This is an accredited certificate issued by SIS Certifications Pvt. Ltd.

IAS ACCREDITED Management Systems Certification Body
MSCB-131

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Certified Organization is responsible for maintaining the compliance of the relevant standard rules. Any significant changes in the scope of the certification or standard referred above render this certificate invalid

Corporate office- **SIS Certifications Pvt. Ltd.**
Unit No. 514, 5th Floor, Vipul Business Park, Sector-48, Sohna Road, Gurgaon-122018, Haryana, India.
Key Location: 43 SAUDI BUILDINGS ST, QUBA SQUARE, CAIRO-EGYPT
International Key Locations: **Qatar, India, Peru, Italy, KSA, Nigeria & Malaysia.**
Email us:- support@siscertifications.com, Call /Whatsapp: +91-9643073391
The status of this certificate can be verified on "https://siscertifications.com
Web:- www.siscertifications.com

Issue No.: **03**

Certificate of Registration

This certificate has been awarded to

HYMA PLASTIC - HYMA FOAM

Head Office : 22 Obour Building, Salah Salem St., Nasr City, Cairo - Factory: Mansouria , Imbaba , Giza, Egypt

in recognition of the organization's Quality Management System which complies with

ISO 9001:2015

The scope of activities covered by this certificate is defined below

Manufacture of Plastic Products

Certificate Number **33997/A/0001/UK/En**

A certificate number of 0001, confirms the Client has a single site Certified & the site is their Head Office or Main site in relation to the Certified scope with URS. A certificate number of 0002, or greater (e.g.: xxxx/B/0002/UK/En) refers to a client that has more than one site certified with URS. as such, the following statement shall apply - 'The validity of this certificate depends on the validity of the main certificate'.

Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
22 January 2024	**7**	**21 January 2027**	**6**
Revision Date	**Revision Number**	**Original Certificate Issue Date**	**Scheme Number**
22 January 2024	**0**	**22 January 2009**	**n/a**

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by

Mukesh Singhal - On behalf of the Schemes Manager

UNITED REGISTRAR OF SYSTEMS URS ISO 9001

UKAS MANAGEMENT SYSTEMS 0043

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

CERTIFIED URS

If there is any doubt as to the authenticity of this certificate, please do not hesitate to contact the Head Office of the Group on info@urs-certification.com.
URS is a member of United Registrar of Systems (Holdings) Ltd, United House, 28 Poole Hill, Bournemouth, BH2 5PS, UK. Company Registration no. 5298466

Certificate of Registration

This certificate has been awarded to

HYMA PLASTIC - HYMA FOAM

Head Office : 22 Obour Building, Salah Salem St., Nasr City, Cairo - Factory: Mansouria , Imbaba , Giza, Egypt

in recognition of the organization's Environmental Management System which complies with

ISO 14001:2015

The scope of activities covered by this certificate is defined below

Manufacture of Plastic Products

Certificate Number 33997/B/0001/UK/En			
Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
27 May 2021	**5**	**21 January 2024**	**5**
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
27 May 2021	**0**	**22 January 2009**	**n/a**

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by

On behalf of the Schemes Manager

CERTIFICATE OF REGISTRATION

SIS CERT.™

We Do Not Sell, We Certify!

This Certificate has been awarded to

Hyma Plastic - Hyma Foam

Head office: 22 Obour Buildings, Salah Salem St., Nasr city, Cairo, Egypt
Factory: Kilo 28, Misr Alex Desert Road, Industrial zone, Abo Rawash, Giza, Egypt

In recognition of the organization's Management System which complies with

ISO 14001:2015 (EMS)

The scope of activities covered by this certificate is defined below

Manufacturing of Food Stuff Flexible Packaging Polyethylene & Geomembrane

Certificate Number: **SISEGYE12202013389**
Date of Issue of Original Certificate: **21.12.2020**
Date of Issue of latest certificate: **20.12.2021**
Expiry Date: **20.12.2022**
Re-certification Due on: **20.12.2023**

Managing Director

Note: This certificate is valid only if produced with the continuation letter after the surveillance is carried out successfully.

The Organization's documentation and Implementation has been reviewed and found to comply with the relevant standard rules. This certificate of Registration is based on the evaluation of the mentioned scope given above. Organization is responsible for maintaining the responsibilities of the relevant standard rules. Any significant changes in the scope of the certification or standard referred above render this certificate invalid. This is an accredited certificate issued by SIS Certifications Pvt. Ltd. sanctioned for issue by International Accreditation Services , 3060 Saturn Street Suite 100 Brea, California 92821-1732, USA.

Corporate office(SIS):- Unit No. 514, 5th Floor, Vipul Business Park, Sohna Road, Sector-48, Gurgaon-122018, Haryana, India.
International office(SIS):- 43 SAUDI BUILDINGS ST, QUBA SQUARE, CAIRO-EGYPT
Email us :- support@siscertifications.com, info@siscertifications.co.in . Call:- +91 99105 01396, +91 96430 73391. Web:- http://www.siscertifications.co.in, www.siscertifications.com
The status of this certificate can be verified on "http://www.siscertifications.com

Issue No.: **02**

IAS ACCREDITED Management Systems Certification Body MSCB-131

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Certificate of Registration

This certificate has been awarded to

HYMA PLASTIC - HYMA FOAM

Head Office : 22 Obour Building, Salah Salem St., Nasr City, Cairo - Factory: Mansouria , Imbaba , Giza, Egypt

in recognition of the organization's Environmental Management System which complies with

ISO 14001:2015

The scope of activities covered by this certificate is defined below

Manufacture of Plastic Products

Certificate Number **33997/B/0001/UK/En**

A certificate number of 0001, confirms the Client has a single site Certified & the site is their Head Office or Main site in relation to the Certified scope with URS. A certificate number of 0002, or greater (e.g. 1000/B/0002/UK/En) refers to a client that has more than one site certified with URS, as such, the following statement shall apply - 'The validity of this certificate depends on the validity of the main certificate'.

Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
02 February 2024	**6**	**21 January 2027**	**6**
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
02 February 2024	**0**	**22 January 2009**	**n/a**

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by

Mukesh Singhal - On behalf of the Schemes Manager

UNITED REGISTRAR OF SYSTEMS URS ISO 14001

UKAS MANAGEMENT SYSTEMS 0043

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

CERTIFICATE OF REGISTRATION

SIS CERT.™

We Do Not Sell, We Certify!

This Certificate has been awarded to

Hyma Plastic - Hyma Foam

Head office: 22 Obour Buildings, Salah Salem St., Nasr city, Cairo – Egypt

Factory: Kilo 28, Misr Alex Desert Road, Industrial zone, Abo Rawash , Giza – Egypt

In recognition of the organization's Management System which complies with

ISO 22000:2018 (FSMS)

The scope of activities covered by this certificate is defined below

Manufacturing of food stuff flexible packaging polyethylene & Geomembrane

Category:- I

Certificate Number: **SIS040323F067**
Date of Issue of Original Certificate: **03.03.2023**
Date of Issue of latest certificate: **03.03.2023**
Expiry Date: **02.03.2024**
Re-certification Due on: **02.03.2026**

Managing Director

SIS CERTIFICATIONS PVT. LTD.

IAS ACCREDITED Management Systems Certification Body
MSCB-131

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Note: This is an accredited certificate issued by SIS Certifications Pvt. Ltd.

Certified Organization is responsible for maintaining the compliance of the relevant standard rules. Any significant changes in the scope of the certification or standard referred above render this certificate invalid

Corporate office- **SIS Certifications Pvt. Ltd.**
Unit No. 514, 5th Floor, Vipul Business Park, Sector-48, Sohna Road, Gurgaon-122018, Haryana, India.
Key Location: 43 SAUDI BUILDINGS ST, QUBA SQUARE, CAIRO-EGYPT
International Key Locations: **Qatar, India, Peru, Italy, KSA, Nigeria & Malaysia.**
Email us:- support@siscertifications.com, Call /Whatsapp: +91-9643073391
The status of this certificate can be verified on "https://siscertifications.com
Web:- www.siscertifications.com

Issue No.: **01**

Certificate of Registration

This certificate has been awarded to

HYMA PLASTIC - HYMA FOAM

Head Office : 22 Obour Building, Salah Salem St., Nasr City, Cairo - Factory: Mansouria , Imbaba , Giza, Egypt

in recognition of the organization's Occupational Health and Safety Management System which complies with

ISO 45001:2018

The scope of activities covered by this certificate is defined below

Manufacture of Plastic Products

Certificate Number **33997/D/0001/UK/En**

A certificate number of 0001, confirms the Client has a single site Certified & the site is their Head Office or Main site in relation to the Certified scope with URS. A certificate number of 0002, or greater (e.g. xxxx/B/0002/UK/En) refers to a client that has more than one site certified with URS, as such, the following statement shall apply : 'The validity of this certificate depends on the validity of the main certificate'.

Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
26 May 2024	**2**	**25 May 2027**	**2**
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
06 February 2024	**0**	**26 May 2021**	**n/a**

For detailed explanation for the data fields above, refer to http://www.urs-holdings.com/logos-and-regulations

Issued by

Mukesh Singhal - On behalf of the Schemes Manager

MATERIAL SAFETY DATA SHEET

POLYETHYLENE GEOMEMBRANE – GEO HD

1- Identification of the Product and Company Undertaking

Product Name : **PE GEOMEMBRANE**

Chemical Name : **Polyethylene Polymer**

Supplier : **HYMA PLASTIC-HYMA FOAM**
22 Hadaeq EL Obour –salah salem,cairo,Egypt
Pox:8007 Nasr city-Cairo-Egypt
TEL: (+202)24011626
www.hyma-plastic.com

2-Composition / Information on Ingredients

Mixture: consists of polyethylene resin, carbon black and antioxidant additive.

3-Hazards Identification

Under normal use and handling, this product is not expected to create any physical or health hazards. Excessive heating may result in the generation of smoke or fumes containing toxic chemicals due to decomposition of the components. These fumes may be irritating to the respiratory tract and eyes.

4-First Aid Measures

SKIN CONTACT : not expected to cause prolonged or significant irritation.
EYE CONTACT : not expected to cause prolonged or significant eye Irritation. If this product is heated , thermal burns may result from eye contact.

5-Fire Fighting Measures

NFPA Ratings: Health : 1 Flammability : 1 Reactivity : 0

This product will only burn in direct flame and with temperatures in excess of 360°C.

Flash Point : NA

Flammability (Explosive) Limits(% by volume in air): Lower : NA Upper : NA

5.1. Extinguishing media : For minor fires, carbon dioxide (CO2) or powder , water
For more extensive fires: foam ,water spray (mist) to cool the surfaces exposed to the fire.
Not to be used Do not use water jets (stick jets)for extinguishing fire since they could help to spread the flames.

5.2. Special hazards arising from the substance: Complete combustion, with an excess of oxygen forms, carbon dioxide (CO2) and water vapor

Cracked products:
aldehydes, ketones, acetone, acetaldehyde, formaldehyde, acrolein, hydrocarbons and volatile fatty acids.

6-Physical & Chemical Properties

Physical state	: solid
Color	: Black
Odor	: odorless
Solubility in water	: Insoluble
Auto Ignition Temp.	: not available
Melting Point	: 135 – 140 °C
Specific Gravity	: ≥ 0.940 g/cm³ **For GEO HD**
pH	: NA

7- Stability and Reactivity

Stability: Product as delivered is stable
Conditions to Avoid: Keep away from strong oxidizing agents.

8- Hazardous Decomposition

Not expected to occur.

9-Handling and Storage

The Geomembrane rolls are wide and heavy, use appropriate equipment to handle it securely. The Membrane can be very slippery at any time, use appropriate footwear to walk on it. Store at ambient temperature, away from heating source or oxidizing materials, in a cool dry place with adequate ventilation.

11-Toxicology Information

No acute toxicity effects are known.

12- Ecological Information

These products have not been tested for environmental effects. These products are not expected to present any environmental problems.

13- Disposal Considerations

Recycle, if possible, disposal is conducted through landfill or authorized waste dump in accordance with local, or local laws. Incinerate or landfill in accordance with local regulations.

14- Transport Information

TDG (Canada)	: Not regulated
DOT (USA)	: Not regulated
IMDG (International Maritime Dangerous Goods)	: Not regulated
ICAO (International Civil Aviation Organization)	: Not regulated
RID/ADR	: Not regulated

15- Rregulatory Information

WHIMS classification: Not considered a controlled product.
CANADA: All the components of this material are on the Canadian Domestic Substances List (DSL).
UNITED STATES: All the components of this material are on the Toxic Substances Control Act (TSCA)
EUROPEAN UNION: All the components of this material are in compliance with the EU Sevent Amendment Directive 92/32/EEC.

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4421

In compliance with **Regulation 305/2011/EU** of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Geosynthetic barriers, described in annex.

placed on the market under the name or trade mark of

Hyma Plastic - Hyma Foam

HO: 22 Hadaeq El-Obour Salah Salem Street Nasr City, Cairo, EGYPT

and produced in the manufacturing plant

Hyma Plastic - Hyma Foam

Site 1: Industrial Zone Abou Rawash Km 28.5 Cairo Alex desert road, EGYPT

CE
1029

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13361:2004 + EN 13361:2004/A1:2006

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 28/09/2021until 26/04/2024, and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Re certification audit due before 26/02/2024

Issue 2. Certified with SGS since26/04/2018.

Authorised by

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

Luís Neves
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
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T: +351 217104200; F: +351 217157527
e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control

1029 – CPR – EG20/4421

Annex 1

Product(s): Geosynthetic barriers.

CE
1029

Product Description	Thickness (mm)	Intended use
Geomembrane (HDPE) & (LLDPE)	0,5 - 3	Fluid barriers in the construction of reservoirs and dams

IPAC acreditação
C0001
ISO/IEC 17065
Produtos

GEOMEMBRANE TEST RESULTS

TRI Client: HYMA Plastic-HYMA Foam Co.

Material: Smooth HDPE Geomembrane
Sample Identification: 1031009061 **0.75 mm**
TRI Log #: E2334-56-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
SP-NCTL Stress Crack Resistance (ASTM D 5397, App)													
SURFACTANT:	CO-630												
EXPOSURE PERIOD:	300 hours												
DATE TEST STARTED:	4-Nov-09												
TEST TEMPERATURE:	50C												
Transverse direction yield stress:	20.7 (MPa)												
x 30%	6.21 (x 0.30)												
x hinge thickness (in)	0.61 (80% of thickness)												
x specimen width	3.15 (3.18 mm)												
Load	11.8 (N)												
Mechanical Advantage	5												
Lever Weight	1.34 (N)												
Grip Weight	0.4005 (N)												
Applied load = (Load - Lever Weight + Grip Weight)/Mechanical Advantage =	2.17 N = 221 grams												
Replicate No.:	1	2	3	4	5								
No. Hours to Failure:	>300	>300	>300	>300	>300						>300		300 min

UV Resistance (GRI GM11)

The resistance to degradation due to exposure to ultraviolet light and moisture was determined in accordance with GRI-GM11, Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device. This standard covers the basic principles for using the QUV apparatus to accelerate the weathering of geomembranes using UVA bulbs and condensation. To comply with Specification GRI GM13, the sample was exposed to 1600 hours of UV exposure composed of 80 cycles of UA at 75 C for 20 hours followed by condensation at 60 C for 4 hours. The High Pressure Oxidative Induction Time (HPOIT) was evaluated before and after the exposure and results were as follows.

		MEAN	PERCENT RETAINED
HPOIT (minutes) - Baseline	894	894	
HPOIT (minutes) - After QUV Aging	526	526	59
			50 min

Note: No surface cracking was observed.

Oven Aging (ASTM D 5721)

The geomembrane was exposed to 90 days of elevated temperature exposure in an air oven maintained at 85°C ± 0.5°C in accordance with ASTM D 5721-95, Standard Practice for Air-Oven Aging of Polyolefin Geomembranes. Oxidative Induction Time (OIT) was tested for after exposure and compared to values generated for unexposed material. The results are provided below.

		MEAN	PERCENT RETAINED
OIT (minutes) - Unexposed	227	227	
OIT (minutes) - After Oven Aging	68	68	30
HPOIT (minutes) - Baseline	894	894	
HPOIT (minutes) - After Oven Aging	729	729	82
			80 min

Note: No surface cracking was observed.

MD Machine Direction TD Transverse Direction NA Not Available

ORIGINAL

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: HYMA Plastic-HYMA Foam Co.

Material: Smooth HDPE Geomembrane
Sample Identification: 1031009061 **0.75 mm**
TRI Log #: E2334-56-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5199)													
Thickness (mm)	0.81	0.76	0.79	0.79	0.79	0.79	0.76	0.79	0.79	0.81	**0.79**	0.02	0.75 min
											0.76	<< min	0.68 min
Density (ASTM D 1505)													
Density (g/cm3)	0.946	0.946	0.946								**0.946**	0.000	0.940 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.23	2.22									**2.23**	0 01	2.0-3.0
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (N/mm)	14.4	14.9	15.1	14.2	15.8						**14.9**	0.6	11 min
TD Yield Strength (N/mm)	16.6	16.6	16.5	15.2	17.0						**16.4**	0.7	11 min
MD Break Strength (N/mm)	29.3	20.5	24.5	29.1	27.0						**26.1**	3.7	20 min
TD Break Strength (N/mm)	29.8	28.7	26.6	26.1	28.6						**28.0**	1.5	20 min
MD Yield Elongation (%)	18	19	19	19	19						**19**	0	12 min
TD Yield Elongation (%)	16	16	16	16	16						**16**	0	12 min
MD Break Elongation (%)	871	671	781	931	815						**814**	98	700 min
TD Break Elongation (%)	1006	968	898	920	948						**948**	42	700 min
Puncture Resistance (ASTM D 4833)													
Puncture Strength (N)	392	378	378	374	383						**381**	7	240 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (N)	129	125	125	125	125	120	116	120	120	120	**122**	4	93 min
MD Tear Strength (N)	120	111	111	111	107	120	111	125	116	102	**113**	7	93 min

MD Machine Direction TD Transverse Direction NA Not Available

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

ORIGINAL

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: HYMA Plastic-HYMA Foam Co.

Material: Smooth HDPE Geomembrane
Sample Identification: 1031009051 **1.0 mm**
TRI Log #: E2334-56-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5199)													
Thickness (mm)	1.04	1.04	1.09	1.07	1.09	1.09	1.04	1.04	1.07	1.02	**1.06**	0.03	1.00 min
											1.02	<< min	0.90 min
Density (ASTM D 1505)													
Density (g/cm3)	0.948	0.948	0.948								**0.948**	0.000	0.940 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.23	2.23									**2.23**	0.00	2.0-3.0
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (N/mm)	19.8	20.7	18.7	18.4	21.4						**19.8**	1.3	15 min
TD Yield Strength (N/mm)	21.5	22.6	21.5	21.2	21.9						**21.8**	0.5	15 min
MD Break Strength (N/mm)	33.5	35.7	38.9	33.6	34.2						**35.2**	2.3	27 min
TD Break Strength (N/mm)	28.7	37.0	38.7	36.3	34.0						**34.9**	3.9	27 min
MD Yield Elongation (%)	19	16	19	19	19						**18**	1	12 min
TD Yield Elongation (%)	17	17	17	17	17						**17**	0	12 min
MD Break Elongation (%)	823	864	879	853	794						**842**	34	700 min
TD Break Elongation (%)	779	931	1006	940	874						**906**	85	700 min
Puncture Resistance (ASTM D 4833)													
Puncture Strength (N)	481	481	463	472	418						**463**	26	320 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (N)	165	160	165	174	160	174	160	174	174	174	**168**	6	125 min
MD Tear Strength (N)	151	156	156	182	169	160	165	142	169	169	**162**	11	125 min

MD Machine Direction TD Transverse Direction NA Not Available

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
SP-NCTL Stress Crack Resistance (ASTM D 5397, App)													
SURFACTANT:	CO-630												
EXPOSURE PERIOD:	300 hrs												
DATE TEST STARTED:	4-Nov-09												
TEST TEMPERATURE:	50C												

Transverse direction yield stress: 21.0 (MPa)
x 30% 6.29 (x 0.30)
x hinge thickness (in) 0.81 (80% of thickness)
x specimen width 3.15 (3.18 mm)
Load 15.9 (N)

Mechanical Advantage 5
Lever Weight 1.34 (N)
Grip Weight 0.4005 (N)

Applied load = (Load - Lever Weight + Grip Weight)/Mechanical Advantage = 2.99 N = 305 grams

Replicate No.:	1	2	3	4	5		
No. Hours to Failure:	>300	>300	>300	>300	>300	>300	300 min

UV Resistance (GRI GM11) data pending

The resistance to degradation due to exposure to ultraviolet light and moisture was determined in accordance with GRI-GM11, Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device. This standard covers the basic principles for using the QUV apparatus to accelerate the weathering of geomembranes using UVA bulbs and condensation. To comply with Specification GRI GM13, the sample was exposed to 1600 hours of UV exposure composed of 80 cycles of UA at 75 C for 20 hours followed by condensation at 60 C for 4 hours. The High Pressure Oxidative Induction Time (HPOIT) was evaluated before and after the exposure and results were as follows.

			PERCENT RETAINED
HPOIT (minutes) - Baseline	887	887	
HPOIT (minutes) - After QUV Aging	598	598	67
			50 min

Note: No surface cracking was observed.

Oven Aging (ASTM D 5721)

The geomembrane was exposed to 90 days of elevated temperature exposure in an air oven maintained at 85°C ± 0.5°C in accordance with ASTM D 5721-95, Standard Practice for Air-Oven Aging of Polyolefin Geomembranes. Oxidative Induction Time (OIT) was tested for after exposure and compared to values generated for unexposed material. The results are provided below.

			PERCENT RETAINED
OIT (minutes) - Unexposed	238	238	
OIT (minutes) - After Oven Aging	95	95	40
HPOIT (minutes) - Baseline	887	887	
HPOIT (minutes) - After Oven Aging	845	845	95
			80 min

Note: No surface cracking was observed.

MD Machine Direction TD Transverse Direction NA Not Available

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GEOMEMBRANE TEST RESULTS

TRI Client: HYMA Plastic-HYMA Foam Co.

Material: Smooth HDPE Geomembrane
Sample Identification: 1270909051 **1.5 mm**
TRI Log #: E2334-56-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5199)													
Thickness (mm)	1.52	1.52	1.52	1.52	1.57	1.57	1.55	1.55	1.57	1.55	**1.55**	0.02	1.50 min
											1.52	<< min	1.35 min
Density (ASTM D 1505)													
Density (g/cm3)	0.948	0.948	0.948								**0.948**	0.000	0.940 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.25	2.28									**2.27**	0.02	2.0-3.0
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (N/mm)	30.1	29.8	29.8	29.8	29.8						**29.9**	0.2	22 min
TD Yield Strength (N/mm)	31.0	31.2	31.0	31.2	32.1						**31.3**	0.4	22 min
MD Break Strength (N/mm)	54.1	41.0	54.3	55.5	54.3						**51.9**	6.1	40 min
TD Break Strength (N/mm)	44.9	52.9	53.4	48.0	55.4						**50.9**	4.3	40 min
MD Yield Elongation (%)	19	19	19	19	19						**19**	0	12 min
TD Yield Elongation (%)	17	17	17	17	19						**17**	1	12 min
MD Break Elongation (%)	908	721	911	914	914						**874**	85	700 min
TD Break Elongation (%)	801	931	926	836	948						**889**	65	700 min
Puncture Resistance (ASTM D 4833)													
Puncture Strength (N)	672	663	672	654	645						**661**	12	480 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (N)	263	254	254	254	263	258	249	263	263	263	**258**	5	187 min
MD Tear Strength (N)	249	249	236	258	231	245	245	258	249	254	**247**	9	187 min

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Material: Smooth HDPE Geomembrane
Sample Identification: 1270909051 **1.5 mm**
TRI Log #: E2334-56-03

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
SP-NCTL Stress Crack Resistance (ASTM D 5397, App)													
SURFACTANT:	CO-630												
EXPOSURE PERIOD:	300 hours												
DATE TEST STARTED:	4-Nov-09												
TEST TEMPERATURE:	50C												

Transverse direction yield stress: 20.1 (MPa)
x 30% 6.04 (x 0.30)
x hinge thickness (in) 1.20 (80% of thickness)
x specimen width 3.15 (3.18 mm)
Load 22.5 (N)

Mechanical Advantage 5
Lever Weight 1.34 (N)
Grip Weight 0.4005 (N)

Applied load = (Load - Lever Weight + Grip Weight)/Mechanical Advantage = 4.31 N = 440 grams

Replicate No.:	1	2	3	4	5			
No Hours to Failure:	>300	>300	>300	>300	>300	>300		300 min

UV Resistance (GRI GM11)

The resistance to degradation due to exposure to ultraviolet light and moisture was determined in accordance with GRI-GM11, Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device. This standard covers the basic principles for using the QUV apparatus to accelerate the weathering of geomembranes using UVA bulbs and condensation. To comply with Specification GRI GM13, the sample was exposed to 1600 hours of UV exposure composed of 80 cycles of UA at 75 C for 20 hours followed by condensation at 60 C for 4 hours. The High Pressure Oxidative Induction Time (HPOIT) was evaluated before and after the exposure and results were as follows.

			PERCENT RETAINED
HPOIT (minutes) - Baseline	711	711	
HPOIT (minutes) - After QUV Aging	558	558	78
			50 min

Note: No surface cracking was observed.

Oven Aging (ASTM D 5721)

The geomembrane was exposed to 90 days of elevated temperature exposure in an air oven maintained at 85°C ± 0.5°C in accordance with ASTM D 5721-95, Standard Practice for Air-Oven Aging of Polyolefin Geomembranes. Oxidative Induction Time (OIT) was tested for after exposure and compared to values generated for unexposed material. The results are provided below.

			PERCENT RETAINED
OIT (minutes) - Unexposed	172	172	
OIT (minutes) - After Oven Aging	52	52	30
HPOIT (minutes) - Baseline	711	711	
HPOIT (minutes) - After Oven Aging	570	570	80
			80 min

Note: No surface cracking was observed.

MD Machine Direction TD Transverse Direction NA Not Available

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