



### STYRO Insulations Mat. Ind. (L.L.C)

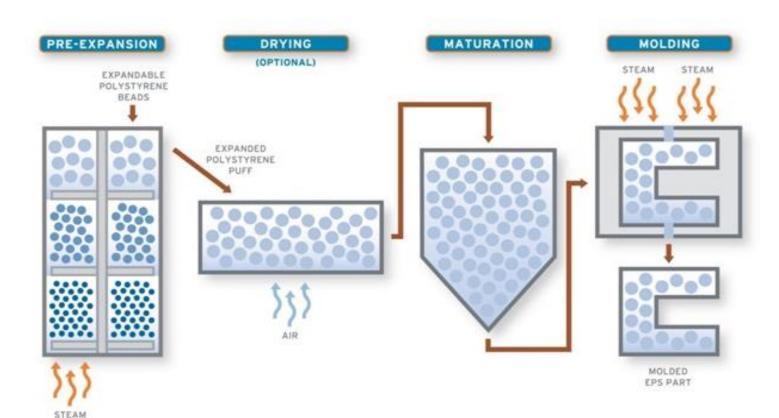
### Established in January 2000

STYRO provides complete integrated insulation and construction solutions for residential, commercial infrastructural and governmental structures. Our services cover consultation, materials and installation of various products that insure proper insulation from liquid, gases, and soundproofing; in addition to our non-dispensable elements for constructions.



## **Manufacturing Process**

Raw material  $\rightarrow$  BASF – Germany - Receiving raw material from the supplier on that time we verified the certificate of analysis for beads size, percentage of pentane,



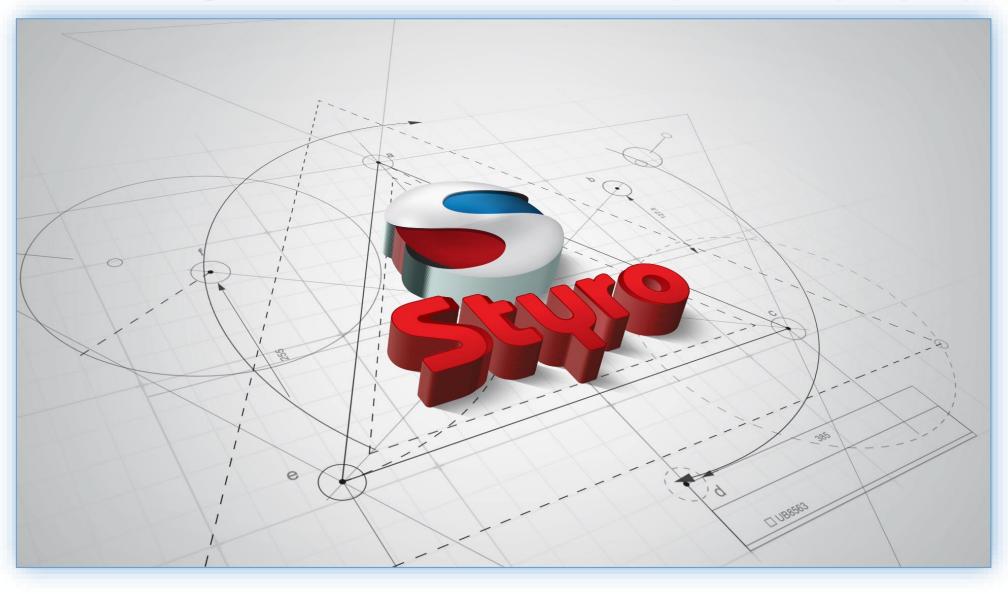
**Pre-expansion**  $\rightarrow$  Upon contact with steam the prefoaming agent found within the polystyrene beads (pentane) starts to boil and the beads are expanded to between 40 to 50 times their original volume.

**Beads curing**  $\rightarrow$  Normally expanded beads will be stored from 4 to 24 hrs in the aerated silo bags. In order to reach an equilibrium temperature & pressure.

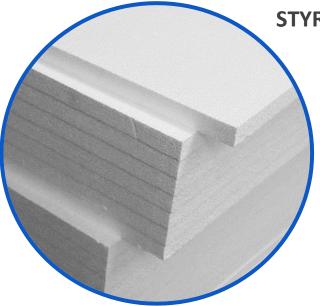
Block moulding  $\rightarrow$  The beads are placed within a mould and again re-heated with steam. The prefoamed beads expand further, completely fill the mould cavity and fuse together. The beads are moulded to form block and customized products.

Blocks curing  $\rightarrow$  Moulded EPS products are kept for drying purpose for at least 3 – 4 weeks to get good dimensional stability, compressive strength and smooth surface finish during cutting process.

### Manufacturing Process of STYRO Expanded polystyrene

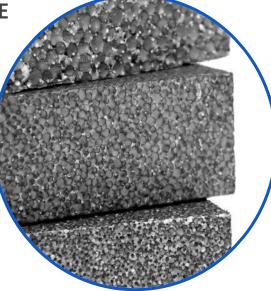


### **STYRO Products**



### **STYRO EXPANDED POLYSTYRENE**

Expanded Polystyrene (EPS) is a generic term for polystyrene and styrene copolymers. It is a rigid cellular plastic foam material derived from petroleum and natural gas by products.



#### **STYRO GRAYPOR**

STYRO Graypor is an energy-efficient,costeffective, innovative, grey-color EPS insulation material introduced by STYRO provided by BASF. Its Infrared absorbers and reflectors prevent the heat dissipation caused by radiation.

# Non-Polluting material

Our products is free from :

Free from Ozone depleting substances ( CFS ,HCFC ,Halons and Methyl bromide )

Free from Brominated compounds (PBPEs and PBBs)

Free from lead ,ladmium ,chromium (VI) and mercury

Free from asbestos content .





#### **DECLARATION LETTER**

To Whom it May Concern,

#### **Environment Impact Factors ODP, CFC & GWP**

**<u>ODP=0</u>** – The ODP or (Ozone Depletion Potential) is the potential for a single molecule of the refrigerate to destroy the Ozone Layer.

<u>GWP<5</u> – Since it has no HCFC/ CFC Compound it comes under the group of GWP.

<u>EPS contains no CFC's, HCFC's</u>, it is not noxious, and it is physically and chemically inert. It contains no known biological or physiological irritant, thus it is **Environment Friendly**, since it has no Chlorine content.



### Environment Impact factors

 So , STYRO Products are comply with LEED and estidama requirements



### ▪ TVOC →0.22 mg/m<sup>3</sup>

### **Technical Data Sheets**



### **STYRO GRAYPOR**

Technical and Physical Properties

sb	ASTM C 578	ΤΥΡΕ ΧΙ	ΤΥΡΕ Ι	TYPE VIII	ΤΥΡΕ 🛙	ΤΥΡΕ ΙΧ			
dar	BS 3837	LD	SD	HD	EHD	UHD			
Standards	Product	Graypor 150	Graypor 180	Graypor 220	Graypor 290	Graypor 380			
	Density	12-15	15-18	18-22	22-29	29-38			
				(Kg/m³)					
	Compressive Resistance	35	69	90	104	173			
	Resistance	(	@ yield or 10 % de	formation, which o	ccurs first, min kPa	)			
	Thermal Resistance	0.75	0.78	0.79	0.79	0.79			
	R-Value	( of 25	.4 mm thickness @	mean temperature	of 24 ± 1 °C min,K	.m²/W )			
	Thermal Conductivity	0.0335	0.0322	0.0321	0.0320	0.0320			
ies	K-Value	( max, W/m.K @ 35 °C and 60 % RH, as per independent tests )							
perti	Flexural	70	173	208	240	345			
Pro	Strength			(min, kPa)					
Physical Properties	Water Vapor Permeance	5	5	3.5	3.5	2.5			
Phy	Permeance	( of 25.4 mm thickness, max, perm )							
	Water Absorption	4	4	3	3	2			
	Absorption	( total immersion, max, volume % )							
	Dimensional Stability	2.0	2.0	2.0	2.0	2.0			
	Stability		(chan	ge in dimensions, m	nax % )				
	Oxygen Index	24	24	24	24	24			
	62553			( min, volume %)					
	Flame Spread Index	5	5	5	5	5			
	mdex		( max, as per surfa	ce burning characte	eristics-UL 723)				
	Smoke Developed	20	20	20	20	20			
	Developed		( max, as per surfa	ce burning characte	eristics-UL 723)				



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### **STYRO Expanded Polystyrene (EPS)** Technical and Physical Properties

ş	ASTM C 578	TYPE XI	TYPE I	TYPE VIII	TYPE II	TYPE IX	TYPE XIV	TYPE XV		
Jarc	BS 3837	LD	SD	HD	EHD	UHD	SHD	XD		
Standards	Product	STYRO 150	STYRO 180	STYRO 220	STYRO 290	STYRO 380	STYRO 460	STYRO 500		
	Density	12-15	15-18	18-22	22-29	29-38	38-46	min 46		
					(Kg/m³)					
	Compressive	35	80.8	120	141	205	285	422		
	Resistance			(@10%	deformation, l	(Pa)				
	Thermal Resistance	0.60	0.64	0.67	0.71	0.72	0.73	0.74		
	R-Value		( of 25.4 mm	n thickness @ n	nean temperat	ure of 24 ± 1 °	C min,K.m²/W )			
	Thermal Conductivity	0.0422	0.0395	0.0377	0.0354	0.0353	0.0348	0.0341		
	K-Value	( max, W/m.K @ 35 °C and 60 % RH )								
ies	Flexural Strength	70	185.8	228.1	260	352.9	442.3	525.1		
bert		(min, kPa)								
Prop	Water Vapor	3.5	3.3	3.2	3.1	2.7	2.5	2.2		
e	Permeance	( of 25.4 mm thickness, max, perm )								
Physical Properties	Water	2.0	1.8	1.6	1.3	1.1	0.9	0.7		
₽.	Absorption		( total immersion, <b>max</b> , volume % )							
	Dimensional	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
	Stability			(change	in dimensions	, max % )				
	Oxygen Index	24	24	24	24	24	24	24		
				(	min, volume %	5)				
	Flame Spread	5	5	5	5	5	5	5		
	Index		( max, a	as per surface b	urning charact	eristics ASTM E	84-UI 723 )			
	Smoke	5	5	5	5	5	5	5		
	Developed	( max, as per surface burning characteristics ASTM E84-UI 723 )								



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## STYRO PRODUCTS ARE COMPLY WITH ASTM C578

#### C578 - 19

#### TABLE 1 Physical Property Requirements of RCPS Thermal Insulation

Norm 1—It is possible that values for properties listed in this table will be affected by the presence of a surface skin which is a result of the manufacturing process. The values for Parket MIII properties listed in this table must be generated on material with the surface skin removed. Where products are tested with skines-in-parket, this condition shall be noted in the test report.

Note 2-Type III has been deleted because it is no longer available.

Norm 3—In addition to the thermal resistance values in Table 1, values at mean temperatures of 25  $\pm$  2°F (4  $\pm$  1°C), 40  $\pm$  2°F (4  $\pm$  1°C), and 110  $\pm$  2°F (43  $\pm$  1°C) are provided in X1.7 for information purposes.

Nom 4—Values quoted are maximum values for 1.00 in (25.4 mm) thick samples with natural skins intact. Lower values will result for thicker materials. Where water vapor permeance is a design issue, consult manufacturer.

Norm 5-IIt is acceptable to determine the values for thermal resistance listed in this table on product at a thickness other than 1 in. (25.4 mm) in accordance with 7.2.2.1. When tested at a thickness other than 1 in. (25.4 mm), the thermal resistance per inch shall meet the minimum requirement.

Classification	Type XI	Type I	Type VIII	Type II	Type IX	Type XIV	Type XV	Type XII	Type X	Type XIII	Type IV	Type VI	Type VII	Type V
Compressive resistance at yield or 10 % deformation, whichever occurs first (wth skins intact), min, psi (kPa)	5.0 (35)	10.0 (69)	13.0 (90)	15.0 (104)	25.0 (173)	40.0 (276)	60.0 (414)	15.0 (104)	15.0 (104)	20.0 (138)	25.0 (173)	40.0 (276)	60.0 (414)	100.0 (690)
Thermal resistance of 1.00-in. (25.4-mm) thickness, min, F.ft <sup>2</sup> -h/Btu (K-m <sup>2</sup> /W) Mean temperature: 75 ± 2 <sup>-</sup> F (24 ± 1 <sup>+</sup> C)	3.1 (0.55)	3.6 (0.63)	3.8 (0.67)	4.0 (0.70)	4.2 (0.74)	4.2 (0.74)	4.3 (0.76)	4.6 (0.81)	5.0 (0.88)	3.9 (0.68)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)	5.0 (0.88)
Flexural strength, min, psi (kPa)	10 (70)	25 (173)	30 (208)	35 (240)	50 (345)	60 (414)	75 (517)	40 (276)	40 (276)	45 (310)	50 (345)	60 (414)	75 (517)	100 (690)
Water vapor permeance of 1.00-in. (25.4-mm) thickness (See Note 4.), max, perm (ng/ta+m <sup>2</sup> )	5.0 (287)	5.0 (287)	3.5 (201)	3.5 (201)	2.5 (143)	2.5 (143)	2.5 (143)	1.5 (86)	1.5 (86)	2.0 (114)	1.5 (86)	1.1 (63)	1.1 (63)	1.1 (63)
Water absorption by total immension, max, volume %	4.0	4.0	3.0	3.0	2.0	2.0	2.0	0.3	0.3	1.0	0.3	0.3	0.3	0.3
Dimensional stability (change in dimensions), max,%	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Oxygen index, min, volume %	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Density, min, Ibft <sup>3</sup> (kg/m <sup>3</sup> )	0.70 (12)	0.90 (15)	1.15 (18)	1.35 (22)	1.80 (29)	2.40 (38)	3.00 (48)	1.20 (19)	1.30 (21)	1.60 (26)	1.45 (23)	1.80 (29)	2.20 (35)	3.00 (48)

TABLE 2 Common Dimensions of RCPS Thermal Insulation							
Туре	XI, I, VIII, II, IX, XIV, XV	X, IV, XII	VI, VII	V	XIII		
Width, in. (mm)	12 to 48 (305 to 1219)	16, 24, 48 (406, 610, 1219)	24 (610)	16 (406)	14 to 20 (356 to 506)		
Length, in. (mm)	48 to 192 (1219 to 4877)	48, 96 108 (1219, 2438, 2743)	48, 96, (1219, 2438)	96 (2438)	36 to 112 (914 to 2845)		
Thickness, in. (mm)	% to 24 (9.5 to 610)	½ to 4 (13 to 102)	1 to 4 (25 to 102)	1 to 4 (25 to 102)	7 to 10 (178 to 254)		

7.1.2 All dimensional requirements are described in Section 8. 7.1.3 All workmanship, finish, and appearance requirements are described in Section 9. 7.1.4 Density with Table 1. The average test value based upon testing the number of test specimens required by the specified test method for each physical property or Section 11 of this specification shall be used to determine compliance. 7.1.2 means thermal resistance of the material tested

7.1.4 Density shall be in accordance with Table 1. Nore 2—For lots of 150 units or less, the tightened inspection sampling plan in Practice C390 will be followed.

7.2 Qualification Requirements: 7.2.1 The physical properties listed in this section of the

specification are defined as qualification requirements (refer to Practice C390). Thermal resistance, compressive resistance, nation of compliance with thermal resistance, compressive flexural strength, water vapor permeance, water absorption, dimensional stability and ensity princes shall be in a contract stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes are the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability and ensity princes in Table 1.1 for the stability princ

shall not be less than the minimum value identified in Table 1. The thermal resistances of individual specimens tested shall not be less than 90 % of the minimum value identified in Table 1. 7.2.2.1 Test 1 in. (25.4 mm) thick specimens for determination of compliance with thermal resistance, compressive

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## **STYRO Certification:**



مجلس لـ وفريس لـ دورة وا<u>معافية</u> ABU DHABI COULITY AND CONFIGMITY COUNCIL وثيقة المطابقة

Conformity Document

Certificate No:	QAD-2022.0313.01-IP	رقم الشهادة:
Expiry Date:	13 March 2023	تاريخ الإنتهاء:
Issuing Date:	14 March 2022	تاريخ الإصدار:
Conformity Scheme:	Insulation Products Certification Scheme	برنامح المطابقة:
Product:	EXPANDED POLYSTYRENE	المنتج:
Name and Address of the Licensee:	STYRO INSULATION MATERIAL INDUSTRIES LLC Icad III (57SR40), Postal code 9108 Abu Dhabi, UAE	اسم و عنوان صاحب الحق بإستخدام العلامة: 8
Name and Address of the Manufacturer and the Factory:	STYRO INSULATION MATERIAL INDUSTRIES LLC Icad III (57SR40), Postal code 9108 Abu Dhabi, UAE	اسم وعنوات المصنع ومكات التصنيع: 8
Trademark / Brand Name:	STYRO	العلامة التجارية / الاسم التجاري:
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Certificate of Compliance

Intertek ETL US Mark for Thermal

You have been awarded:

Standards: UL 723 (2010)

Insulation Boards

Certificate number: WHI16-28153601



This is a certificate of compliance to certify that the bearer has successfully completed the requirements of the above scheme which include the testing of products, the initial assessment, and are subject to continuing annual assessments of their compliance and testing of samples of products taken from production (as applicable to the scheme) and has been registered within the scheme for the

Organization: Styro Insulations Mat . Ind . LLC P.O. Box 29272 Industrial Area - 11 Sharjah United Arab Emirates

> Product: STYRO Expanded Polystyrene G (EPS) Spec ID: 37391 Listing Information: See following page(s)

Certification body: Intertek Testing Services NA, Inc. Initial registration: May 12, 2016 Date of expiry: December 31, 2023 Issue status: 9

> 00 Authorized By: Jean-Philippe Kayl, Director of Certification

Intertek Testing Services NA, Inc. 545 E. Algonguin Road, Ste H., Arlington Heights, IL 60005 USA Phone: 847-439-5667 Fax: 847-439-7320

www.intertek.com

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intertek Certificate of Compliance Total Quality. Assured. You have been awarded: Intertek ETL US Mark for Thermal Insulation Boards Standards: UL 723 (2010) Intertek Certificate number: WHI16-28153602 This is a certificate of compliance to certify that the hearer has successfully completed the Organization: Styro Insulations Mat . Ind . LLC requirements of the above scheme which include P.O. Box 29272 the testing of products, the initial assessment, and Industrial Area - 11 are subject to continuing annual assessments of Shariah taken from production (as applicable to the scheme) United Arab Emirates and has been registered within the scheme for the nroducts detailed Product: STYRO Expanded Polystyrene W (EPS) Spec ID: 37392 Listing Information: See following page(s) Certification body: Intertek Testing Services NA, Inc.

Initial registration: May 12, 2016 Date of expiry: December 31, 2023 Issue status: 9

Cee Authorized By: Jean-Philippe Kayl, Director of Certification

Intertek Testing Services NA, Inc. 545 E. Algonquin Road, Ste H., Arlington Heights, IL 60005 USA Phone: 847-439-5667 Fax: 847-439-7320

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bearer has successfully completed the

products detailed.

You have been awarded: Intertek ETL US Mark for Exterior **Cladding Systems & Components** Standards: NFPA 285 (2012), NFPA 268 (2016) Ed. 2017, NFPA 285 (2019)

Certificate number: WHI20-28153606

Organization: Styro Insulations Mat . Ind . LLC P.O. Box 29272 Industrial Area - 11 Sharjah United Arab Emirates

Product: STYRO Exterior Insulation and Finish System Spec ID: 56914 Listing Information: See following page(s)

Certification body: Intertek Testing Services NA, Inc. Initial registration: June 09, 2020 Date of expiry: December 31, 2023 Issue status: 3

00 Authorized By: Jean-Philippe Kayl, Director of Certification

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## **Civil Defense Approval (STYRO Products)**

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Factory distributor

2024/11/19 داريخ الانتهاد الريخ الانتهاد

مثلور الجارة البراد المؤله (الى (م)

Here Stad of Analysis Adults

UAE-BASE- Managers BEARDAR RJ. Adjacements BEARDAR RJ. Adjacements

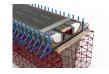
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2024/11/19

1010571

#### **Dubai Civil Defense RAK Civil Defense** Sharjah & AD Civil Defense Ajman Civil Defense ة الامارات العربية العلما ة الاطرات العربية الطحط ولة الامترات العربية المتحما Ministry of Interior Ministry of Interior وزارة علطية Ministry of Interior وزارة الناخلية وزارة الخطية General Directorate of Civil Defense General Directorate of Civil Defense القيادة المامة للطاح السذي General Directorate of Civil Delena ظيادة العامة للطاع المنتى الليادة المامة للنقاع الستى tment of Civil Defense - Ras Al Khatma . اوبارة الحابة شقاع السني - الخارقة بارة النظاع المنذي - راس الخيما General Department of Civil Defense . Shartal General Department of Civil Defense - Atmas ورارة الحامة للطاع السني - عجمان رقم الترخيص : 74380-2014 رقم انټر ڪيمن : 6-232970 2019-6-20 رقم الترخيص 2013-4-34688 منة الترخيص : 2020 · ترخيص موزع سنة الترخيص : 2020 ترخيص مصنع لمعنات و أجهزة و مواد الوقاية و مكافحة الحريق ترخيص موزع مدد التراخيص : 1 Agent Manufacturer Agent 🗌 Manufacturer 🗹 ترخيص موزع لمصنع عد التراخيص : 1 تم إصمار الترخيص استثاما إلى القرار الوزاري رقم (24) لسنة 2012 ، في شأن تنظيم هدمات الطاع المنذي هد الذراهيمي : 1 در التراخيص 1-9 تم إصبار الترخيص استنادا إلى القرار الوزاري رقم (24) نسخة 2012 ، في شأن تنقليم خدمات الدفاع المدني الاسم التجاري للمنشأة 2014.3.74380 رقم السجل 508740 رقم الرهصة ستايرو لصناعة المواد العازلة ذ م م تم إصبار الترحيص استثابا إلى القرار الوزاري رقم (24) لسمَة 12 20 . في شأن تتقليم حسات النقام المنز ستابرو لتجارة العواد العازلة ذجم فرع الاسم التجارى للمنشأة 2013-4-34688 . قد السحا . 48753 رقم الرخصة ستايرو لتجارة العواد العازلة(ت.م.م) الاسم التجارى للمنشأة Luis وليدخليل واكيم اسم صاحب اللرخيص ملم السجال 562647 م اشركة 2019-6-232970 رقم السجل 51981 رقم الرخصنة رقم الترخيص مثاير الجارة البراد المازلة (اليذمي) Shartah صناعة المواد العازلة نوع النشاط الأمادات العربية المتحية سلطان على سلطان على العبيدتي اسم مباجب الترجيص ALC: NOT THE OWNER. لمشمة وليدخليل واكتح اسم مناجب الترخيص وصاحب الترخيص 29272 0506869268 رقم الهاتف تجارة المواد العازلة نوم النشاط للذان على سلطان الميطي عنب قم القاتص Almar Ras Al Khaimah نطقة النشاط تحادة المواد العازلة توم التشاط Sharjah Sharjah 11. Area Industrial ، خلف شارع النليحة 14845 0509819157 عنوان الشركة قم القاكس رقم الهاتف فاق الرضة لجنبية 050981915 وليد غايل والكرم رقم القاكس رقم الهاتف 4.00 الموقع و البريد الإلكتروني Alman Alman 3. Industrial Jurf . 3على حسن خليفة القورة - الجرف المستاعية عنوان الشركة شارع الشيخ صقر بن محمد القاسمي - الشيخ صقر بن محمد القاسمي . Khaimah Al-Ras Khaimah Al-Ras rak. - eraibi al عنوان الشركة ----رقم الفاكس Tex Number تاريخ الإصبار 11/2020 تاريخ الانتها، 19/11/2021 تاريخ الانتها، 19/11/202 تاريخ تأسيس استشاد 17/01/2000 لموقع والبريد الإلكتروني 971-4-2678434 الموقع و البريد الإلكتروني 19/11/2021 تاريخ الإمسار 08/12/2020 تاريخ الانتها، 01/10/2007 تاريخ تأسيس النشاة عد المحات و الأجهزة المراد ترخيصها 3 تاريخ تأسيس المنشاذ وأن الشركة 19/11/2021 25/11/2019 تاريخ الانتهاء کلب رام 301 ملك حربي جناف جدادزيز ال طبق، نيره، البرر عد المحات و الأجهزة المراد ترخيصها 3 س القشين المعتميين 2 عد المهتسين المعتمدين 3 عدد المحات و الأجهزة المراد ترخيصها 3 تم تسديد الرسوم بإيصال رقم (1 125393 14 02045) - تم شنديد الرسوم بإيصال رقم (13 03203448565). تم تستيد الرسوم بإيصال رقم (03494336560440533997) 2020/12/19 James 1000 2004/10/25 تم اسدار الترخيص استناداً إلى القرار الوزاري رقم (213) استة 2017، في شاكر الطيور خومات الدفاع المدني رؤيتنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة رؤيلتا أن تكون دولة الإمارات العربية المتحدة من أغضل دول العالم في تحقيق الأمن و السلامة رؤيقنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة 0 شير هنه الشهادة و فيفة رسمية لا تحتاج الى توقيع الثالث من صحة العطومات يرجى زيارة الرابط https://cdservices.moi.gov.ae//index/certificate-inquiry تعتبر هنه الشهادة وغيقة رسمية لا تحتاج الى توقيع. للتأك من صحة المعلومات يرجى زيارة الرابط بعتمد / عن مدير الإدارة العامة للدفاع المد ioi.gov.ac//index/certificate-inquiry تعتب منه الشُوادة وشقة ، سبعة لا تحتام إلى توقيع اللتأكرين صبحة المعلومات برحي : باد ة إلرابط ces.moi.gov.ac//index/certificate-inquiry https://cd 1/3 1/3 1/3 ولة الامزات المربية الشصة دولة الإمارات العربية المثحط ولة الاطرات العربية الطعط (\*) United Arab Emirater Ministry of Interior Ministry of Interior Ministry of Interior وزارة فبلطية وزارة البلطية والرة الناطية Seneral Directorate of Civil Defens الكيادة المامة للطاع المتني General Directorate of Civil Defense القيادة الحامة لأطاع المنتى General Directorate of Civil Defense الليادة المامة تلطاع المنغى Department of Civil Defense - Ras Al Rhatma إبارة لاطاع الصلي - رض الحيطة General Department of Civil Defense - Shartal اويارة الحابية للبقام البيتى - الشارقة General Department of Civil Defense - Ajmar ودارة المامة للطاع النتني - عجمان رفرا الترجيس : 2019-6-232970 الإسم التجاري للمنشأة : استايرو لتجارة العوام المازلة تـ مم فرع رأس الخيمة سناه الترجيس : 2020 V (Manufacturer V) رقم الترخيص : 74380-2014-3 رفر الترحسين (2013-4-34688) الإسم التحاري للمتخدأة (مستام والتحارة العواد العاز للازتـم) المدينة من مدين المدينة الم الإسو التحذي للمنشأة : ستاد و للمناعة المواد العلالة ذ م م سنة الترخيص : 2020 Agent Manufacturer 🗹 ــنة الترخيص : 2020 -later bolt عد الثراخيص : 1 مدد التراخيص ر 1 مثاري أسناعة البراد الطرلة ذيرم هد الاراهيمن : 1 19-11-2021 Exptry date of the Manufacturer - 2014-3-7439 Seal and اسم المخلين الصنادر للشهادة رقم شهادة الملامة سم اللجارى اسم المعدة/المواد/النظام تاريخ اللها، فيد الوعلة , قر ڈولیڈ السلامی , فرقب الوعالة اسر العمذم بلد المحتم لاسم اللحلري اسم المسلار الموادر الثاقام INTERTEK TESTIN SERVICE, USA The exterior : External insulation and finishing WHI16-2815360 STYRO رقر شهادة السلامة تاريخ انتها . فيد الوعلة رقر قيد لوعانة لبراهمتع بدلمتع لاسواللجاري اسم المحة / لمواد : التقام systems United Aral exterior - External insula flatshing systems 18-06-2024 12773 ستايرو فتستاعة ا المازنة STYRO exterior - External insulation and finishing systems WHUSS. EXPANDED 2012001 POLYETYBEN COLVENTIAL نايرو لصفاعة الم العارية United Arab Emtrates STYRO Expanded Polystyr 92.01.2025 946 STYRO ر فروبيل . intyper 220, Grayper 290, Grayper 380، INTERTEK TESTIP SERVICE, USA WHI16-2815360 STYRC STYRO Expanded Polystyrene G EPS (Grayper 150, Grayper 180 18-06-2024 12773 ستايرو عمتاها لم المازند United Arab Emirates STYR exterior - External Insulation an First Resident Material First Steel Class & exterior External insula finishing systems STYRO E 22.01/2025 946 يرو لمتاعة ا العاركة STYRO SIVRO Expanded Jobystyrme W EPS (STYRO 150, STYRO 180, STYRO 220, STYRO 260, STYRO 380, STYRO 460, STYRO 500 INTERTEK TESTIN SERVICE, USA STYRO The exterior : External insulation and finishing WHI20-2815360 WHI 16-BUDDEL POLYDYNED WHITE EP system SITURO Extranded Polysis 18-06-2024 12773 ستايرو فتنتاعة ا العلالة STYRO 946 تايرو اصناط ا العار له لم لموسيل 2012 10 10 241 -1 بة نشاطه في إمارة Sharjah فقط استثناما إلى قرار مجلس الوزارع است المراسطة المراسطة المراسطة المراسطة مسم مسم، ---printing وهو به مراود محملة في إمارة Comput نظم استثنا إلى قرار مجلس الوزاري رام 24 استة - في شأن تظهر ممادة المقام السفي الاتحة التقنينية رام (21 ) سنة 2017، و لا يعني له مزاونة أشطنة في باقي الإمران - الاختصاص بقل إمرار ؟ فقط استذابا إلى قرار مجلس الوزاري رقم (4 بدره بير قبل الاندات المانية بات الاطلساني ب يحق مزاولة التُطلة في بالى الإمارات (لا بعد استثراط ترخيص متطلقة في الترخيص الأسامر من هن الإمارة المقلة للطلع السني و يحق له مزاونة مثناطه في إمارة Jyman فقط استناما إلى قرار مجلس فوزاري رقام (24) استة يحتبر الموزع مرخص من قبل الإدارة الحامة ا 2. إبلاغ الإبارة العامة للنفاع الننفي في حالة تغيير أو تعديل في البيانات المتطفة في الترخيص الصادر من غبل الإدارة العامة للنفاع النسي لَحَ المَعْنِي في حَالةً تَصْبِر أو تَعْمِيْنَ في البِيادَة رؤيتُنَّا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة يويننا أن تتون دولة الإمارات العربية المتحدة من أقضل دول العالم في تحقيق الأمن و السلامة بية لا تحتاج إلى توضع الفائمة من صحة المعلومات يرجى زيارة الرابط 2. به وارد تمام سو عند بر همه نیز و بی این و بی بر تعتیر هنه الشهادة و فقة رسمیة لا تحتاج الی نوابع التأكم من مسحة العطومات پرچی زیارة الرابط moigov.ac//index/certificate-inquiry متمد / عن مدير الإدارة العامة للدفاع المتل - دل تعلير هند الشها القاني: 1/3 mot gov ac//index/certificate-inquiry https://cdser رؤيثنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة

## **STYRO Solutions**















STYRO Void Fill

**STYRO** Void Formers **STYRO** Piling

••••••

STYRO Floor Raising

> **STYRO** Geofoam

STYRO Landscaping STYRO EIFS **STYRO** Roof Insulation

**STYRO** Domes with EIFS

**STYRO** Domes for Concrete Casting

**STYRO** Interior Decoration

**STYRO** Buoys

STYRO Pontoons







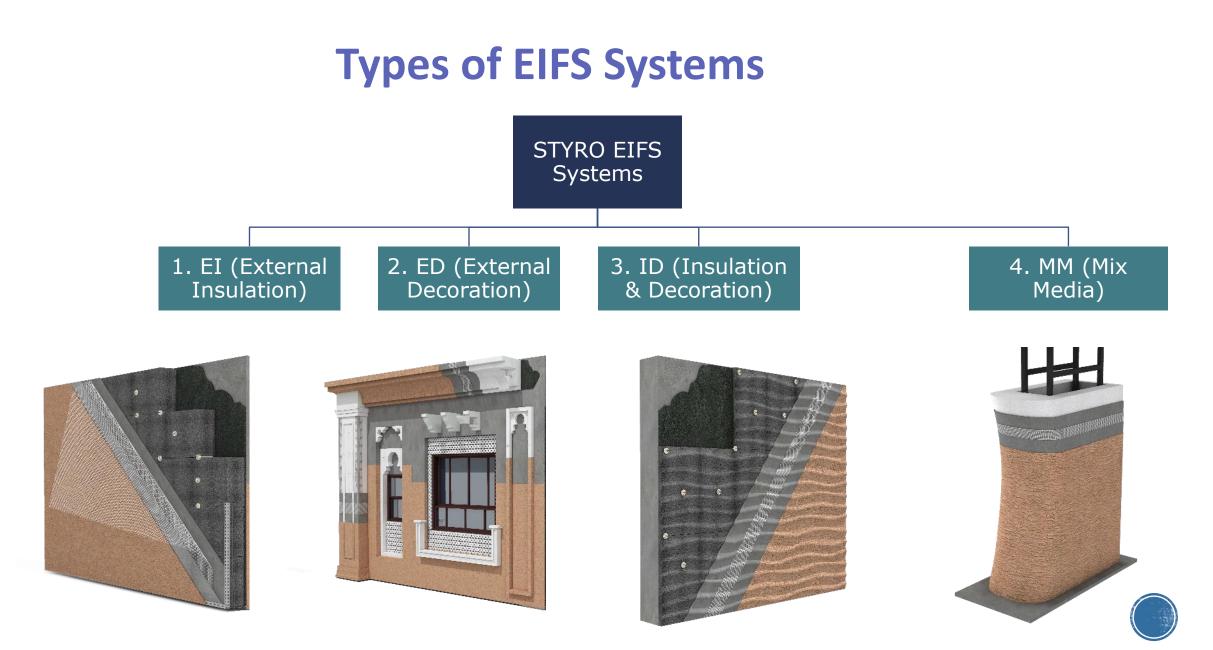












### Why STYRO EIFS?

Many superior features which make STYRO EIFS the product of choice for decorative and insulation include:

• Thermal Performance

• Design versatility

- Relatively Low Cost
- Moisture Protection
- Lightness
- Fire Safety
- Flexibility
- Finish Durability
- Ease of transportation and installation
- High compressive strength
- Easy Maintenance

- Weather Resistance
- Colour Fastness
- Impact Resistance
- Adaptability to long spans and curvatures
- Suitability For Recladding Particularly
- Over Uninsulated Concrete And Masonry
- Energy Savings





# Thermal Conductivity of STYRO Graypor:

- STYRO Graypor is recommended material to be used as thermal insulation as it has low thermal conductivity and superior thermal resistance, in this case study we GRAYPOR 180 will be used.
- It has thermal conductivity of 0.0322
   W/mk.

GOVERNMENT OF DUBAI	Organization/Unit:	إدارة مختبر دي المركزي Dubai Central Laboratory Department	الوحدة التنظيمية:	
	Document Title:	TEST REPORT THERMAL TRANSMISSION PROPERTIES BY HEAT FLOW METER (THERMAL COND)	عنوان الوثيقة:	بلدية دبي
	Doc Ref.	DM-DCLD-F-CM-0100	رقم الوثيقة :	

CONSTRUCTION MATERIAL LABORATORY SECTION

GREEN BUILDING PRODUCT UNIT

Report No:	409154		R	Request No: EMTX-2022-10	006570	
TEST NO / SPECIMEN NO	L	1	2	3		
MEASURED THICKNESS (	L) (mm)	49.86	49.83	51.14		
MEASURED DENSITY (kg/	/m3)	16.15	16.20	16.26		
MEAN TEMPERATURE AC	HIEVED (deg C)	34.96	35	34.93		
AVERAGE HEAT TRANSFE	R (q) μV	1905	1911	1859		
THERMAL CONDUCTIVIT	Y, W/(m K)	0.0322	0.0323	0.0322		
THERMAL CONDUCTIVIT	Y, Btu-in /h.square	0.2233	0.2240	0.2233		
ft.degF						
AVERAGE THERMAL CON	DUCTIVITY, W/(m			0.0322		
К)						
THERMAL RESISTANCE, (	Square m K) / W	1.5484	1.5427	1.5882		
THERMAL RESISTANCE, F	t square / Btu	8.7938	8.7614	9.0198		
AVERAGE THERMAL RESI	STANCE, (Square			1.5598		
m K) / W						
AVERAGE TEMPERATURE	GRADIENT (K/m)	399.77	400.04	389.40		
WEIGHT DIFFERENCE (%	)	-0.027	-0.041	-0.040		
TEST DURATION ( h:mm:s	s )	02:36:02	03:16:27	02:37:09		
Sampled By:	Mr. Lino /DM			Tested By:	NIMIAH	
Sampled Brought By:	Raman / Client Re	presentative		Testing Date:	14/02/2022 09:26AM	
Sampling Method:	DCL-IC-99			Sampling Report No:	NA	
Test Method:	ASTM C518-17			Test Method Variation:	NIL	
Remarks:		CUSTOMER PERFORMED SAMPLING AND PROVIDED THE SAMPLE; THE RESULTS APPLY ONLY TO THE SAMPLE AS RECEIVED AND TESTED.				

Disclaimer : \* Information is supplied by the customer and Laboratory is not responsible for this data.

\*\*\* END OF REPORT \*\*\*

This report is computer approved and authorized by Head of Unit and does not require any signature.



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Date of Issue :	02/05/2021	Rev No. : 3
عام / General	درجة السرية / Level of Confidentiality	Page 2 of 2



### U-Value Comparison between EIFS Building & Non-EIFS Building:

#### Case study:

- U-value calculation for a building using EIFS system/for façade.
- Assuming that:
  - The insulation thickness is **50 mm** and hollow blocks are existing as a substrate.
  - The Maximum U-value for external wall is 0.57 W/m<sup>2</sup>k

### U value Calculation for External Wall with (EIFS)

S.n	Thickness	Layers	Resistance
0	(mm)		(W/m2.k)
1	200	Hollow blocks	0.171
2	20	Plastering	0.028
3	5	Adhesive (cement)	0.007
4	50	Thermal insulation board Graypor 180 (k = 0.0322 W/mk)	1.55
5	2	Base coat (cement)	0.006
6	2	Second coat (cement)	
7	1.5	Finishing	0.010
Total	R value (W/m2.k	1.772	
Uv	alue Calcu	lation for External Wall with	iout (EIFS)
S.n	Thickness	Layers	Resistance
ο	(mm)		(W/m2.k)
1	200	Hollow blocks	0.171
2	20	Plastering	0.028
7	1.5	Finishing	0.010
Total	R value (W/m2.k	0.209	
U Va	lue (W/m2. K)		4.78

• These two U-Values of Facade calculated above will be used to determine the heat gain in summer and heat loss in winter.





### Heat Transfer Comparison between EIFS Building & Non-EIFS Building

#### **Assumption:**

#### Summer cooling load for the wall:

Outside temperature	$(T_{o}) = 50^{\circ} C$
Inside temperature	$(T_i) = 20^{\circ} C$
Change in temperature	(ΔT) = 30° C

Using the heat transfer equation, the total heat gain /loss from façade systems for external wall can be determined.

The heat transfer equation is:

#### Winter heating load for the wall:

Outside temperature	$(T_{o})$	=	10º C	2
Inside temperature	$(T_i)$	=	25° (	2
Change in temperature	(ΔT)	=	15° (	2

Q\*= ΔΤ. Α . U

- **Q**\* → Heat Transfer (W)
- **∆***T* → *Temperature difference*
- *A* → Area (Assumption)
- *U* → *Thermal transmittance*

Summer Heat Gain					
Façade system	Area (m2)	U Value (W/m2. K)	ΔT (°K)	Heat transfer (W)	
Without EIFS	2000	4.78	30	286,800	
With STYRO EIFS	2000	0.52	30	31,200	
Difference				255,600	

Winter Heat Loss				
Façade system	Area (m2)	U Value (W/m2. K)	ΔT (°K)	Heat transfer (W)
Without EIFS	2000	4.78	15	143,400
With STYRO EIFS	2000	0.52	15	15,600
Difference				127,800



### **Operation Cost in Summer:**



	Heat Transfer				
	W/first hr.	W/first hr.	KW/12 hr.	KW / month	Cost /month (AED)
Without EIFS	286,800	286.8	812.6	48,756	19,500
With EIFS	31,200	31.2	57.2	3,432	1,372
				Difference	18,128

 $Q^*$  (after one hour of activating the AC) =  $U^*A^*5^0k$ 

Without EIFS →

 $Q/12 hr = 286.8 KW + 4.78 W/m2k *2000 m^2 *5^0 k /1000* 11 hr = 812.6 KW/12 hr$ 

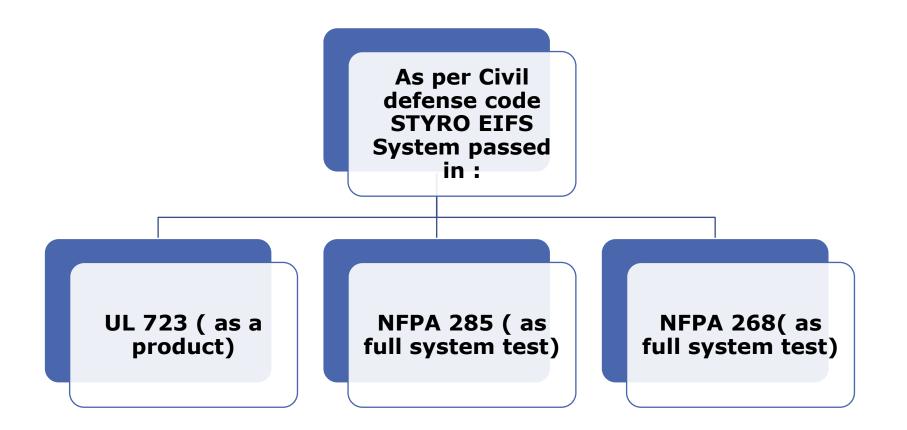
■ With EIFS →

 $Q/12 hr = 32.2 KW + 0.52 W/m2k *2000 m^2 *5^0 k /1000* 11 hr = 57.2 KW/12 hr$ 

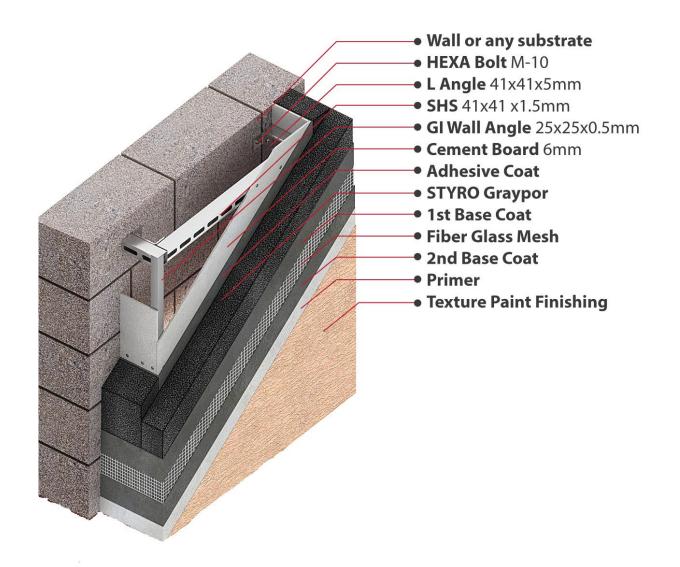
- This cost is per sq. meter.
- The highest energy consumed will be in the first hour, after that the temperature difference will be 5<sup>o</sup>k for each hour after the first hour.
- 1 KW = 0.4 AED



# SYSTEM AND COMPONENT TESTING :







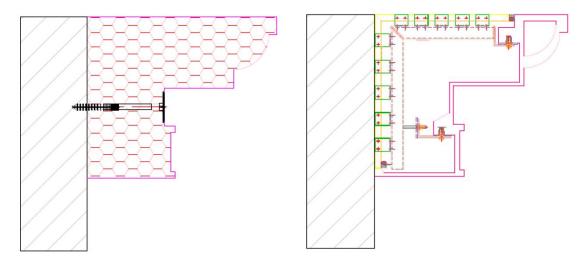
### Replacement of Heavy cladding

 STYRO EIFS SYSTEM can be as a replacement of heavy cladding :

Property	Heavy cladding	STYRO EIFS
Weight	Heavy weight	Lightweight
Safety	Not safe due to its heavy weight	Safe
Thermal Performance	It won't show any thermal performance	The EPS is an insulaltion material has a low thermal conductivity $% \left( {{{\rm{T}}_{{\rm{s}}}}_{{\rm{s}}}} \right)$
Construction time	The construction time of it is longer since its heavy	The ease and speed with which EIFS can be constructed results in shorter construction time due to several points; faster placement rates, reduced utility relocation and less disruption of traffic in urban areas
Ease of handling	It's heavier than normal concrete as it contains some fibres. So, it requires special equipment and skilled laborers	No special equipment and skilled labours are needed
flexibility	The boards should be prepared outside in the factory; if there is any mistake in manufacturing of the board it should be remanufactured inside the factory as it cannot be trimmed easily in site. Its not flexible at all due its strength and bonding	STYRU Graypor is a nighly fixable material and can be trimmed on site to accommodate the shapes of
Durability		STYRO Graypor is considered a permanent material when correctly specified and installed, Graypor keeps its initial properties at long term
Cost	> 400 AED/m2	<= 30% of heavy cladding cost
Maintenance	It's hard to get the item maintained at site, you need to take the item off and refabricate it inside the factory.	
Lifespan of the building's façade	The heavy weight will affect the façade lifespan in longterm due to the structural weight	Lightweight system will not affect the lifespan

## Compariso n between Heavy cladding & STYRO EIFS

### **Structural Impact**



System	STYRO EIFS	Heavy cladding
Size	1*1*1 m	1*1*1 m -
Volume	1 m3	1 m3
Density	22 kg/m3 of EPS	2300 kg/m3
Weight force of the full panel	0.22 KN/m3	22.6 KN/m3











# Thank You!