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ID	Material المادة	Test Required الفحوصات المخبرية اللازمة	Form No: نموذج رقم	Tested By أماكن فحص العينات	Availability	Location	Price

CIVIL Materials Part

1.1

Concrete Masonry LoadBearing Type الطوب الإسمنتي الحامل ASTM C90

Test Description	إسم الإختبار	Standard Procedure	Standard Limits		
Compression Test	مقاومة الضغط	ASTM C1314	Ave. of 3 units	Individual unit	
			13.1 Mpa	11.7MPa	
Size Variation	التفاوت بالابعاد	ASTM C90	± 3.2		
Appearance	المظهر	ASTM C90	منتظم الشكل، خال من العيوب ،خشن يسمح بإلتصاق المونة و الدهانات		
Water Absorption	امتصاص الماء	ASTM C90	Lightweight Less than 1680(Kg/cm^3)	Medium weight (1680-2000)Kg/cm^3	Normal weight 2000Kg/cm^{3}or more
			Average of 3 units Max 18%	Average of 3 units Max 15%	Average of 3 units Max 13%

TABLE 2 Minimum Thickness of Face Shells and Webs

Nominal Width (W) of Units, in. (mm)	Face Shell Thickness (t_{fs}), min, in. (mm)[A]	Web Thickness (t_w) Webs[E] min, in. (mm)	Web Thickness (t_w) Equivalent Web Thickness, min, in./linear ft[B,C] (mm/linear m)
3 (76.2) and 4 (102)	¾ (19)	¾ (19)	1⅝ (136)
6 (152)	1 (25)[D]	1 (25)	2¼ (188)
8 (203)	1¼ (32)[D]	1 (25)	2¼ (188)
10 (254)	1⅜ (35)[D] 1¼ (32)[D,E]	1¼ (29)	2½ (209)
12 (305) and greater	1½(38) 1¼ (32)[D,E]	1¼ (29)	2½ (209)

1.1	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732	Yes	All Regions	200
		Yes	All Regions	150
		Yes	All Regions	150
		Yes	All Regions	300

1.2

Concrete Masonry NonLoadBearing Type الطوب الإسمنتي الغير حامل ASTM C129

Test Description	إسم الإختبار	Standard Procedure	Standard Limits	
Compression Test	مقاومة الضغط	ASTM C1314	Ave. of 3 units	Individual unit
			4.14 Mpa	3.45 MPa
Size Variation	التفاوت بالابعاد	ASTM C90	± 3.2	
Appearance	المظهر	ASTM C90	منتظم الشكل، خال من العيوب ،خشن يسمح بإلتصاق المونة و الدهانات	
Water Absorption	امتصاص الماء	ASTM C90		

TABLE 3 Moisture-Content Requirements for Type I Units

Total Linear Drying Shrinkage, %	Moisture Content, max, % of Total Absorption (Average of 3 Units) Humidity[A] Conditions at Job Site of Point of Use: Humid[B]	Intermediate[C]	Arid[C]
Less than 0.03	45	40	35
0.03 to less than 0.045	40	35	30
0.045 to 0.065, max	35	30	25

4.1 *Types*—Two types of concrete masonry units are covered as follows:

4.1.1 *Type I, Moisture-Controlled Units*—Units designated as Type I shall conform to the requirements of this specification.

4.1.2 *Type II, Nonmoisture-Controlled Units*—Units designated as Type II shall conform to the requirements of this specification, except the requirements of Table 1.

TABLE 1 Weight Classification

Weight Classification	Oven-Dry Weight of Concrete, lb/ft^3(kg/m^3)
Lightweight	Less than 105 (1680)
Medium Weight	105 to less than 125 (1680 to 2000)
Normal Weight	125 (2000) or more

1.2	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732	Yes	All Regions	200
		Yes	All Regions	150
		Yes	All Regions	150
		Yes	All Regions	300

1.3

Concrete Aggregates ركام الخرسانة ASTM C-33

Coarse Aggregates الركام الخشن

Test Description	إسم الإختبار	Standard Procedure	Standard Limits
Loss Angeles Abrasion	المقاومة ضد البري	ASTM C-131	50% Max
Soundness	الجساءة	ASTM C-88	MgSO4 18% Max NaSO4 12% Max
Clay Lumps & Friable Particles	نسبة الكتل الطينية و الجسيمات سهلة التفتت	ASTM C-142	5% Max
Coal & Lignite	نسبة الفحم	ASTM C-123	0.5% Max
Water Absorption	نسبة امتصاص الماء	ASTM C-127	2.5% Max
Materials Finer than 75µm	المواد الناعمة جداً	ASTM C-117	1% Max

Fine Aggregates الركام الناعم

Test Description	إسم الإختبار	Standard Procedure	Standard Limits
Soundness	الجساءة	ASTM C-88	MgSO4 15% Max NaSO4 10% Max
Water Absorption	نسبة امتصاص الماء	ASTM C-127	1% Max
Organic Impurities	الشوائب العضوية	ASTM C-140	Darker Than Standard
Acid Soluble Chlorides (Cl)	نسبة الكلور في المواد الناعمة	BS-812, Part 117	0.06% Max
Acid Soluble Sulphates (SO_4)	نسبة مركبات الكبريتات	BS-812, Part 118	0.40%
Acid Soluble Sulphates (SO_3)			

Gradation of Fine Agg. ASTM C-136	
3/8" Passing	100%
No.4 Passing	95-100%
No.8 Passing	80-100%
No.16 Passing	50-85%
No.30 Passing	25-60%
No50 Passing	5-30%
No.100 Passing	0-10%

1.3	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732	Yes	All Regions	200
		Yes	All Regions	400
		Yes	All Regions	150
		Yes	All Regions	150
		Yes	All Regions	180
		Yes	All Regions	100

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1.4	Grout for Masonry مونة الطوب الأسمنتي ASTM C476	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.4	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Proportions	المكونات	ASTM C-476	Material / Portland cement / Blended cement / Hydrated lime / Lime putty[4] / Sand, damp and loose	Weight, lb/ft³ (kg/m³) 94 (1504) / weight printed on bag / 40 (640) / 80 (1281) / 80 (1281) of dry sand					To Follow
		Compression Test	مقاومة الضغط	ASTM C-130	Minimum 14MPa after 28 days				Yes	All Regions	350
		Slump	الهبوط	ASTM C 143/C 143M	200-280 mm				Yes	All Regions	100
1.5	Bitumenous Waterproofing العزل البيتومني لما تحت الأساسات ASTM D41	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.5	Hotty-Stanger Laboratory Mr. Riyaz 0515182544 Bitumat Company Limited: Eng.Mohamad Shehateh: 0503839857 Awazel Company Eng Khaled Nazee: 0503840348 Exova Laboratory Mr. Osama Farhan 0535365732			
		Water, Vol%	نسبة الماء	ASTM D 95	0.5% Max				Yes	H.O. - Khobar	200
		Saybolt Furol viscosity at 25°C	اللزوجة	ASTM D 88	25-125s				Yes	H.O. - Khobar	350
		Distillation, volume % of the primer:	التقطير	ASTM D 402	Up to 225°C	not less than 35			No	-	-
					Up to 360°C	not more than 65					
		Residue obtained from the distillation up to 360°C	الكمية المتبقية من المادة بعد التقطير يجب ان تكون خصائصها كالتالي	ASTM D 5 & ASTM D 2042	Penetration at 25°C, 100 g, 5 s	20-25			Yes	H.O. - Khobar	400
					Matter soluble in trichloroethylene	not less than 99 %					

1.6	Termite Control Materials مواد مكافحة النمل الأبيض	MATERIALS	Materials Should Approved From :		Recommended Mannufacturer	Application Rates		1.6	
		Use an emulsible, concentrated termiticide that dilutes with water	SASO	Saudi Arabian Standards Organization	Bifenthrin 25.1% w/w	Horizontal Barrier	5 liter/ 1m2		
			EPA	Environmental Protection Agency					
			ATSDR	Agency for Toxic Substances and Diesease Registry	Tergam: Pure gamma isomer BHC (lindane) 20% w/v in an oil solvent emulsifier system.	Vertical Barrier	5 liter/ 1m2		
		Do not use chemicals, having "Chlorpyrifos"	NIOSH	National Institute for Occupational Safety and Health					

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1.7	Sheet Membrane Waterproofing APP (Atactic Polypropylene) صفائح العزل المبتومينى المعدل بالبولى بروبيلين و المطعم بالبولى ستر ASTM D6222	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.7	Bitumat Company Limited: Eng.Mohamad Shehatelt 0503839857 Awazel Company Eng Khaled Niazee: 0503840348 Exova Laboratory Mr. Osama Farhan 0535365732			
		Softening Point	درجة حرارة التليين	ASTM D 36	155 °C				Yes	H.O. - Khobar	150
		Penetration at 25°C	اختبار الخرق	ASTM D 5	20 - 30 dmm				Yes	H.O. - Khobar	200
		Heat Resistance	مقاومة الحرارة		2 hours at 120oC: No flow				Yes	H.O. - Khobar	150
		Tensile Strength	مقاومة الشد	ASTM D 828	Longitudinal	23 kN/m			Yes	H.O. - Khobar	200
				ASTM D 146	Transverse	15.8 kN/m					
		Elongation	التمددية	ASTM D 828	Longitudinal	55%			Yes	H.O. - Khobar	200
				ASTM D 146	Transverse	60%					
		Tear Resistance	مقاومة التمزق	DIN 53859	Longitudinal	195 N			Yes	H.O. - Khobar	200
				DIN 53859	Transverse	210 N					
		Puncture Resistance	مقاومة الخرق	ASTM E 154	1155 N				Yes	H.O. - Khobar	200
		Water Absorption	نسبة امتصاص الماء	ASTM D 570 & ASTM D 471	Less than 0.12 %				Yes	H.O. - Khobar	150
		Water Vapor Transmission	نفاذية بخار الماء	ASTM E 96	Procedure E (37.8oC at 90% RH)	< 0.28 g/m2/24 hrs			No	-	-
1.8	Vapor Barrier(Polyethylene sheeting) غلاف بولى إيثيلين مانع لبخار الماء ASTM D 4397	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.8	Alyaf Industrial Co.LTD Mohammad Hassan 0504845529			
		Vapor Permeance Rating	اختبار نفاذية بخار الماء	ASTM E 96, Pro. C.	Max : 0.063 perms				No	-	-
		Water resistance (hours):	مقاومة نفاذية الماء	ASTM D 779	76+				Yes	H.O. - Khobar	100
		Puncture resistance (Beach units)	مقاومة الخرق	ASTM D 781	52				Yes	H.O. - Khobar	200
1.9	A-1-b Soil Material تربة دفان نوع A-1-b ASTM 3282	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.9	Hotty-stanger Laboratory Mr. Riyaz: 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Sieve Analysis	التدرج الحبيبي	ASTM D422	Passing No. 40	Max 50%			Yes	All Regions	100
					Passing No. 200	Max 25%					
		Liquid Limit	حد السيولة	ASTM D4318	-				Yes	All Regions	100
		Plastic Limit	حد اللدونة		-				Yes	All Regions	
		Plasticity Index	معامل اللدونة		Max 6%				Yes	All Regions	

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1.10	A-1-a Soil Material تربة دفان نوع A-1-a ASTM 3282	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.10	Hotty-stanger Laboratory Mr. Riyaz: 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Sieve Analysis	التدرج الحبيبي	ASTM D422	Passing No. 10	Max 50%			Yes	All Regions	100
					Passing No. 40	Max 30%					
					Passing No. 200	Max 15%					
		Liquid Limit	حد السيولة	ASTM D4318	-				Yes	All Regions	100
		Plastic Limit	حد اللدونة		-				Yes	All Regions	
		Plasticity Index	معامل اللدونة		Max 6%				Yes	All Regions	
1.11	Sand Material (A3) تربة دفان نوع رمل ASTM 3282	Test Description	إسم الإختبار	Standard Procedure	Standard Limits		1.11	Hotty-stanger Laboratory Mr. Riyaz: 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Sieve Analysis	التدرج الحبيبي	ASTM D422	Passing No. 40	Min 51%			Yes	All Regions	100
					Passing No. 200	Max 10%					
		Liquid Limit	حد السيولة	ASTM D4318	-				Yes	All Regions	100
		Plastic Limit	حد اللدونة		-				Yes	All Regions	
		Plasticity Index	معامل اللدونة		Non Plastic				Yes	All Regions	

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		Test Description	**إسم الإختبار**	**Standard Procedure**	**Standard Limit Type II Grade I**	**Standard Limit Type II Grade I**	**Standard Limit Type III**	**Standard Limit Type IV**				
1.12	**PVC Membrane Waterproofing used in Roofing صفائح العزل المائي بي في سي ASTM D4434**	Overall Thickness	السماكة	ASTM D638 & D751	1.14mm (min)	1.14mm (min)	1.14mm (min)	0.91mm (min)	**1.12**	**Insuwrap for Waterproofing and Wrapping Products Co.Ltd** Eng. Osama Abu Hujair 0504467024 **Exova Laboratory** Mr. Osama Farhan 0535365732	Yes	H.O. - Khobar	70
		Tensile Strength at Break (Mpa) Machine Direction, min	مقاومة الشد	ASTM D638	10.4	--	--	--			Yes	H.O. - Khobar	100
		Tensile Strength at Break (Mpa) Cross-machine Direction, min	مقاومة الشد	ASTM D638	10.4	--	--	--			Yes	H.O. - Khobar	100
		Breaking Strength, min (kN/m)	قوة الكسر	ASTM D 751	--	35	35	48			Yes	H.O. - Khobar	100
		Elongation at Break, min, (%)	الاستطالة عند الكسر	ASTM D638 & D751	250	15	15	25			Yes	H.O. - Khobar	100
		Seam Strength, min, % of Tensile or Breaking Strength	قوة اللحام	ASTM D638 & D752	75	75	75	75			Yes	H.O. - Khobar	100
		Retention of Properties after heat Aging Tensile Strength, min, % of Original : Breaking Strength, min, % of Original : Elongation, min, % of Original :	نسبة بعض الخصائص الفيزيائية للوضع الاصلي	-	 90 -- 90	 -- 90 90	 -- 90 90	 -- 90 90			Yes	H.O. - Khobar	400
		Tear Resistance, min, (N)	مقاومة التمزق	ASTM D1004	45	--	--	--			Yes	H.O. - Khobar	200
		Tearing Strength, min, (N)	مقاومة التمزق	ASTM D751	--	200	200	200			Yes	H.O. - Khobar	200
		Low Temperature Bend	التي عند درجات حرارة منخفضة	ASTM D2136	Pass	Pass	Pass	Pass			NO	-	-
		Accelerating Weathering Test Cracking (7XMagnification) Crazing (7XMagnification)	فحص تعجيل الطقس	ASTM G26 & G53	 None None	 None None	 None None	 None None			Yes	H.O. - Khobar	250
		Linear Dimension Change, max, %	معدل التمدد الطولي	ASTM D1204	0.1	0.1	0.5	0.5			NO	-	-
		Weight Change After immersion in Water, max, %	معدل التغير في الوزن بعد التغطيس بالماء	ASTM D570	±0.3	±0.3	±0.3	±0.3			Yes	H.O. - Khobar	100
		Static and Dynamic Puncture Resistance	مقاومة التخريم الاستاتيكي و الديناميكي	ASTM D5602 & D5635	Pass	Pass	Pass	Pass			Yes	H.O. - Khobar	200

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		Test Description	إسم الإختبار	Standard Procedure	Standard Limit Type I		Standard Limit Type II						
1.13	APP (Atactic Polypropylene) Modified Bituminous Waterproofing Sheet Using Polyester Reinforcement صفائح العزل البتيومينى المعدل بالبولى بروبيلين و المطعم بالبوليي ستير ASTM D6222	Thickness, min, (mm)	السماكة	ASTM D5147	Grade S	3.5	Grade S	3.8	1.13	**Bitumat Company Limited:** Eng.Mohamad Shehateh 0503839857 **Awazel Company** Eng Khaled Niazee : 0503840348 **Exova Laboratory** Mr. Osama Farhan 0535365732	Yes	H.O. - Khobar	75
					Grade G	4.0	Grade G	4.3					
		Net Mass Per unit Area, min, g/m2	وزن وحدة المساحة	ASTM D5147	Grade S	34.1	Grade S	39.0			Yes	H.O. - Khobar	200
					Grade G	41.5	Grade G	48.8					
		Bottom Side Coating Thickness, min, (mm)	سماكة الدهان السفلي	ASTM D5147	Grade S	0.76	Grade S	1.0			Yes	H.O. - Khobar	50 / Point
					Grade G	0.76	Grade G	1.0					
		Maximum Load at 23±2°C MD and XMD, before and After heat conditioning, min, (KN/m)	الحمل الأقصى	ASTM D5147	8.8		14				Yes	H.O. - Khobar	200
		Elongation at 23±2°C MD and XMD, before and After heat conditioning at maximum Load, % min	التمدد عند الحمل الاقصى	ASTM D5147	23		40				Yes	H.O. - Khobar	200
		Maximum Load at -18±2°C MD and XMD, min, (KN/m)	الحمل الأقصى	ASTM D5147	60		15.8				NO	-	-
		Elongation at 23±2°C MD and XMD at Maximum load, % min	التمدد عند الحمل الاقصى	ASTM D5147	10		15				Yes	H.O. - Khobar	200
		Elongation at 5% Maximum load at 23±2°C MD and XMD, % min	التمدد عند ٥% من الحمل الاقصى	ASTM D5147	30		50				Yes	H.O. - Khobar	200
		Tear Strength at 23±2°C, min (N)	قوة التمزق	ASTM D5147	311		356				Yes	H.O. - Khobar	200
		low Temp. Flexibility, max	المرونة عند درجة حرارة منخفضة	ASTM D5147	(+0)		(+0)				Yes	H.O. - Khobar	100
		Dimensional Stability, %change, max	ثبات الابعاد	ASTM D5147	1		1				Yes	H.O. - Khobar	100
		High Temp. Stability, °C, minimum	الثبات عند درجات الحرارة العالية	ASTM D5147	110		110				Yes	H.O. - Khobar	150
		Granule Embedment, Grade G only maximum loss, grams	فقد الحبيبات السطحية	ASTM D5147	2		2				NO	-	-
		Water Absorption, % max	امتصاصية الماء	ASTM D5147	3.2		3.2				Yes	H.O. - Khobar	100
		Moisture Content, % max	محتوى الرطوبة	ASTM D5147	1		1				Yes	H.O. - Khobar	100
		Low Temp. Unrolling, °C, maximum	الحرارة الدنيا للبسط	ASTM D5636	5		5				Yes	H.O. - Khobar	100

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		Test Description	إسم الإختبار	Standard Procedure	Standard Limit Type I		Standard Limit Type II						
1.14	APP (Atactic Polypropylene) Modified Bituminous Waterproofing Sheet Using Combination of Polyester and Glass fiber Reinforcement صفائح العزل البتيومينى المعدل بالبولى بروبيلين و المطعم بالبوليى ستير و الليبر غلاس ASTM D6223	Thickness, min, (mm)	السماكة	ASTM D5147	Grade S	3.5	Grade S	3.5	1.14	Bitumat Company Limited: Eng.Mohamad Shehateh: 0503839857 Awazel Company Eng Khaled Niazee: 0503840348 Exova Laboratory Mr. Osama Farhan 0535365732	Yes	H.O. - Khobar	75
					Grade G	4.0	Grade G	4.0					
		Net Mass Per unit Area, min, g/m2	وزن وحدة المساحة	ASTM D5147	Grade S	36.6	Grade S	36.6			Yes	H.O. - Khobar	100
					Grade G	43.9	Grade G	43.9					
		Bottom Side Coating Thickness, min, (mm)	سماكة الدهان السفلي	ASTM D5147	Grade S	1.00	Grade S	1.00			Yes	H.O. - Khobar	50 / Point
					Grade G	1.00	Grade G	1.00					
		Maximum Load at 23±2°C MD and XMD, before and After heat conditioning, min, (KN/m)	الحمل الأقصى	ASTM D5147	11.4		17.5				Yes	H.O. - Khobar	200
		Elongation at 23±2°C MD and XMD, before and After heat conditioning at maximum Load, % min	التمدد عند الحمل الاقصى	ASTM D5147	3		3				Yes	H.O. - Khobar	200
		Maximum Load at -18±2°C MD and XMD, min, (KN/m)	الحمل الأقصى	ASTM D5147	26.3		26.3				No	-	-
		Elongation at 23±2°C MD and XMD at Maximum load, % min	التمدد عند الحمل الاقصى	ASTM D5147	3		3				Yes	H.O. - Khobar	200
		Tear Strength at 23±2°C, min (N)	قوة التمزق	ASTM D5147	533		800				Yes	H.O. - Khobar	200
		low Temp. Flexibility, max	المرونة عند درجة حرارة منخفضة	ASTM D5147	(+0)		(+0)				Yes	H.O. - Khobar	100
		Dimensional Stability, %change, max	ثبات الابعاد	ASTM D5147	1		1				Yes	H.O. - Khobar	100
		High Temp. Stability, °c, minimum	الثبات عند درجات الحرارة العالية	ASTM D5147	110		110				Yes	H.O. - Khobar	150
		Granule Embedment, Grade G only maximum loss, grams	فقد الحبيبات السطحية	ASTM D5147	2		2				No	-	-
		Water Absorption, % max	امتصاصية الماء	ASTM D5147	3.2		3.2				Yes	H.O. - Khobar	100
		Moisture Content, % max	محتوى الرطوبة	ASTM D5147	1		1				Yes	H.O. - Khobar	100
		Low Temp. Unrolling, °C, maximum	الحرارة الدنيا للبسط	ASTM D5636	5		5				Yes	H.O. - Khobar	100

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1.15	Specification of Deformed Steel Bars for Concrete Reinforcement مواصفة الحديد المستخدم كتقوية للخرسانة ASTM A615	Test Description	إسم الإختبار	Standard Procedure	Standard Limit Grade 300		Standard Limit Grade 420		Standard Limit Grade 520		1.15	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Yield Strength, min (MPa)	إجهاد المطاوعة	ASTM A370	300		420		520				Yes	H.O. - Khobar	500
		Tensile Strength, min (MPa)	إجهاد الكسر	ASTM A370	500		620		690				Yes	H.O. - Khobar	
		% Elongation, L_o = 203.2 mm (min)	الاستطالة	ASTM A370	9.5, 10mm	11	Up to 20mm	9	19.1,…, 25.4mm	7			Yes	H.O. - Khobar	
					12, …., 19.1mm	12	22,…., 25mm	8	>25mm	6					
							>25mm	7							
		Bending Test	إجهاد الثني	ASTM A370	Up to 6mmϕ (Bending Diameter)	3 1/2 d	Up to 16mm ϕ	3 1/2 d	19.1,.., 25.4mm ϕ	5 d			Yes	H.O. - Khobar	400
					19.1mm ϕ	5d	19,…., 25.4mm ϕ	5d	28,….,40mm ϕ	7d					
							28,….,40mm ϕ	7d							
		Chemical Composition (%)	التحليل الكيميائي	ASTM A370	C	Not Specified	C	Not Specified	C	Not Specified			Yes	H.O. - Khobar	1300
					Si	Not Specified	Si	Not Specified	Si	Not Specified					
					S	Not Specified	S	Not Specified	S	Not Specified					
					Mn	Not Specified	Mn	Not Specified	Mn	Not Specified					
					P	Max 0.06	P	Max 0.06	P	Max 0.06					
					Carbon Equivalent	Not Specified	Carbon Equivalent	Not Specified	Carbon Equivalent	Not Specified					

ID	Material المادة	Test Description	إسم الإختبار	Standard Procedure	Standard Limit				Form No: نموذج رقم	Tested By أماكن فحص العينات	Availability	Location	Price
1.16	Asphalt Concrete Paving مواصفة الرصف الأسفلتي	Quality Test for Aggregate and Sand							1.16	GTC Laboratory (03) 5877424 Exova Laboratory Mr. Osama Farhan 0535365732			
		Sand Equivalent	المكافئ الرملي	-	Min 50						Yes	All Regions	150
		Soundness (Soudium sulphate)	الجساءة	ASTM C88	Max 12						Yes	All Regions	400
		Loss Angeles Abrasion	التآكل	ASTM C131	Max 40						Yes	All Regions	200
		Job mix Formula						Tolerences From JMF			-	-	-
		Sieve Size	إسم الإختبار	Standard	A	B	C				Yes	All Regions	200
		25mm	المناخل القياسية	MS-2	100	100	100	± 7%			-	-	-
		19mm			82-100	100	100	± 7%			-	-	-
		12.5mm			70-90	82-100	100	± 7%			-	-	-
		9.5mm			60-82	68-90	82-100	± 7%			-	-	-
		4.75mm			42-70	50-79	56-88	± 7%			-	-	-
		No.10			30-60	36-67	40-75	± 4%			-	-	-
		No.40			15-40	17-44	19-48	± 4%			-	-	-
		No.80			8- 26	9-29	10-32	± 4%			-	-	-
		No.200			3-8	3-8	4-9	± 2%			-	-	-
		Asphalt Content	نسبة البيتيومين		4.5-7.0	5.0-7.5	5.5-8.0	± 0.4%			Yes	All Regions	150
		Marshall Stability	الثبات (مارشال)	-	Min 3336N						Yes	All Regions	200
		Marshall Flow 0.25mm units		-	7 - 15						Yes	All Regions	100
		% Voids	نسبة الفراغات	-	2 - 4						Yes	All Regions	100
		% Voids in Mineral Aggregate(VMA)	نسبة الفراغات بين الحصى	-	Min 14.2						Yes	All Regions	100

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	Architectural Materials Part						

2.1 — Gypsum Wallboard / ألواح الجدران الجبسية / ASTM C-36

Test Description	إسم الإختبار	Standard Procedure	Standard Limits	Availability	Location	Price
Finish and Appearance	المظهر	ASTM C-473	منتظم الشكل، خال من العيوب	Yes	Abu Dhabi - UEA	450
Dimensions and Tolerances	التفاوت بالأبعاد	ASTM C-473	Thickness ====> ±0.4mm Width ====> ±3mm Length ====> ±6mm	Yes	Abu Dhabi - UEA	450
Fire Resistance *If Required	مقاومة الحريق ان تطلب	ASTM E119	15.9mm Thickness : 1 h fire-resistance / 12.7mm Thickness : 3/4 h fire-resistance	No	-	-
Flame spread index	معامل انتشار اللهب	ASTM E84	≤25	No	-	-
Core, End, and Edge Hardness	الصلادة السطحية	ASTM C-473	Method A : 67N / Method B: 49N	Yes	Abu Dhabi - UEA	1400
Nail Pull Resistance	مقاومة الغرز	ASTM C-473	Thickness, in. [mm] / Method A Nail Pull Resistance, lbf [N] / Method B Nail Pull Resistance, lbf [N] ¼ [6.4] / 40 [180] / 36 [160] 5⁄16 [7.9] / 50 [220] / 46 [200] ⅜ [9.5] / 60 [270] / 56 [250] ½ [12.7] / 80 [360] / 77 [340] ⅝ [15.9] / 90 [400] / 87 [390] ¾ [19.0] / 100 [440] / 97 [430]	Yes	Abu Dhabi - UEA	785
Humidified Deflection	الانحراف و الميلان	ASTM C-473	Thickness, in. [mm] / Humidified Deflection, Eighths of an inch [mm] ¼ [6.4] / not applicable 5⁄16 [7.9] / not applicable ⅜ [9.5] / 15 [48] ½ [12.7] / 10 [32] ⅝ [15.9] / 5 [16] ¾ [19.0] / 5 [16]	Yes	Abu Dhabi - UEA	900
Flexural Strength	مقاومة الانحناء	ASTM C-473	Thickness, in. [mm] / Method A: Load, lbf [N] Bearing Edges Across Fiber of Surfacing / Method A: Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing / Method B: Load, lbf [N] Bearing Edges Across Fiber of Surfacing / Method B: Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing ¼ [6.4] / 50 [222] / 20 [89] / 46 [205] / 16 [71] 5⁄16 [7.9] / 65 [289] / 25 [111] / 62 [276] / 21 [93] ⅜ [9.5] / 80 [356] / 30 [133] / 77 [343] / 26 [116] ½ [12.7] / 110 [489] / 40 [178] / 107 [476] / 36 [160] ⅝ [15.9] / 150 [667] / 50 [222] / 147 [654] / 46 [205] ¾ [19.0] / 170 [756] / 60 [267] / 167 [743] / 56 [249]	Yes	Abu Dhabi - UEA	950

2.1

Hotty-stanger Laboratory
Mr. Riyaz: 0515192544
Exova Laboratory
Mr. Osama Farhan
0535365732
Mada Gypsum
Mr. Patric Vancik 0535001605

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2.2	Gypsum Ceiling board الأسقف الجبسية المستعارة ASTM C-1396	See table below	2.2	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732 Mada Gypsum Mr. Patric Vancik 0535001605	Yes	Abu Dhabi - UEA	450
					Yes	Abu Dhabi - UEA	450
					Yes	Abu Dhabi - UEA	785
					Yes	Abu Dhabi - UEA	1400
					Yes	Abu Dhabi - UEA	900
					Yes	Abu Dhabi - UEA	950

Test Description	إسم الاختبار	Standard Procedure	Standard Limits
Finish and Appearance	المظهر	ASTM C-473	منتظم الشكل، خال من العيوب
Dimensions and Tolerances	التفاوت بالأبعاد	ASTM C-473	Thickness ====> ± 0.8mm Width ====> ± 3mm Length ====> ± 6mm
Nail Pull Resistance	مقاومة الغرز	ASTM C-473	Method A: Not less than 356N Method B: Not less than 343N
Core, End, and Edge Hardness	الصلادة السطحية	ASTM C-473	Method A : 67N; Method B: 49N
Humidified Deflection	الانحراف و الميلان	ASTM C-473	Not more than 8mm
Flexural Strength	مقاومة الانحناء	ASTM C-473	METHOD A: Thickness in. [mm] ½ [12.7]; Load, lbf [N] Bearing Edges Across Fiber of Surfacing 110 [489]; Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing 40 [178] METHOD B: Load, lbf [N] Bearing Edges Across Fiber of Surfacing 107 [476]; Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing 36 [160]

ID	Material المادة	Test Required الفحوصات المخبرية اللازمة	Form No: نموذج رقم	Tested By أماكن فحص العينات	Availability	Location	Price
2.3	Ceramic Tiles (Floor, Wall, Mosaic and Quarry) بلاطة السيراميك ANSI A137.1 & ASTM D523	See table below	2.3	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Saudi Ceramic Company Eng. Sameer Al-Mulla : (03) 5307324 Al-Fanar Ceramics	Yes	All Regions	
					Yes	All Regions	300
					Yes	All Regions	2200

Test Description	إسم الاختبار	Standard Procedure	Standard Limits Pressed Floor Tile	Standard Limits Glazed Wall Tile	Standard Limits Quarry Tile	Standard Limits Mosaic Tile
Nominal Size	الحجم الاعتباري	ASTM C499	±4.0%	±2.0%	±2.0%	±10.0%
Caliber Range (Variation from Average Facial Dimension of Sample	التفاوت بالابعاد	ASTM C499	±0.75% or ±2.3mm	±0.30% or ±1.0mm	±0.75% or ±2.3mm	±5.0%
Warpage Edge	إعوجاج الحواف	ASTM C485	±1% or ±3.1mm	(-0.3% to 0.4%) or (-1.0 to 1.3mm)	±1.5% or ±4.6mm	±1.0%
Warpage Diagonal	إعوجاج القطر	ASTM C486	±0.75% or ±3.3mm	(-0.3% to 0.4%) or (-1.3 to 1.8mm)	±0.1.0% or ±4.3mm	±0.75%
Wedging	التوتيد	ASTM C502	±1% or ±3.1mm	±0.40% or ±1.3mm	±1% or ±3.1mm	±2.0%
Thickness	السماكة	ASTM C499	(+ 1.02mm)	(+ 0.79mm)	(+ 1.27mm)	(+ 0.76mm)
Visible Abrasion Resistance	مقاومة التآكل المرئية	ASTM C1027	As Reported(Glazed only)	N/A	As Reported(Glazed only)	As Reported(Glazed only)
Deep Abrasion	مقاومة التآكل	ASTM C1243	See Table 11	N/A	See Table11	See Table11
Bond Strength	قوة الترابط	ASTM C482	≥ 0.345 MPa	≥ 0.345 MPa	≥ 0.345 MPa	≥ 0.345 MPa
Water Absorption	إمتصاصية الماء	ASTM C 373	**Vitreous (P2)** (0.5%<wa≤3.0%) **Semi-Vitreous(P3)** (3.0%<wa≤7.0% **Non-Vitreous (P4)** (7.0<wa≤20.0%)	**Non-Vitreous (P4)** (7.0<wa≤20.0%)	**Vitreous (E2)** (0.5%<wa≤3.0%) **Semi-Vitreous(E3)** (3.0%<wa≤7.0% **Non-Vitreous (E4)** (7.0<wa≤20.0%)	**Vitreous** (0.5%<wa≤3.0%) **Semi-Vitreous** (3.0%<wa≤7.0% **Non-Vitreous** (7.0<wa≤20.0%)
Crazing Resistance	مقاومة التصدع	ASTM C 424	Pass(Glazed Only)	Pass	Pass(Glazed Only)	Pass(Glazed Only)
Thermal Shock	مقاومة الصدمة الحرارية	ASTM C 484	Pass (Glazed Only)	Pass	Pass (Glazed Only)	Pass (Glazed Only)
Chemical Resistance	مقاومة الكيماويات	ASTM C650	As Reported	As Reported	As Reported	As Reported
SCOF	معامل الاحتكاك	ASTM 1028	As Reported	N/A	As Reported	As Reported
Stain Resistance	مقاومة التبقع	ASTM C 1378	As Reported	As Reported	As Reported	As Reported
Breaking Strength	إجهاد الكسر	ASTM C648	Ave: ≥ 113.4 Kgf Individual ≥102.1 Kgf	Ave: ≥ 56.7 Kgf Individual ≥45.4 Kgf	Ave: ≥ 113.4 Kgf Individual ≥102.1 Kgf	Ave: ≥ 113.4 Kgf Individual ≥102.1 Kgf
Resistance to Freeze (Thaw Cycling)	مقاومة التجمد	ASTM 1026	As Reported	As Reported	As Reported	As Reported
Scratch Hardness	مقاومة الخدش	ASTM C373	≥ 7 Moh's	≥ 7 Moh's	≥ 7 Moh's	≥ 7 Moh's

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2.4 Porcelain Tiles — ارضيات بورسيلان — ANSI A137.1 & ASTM D523

Test Description	إسم الإختبار	Standard Procedure	Standard Limits
Nominal Size	الحجم الاعتباري	ASTM C499	±3.0%
Caliber Range (Variation from Average Facial Dimension of Sample	التفاوت بالابعاد	ASTM C499	±0.50% or ±2.0mm
Warpage Edge	إعوجاج الحواف	ASTM C485	±0.75% or ±2.3mm
Warpage Diagonal	إعوجاج القطر	ASTM C486	±0.50% or ±2.0mm
Wedging	التوتيد	ASTM C502	±0.50% or ±2.0mm
Thickness	السماكة	ASTM C499	(+ 1.02mm)
Visible Abrasion Resistance	مقاومة التآكل المرئية	ASTM C1027	As Reported(Glazed only)
Deep Abrasion	مقاومة التآكل	ASTM C1243	See Table 11
Bond Strength	قوة الترابط	ASTM C482	≥ 0.345 MPa
Water Absorption	إمتصاصية الماء	ASTM C 373	**0.0% - 0.5%**
Crazing Resistance	مقاومة التصدع	ASTM C 424	Pass(Glazed Only)
Thermal Shock	مقاومة الصدمة الحرارية	ASTM C 484	Pass (Glazed Only)
Chemical Resistance	مقاومة الكيماويات	ASTM C650	As Reported
SCOF	معامل الاحتكاك	ASTM 1028	As Reported
Stain Resistance	مقاومة التبقع	ASTM C 1378	As Reported
Breaking Strength	إجهاد الكسر	ASTM C648	Ave: ≥ 113.4 Kgf Individual ≥102.1 Kgf
Resistance to Freeze (Thaw Cycling)	مقاومة التجمد	ASTM 1026	As Reported
Scratch Hardness	مقاومة الخدش	ASTM C373	≥ 6 Moh's

Table 1: Class and Corresponding Water Absorption (wa) Ranges

Forming Method	Impervious (Porcelain) wa ≤ 0.5%	Vitreous 0.5% < wa ≤ 3.0%	Semi-Vitreous 3.0% < wa ≤ 7.0%	Non-Vitreous 7.0% < wa ≤ 20.0%
Pressed	P1	P2	P3	P4
Extruded	E1	E2	E3	E4
Other	O1	O2	O3	O4

Table 12: Visible Abrasion Classification

Class	Maximum Recommended Use
0	Not recommended for floors
I	Light Residential
II	Residential
III	Heavy Residential or Light Commercial
IV	Commercial
V	Heavy Commercial

Table 11: Deep Abrasion

Class	Maximum Value (loss in mm³)
P1, E1, O1	175
P2	225
E2, O2	275
P3	345
E3, O3	393
E4, O4	2365
P4	no requirement

Table 14: Stain Resistance Classification

Stain Resistance Class	Maximum Number of Samples that Retain a Stain
A	0
B	1
C	2
D	3
E	4 or More

Table 13: Chemical Resistance Classification

Chemical Resistance Class	Maximum Number of Affected Samples
A	0
B	1
C	2
D	3
E	4 or More

Form No:	Tested By	Availability	Location	Price
2.4	**Hotty-stanger Laboratory** Mr. Riyaz: 0515182544 **Saudi Ceramic Company** Eng. Sameer Al-Mulla: (03) 5307324 **Al-Fanar Ceramics**	Yes	All Regions	
		Yes	All Regions	
		Yes	All Regions	

2.5 Marble Stone — ارضيات الرخام — ASTM C 503

Test Description	إسم الإختبار	Standard Procedure	Standard Limits Calcite Marble Type I	Standard Limits Dolomite Marble Type II	Standard Limits Serpentine Marble(Type III)	Standard Limits Travertine Marble Type (IV)
Absorption by weight, max, %	إمتصاص الماء	ASTM C 97	0.2% Max	0.2% Max	0.2% Max	0.2% Max
Density, min,(kg/m3)	الكثافة	ASTM C 97	2595	2800	2690	2305
Compressive strength, min,(MPa)	إجهاد الضغط	ASTM C 170	52MPa Min	52MPa Min	52MPa Min	52MPa Min
Modulus of rupture, min, (MPa)	معامل الكسر	ASTM C 99	7 MPa Min	7 MPa Min	7 MPa Min	7 MPa Min
Abrasion resistance, min	مقاومة البري	ASTM C 241	10 Min	10 Min	10 Min	10 Min
hardness, min	الصلادة السطحية	ASTM C1353	3 Moh's	3 Moh's	3 Moh's	3 Moh's
Flexural strength, min, (MPa)	إجهاد الثني	ASTM C880	7 MPa Min	7 MPa Min	7 MPa Min	7 MPa Min

Form No:	Tested By	Availability	Location	Price
2.5	**Hotty-stanger Laboratory** Mr. Riyaz: 0515182544 **Exova Laboratory** Mr. Osama Farhan 0535365732	Yes	All Regions	200
		Yes	All Regions	150
		Yes	All Regions	400
		Yes	All Regions	500
		Yes	All Regions	800
		Yes	All Regions	200
		Yes	All Regions	500

2.6 Granite Stone — ارضيات الجرانيت — ASTM C 615

Test Description	إسم الإختبار	Standard Procedure	Standard Limits
Absorption by weight, max, %	إمتصاص الماء	ASTM C 97	0.4% Max
Density, min,(kg/m3)	الكثافة	ASTM C 97	2560
Compressive strength, min,(MPa)	إجهاد الضغط	ASTM C 170	131 MPa Min
Modulus of rupture, min, (MPa)	معامل الكسر	ASTM C 99	10.34 MPa Min
Abrasion resistance, min	مقاومة البري	ASTM C 241	25 Min
hardness, min	الصلادة السطحية	ASTM C1353	3 Moh's
Flexural strength, min, (MPa)	إجهاد الثني	ASTM C880	8.27 MPa Min

Form No:	Tested By	Availability	Location	Price
2.6	**Hotty-stanger Laboratory** Mr. Riyaz: 0515182544 **Exova Laboratory** Mr. Osama Farhan 0535365732	Yes	All Regions	200
		Yes	All Regions	150
		Yes	All Regions	400
		Yes	All Regions	500
		Yes	All Regions	800
		Yes	All Regions	200
		Yes	All Regions	500

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2.7	Limestone الحجر الجيري ASTM C 568	Test Description	إسم الاختبار	Standard Procedure	Standard Limits Low Density (1760-2160 kg/m3) Type (I)	Standard Limits Medium Density (2160-2560 kg/m3) Type (II)	Standard Limits High Density (>2560kg/m3) Type (III)	2.7	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Absorption by weight, max, %	إمتصاص الماء	ASTM C 97	12% Max	7.5% Max	3.0% Max			Yes	All Regions	200
		Density, min,(kg/m3)	الكثافة	ASTM C 97	1760	2160	2560			Yes	All Regions	150
		Compressive strength, min,(MPa)	إجهاد الضغط	ASTM C 170	12 MPa Min	28 MPa Min	55 MPa Min			Yes	All Regions	400
		Modulus of rupture, min, (MPa)	معامل الكسر	ASTM C 99	2.9 MPa Min	3.4 MPa Min	6.9 MPa Min			Yes	All Regions	500
		Abrasion resistance, min	مقاومة البري	ASTM C 241	10 Min	10 Min	10 Min			Yes	All Regions	800
2.8	Quartz-Based Stone حجر الكوارتز ASTM C 616	Test Description	إسم الإختبار	Standard Procedure	Standard Limits Sandstone (60% Min Sillica) Type (I)	Standard Limits Quartzitic Sandstone (90% Min Sillica) Type (II)	Standard Limits Quartzite (95% Min Sillica) Type (III)	2.8	Hotty-stanger Laboratory Mr. Riyaz 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Absorption by weight, max, %	إمتصاص الماء	ASTM C 97	8% Max	3% Max	1% Max			Yes	All Regions	200
		Density, min,(kg/m3)	الكثافة	ASTM C 97	2003	2400	2560			Yes	All Regions	150
		Compressive strength, min,(MPa)	إجهاد الضغط	ASTM C 170	27.6 MPa Min	68.9 MPa Min	137.9 MPa Min			Yes	All Regions	400
		Modulus of rupture, min, (MPa)	معامل الكسر	ASTM C 99	2.4 MPa Min	6.9 MPa Min	13.9 MPa Min			Yes	All Regions	500
		Abrasion resistance, min	مقاومة البري	ASTM C 241	2 Min	8 Min	8 Min			Yes	All Regions	800
		hardness, min	الصلادة السطحية	ASTM C1353	3 Moh's	3Moh's	3Moh's			Yes	All Regions	200
2.9	Slate Stone حجر الأردواز ASTM C 629	Test Description	إسم الاختبار	Standard Procedure	Standard Limits Slate Stone For Exterior Uses (I)	Standard Limits Slate Stone For Interior Uses (II)		2.9	Hotty-stanger Laboratory Mr. Riyaz: 0515182544 Exova Laboratory Mr. Osama Farhan 0535365732			
		Absorption by weight, max, %	إمتصاص الماء	ASTM C121	0.25% Max	0.45% Max				Yes	All Regions	200
		Modulus of rupture, min, (MPa)	معامل الكسر	ASTM C120	Across Grain: 62.1 MPa Min Along Grain: 49.6 MPa Min	Across Grain: 49.6 MPa Min Along Grain: 37.9 MPa Min				Yes	All Regions	500
		Abrasion resistance, min	مقاومة البري	ASTM C241	8 Min	8 Min				Yes	All Regions	800
		Acid Resistance, max, (mm)	مقاومة الحوامض	ASTM C217	0.38	0.64				Yes	H.O. - Khobar	
2.10	Hollow Metal Doors & Steel Frames	Quality Assurance & Control Check Items						2.10	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			
		1) Make sure the supplier is approved by KFU										
		2) Compare materials used by supplier with that specified in the project										
		3) Check the Stamped UL No. and Certificate for the fire rated doors.										
		4) Check the hardwares of the doors and compare with the approved one's.										
		5) Check the Certificate of Origin for the doors and the hardware.										
		6) Ask for the Warranty Certificate.										
		7) Ask for the Manufactured Recommended Installation Procedure.										

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2.11	Wood Doors and Frames	**Quality Assurance & Control Check Items** 1) Make sure the supplier is approved by KFU 2) Compare materials used by supplier with that specified in the project 3) Check the Stamped UL No. and Certificate for the fire rated doors. 4) Check the hardwares of the doors and compare with the approved one's. 5) Check the Certificate of Origin for the doors and the hardware. 6) Ask for the Warranty Certificate. 7) Ask for the Manufactured Recommended Installation Procedure. 8) The Guarntee shall be according to NWMA Standard Door Guarantees	2.11	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			
2.12	Door Accessories	**Quality Assurance & Control Check Items** 1) Make sure the supplier is approved by KFU 2) Compare Materials used by supplier with that specified in the project. 3) Check the Stamped UL No. and Certificate for the fire rated Accessories. 4) Check the hardwares Moded No. and make sure it is in BHMA. 5) Check the Certificate of Origin. 6) Ask for the Warranty Certificate. 7) Take random sample and open it to check it.	2.12	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			
2.13	Carpet & Carpet Tiles	**Quality Assurance & Control Check Items** 1) Make sure the supplier is approved by KFU 2)Make a Comparison Sheet between the Carpet Manufacturer and the Specified one. 3) Check the UL No. and Certificates for the Fire Rating(UL 992 - Smoke Chamber Test). 4)DOC - Federal Standard, Department of Commerce (FF 1-70 - Methenamine Pill Test) 5) Check the Certificate of Origin. 6) Ask for the Warranty Certificate. 7)NFPA - National Fire Protection Association (NFPA 253 & NFPA 255). 8) Ask for the manufacturer's recommended installation procedures	2.13	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			
2.14	Wood Work	**Quality Assurance & Control Check Items** 1) Make sure the supplier is approved by KFU 2)Make a Comparison Sheet between the Wood Manufacturer Data and the Specified One. 3) Ask for Woodwork Manufacturer (Fabricator) Certification. 4) Make Sure that Wood used Comply with requirements of AWI's quality standard. 5) Check the Certificate of Origin. 6) Ask for the Warranty Certificate. 7) Moisture shall be 10% for Interior Woodwork and Ranging from (9-13)% for Exterior Woodwork 8) Fire Retardant Treated Wood : AWPA C-20 for **Lumber** and AWPA C-27 for **Plywood** 9) Flame Spread Rating of 25 as per ASTM E 84.	2.14	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			

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2.15	Sealants	**Quality Assurance & Control Check Items** **Exterior Usage** **1) Joints between metal frame and concrete or masonry and joints between marble cladding.** * Multi-Component Polyurethane Sealant: Polyurethane-based, 2-part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25 or FS-TT-S-0227E, Type II, Class A. * One-Component Polyurethane Sealant: Polyurethane-based, one part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25. **2) Expansion and control joints:** * Multi-Component Polyurethane Sealant: Polyurethane-based, 2-part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25 or FS-TT-S-0227E, Type II, Class A. * One-Component Polyurethane Sealant: Polyurethane-based, one part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25. **3) Exterior sills, jambs, and heads of window frames, door frames, louvers and similar openings and where metal, wood or other materials abut or join masonry concrete or each other:** * One-Component Polyurethane Sealant: Polyurethane-based, one part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25. * One-Component Acrylic Sealant: Acrylic ter-polymer, solvent-based, one-part, thermo-plastic sealant complying ASTM C 834; solids not less than 95 percent acrylic as recommended by the manufacturer for general use as an exposed building construction sealant. **4) Horizontal joints in pavement and sidewalks:** * Two-Component Polyurethane Sealant: Pourable polyurethane-based, 2-part elastomeric sealant (self-leveling), conforming to ASTM C 920, Type M, Grade P, Class 25, or FS-TT-S-0220, or FS TT-S-0227. **Interior Usage** **1) Interior sill, jamb, around window and door frames and all items adjoined to masonry or concrete surfaces.** * One-Component Polyurethane Sealant: Polyurethane-based, one part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25. * One-Component Acrylic Sealant: Acrylic ter-polymer, solvent-based, one-part, thermo-plastic sealant complying ASTM C 834; solids not less than 95 percent acrylic as recommended by the manufacturer for general use as an exposed building construction sealant. **2) Expansion and control joints:** * Multi-Component Polyurethane Sealant: Polyurethane-based, 2-part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25 or FS-TT-S-0227E, Type II, Class A. * One-Component Polyurethane Sealant: Polyurethane-based, one part elastomeric sealant (non-sag), conforming to ASTM C 920, Type M, Grade NS, Class 25. **3) Joints between plumbing fixtures and other elements of wet areas:** *Mildew-Resistant Silicone Rubber Sealant: Silicone rubber-based, one part elastomeric sealant, conforming to ASTM C 920, Type S, Grade NS, Class 25 or FS TT-S-1543, Class A; specifically for mildew resistance and recommended by the manufacturer for interior joints in wet areas, passing ANSI A 136.1 test for mold growth **Exterior and Interior Glazing Sealant** * One-component construction silicone sealant: Conforming to ASTM C 834 and ASTM C 920 with movement capability plus or minus 25 percent, excellent adhesion to glass and aluminum.	2.15	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			

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2.16	ALUMINUM DOORS AND FRAMES	**Quality Assurance & Control Check Items** **Test Description** | **إسم الإختبار** | **Standard Procedure** | **Standard Limits** Wind Loading – Uniform Pressure – تحمل الرياح – ASTM E 330 – 97.6 kg/m² Wind Loading – Maximum Deflection – تحمل الرياح – ASTM E 330 – 1/175 of clear span any framing member Weather Resistance – Air Infiltration – تسرب الهواء – ASTM E 283 – 0.6 m3/min/m of crack Weather Resistance – Water penetration – تسرب الماء – ASTM E 331 – Not be allowed Ask for Certificates showing these Requitrments **Aluminum Members** 1) Extrusions of Bars, Rods and Tubes: 6063-T6 Alloy conforming to ASTM B 221. 2) Sheets and Plates: 5005-H14 alloy conforming to ASTM B 209. 3) Doors and frames shall be manufacturer standard systems of extrusions not less than 2.5 mm thick 4) Powder Coated Finish: 60 - 80 micron thick. Color shall be as selected and approved by the Engineer 5) Anodized Finish: Conform to AA C22A42; 22 micron thick; with shop applied protective coating of clear acrylic lacquer or any coating in accordance with AAMA 602.2, 0.5 mil dry film thickness, over anodized finish.	2.16	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			

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2.17 Aluminum Windows

Quality Assurance & Control Check Items

Test Description		إسم الإختبار	Standard Procedure	Standard Limits	
Wind Loading	Uniform Pressure	تحمل الرياح	ASTM E 330	98 kg/m²	Ask for Certificates showing these Requitrments
	Maximum Deflection			1/175 of clear span any framing member	
Weather Resistance	Air Infiltration	تسرب الهواء	ASTM E 283	(0.30 cfm per ft)	
	Water penetration	تسرب الماء	ASTM E 331	Not be allowed	

Aluminum Members

1) Extrusions of Bars, Rods and Tubes: 6063-T6 Alloy conforming to ASTM B 221.
2) Sheets and Plates: 5005-H14 alloy conforming to ASTM B 209.
3) Doors and frames shall be manufacturer standard systems of extrusions not less than 2.5 mm thick
4) Powder Coated Finish: 60 - 80 micron thick. Color shall be as selected and approved by the Engineer
5) Anodized Finish: Conform to AA C22A42; 22 micron thick; with shop applied protective coating of clear acrylic lacquer or any coating in accordance with AAMA 602.2, 0.5 mil dry film thickness, over anodized finish.

Form No: 2.17

Tested By: Ask Eng. Abdullah Alarbash, QC Department in KFU, 0506930652

2.18 Paints

Quality Assurance & Control Check Items

1) Make sure the supplier has been approved by KFU
2)Make a Comparison Sheet between the Paint Manufacturer Data and the Specified One.
3) Take Samples for Checking and Compare it with Technical Data Sheet.
4) Ask for Test Reports and certificates of compliance
5) Ask for Manufacturer's stock number and date of manufacture

Form No: 2.18

Tested By: Ask Eng. Abdullah Alarbash, QC Department in KFU, 0506930652

2.19 Vinyl Flooring

Quality Assurance & Control Check Items

1) Make sure the supplier is approved by KFU
2) Compare materials used by supplier with that specified in the project
3) Check the Certificate of Origin
4) Ask for the Warranty Certificate.
5) Ask for the Manufactured Recommended Installation Procedure.
6) Ask for Test Reports and certificates of compliance
7) Check the Thickness of the Flooring.

Form No: 2.19

Tested By: Ask Eng. Abdullah Alarbash, QC Department in KFU, 0506930652

2.20 Epoxy & PU Flooring

Quality Assurance & Control Check Items

1) Make sure the supplier is approved by KFU
2) Compare materials used by supplier with that specified in the project
3) Check the Certificate of Origin
4) Ask for the Warranty Certificate.
5) Ask for the Manufactured Recommended Installation Procedure.
6) Ask for Test Reports and certificates of compliance
7) Check the Thickness of the Flooring.
8) Take Containers and Check it with Technical Data Sheet whether it is the same material mentioned or not
9) Take random samples and send it for testing after that compare the results with Technical Data Sheet for the system
10) Ask for the shipping Tickets

Form No: 2.20

Tested By: Ask Eng. Abdullah Alarbash, QC Department in KFU, 0506930652

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2.21	Solid Phenolic	**Quality Assurance & Control Check Items** Test Description | إسم الإختبار | Standard Procedure | Standard Limits Flame Spread | إنتشار اللهب | ASTM E 84 | 25 or less Smoke Development | تطور الدخان | 450 or less Ask for Certificates showing these Requirements 1) Make sure the supplier is approved by KFU 2)Make a Comparison Sheet between the Phenolic Manufacturer Data and the Specified One. 3) Check the Certificate of Origin. 4) Ask for the Warranty Certificate.	2.21	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652			
2.22	Stainless Steel Work Grade 304 & 316 (ASTM A240/A240M)	**Quality Assurance & Control Check Items** **Type 304** Test Description | إسم الإختبار | Standard Procedure | Standard Limits Tensile Strength (MPa) min | الإجهاد الأقصى | -- | 515 Yield Strength 0.2% Proof (MPa) min | إجهاد المطاوعة | -- | 205 Elongation (% in 50mm) min | الاستطالة | -- | Hardness Rockwell B (Max) | الصلادة السطحية | -- | 92 Brinell (Max) | -- | 201 Elastic Modulus (GPa) | الإجهاد على الإستطالة | -- | 193 Compposition Range Constituent | C | Cr | Ni | Mn | Si | P | S | Fe % wt | <0.08% | 17.5-20% | 8-11% | <2% | <1% | <0.045% | <0.03% | Balance **Type 316** Test Description | إسم الإختبار | Standard Procedure | Standard Limits Tensile Strength (MPa) min | الإجهاد الأقصى | -- | 515 Yield Strength 0.2% Proof (MPa) min | إجهاد المطاوعة | -- | 205 Elongation (% in 50mm) min | الاستطالة | -- | 40 Hardness Rockwell B (Max) | الصلادة السطحية | -- | 95 Brinell (Max) | -- | 217 Elastic Modulus (GPa) | الإجهاد على الإستطالة | -- | 193 Composition Range Constituent | Fe | C | Cr | Ni | Mn | Si | P | S | Mo % wt | Balance | <0.03% | 16-18.5% | 10-14% | <2% | <1% | <0.045% | <0.03% | 2-3%	2.22	Ask Eng. Abdullah Alarbash QC Department in KFU 0506930652	Yes Yes Yes Yes Yes Yes	Khobar & Riyadh H.O. - Khobar H.O. - Khobar Khobar & Riyadh H.O. - Khobar H.O. - Khobar	750 400 2300 750 400 2300

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		Test Description	**إسم الاختبار**	**Standard Procedure**	**Standard Limits**					
2.23	**Extruded Polystyrene For Roof Thermal Insulation** **ألواح البوليستايرين لعزل الأسطح** **ASTM C579-09**	Nominal Size	الحجم الاعتباري	ASTM C499	±3.0%	**2.4**	**Hotty-stanger Laboratory** Mr. Riyaz 0515182544 **Exova Laboratory** Mr. Osama Farhan 0535365732	Yes	H.O. - Khobar	500
		Caliber Range (Variation from Average Facial Dimension of Sample	التفاوت بالابعاد	ASTM C499	±0.50% or ±2.0mm			Yes	H.O. - Khobar	500
		Warpage Edge	إعوجاج الحواف	ASTM C485	±0.75% or ±2.3mm			Yes	H.O. - Khobar	500
		Warpage Diagonal	إعوجاج القطر	ASTM C486	±0.50% or ±2.0mm			Yes	H.O. - Khobar	500
		Wedging	التوتيد	ASTM C502	±0.50% or ±2.0mm			Yes	H.O. - Khobar	500
		Thickness	السماكة	ASTM C499	(+ 1.02mm)			Yes	H.O. - Khobar	500
		Visible Abrasion Resistance	مقاومة التآكل المرئية	ASTM C1027	As Reported (Glazed only)			No	-	-
		Deep Abrasion	مقاومة التآكل	ASTM C1243	See Table 11			No	-	-
		Bond Strength	قوة الترابط	ASTM C482	≥ 0.345 MPa			Yes	H.O. - Khobar	250
		Water Absorption	إمتصاصية الماء	ASTM C 373	**0.0% - 0.5%**			Yes	H.O. - Khobar	150
		Crazing Resistance	مقاومة التصدع	ASTM C 424	Pass (Glazed Only)			No	-	-
		Thermal Shock	مقاومة الصدمة الحرارية	ASTM C 484	Pass (Glazed Only)			No	-	-
		Chemical Resistance	مقاومة الكيماويات	ASTM C650	As Reported			Yes	H.O. - Khobar	1200
		SCOF	معامل الاحتكاك	ASTM 1028	As Reported			No	-	-
		Stain Resistance	مقاومة التبقع	ASTM C 1378	As Reported			Yes	H.O. - Khobar	800
		Breaking Strength	إجهاد الكسر	ASTM C648	Ave: ≥ 113.4 Kgf Individual ≥102.1 Kgf			Yes	H.O. - Khobar	200
		Resistance to Freeze (Thaw Cycling)	مقاومة التجمد	ASTM 1026	As Reported			No	-	-
		Scratch Hardness	مقاومة الخدش	ASTM C373	≥ 6 Moh's			Yes	H.O. - Khobar	200