



Kingdom of Bahrain
Ministry of Electricity & Water
Electricity & Water Consumption Directorate

مملكة البحرين
وزارة الكهرباء والماء
إدارة ترشيد الكهرباء والماء

thermal insulation APPLICATION FORM
Modification form

TO : Electricity & Water Conservation Directorate

We would like to inform you about the following changes in our Application

No. _____

Date Approved _____

- Owner
 Insulation Materials in Roof
 Glass Type

- Engineering Office
 Insulation Materials in Walls
 Glass Area

• Thermal Insulation of Roof

Sr. No.	Description of materials used in Roof	Density kg/m ³	Thickness (l) m	r m.k w	R m ² .k w	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						

Total thermal resistances for materials used in Roof (R_T) :

U-Value = W/m² °C

Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

Ministry of Electricity & Water Approval

Date of Approval

APPLICATION NO.



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thermal insulation APPLICATION FORM

Client Name :

Phone No :

Bldg. No :

Road No.

Block No.

Area :

Engineering Office Name :

Phone No :

Building Type :

No of floors :

• Thermal Insulation of Roofs

Sr. No.	Description of materials used in Roof	Density kg/m ³	Thickness (l) m	r $\frac{m.k}{w}$	R $\frac{m^2.k}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
13-						
Total thermal resistances for materials used in Roof (R _T) :						

U-Value = $W/m^2 \text{ } ^\circ C$

Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

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• Thermal Insulation for Exterior Walls

Sr. No.	Description of materials used in Exterior Walls	Density kg/m ³	Thickness (l) m	$\frac{r}{m.k}$ $\frac{w}{w}$	$\frac{R}{m^2.k}$ $\frac{w}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
Total thermal resistances for materials used in Roof (R _T) :					2.004	

U-Value	W/m ² °C
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Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

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• Thermal Insulation for Walls

Sr. No.	Description of materials used in Exterior Walls	Density kg/m ³	Thickness (l) m	$\frac{r}{m.k}$ $\frac{w}{w}$	$\frac{R}{m^2.k}$ $\frac{w}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
Total thermal resistances for materials used in Roof (R _T) :						

U-Value = W/m² °C

Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

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- Thermal Insulation for Walls (Lift shaft Shearwall)

Sr. No.	Description of materials used in Exterior Walls	Density kg/m ³	Thickness (l) m	$\frac{r}{m.k}$ $\frac{w}{w}$	$\frac{R}{m^2.k}$ $\frac{w}{w}$	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						

Total thermal resistances for materials used in Roof (R_T) :

U-Value =	W/m ² °C
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Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

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- Thermal Insulation for Walls (Spandrel panel @ Blockwall)

Sr. No.	Description of materials used in Exterior Walls	Density kg/m ³	Thickness (l) m	$\frac{r}{w}$ m.k	$\frac{R}{w}$ m ² .k	Notes
1-						
2-						
3-						
4-						
5-						
6-						
7-						
8-						
9-						
10-						
11-						
12-						
Total thermal resistances for materials used in Roof (R _T) :						

U-Value = W/m ² °C
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Client's Name
& Signature

Incharge Engineer
Name & Signature

Engineer Office
Stamp & Signature

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• Design of Windows Glass

Sr. No.	Geographical Location	Area of Glass (m ²)	Area of Wall (m ²)	Glass (single/double)	Glass type	Notes including shading if it is available
1-					INSULATED	
2-					INSULATED	
3-					INSULATED	
4-					INSULATED	
	Total			X	X	X

The percentage of the glass area with respect to the total area of exterior walls: %

I hereby state that all information in the attached tables and documents is correct and I confirm that I will comply with Thermal Insulation Order no. (8 /99) for the construction of this building.

Client's Name & Signature

Incharge Engineer Name & Signature

Engineer Office Stamp & Signature

Date of Approval

Ministry of Electricity & Water Approval

Where :

• $(U) = \frac{1}{R_T} \text{ W/m}^2 \text{ k}$

• Total thermal resistance $R_T = R_1 + R_2 + R_3 + R_4 + R_5$ (m²k/w)

Thermal resistance for adjacent air layer

Section	Thermal resistance for adjacent air layer (m. ² k/w)	
	Interior thermal resistance (R _i)	Outside thermal resistance (R _o)
Wall	0.121	0.059
Roof	0.166	0.059

THERMAL INSULATION IMPLEMENTATION CALCULATION SHEET FOR GLASS AREA

Job Title : _____ Client's Name : _____

Typical of External Glazed Window/Glazed Door/Curtain Wall/Skylight	Size of window/ door/curtain wall/ skylight (W x H)	Front Elevation		Rear Elevation		Left Elevation		Right Elevation		Total Glass Area of all Elevations (M ²)	Total Surface Area of all Elevations (M ²)
		Qty. (Nf)	TOTAL GLASS AREA (M ²) (WXHXNF)	Qty. (Nr)	TOTAL GLASS AREA (M ²) (WXHXNR)	Qty. (Nl)	TOTAL GLASS AREA (M ²) (WXHXNL)	Qty. (Nr)	TOTAL GLASS AREA (M ²) (WXHXNR)		

Engineering Office Name : _____ AREF SADEQ DESIGN CONSULTANTS
 Incharge Engineer's Name : _____
 Incharge Engineer's Signature : _____

Notes:
 L = LENGHT (METERS) H = HEIGHT (METERS)
 N* = No. Typical Floors and is applicable for calculating total surface area of typical floors. For remaining floors N*=1
 Other floors : Specify & add if any
 Exclude parapet in calculation of wall surface areas

CALCULATION SHEET FOR WALL SURFACE AREAS (including glass)

Job Title : _____ Client's Name : _____

Floor Designation	Front		Rear		Left		Right	
	L x H x N*	Area (M ²)	L x H x N*	Area (M ²)	L x H x N*	Area (M ²)	L x H x N*	Area (M ²)
Total Area								

Engineering Office Name : _____
 Incharge Engineer's Name : _____
 Incharge Engineer's Signature : _____

Notes:
 L = LENGHT (METERS) H = HEIGHT (METERS)
 N* = No. Typical Floors and is applicable for calculating total surface area of typical floors.For remaining floors N*=1
 Other floors : Specify & add if any
 Exclude parapet in calculation of wall surface areas

DETAILS FOR GLASS SELECTED

Job Title : _____ Client's Name : _____

Location :	Windows & Door	Curtain Wall	S K Y L I G H T	Total Glass Area (M ²)	Total Surface Area (M ²)	Glass %
Glass Area (M ²)						

Location :	GLASS TYPE / DESCRIPTION / COATING SURFACE #			Thickness (mm)			SUMMER U-VALUE (W/M ² C)	SHADING COEFFICIENT (SC)
	OUTER GLASS	INNER GLASS	INNER GLASS	OUTER GLASS	AIR SPACE	INNER GLASS		
Windows & Door								
Curtain Walls								
Skylight								

Engineering Office Name : AREF SADEQ DESIGN CONSULTANT

In-charge Engineer's Name : SAMIK B.

In-charge Engineer's Signature : _____

Note : Attached Performance Data for each type of glass selected.