

Building Regulations Specification

**Proposed New Single-storey side extension at
14 Heulfan Way, Gwersyllt LL11 4HX**

Client: Mr & Mrs Thomas

**Building Regulations
Specification**
(July 2015)

720/S(2)01



Architectural Design

GENERAL NOTES:

Specification is a guide only - read in conjunction with drawings.

All material and work practices to be strictly in accordance with BBA / manufacturer's instructions / British standards.

All new timbers to be vic-vac treated. Dpc / timber / insect treatments to be accompanied by suitable 10-year guarantees and BBA certificate (insurance backed).

All fixings to be as recommended by manufacturer and to latest British standards

Note:

The following descriptions are to be read in conjunction with the drawings.

DEMOLITION – GENERAL:

Allow for taking down external walls, nibs, removal of doorways etc, all as indicated on proposed plans.

(Note: all internal works that are to be demolished to be checked on site to see if load bearing).

Support ceiling and roof structure over as required and carefully remove existing external brick walls as indicated. Make good to floor, walls and ceiling, as required, including making good to finishes.

NOTE: *CONTRACTOR TO PROVIDE CLIENT WITH METHOD STATEMENT FOR ALL DEMOLITION WORKS.*

EXISTING PIPEWORK AND CABLING:

All redundant pipework and cabling to areas where demolition is present to extend to new rooms etc. to be stripped out and made safe. Contractor to allow for all new pipework runs, fixings, spurs etc, for connection to sanitary units etc. and all other appliances as necessary/required by Client.

NEW FOUNDATIONS

Conventional concrete strip foundations positioned centrally under external cavity wall.

Ground to be excavated until a suitable bearing strata is reached.

Minimum depth of foundations to be 450mm below finished external ground level (to avoid frost attack), depths generally to suit ground conditions. All to the satisfaction of the local district Building Control Officer.

Foundations to be 652.5mm wide by 150mm deep minimum. Concrete generally to be GEN 1 designated mix, with recommended 75mm slump. All in accordance with BS 5328:Part 1 and BCA publications 97.359 and 97.363 & in accordance with European Standard BS EN 206-1: Concrete-Part 1.

ALL SUBJECT TO GROUND CONDITIONS.

Any drainage trench within 1m of the foundation shall be filled with concrete at least to the level of the underside of the foundation.

Minimum depth of foundations to be 750mm below finished external ground level in gravel & 1000mm deep in clay, depths generally to suit ground conditions.

Care to be taken whilst excavation due to location of existing services, manholes and drains.

Any redundant manholes & drains to be grubbed up.

NEW BRICKWORK BELOW D.P.C.

Frost resisting commons, min. compressive strength 7 N/mm² to inner and outer leaves with lean mix conc. cavity fill to a depth of 150mm below the level of the lowest d.p.c.

Facing brickwork below d.p.c. to be FL quality and to be to client's approval. All substructure brickwork in Class 1 mortar, complete with perpendicular weepholes at 1800 centres.

NEW GROUND FLOOR D.P.C.

Visqueen GX horizontal d.p.c. set at 150mm above external ground level, bridging entire cavity to form gas tight seals and lapped and taped with DPM.

Any DPC's to be a minimum of 150mm above external ground level.

Refer to drawing A(2)01.

NEW GROUND FLOOR

New ground floor finish to marry in with adjoining existing and setting out on site adjusted as required.

150mm thick power floated insitu concrete slab on separating layer, on 100mm Celotex FF4000 floor insulation board (with taped joints) and 20mm thick perimeter insulation to edge

of slab, on Visqueen GX Geomembrane DPM (lapped & taped to form gas tight seal with horizontal d.p.c.), on grout or sand blinding on separating layer on 200mm granular layer below the gas barrier to aid dilution and dispersion of methane ground gases.

Granular layer to be formed using 20mm minimum, well compacted, clean hardcore. This will not be mixed with sand.

Granular layer will be in direct contact and alignment of Timloc perimeter air vents with cavity sleeves through both leaves of the wall to allow ventilation to the exterior of the building.

Provide min. 150mm thick well compacted hardcore beneath.

Periscope ventilation to be located to entire perimeter of new external walls. 8 x Timloc vent bricks (6000mm² per vent) is adequate to give actual opening at least equivalent to 3050mm²/m run of wall. If possible space not more than 2m apart around the whole of perimeter wall. Refer to L(2)04 for indicative locations.

Ventilators to be positioned not more than 450mm from the ends of the walls.

DPM to be checked, prior to pouring slab, for any rips or tears etc. Any defects to be taped as above to form a gas tight seal.

IMPORTANT NOTE:

Installation of granular fill & DPM gas membrane to be inspected by a suitably qualified third party. Certification to be issued to WCBC planning department for approval as part of Planning Condition relating to application ref: P/2015/0200.

ALL DPM & DPC'S TO BE INSTALLED STRICTLY TO MANUFACTURERS RECOMMENDATIONS.

(U-value required: 0.18)

Floor construction and requirement of any expansion joints to be confirmed by the local Building Control Officer, all to suit site conditions.

Excavate external ground levels to allow for new ground to terminate a minimum of 150mm below new dpc level. Excavate for all necessary trenches to accommodate new drainage and service runs.

TYPICAL GAS BARRIER INSTALLATION:

Visqueen Radon (red) membrane used for illustrative purposes only.

			
1 Remove loose debris from the surface of the floor slab and unroll the first sheet of membrane. The surface of the slab should be smooth and free from projections or indentations – if very rough, apply a sand blinding.	2 Remove the protective paper from one side of the appropriate jointing tape and apply it to the first sheet, starting about 50mm from the edge. Ensure that all surfaces are dry for maximum adhesion.	3 Unroll the second sheet along the joint, overlapping the first by at least 150mm. Press firmly onto the double sided tape, gradually removing the protective paper.	4 Seal the edge of the overlap with appropriate sealing tape.

TYPICAL GAS BARRIER TO DPC INSTALLATION:

Visqueen Radon (red) membrane used for illustrative purposes only.



1
Install the DPC starting from the outside of the external wall, over the inner masonry leaf and finishing at least 200mm from the wall.



2
Just before the floor topping is applied (or floor slab is cast), clean any mortar droppings, or other debris from the DPC. Remove the protective paper from the appropriate jointing tape and apply the tape to the DPC, starting about 50mm from the edge.

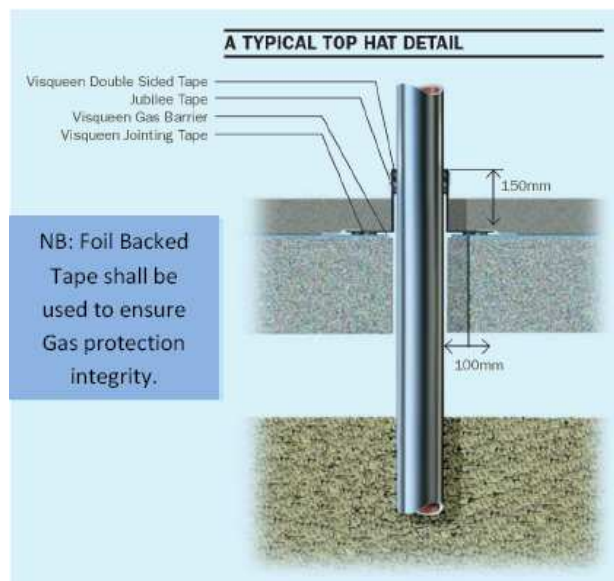


3
Lay the membrane over the floor slab (or subfloor blinding), overlapping the DPC by at least 150mm. Press firmly onto the appropriate jointing tape, gradually removing the protective paper.



4
Seal the edge of the overlap with appropriate sealing tape.

TYPICAL TOP-HAT DETAIL TO SERVICE PENETRATIONS:



TYPICAL TOP-HAT INSTALLATION:

Visqueen Radon (red) membrane used for illustrative purposes only.

Cut a circular hole in the membrane as close as possible to the pipe, or pipe socket. Ensure that pipe penetrations do not occur at joints in the membrane.	With the pipe in position, slide the Visqueen Preformed Top Hat Unit over the pipe (various diameters are available – 110mm being the most common).	Mark the extent of the square horizontal skirt over the membrane and also mark the line of the top of the top hat unit around the pipe.	Raise the top hat unit and cut four lengths of Visqueen Double Sided Jointing Tape, one for each side of the horizontal skirt. Allowing for an overlap at each corner. Cut one length to go round the pipe.
Start to remove the protective paper from the double sided tape around the pipe and raise it up at an angle so that it will project above the top hat unit when it is stuck to the membrane.	Release the protective paper from each of the four lengths of double sided tape. Lower the top hat unit, ensuring that the free end of the protective paper around the pipe is reachable, and seal the horizontal skirt to the membrane.	Gradually remove the remainder of the protective paper from the double sided tape around the pipe.	Seal the junction of the horizontal skirt and the membrane with the appropriate sealing tape and secure the top hat unit to the pipe with a jubilee clip.

NEW EXTERNAL WALLS

Outer leaf to be 102.5mm brickwork with 150mm overall cavity accommodating 100mm thick Celotex CG5000 cavity board, installed strictly to manufacturers recommendations and to retain nominal 50mm clear cavity. Inner leaf to be 100mm thick Thermalite Hi-Strength 7 concrete blocks or similar approved, 15mm plaster dab cavity, 12.5mm gypsum plasterboard and 3mm skim finish.

Total External Wall construction to achieve a **U-value of 0.16 W/m²k**.

Provide suitable stainless steel wall ties at 450mm vertical and 750mm horizontal staggered spacing, increased to 300mm intervals at openings. All wall ties to BS 1243 to suit 91mm cavity.

Provide suitable insulated cavity closers for door & window returns to suit cavity width, with cavity tray d.p.c to steel lintels. Cavity trays to be taken min 150mm past reveals to either side of opening complete with cavity tray stop ends at each end. All cavities to be closed at eaves with 225mm x 6mm 'Masterboard' or similar approved cavity closer. Weep holes in external leaf to be provided at min. 900mm center's over all cavity trays.

Where new blockwork abutts existing wall, provide stainless steel approved wall connector starter ties per each leaf, installed strictly to manufacturers recommendations. Vertical joint between existing and new outer leaf to be weathersealed at perpend junction via pre-compressed sealing strip or polymer-based sealant, all installed to manufacturers instructions.

Note: Attention to detailing is required at joints in order to provide high level of air tightness as required.

WINDOWS

All new windows to be double glazed high performance white reinforced upvc to match existing.

All complete with full weather/draught proofing and all necessary lockable ironmongery.

Glazing shall be double glazed Low-E glass and ensure U-value of windows are not more than 1.8w/m²°C.

Glazing to ALL new ground floor windows to be in laminated glazing (not toughened).

PURGE VENTILATION - On the basis windows will open more than 30°, windows to have an opening area equal to at least 1:20th of the floor area to habitable rooms (window manufacturer / supplier to confirm).

BACKGROUND VENTILATION (Whole Building Ventilation) - Provide controllable trickle ventilators to window heads at high level within habitable rooms and / or air bricks if required with internal closable grille. Allow background ventilation to provide a free area of at least 5000mm².

EXTERNAL DOORS

Provide new doors to locations shown on plan.

For safety glazing requirements refer to notes elsewhere.

Frame to be fixed at 600mm centres complete with mastic pointing to frame externally.

All door leaves to be fully weather stripped.

All new doors to be double glazed high performance reinforced uPVC manufactured and fitted by specialist contractor with all accompanying ironmongery and beading etc. All as shown on elevations and to be to Client approval. Colour to be white.

Ensure U-value of PVC framed doors is not more than 1.6w/m²°C.

Door manufacturer to provide flush threshold strip, max. 15mm high protrusion, to cover DPC and bedded in mastic.

SAFETY GLAZING

All glazing to doors below a height of 1500mm above finished floor level and to glazing 300mm wide either side of opening to be laminated / toughened glazing to comply with BS 6206:1981. All glazing to new windows below a height of 800mm above finished floor level to be finished with laminated / toughened glazing as above.

CAVITY TRAYS

Provide cavity trays over all openings with weepholes as below @ 900ctrs.

Also provide polythene cavity trays where external finished ground level is less than 150mm below internal FFL complete with all stop ends as necessary and G. Molyneux (Products) Ltd concealed weepholes @ 900ctrs in wall.

INTERNAL PARTITIONS

New timber partitions to be constructed of 75 x 50mm studwork with horizontal noggins at 400 staggered vertical centres with Gyproc SOUNDLOC, or similar approved, 15mm plasterboard and skim finish to either side.

NEW CEILING FINISHES

Provide 12.5mm plasterboard with skim finish to underside of new trussed rafters.

Provide Rockwool Rollbats or equal 400mm thick roof insulation, laid between & over joist members to achieve U-Value of not more than 0.12w/m²K.

Client to confirm requirement for insulated access hatch.

STEEL LINTELS

To be manufactured by 'Keystone Lintels' or similar approved. References and sizes to be as noted on schedule to be produced by manufacturer and submitted to Building Control for approval by appointed Contractor. Lintels to have 150mm end bearing to load bearing lintels. All external lintels to be protected by cavity tray d.p.c if not integral.

Conditional Approval for this item is sought until Lintel Schedule is received and can be submitted for approval.

NEW EXTERNAL DRAINAGE

All external drainage to be proprietary pipework as detailed on drawings.

All pipe runs, inspection chambers and manholes to be bedded and surrounded in strict accordance with the manufacturer's recommendations.

All pipework connections through external walls to be protected by proprietary p.c. concrete lintels to each leaf.

Refer also to drawings for further information.

NEW RAINWATER GOODS

All external rainwater goods to match existing and be sized accordingly. Include for any hoppers, offset swan necks and stop ends etc. as necessary. Gutters to match existing, style to match down pipes.

Before commencing work ensure that below ground drainage is ready to receive the discharge and can be dispersed by approved means to prevent damage or disfigurement of the building fabric.

INTERNAL PLUMBING

All plumbing to comply with relevant water supply authority regulations and is to be installed by approved sub-contractors.

All sinks to have 32/40mm dia H.T. p.v.c. wastes and 65mm deep seal anti-syphon straps.

All wastes from Kitchen to connect to new gully outside, unless indicated otherwise.

INTERNAL DOORS

Internal doors to match existing, generally door size being metric at 2040mm high leaf x 40mm thick door leaf, factory prepared and finished, sized accordingly to suit setting out plan. Client to choose exact door finish and style.

Provide new finished softwood 44mm thick frames as necessary with rebated (not planted) stops unless otherwise noted. Allow for all new sw packings to suit as required.

Allow for sw architraves throughout to match existing (to be confirmed by Client).

NEW ROOF CONSTRUCTION

Trussed roof construction to main roof to be timber trussed rafters by Specialist Manufacturer to profiles shown on Architect's drawings.

All trusses and bracing to be to specialist design in accordance with BS 5268. Trusses to be fixed to 100 x 63mm wall plate with galvanised steel truss clips. Wall plates to be secured with 30 x 5mm galvanised steel straps at 1.8m max. ctrs. Gable straps to be 30 x 5mm galvanised steel at max. 2m ctrs. and bedded under a cut block to bear onto a full block beneath rafter member of the truss complete with treated soft wood noggin set horizontal to suit.

Trusses to be subject to conditional approval until design calcs can be submitted for approval prior to putting these works in hand.

NOTE: Trussed rafters to be capable of carrying a uniformly distributed imposed load of 1.5KN/m² on bottom chords / ceiling ties.

ROOF VENTILATION

No-ventilation - breathable underlay proposed – Tyvek Supro.

To ensure draught is achieved at eaves provide 'Glidevale', or similar approved, 'between rafter ventilator' installed between each rafter to ensure min. 25mm clear air path between roof underlay and insulation.

All in compliance with Building Regulations Approved Document F.

ROOF COVERING

Brown interlocking tiles to match existing, fitted in accordance with the manufacturer's instruction on suitably sized roofing battens to BS 5534, Part 1 on Tyvek Supro - breather membrane. Installed strictly to manufacturers recommendations. Fixed with extra large headed galv'd. steel nails.

Provide suitable eaves carrier tapped to underlay and into gutter full extent of eaves.

All roof coverings to be undertaken to BS 5534: 2003 Code of Practice for Slating and Tiling.

NEW LEADWORK

APRON FLASHINGS (Code 4):

Horizontal flashings to be minimum 150mm upstand cut back 25mm into existing coursing and dressed down over roof below min. 150mm.

GENERAL:

All leadwork flashing (including under the lower edge) to receive a coat of patination oil applied evenly with a soft cloth at the end of each day's work.

TIMBER TREATMENT

All structural and joinery timber to be preservative treated with Protim Pre-Vac organic solvent preservative as follows: -

Redwoods - Protim Cycle 1

Whitewoods - Protim Cycle 2

Hardwoods - Protim Cycle 1

All fabrication and drilling to be carried out after pre-treatment where possible.

All cut ends to be liberally treated with two initial coats of Protim cut-end preservative.

All preservative treatment to be in accordance with BS 5707 Parts 1 and 3.

External timbers in contact with ground to be C.C.A preservative treated.

NEW ELECTRICAL INSTALLATIONS

All electrical works must be carried out by a member of N.I.C.E.I.C and to fully comply with the latest I.E.E. Regulations and new Building Regulations approved document 'P'.

Electrical Contractor must supply the Client/B.C.O with an Electrical Installation Certificate on completion of the works.

Light fittings to be energy efficient fittings inc. light bulbs, (not GLS tungsten lamps with bayonet cap or Edison screw bases) to newly formed habitable rooms (see below).

Ensure that any new switches and socket outlets for lighting and other equipment in habitable rooms are fixed at appropriate heights between 450mm and 1250mm from finished floor level.

IMPORTANT NOTE:

Electric cable specification to be generally decreased accordingly where within or under insulation between joists etc. (fire risk). All in accordance with BRE BR 262, section 2.3).

EXTENDING EXISTING CENTRAL HEATING/REPOSITIONING OF RADIATORS

All works to central heating to be carried out by a GAS SAFE approved Contractor.

Contractor is to check that the output capacity of existing boiler is sufficient to provide additional heating required.

The existing system is to be extended to include the additional new radiators for the extension (Exact location & number to be confirmed by Contractor and approved by Client).

Thermostatic valves required to all new radiators.

Allow for plumbing in all washing machines, sanitary ware, sinks etc.

Full system to be 'Contractor's design' with radiators etc. all sized accordingly to suit size of room.

The following minimum internal temperatures are to be comfortably achieved when the external temperature is –1°C

Living / Dining: 21°C
Bathrooms / WC's: 22°
Bedrooms: 18°C
Hall / Landing: 18°C

Note: Central heating to be Sub-Contractor's design.

COMMISSIONING OF WATER & SPACE SYSTEMS

On completion of installation, all heating and hot water services must be commissioned by a suitably qualified person declaring that the manufacturer's commissioning procedures have been completed satisfactorily. Notice to be given to Building Control. All in compliance with the 'Domestic Heating Compliance Guide'.

NEW MECHANICAL VENTILATION

Provide mechanical ventilation intermittent extract to Kitchen capable of extracting at a rate not less than 60 litres per second, which may be operated intermittently in addition to natural ventilation. If using a cooker hood or located near the ceiling within 300mm of the centre-line of the space for the hob and under humidistat, control rate to be not less than 30 litres per second.

Provide mechanical ventilation intermittent extract to Bathrooms to provide mechanical extract ventilation capable of extracting at a rate not less than 15 litres per second, which may be operated intermittently.

All of the above to be centrifugal fans fitted with anti back draught shutters.

All systems to be subject to Specialist design and to comply with Approved Document 'F' of the Building Regulations.

Manufacturer to be Vent axia or similar approved.

LIGHTING STANDARDS

Full Lighting layout / type and control type to be specialists design and put forward for Building Control approval prior to order. Exact style of light fittings to be advised by Client.

All to comply with A.D. 'L2'.

Allow for the provision of dedicated energy efficient light fittings to all rooms which must comprise of the lamp, control gear, and an appropriate housing, reflector, shade or diffuser. The fittings must be capable of only accepting lamps having a luminous efficacy greater than 40 lumens per circuit watt.

Tubular fluorescent and compact fluorescent light fitting would meet the criteria however, *light fittings for GLS tungsten lamps with bayonet cap, Edison screw bases, or tungsten halogen lamps will not comply.*

All in compliance with A.D. L2.

Light fittings should be diffused so as not to cause glare.

It is recommended that lighting achieves illuminance in the table listed below;

Table of recommended illuminance at the floor of each room	
Area	Recommended Range (Min-Max)
Internal Area - Hallway etc.	100-300
Bedrooms	100-300
Kitchen	200-300
Bathroom/WC	100-300
Bedrooms	100-300

Utility	100-200
External Areas - Ramps/Entrance areas	100-200

Lux Levels taken from recommendations with Thomas Pocklington Trust p. 101.

U-VALUES

Target U-Value requirements are as follows and are to be read in conjunction with the Celotex U-Value calculations:

Walls = 0.16 W/m/sqK
Floor = 0.18 W/m/sqK
Roof = 0.12 W/m/sqK
Windows = 1.8 W/m/sqK
Doors = 0.16 W/m/sqK

APPENDIX

PITCHED ROOFS: HORIZONTAL LOFT INSULATION

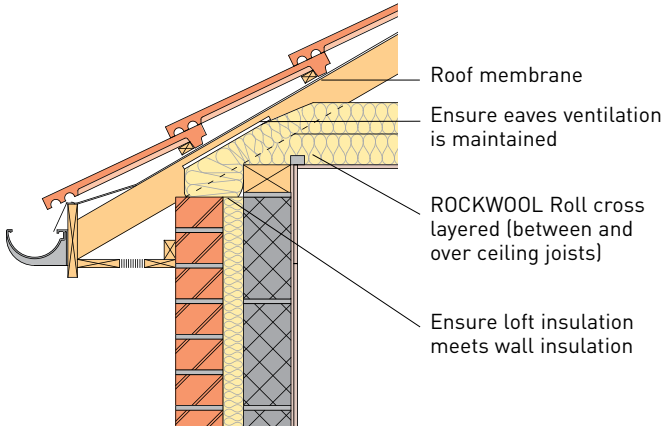
ROCKWOOL Roll

CONSTRUCTION 1:

100mm ROCKWOOL Roll fitted between joists, with an additional thickness of ROCKWOOL Roll laid over joists

ROCKWOOL Roll U-values W/m²K	Between joists	Over joists	Total thickness (mm)
0.16	100	170	270
0.14	100	200	300
0.13	100	220	320
0.11	100	300	400
0.10	100	320	420

Timber bridging fraction allowance 9%



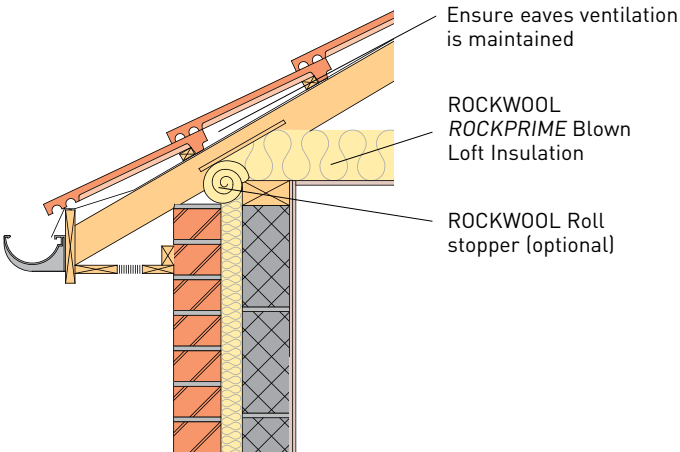
ROCKWOOL ROCKPRIME blown insulation

CONSTRUCTION 2:

ROCKWOOL ROCKPRIME is blown at an average density of 21kg/m³ blown 100mm ROCKWOOL ROCKPRIME blown between joists, with the additional thickness of ROCKWOOL ROCKPRIME blown over joists.

ROCKWOOL ROCKPRIME Blown U-values W/m²K	Between joists	Over joists	Total thickness (mm)
0.16	100	180	280
0.14	100	220	320
0.13	100	250	350
0.11	100	300	400
0.10	100	350	450

Timber bridging fraction allowance 9%



2013 PART L U-VALUE REQUIREMENTS FOR HORIZONTAL LOFT INSULATION:

Extensions, Renovation and repair work: 0.16 W/m²K
 New build requirements could range between 0.16-0.13 W/m²K
 subject to build type

Project Information

Date 13 July 2015
 Client Craig Baugh, CB Architectural Design
 41 Foster Road
 Wrexham
 LL11 2LT
 Project 14 Heulfan Way
 Gwersyllt
 Wrexham

Construction Type

Element : Wall - 0Partial Fill Cavity Wall - Plasterboard on Dabs - Block Inner - Brick Outer

Partial Fill Cavity Wall - Plasterboard on Dabs - Block Inner - Brick Outer

Internal surface emissivity : High External surface emissivity : High

Correction for mechanical fasteners :-

Alpha	: 0.8 per m	Thermal conductivity of fastener	: 17.00 W/mK		
Fasteners per square metre	: 2.50 off	Fasteners cross-sectional area	: 23.40 mm²		
	Thickness	Thermal Conductivity	Thermal Resistance	Pitch	Bridge Details
	(mm)	(W/mK)	(m²K/W)	(°)	
Outside surface resistance	-	-	0.040		
Brickwork	103.0	0.770	0.134		17.2% Mortar (103.0mm)
Cavity (low emissivity)	50.0	-	0.713		
Celotex CG5000	100.0	-	4.762		
Thermalite - Hi Strength 7 (lambda = 0.19)	100.0	0.190	0.526		6.6% Mortar (100.0mm)
Plaster Dabs Cavity	15.0	-	0.170		20.0% Plaster Dabs (15.0mm)
Knauf Wallboard	12.5	-	0.066		
Inside surface resistance	-	-	0.130		

U-value = 0.16W/m²K

U-value, Combined Method : 0.156W/m²K (upper/lower limit 6.481 / 6.361m²K/W, dUf 0.0042, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc0.0000)

(Correction for mechanical fasteners, Delta Uf = 0.004W/m²K)

(Correction for air gaps, Delta Ug = 0.000W/m²K)

(Based on the combined method for determining U-values of structures containing repeating thermal bridges)

Project Information

Date 13 July 2015
 Client Craig Baugh, CB Architectural Design Project 14 Heulfan Way
 41 Foster Road Gwersyllt
 Wrexham
 LL11 2LT

Construction Type

Element : Solid Ground floor - 0Ground Floor - Solid - Insulation over slab

Ground Floor - Solid - Insulation over slab

Internal surface emissivity	: High	External surface emissivity	: High	Thickness	Thermal Conductivity	Thermal Resistance	Pitch	Bridge Details
				(mm)	(W/mK)	(m ² K/W)	(°)	
Inside surface				-	-	0.170		
Screed				65.0	1.401	0.046		
Polythene, 500 gauge separating layer				-	-	-		
Celotex FF4000				100.0	-	4.545		
DPM - Polythene, 1200 gauge				-	-	-		
Concrete oversite				-	-	0.000		
Sand Blinded Hardcore				-	-	0.000		
Ground				-	-	0.040		

Ground Floor Details

Calculation method	: EN ISO 13370:2007		
P/A	: 0.680	Characteristic dimension, B'	: 2.941
Thermal conductivity of ground:	: 1.500 W/mK	Height of floor above ground, h:	: 0.225 m
Width of walls, w:	: 0.300 m	U-value of sub-floor walls, Uw:	: 1.700 W/m ² K
Average wind speed, V:	: 5.000 m/s	Wind shielding factor, fw:	: 0.050
Ventilation opening area, E:	: 0.0015 m ² /m	Subfloor ground resistance, Rs	: 0.170 m ² K/W
Resistance of insulation on ground, Rg	: 0.000 m ² K/W	External surface resistance, Rse	: 0.040 m ² K/W
Floor type	: Solid floor		
Edge insulation position	: None		

Perimeter Upstand Insulation: Celotex TB4000

As detailed in Accredited Construction Details, for all ground floors where a screed or concrete slab is above the insulation layer, a perimeter up-stand insulation with a minimum R Value of 0.75 m²K/W is required for the depth of the screed or concrete slab.

This is achieved with using a minimum thickness of 20mm Celotex TB4000.

U-value = 0.17W/m²K

U-value, Combined Method : 0.170W/m²K (upper/lower limit 4.801 / 4.801m²K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc0.0000)

(Correction for mechanical fasteners, Delta Uf = 0.000W/m²K)

(Correction for air gaps, Delta Ug = 0.000W/m²K)

Visqueen GX Top Hat Units

Page 1 of 2



- **Low Permeability to Hydrocarbon substances and vapours.**
- **High quality single layer HDPE.**
- **Excellent puncture and tear resistance.**
- **Provides an effective seal around service pipe penetrations**
- **Part of the GX Geomembrane system providing protection against Hydrocarbons**

Description

Visqueen GX Top Hat Units are used to provide an effective seal around service pipe penetrations. They are available in a range of sizes, the typical size being 110mm in diameter. They are used within the GX Geomembrane system which provides protection against Hydrocarbons.

Visqueen GX Top Hat is a high quality single layer HDPE membrane and is suitable for use on brownfield sites that require protection from dangerous contaminants such as hydrocarbons and methane.

Application

Airtight seals should be formed around all service entry points. Visqueen Preformed GX Top Hat Units are available for sealing around pipe entries. The base of the pre-formed unit should be sealed using Visqueen GX Double-sided Jointing Tape and Visqueen Girth Jointing Tape.

Please Note:

When ordering your Top Hat Units, please provide the outside diameter of your pipe for the correct Top Hat fitting.

Visqueen GX Top Hat Units

Page 2 of 2

Installation

Procedure

Cut a circular hole in the membrane as close as possible to the pipe, or pipe socket. Ensure that pipe penetrations do not occur at joints in the membrane.

With the pipe in position, slide the Visqueen Pre-formed Top Hat Unit over the pipe (various diameters are available –110mm being the most common).

Mark the extent of the square horizontal skirt over the membrane and also mark the line of the top of the top hat unit around the pipe.

Raise the top hat unit and cut four lengths of Visqueen GX Double Sided Jointing Tape, one for each side of the horizontal skirt, allowing for an overlap at each corner. Cut one length to go round the pipe.

Start to remove the protective paper from the double-sided tape around the pipe and raise it up at an angle so that it will project above the top hat unit when it is stuck to the membrane.

Release the protective paper from each of the four lengths of double-sided tape. Lower the top hat unit, ensuring that the free end of the protective paper around the pipe is reachable, and seal the horizontal skirt to the membrane.

Gradually remove the remainder of the protective film from the double-sided tape around the pipe.

Seal the junction of the horizontal skirt and the membrane with Visqueen Girth Jointing Tape and secure the top hat unit to the pipe with a jubilee clip.

TYPICAL PROPERTIES

Technical data

Inside collar diameter	100mm-160mm
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The information given in this datasheet is based on data and knowledge correct at the time of printing. Statements made are of a general nature and are not intended to apply to any use or application outside any referred to in the datasheet. As conditions of usage and installation are beyond our control we do not warrant performance obtained but strongly recommend that our installation guidelines and the relevant British Standard Codes of Practice are adhered to. Please contact us if you are in any doubt as to the suitability of application.

SPECIFICATION SUPPORT

The following items are available to view online or to download from www.visqueenbuilding.co.uk

- . Technical Datasheets
- . Typical installation CAD details
- . Health and Safety data

Register online for access to NBS Clauses and for information about our CPD Seminars



TECHNICAL SUPPORT

For advice on detailing or installation call Visqueen Building Products Technical Help Line 0845 302 4758. Pricing & Availability may be obtained from our UK Network of merchant stockists. For details of these call our Sales Office on 0845 302 4758.

VISQUEEN
BUILDING PRODUCTS

Heanor Gate, Heanor, Derbyshire DE75 7RG

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VISQUEEN BUILDING PRODUCTS IS A TRADING NAME OF BRITISH POLYTHENE LIMITED, COMPANY NUMBER: 350729, REGISTERED OFFICE: ONE LONDON WALL, LONDON, EC2Y 5AB

Visqueen GX Geomembrane

CE Mark to EN 13967

Page 1 of 5



- **Low Permeability to Hydrocarbon substances and vapours.**
- **High quality single layer HDPE.**
- **Excellent puncture and tear resistance.**
- **Complies with current codes of practice.**
- **Also acts as a DPM.**



EN 13967
Type A and T

13

Description

Visqueen GX Geomembrane is a high quality single layer HDPE membrane and is suitable for use as a barrier membrane on brownfield sites that require protection from dangerous contaminants such as hydrocarbons and methane. Due to the membrane's high puncture and impact resistance the Visqueen GX Geomembrane generally requires no protective screed or boarding when laying reinforced concrete above it. The Visqueen GX Geomembrane is also suitable as a high performance damp proof membrane and is available in two thicknesses, 1mm and 1.5mm.

Application

Visqueen GX Geomembrane offers a safe solution for the protection of buildings and occupiers against all levels of hydrocarbons, methane, carbon dioxide and radon ingress. Typically these are sites previously used as petrol stations, coalfields, landfill sites or are contaminated industrial sites.

Technical Support

Due to the wide variety of hydrocarbon contaminants found, we strongly recommend the use of the Visqueen Building Products Technical Support Team at an early design stage so that the most appropriate detailing and material specifications are adopted. A full technical datasheet is available online www.visqueenbuilding.co.uk/gas

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STRUCTURAL WATERPROOFING
AND GAS PROTECTION SYSTEMS

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CE Mark to EN 13967

Page 2 of 5

Installation Guidelines

Visqueen GX and ancillary components must be installed in accordance with the recommendations of Building Research Establishment BRE 414 "Protective measures for housing on gas contaminated land" and CIRIA C665 "Assessing risks posed by hazardous ground gases to buildings", NHBC guidelines, Chartered Institute of Environmental Health Ground Gas Handbook and CIRIA C682 the VOC Handbook.

The Visqueen GX system is suitable where hydrostatic pressure is present, however in this application the joints must be welded and not taped. The membrane should be installed on a blinded or smooth surface allowing adequate overlap for jointing between the sheets and avoiding bridging (i.e. areas of unsupported membrane). In areas where high levels of unsupported membrane occur it is recommended that Visqueen Pre Applied Membrane is used. To avoid linear expansion due to temperature change the membrane should NOT be taken through any masonry wall. In order to provide a continuous barrier across the cavity Visqueen GX DPC should be taken through the blockwork and incorporated below the damp proof course cavity tray in the outer leaf.

When a welded joint system is being used, punctures to the membrane can only be repaired by welding a patch of membrane with identical thickness and lapped at least 150mm beyond the limits of the puncture. Where this is not possible and the three dimensional shapes are complex it is recommended a preformed unit is used. To avoid high linear expansion when installed in hot weather, the membrane should be covered immediately after installation with concrete or screed.

Ventilation

When medium to high levels of ground gases are present or when the generation of gases still occurs, then an open void beneath the ground floor should be constructed as ventilation beneath the ground floor will dilute and disperse the gases to atmosphere. Open voids are normally restricted to beam and block floors or other precast concrete floor systems. An alternative for providing ventilation to in situ concrete floor slabs is to install a Visqueen Ventilation System.

SPECIFICATION SUPPORT

The following items are available to view online or to download from www.visqueenbuilding.co.uk

- . Technical Datasheets
- . Typical installation CAD details
- . Health and Safety data

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Visqueen GX Geomembrane

CE Mark to EN 13967

Page 4 of 5

Technical Data and CE Mark

Visqueen GX Geomembrane complies with the requirements and clauses of EN 13967 - Flexible sheets for waterproofing - Plastic and rubber damp proof sheets including plastic rubber basement tanking sheet - Definitions and characteristics.

Notified certification body SKZ – TeConA GmbH (identification no. 1213) performed the initial inspection of the manufacturing plant and of factory production control (FPC) and the continuous surveillance, assessment and evaluation of FPC and issued the certificate of conformity of the FPC no. 5773.



EN 13967
Type A and T

13

Product Data					
Characteristic	Test method	Units	Compliance criteria	Results for 1mm	1.5mm
Length	EN 1848-2	m	-0%/+10%	30	25
Width	EN 1848-2	m	-0%/+10%	2.95	2.95
Thickness	EN 1849-2	mm	-10%/+10%	1	1.5
Mass	EN 1849-2	g/m ²	-10%/+10%	925	1440
Tensile Strength - MD	EN EN12311	N/mm ²	>MLV	29	27
Tensile Strength - CD	EN EN12311	N/mm ²	>MLV	27	29
Tensile Elongation - MD	EN EN12311	%	>MLV	864	820
Tensile Elongation - CD	EN EN12311	%	>MLV	869	900
Joint Strength	EN12317-2	N	>MLV	450	446
Watertightness 60kPa	EN 1928	-	Pass/Fail	Pass	Pass
Resistance to impact	EN 12691	mm	>MLV	900	1500
Low temperature flexibility	EN 1109	oC	-15	Pass	Pass
Durability against heat ageing	EN 1296	-	Pass/Fail	Pass	Pass
Durability Chemical Resistance	EN 1847	-	Pass/Fail	Pass	Pass
Resistance to tearing (nail shank) CD	EN 12310-1	N	MDV	445	346
Resistance to tearing (nail shank) MD	EN 12310-1	N	MDV	470	353
Resistance to static loading	EN 12730	Kg	>MLV	Pass at 20	Pass at 20
Water vapour transmission - resistance	EN 1931	MNs/g	MDV	2835	2883

Visqueen GX Geomembrane

CE Mark to EN 13967

Page 5 of 5

Water vapour transmission - permeability	EN 1931	g/m ² /d	MDV	0.05	0.07
Methane	ISO 2782	ml/m ² /d	MDV	76.2	46
Petrol Permeability	ISO 6179	g/m ² /hr	MDV	3	1.3
Diesel Permeability	ISO 6179	g/m ² /hr	MDV	0.3	0.1
Toluene Permeability	ISO 6179	g/m ² /hr	MDV	6.4	1.8
Xylene Permeability	ISO 6179	g/m ² /hr	MDV	3.5	1.7
Reaction to Fire	EN 13501-1	Class	MDV	F	F

The information given in this datasheet is based on data and knowledge correct at the time of printing. Statements made are of a general nature and are not intended to apply to any use or application outside any referred to in the datasheet. As conditions of usage and installation are beyond our control we do not warrant performance obtained but strongly recommend that our installation guidelines and the relevant British Standard Codes of Practice are adhered to. Please contact us if you are in any doubt as to the suitability of application.