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BRITISH BOARD OF AGRÉMENT ASSESSMENT REPORT
Ref: S2/60461

Contents

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Date: 18/10/16

Authorised by:
(John Albon – Head of Approvals – Construction Products)

Date: 18/10/16

On behalf of the British Board of Agrément

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Client:	**Alumasc Exterior Building Products Ltd**
Job No:	S260461
Report by:	Natalie Colquhoun

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1 Introduction

The site inspections detailed in the following report were carried out in order to examine and comment on the performance in use of the Derbigum membranes covered in Certificate 86/1593, regarding appearance, condition & weathering / ageing characteristics etc.

2 Studied roofs

2.1 Existing Site Inspection - Site A.

Site Address	Arcelor-Mittal DK (Dunkerque) Rue du Comte Jean 59760, France
Site Details (type, general condition of building & approximate age)	Industrial, open county/marine environment. Hot steel rolling mill. The building was generally in good condition although the roof deck (stainless steel) was suffering from corrosion due to acid fumes and water vapour used in the processes. The Building is approximately 1 km long. Roof is corrugated steel, with a fibre board to provide a bonding surface and the membrane cold bonded to the fibreboard as a single-ply. No vapour control layer and no insulation. Roof is well maintained.
Installation date and approximate quantity of product applied (m^2)	Roofs installed between 1975 and 1990, although the areas inspected were between 1975 and 1977. Roof area of 260,000 m^2.
Has system remained watertight: **Has there been any post installation maintenance or repairs carried out since original application:**	Yes Yes, some patching due to damage caused by windblown debris damaging membrane. The gutter was not originally lined, but was waterproofed later and therefore the overlap of the detailing is up the slope instead of down as per normal.
Comment on dimensional stability	No significant movement at joints; the ridges were reinforced with an extra strip to ensure that no problem would occur in service due to the shrinkage.
Comment on general appearance of product, noting: ***Quality of system adhesion, fixing on / around*** **details etc, plus any evidence of wind uplift surface quality, any signs of wear-through, impact damage, de-lamination, blistering, chalking, pin-holing, splitting or cracking etc:** **Provide photographs / sketches as appropriate:**	Good adhesion, no blisters, no damage other than that mentioned as windblown debris impacts, no wear. One impact damage area noted and marked for repair during the visit. As follows.
Evidence of Algal/Fungal Growths:	Some light moss growth at details.
Mineral finish/solar reflective paint condition	N/A
Note type & quality of drainage + is there any water ponding:	Slopes down to a central gutter. No evidence other than in the gutter, the roofs are appropriately sloped.

Photo 1 – Overview of Site A

Photo 2 – Overview of Site A

Photo 3 - Site A example of detailing

Photo 4 - Site A example of patch repairs

2.2 Existing Site Inspection - Site B.

Site Address	ARCELOR-MITTAL MK (Mardyck) 1 Route de Spycker, 59760 Grande-Synthe, Mardyck, France (5 km from Dunkerque)
Site Details (type, general condition of building & approximate age)	Industrial, open county environment a couple of kilometres from the coast. Steel cold forming plant. Roof is corrugated steel with a fibre board to provide bonding surface and the membrane cold bonded to the fibreboard as a single-ply. No vapour control layer and no insulation. Roof is well maintained.
Installation date and approximate quantity of product applied (m^2)	1973 Roof area 225,000 m^2
Has system remained watertight: **Has there been any post installation maintenance or repairs carried out since original application:**	Yes Minor patching evident.
Comment on dimensional stability	Acceptable
Comment on general appearance of product, noting: **Quality of system adhesion, fixing on / around** **details etc, plus any evidence of wind uplift surface quality, any signs of wear-through, impact damage, de-lamination, blistering, chalking, pin-holing, splitting or cracking etc:** **Provide photographs / sketches as appropriate:**	Top glass reinforcement showing with some broken strands. Some blisters showing, however not large. No tears. Detailing acceptable. As follows.
Evidence of Algal/Fungal Growths:	A small amount of lichen growing on membrane surface, no damage caused.
Mineral finish/solar reflective paint condition	N/A
Note type & quality of drainage + is there any water ponding:	Slopes down to a central gutter. Only standing water is in the gutter.

Photo 1 –Overview of Site B

Photo 2 – Overview of Site B

Photo 3 – Top glass reinforcement visible

Photo 4- Blistering

2.3 Existing Site Inspection - Site C.

Site Address	Motor Parts Chaussée de Mons 472 1600, Sint – Pieters – Leeuw Belgium
Site Details (type, general condition of building & approximate age)	Commercial warehouse. Open country. Pre-cast concrete substrate. Roof is well maintained.
Installation date and approximate quantity of product applied (m^2)	1983 Approximately 3000 m^2
Has system remained watertight: **Has there been any post installation maintenance or repairs carried out since original application:**	Yes Some recent repairs were glass reinforcement strand broke giving appear of crack, however was aesthetic rather than a waterproofing problem.
Comment on dimensional stability	No significant movement at joints.
Comment on general appearance of product, noting: ***Quality of system adhesion, fixing on / around*** **details etc, plus any evidence of wind uplift surface quality, any signs of wear-through, impact damage, de-lamination, blistering, chalking, pin-holing, splitting or cracking etc:** **Provide photographs / sketches as appropriate:**	Top glass reinforcement showing with some broken strands. No blisters or tears seen in main roof. Some splits noted in a valley area, but not deep. A couple of repair patches. Second roof on the site, age unknown, did have a number of blisters. As follows.
Evidence of Algal/Fungal Growths:	Lichen growing on surface of membrane, no damage caused to the membrane.
Mineral finish/solar reflective paint condition	N/A
Note type & quality of drainage + is there any water ponding:	Normal roof outlets. Some evidence of standing water.

Photo 1 - Site C

Photo 2 - Site C example of lichen growing on the membrane

Photo 3 –Site C broken strands of glass reinforcement

2.4 Existing Site Inspection - Site D.

Site Address	AB Lease Chaussée de Mons 488 1600, Sint – Pieters – Leeuw Belgium
Site Details (type, general condition of building & approximate age)	Commercial car showroom. Open country. Brick substrate, with steel rod reinforcement and mortared, no insulation. Roof had not been maintained for the last 15 years, but repairs had been carried out within the last few weeks.
Installation date and approximate quantity of product applied (m^2)	1974 Approximately 500 m^2
Has system remained watertight: **Has there been any post installation maintenance or repairs carried out since original application:**	Yes Recent repairs to flashing, skylight and some of the roof area.
Comment on dimensional stability	No significant movement at joints.
Comment on general appearance of product, noting: ***Quality of system adhesion, fixing on / around*** **details etc, plus any evidence of wind uplift surface quality, any signs of wear-through, impact damage, de-lamination, blistering, chalking, pin-holing, splitting or cracking etc:** **Provide photographs / sketches as appropriate:**	Top glass reinforcement showing with some broken strands. A number of blisters evident and some creasing during the original installation. Roof is the most complicated, detailing wise, of the four roofs and has three roof areas, the central one being the lowest and where all rain water gathers before being drained away. As follows.
Evidence of Algal/Fungal Growths:	Lichen growing on surface of membrane, no damage caused to the membrane.
Mineral finish/solar reflective paint condition	N/A
Note type & quality of drainage + is there any water ponding:	Two outlets from the lower roof, outlets on the other parts of the roof feed onto the lower area. Some evidence of standing water.

Photo 1 – Site D

Photo 2 – Site D

Conclusion

The Inspector reported that the membranes were in good condition, with only minor wear of coating mass from the surface.

It is concluded that the durability of Derbigum Black (also known as Derbigum SP 4 FR) membranes when used in accordance with BBA Certificate 86/1593 and Derbigum guidelines can perform as roofing membranes with a life of at least 40 years.