



ASSESSMENT REPORT

Group Number and Average Specific
Extinction Area for Various CSR Gyprock
Wall and Ceiling Lining Materials

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1 INTRODUCTION

1.1 GENERAL

This assessment considers the performance of a range of CSR wall and ceiling linings when assessed against the criteria of Specification C1.10 of the Building Code of Australia 2013 and AS5637.1.

This report supersedes the report 45759.8 issued on 6/9/2017.

The approach taken was to use AS 1530.3 test data and the expected performance based on consideration of the component materials as an initial screening and then to identify representative test to confirm the expected performance. This approach was taken for all products except Gyprock Gyptone, Gyprock Rigitone and Gyprock Plus.

The specimens were tested in accordance with AS/NZS 3837 procedures and calculations to predict the group numbers were undertaken using the methods prescribed in the Building Code of Australia AND AS5637.1 to assess the performance.

For Gyprock Gyptone, Gyprock Rigitone and Gyprock Plus products, initial screening was conducted with reference to percentage void ratio of the products. Representative products were chosen and tests conducted, in accordance to AS/NZS3837-1998 (Reconfirmed 2016). The test results achieved were used to assess the results for other similar products that were not tested.

1.2 SUMMARY OF REQUIREMENTS OF NCC SPECIFICATION C1.10 - 4

4. Wall and ceiling linings

(a) A wall or ceiling lining system must comply with the group number specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have—

- (i) a smoke growth rate index not more than 100; or
- (ii) an average specific extinction area less than 250 m²/kg.

(b) A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1

TESTED PROTOTYPES

This assessment makes reference to data from the experiments in accordance with AS/NZS3837. Specimen references these tests: 136806, 136808, 136811, 136807, 136812, EWFA 2766200.1 FNK 10457, R-13103, FH 5549, 15-005760, 15-005762 and 16-002226.

All the tests were sponsored by CSR Ltd. Refer to Appendix A for a detailed summary of the reference test data.

2 VARIATION TO TESTED PROTOTYPES

The applicability of the test data to the following materials has been considered:

CSR Gyprock Plasterboard Products	CSR Fibre Cement Products	CSR Ceiling Tile Products
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<ul style="list-style-type: none"> • CD Gyprock • Supaceil • Supaceil 2014 • Soundchek • Aquachek • Flexible • Perforated • Fyrchek • Fyrchek MR • Shaftliner • Flamechek • Impactchek • EC08 Partition • EC08 Fire • EC08 Impact • EC08 ImpactMR • Supercheck • Mouldchek • Perforated with Viledon fabric backing • Partywall Panel • Sensitive Choice • Gyptone Big Quattro 41 • Gyptone Big Quattro 47 • Gyptone Big Line 6 • Rigitone 8/18 • Rigitone 12/25 Q • Rigitone 12-20/66 • Rigitone 8-15-20 Super • Rigitone 10/23 • Gyprock Plus 	<ul style="list-style-type: none"> • CSR Fibre Cement Wallboard • Tile Underlay • Texture Base Sheet • Rendaline • Cladding sheet • SimpleLine • Eaves lining • Compressed Sheet • ExpressPanel • Barestone • Edge • Mosaic • Plank Weatherboard • Headland Weatherboard • Scarborough Weatherboard • Endeavour Weatherboard • Soffitline • Constructafloor Interior • Constructafloor Exterior • Designer Series/Territory • Builder Series • Creative Façade Panel/Surround Façade Panel • Rigid Air Barrier 	<ul style="list-style-type: none"> • 10 mm Supaceil Gyprock Lay in Panels with Paint or Vinyl facings: • CSR Gyprock Freshtone Supatone (Painted plasterboard) • CSR Gyprock Diamond White (Vinyl faced) • CSR Gyprock Ultra Matt (Vinyl faced) • Celotex mineral fibre Ceiling Tile: • Celotex (a cast product) • Hytone (wet felt product) • Ecophon – Glass fibre Wall Panels & Ceiling Tiles • Perforated Ceiling Tile • Arctic White ceiling
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※Report sponsor has confirmed that above product names have been updated while keeping the same product compound as tested and assessed .

3 REFERENCED TEST PROCEDURES

This report is prepared with reference to the AS3837-1999 (amdt 1) Reconfirmed 2016 and AS5637.1-2015.

4 FORMAL ASSESSMENT SUMMARY

Based on the discussion presented in this report, it is the opinion of this testing authority that if the tested prototype described in Section 2 had been modified within the scope of Section 3, it would be likely to achieve the Fire Hazard Properties as stated below in Table 1 if tested in accordance with the test method referenced in Section 4 and subject to the requirements of Section 7.

Table 1 – Fire Hazard Properties

Material	Group Number	Average Specific Extinction Area
CSR Gyprock Plasterboard Products		
CD Gyprock	1	<250
Supaceil	1	<250
Supaceil 2014	1	<250
Soundchek	1	<250
Aquachek	1	<250
Flexible	1	<250
Perforated	1	<250
Fyrchek	1	<250
Fyrchek MR	1	<250
Shaftliner	1	<250
Flamechek	1	<250
Impactchek	1	<250
EC08 Partition	1	<250
EC08 Fire	1	<250
EC08 Impact	1	<250
EC08 ImpactMR	1	<250
Supercheck	1	<250
Mouldchek	1	<250
Perforated with Viledon fabric backing - Ovation 6mm Round (13% void) - Ovation 12mm Square (24% void) - Ovation Diamond (12% void) - Ovation Slotted, offset (37% void) - Ovation Slotted, aligned (39% void) - Ovation Astral (13% void)	1	<250
Partywall Panel	1	<250
Sensitive Choice	1	<250
Gyptone Big Quattro 41	1	<250
Gyptone Big Quattro 47	1	<250
Gyptone Big Line 6	1	<250
Rigitone 8/18	1	<250
Rigitone 12/12 Q	1	<250
Rigitone 12-20/66	1	<250
Rigitone 8-15-20 Super	1	<250
Rigitone 10/23	1	<250
Gyprock Plus	1	<250
CSR Cement Product		
CSR Fibre Cement Wallboard	1	<250
Rigid Air Barrier	1	<250
Tile Underlay	1	<250
Texture Base Sheet	1	<250
Rendaline	1	<250
Cladding sheet	1	<250
SimpleLine	1	<250
Eaves lining	1	<250
Compressed Sheet	1	<250

Material	Group Number	Average Specific Extinction Area
ExpressPanel	1	<250
Barestone	1	<250
Edge	1	<250
Mosaic	1	<250
Plank Weatherboard	1	<250
Headland Weatherboard	1	<250
Scarborough Weatherboard	1	<250
Endeavour Weatherboard	1	<250
Soffitline	1	<250
Constructafloor Interior	1	<250
Constructafloor Exterior	1	<250
Designer Series , Territory	1	<250
Builder Series	1	<250
Creative Façade Panel, Surround façade panel	1	<250
Ceiling Tiles Products		
CSR Gyprock Freshtone Supatone (Painted)	1	<250
CSR Gyprock Diamond White (Vinyl faced)	1	<250
CSR Gyprock Ultra Matt (Vinyl faced)	1	<250
Celotex mineral fibre Ceiling Tile	2	<250
Hytone mineral fibre Ceiling Tile	2	<250
Ecophon – Glass fibre Wall Panels & Ceiling Tiles	1	<250
Gyprock Perforated Plasterboard Ceiling Tile	1	<250
Arctic White ceiling panel	1	<250

5 REQUIREMENTS

This report details the methods of construction, test conditions and assessed results that would have been expected had the specific elements of construction described herein been tested in accordance with AS5637.1-2015

Any variation to the material specification or additions of other layers that are not referenced in this report may invalidate the conclusions drawn in this report.

6 VALIDITY

This assessment report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

The conclusions of this assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Because of the nature of fire testing, and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

The assessment can therefore only relate to the actual prototype test specimens, testing conditions, and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are the subject of constant review and improvement and it is recommended that this report be reviewed on or, before, the stated expiry date.

The information contained in this report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should

be consistent with the requirements stated in the relevant test reports and all referenced documents.

7 AUTHORITY

7.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance, the applicant(s) confirms that:

- to their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the Standard against which this assessment is being made, and
- they agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test by a test authority in accordance with the Standard against which this assessment is being made and the results are not in agreement with this assessment, and
- they are not aware of any information that could adversely affect the conclusions of this assessment and if they subsequently become aware of any such information, agree to ask the assessing authority to withdraw the assessment.

7.2 GENERAL CONDITIONS OF USE

This report may only be reproduced in full without modifications by the report sponsor. Copies, extracts or abridgments of this report in any form shall not be published by other organisations or individuals without the permission of Exova Warringtonfire Aus Pty Ltd.

7.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

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7.4 DATE OF ISSUE

20/09/2018

7.5 EXPIRY DATE

30/09/2023

APPENDIX A - SUMMARY OF SUPPORTING DATA

A.1 TABLE A1: MATERIAL PROPERTIES FOR CSR GYPROCK PLASTERBOARD PRODUCTS

Product	Thickness	Mass kg/m ²	AS1530.3 Indices			
			II	SOF	HE	SDI
CD Gyprock	10	6.5	13	0	1	2
	13	8.5				
Supaceil	10	7.2	14	0	1	1
Soundchek	10	9.3	0	0	0	3
	13	13				
Aquachek	10	8	13	0	2	3
	13	10.4				
Flexible	6	4.3	13	0	1	2
Perforated	13	10	0	0	0	3
Fyrchek	13	10.5	0	0	0	3
	16	12.5				
Fyrchek MR	13	10.7	13	0	2	2
	16	13.5				
Shaftliner	25	19.8	0	0	0	3
Flamechek	10		13	0	2	2
Impactchek	10	8.0	0	0	0	3
	13	10.5				

Notes:

1. Gyprock Plasterboard is machine made sheet composed of a gypsum core encased in heavy duty paper linerboard
2. The linerboard face and back 170-180 gsm.
3. Aquachek and Fyrchek MR contain Paraffin wax emulsion.
4. The mesh in Impactchek is located adjacent to the back linerboard.

A.2 TABLE A2: CSR FIBRE CEMENT PRODUCTS

Product	Thickness	Mass kg/m ³	AS1530.3 Indices			
			II	SOF	HE	SDI
Fibre Cement Panel coated with polyurethane (GBKS 261)	10	1196	0	0	0	1

Notes: II = Ignitibility Index, SOF = Spread of Flame, HE = Heat Evolved, SDI = Smoke Developed Index

A.3 TABLE A3: MATERIAL PROPERTIES FOR CEILING PANELS AND CELOTEX, AND ECOPHON.

Product Description	Thickness	Mass Kg/m ²	EFH
			AS1530.3
10 mm Supaceil Gyprock Lay in Panels with Paint or Vinyl facings	-	-	-
CSR Gyprock Freshtone Supatone (Painted plasterboard)	10	7.3	

Product Description	Thickness	Mass Kg/m ²	EFH
			AS1530.3
CSR Gyprock Diamond White (Vinyl faced)			0,0,0,4
CSR Gyprock Ultra Matt (Vinyl faced)			
Celotex mineral fibre Ceiling Tile	-	-	-
Celotex (a cast product)	-	-	-
Hytone (wet felt product)	-	-	0,0,0,2
Ecophon – Glass fibre Wall Panels & Ceiling Tiles	-	-	-
All tiles/panels have a high density glass fibre core with a variety of facings. Thickness ranging from 15 to 40 mm. The facings are: Acutex T and reinforced Acutex, White tissue, painted tissue, woven glass fibre fabric.	15 to 40	100 kg/m ³	BS Class 0
Arctic White ceiling	10	65	

A.4 TABLE A4: TEST RESULTS FOR CEILING PANELS AND CELETOX, AND ECOPHON IN ACCORDANCE TO AS5637.1-2015.

Material	Test Reference	Group Number	Average Specific Extinction Area (m ² /kg)
Supaceil 10mm thick	136806	1	46
Aquachek 10mm thick	136808	1	38
Supaceil 10mm thick faced with Vinyl Facing (Ultra matt)	136811	1	80
Celotex Hytone ceiling tile	136807	2	125
Ecophon Acutex T (painted) – 40mm thick	136812	1	86
Cement-bonded fibrous wood particle panel- 16mm thick	FNK 10457	1	41.3
Gyprock Perforated Plasterboard with Viledon fabric backing	FH 5549	1	10.1
Arctic white ceiling	18-002907	1	70.3

A.5 TABLE A5: TEST RESULTS FOR GYROCK GYPTONE, GYROCK RIGITONE AND GYROCK PLUS IN ACCORDANCE TO AS3837-1998

Material	Test Reference	Group Number	Average Specific Extinction Area (m ² /kg)
Gyptone Big Quattro 41	15-005762	1	4.9
Gyprock Rigitone 10/23	15-005760	1	8.5
Gyprock Plus	16-002226	1	7.6

APPENDIX B - ASSESSMENT OF SPECIFIC VARIATIONS

B.1 INITIAL SELECTION OF TEST SPECIMENS

- B.1.1.1 Gyprock Plasterboard is a machine-made sheet composed of a gypsum core encased in a heavy duty paper linerboard.
- B.1.1.2 *Aquachek* and *Fyrchek MR* contain Paraffin wax emulsion. The mesh in *Impactchek* is located adjacent to the back linerboard.
- B.1.1.3 *EC08 Partition* is a similar composition to *CD Gyprock*. It has 8% fly ash where *CD Gyprock* has none, and a little extra plaster. The paper is the same as *CD Gyprock*.
- B.1.1.4 *EC08 Fire* is similar in composition to *Fyrchek*. It has 9.5% more fly ash than *Fyrchek* (which has 6%) by weight. The paper is the same as *Fyrchek*.
- B.1.1.5 *EC08 Impact* is similar in composition to *Fyrchek*. It has 18% fly ash and heavier paper – 220gsm compared to *Fyrchek* 170gsm
- B.1.1.6 *EC08 ImpactMR* similar to *EC08 Impact* and like *FyrchekMR*. It has 18% fly ash, 220gsm paper and wax emulsion as for *FyrchekMR*.
- B.1.1.7 *Superchek* is similar in composition to *Soundchek*. It has fibreglass added and 240gsm paper. *Soundchek* has no fibreglass and CD paper
- B.1.1.8 *Supaceil 2014* is similar in composition to *Supaceil* except it has density of 6.1 kg/m² compared to 7.2 kg/m² for *Supaceil*.
- B.1.1.9 *Mouldchek* is similar in composition to *Aquachek* with a small amount an added fungicide.
- B.1.1.10 *Sensitive Choice* is *Aquachek* with a small amount an added fungicide.
- B.1.1.11 *Partywall Panel* is *Shaftliner MR* with a small amount an added fungicide.
- B.1.1.12 Extensive use of plasterboard has shown that it presents a relatively low hazard to such an extent that the NCC deems plasterboard to be non-combustible notwithstanding the applied paper surfaces.
- B.1.1.13 The central core has limited combustibility and therefore the performance will tend to be dominated by the properties of the paper facings and any applied finishes although combustible components in the core may contribute slightly to smoke production.

Table B1 - AS 1530.3 test data on the various types of plasterboard

Product	AS1530.3 Indices			
	II	SOF	HE	SDI
CD Gyprock	13	0	1	2
Supaceil	14	0	1	1
Soundchek	0	0	0	3
Aquachek	13	0	2	3
Flexible	13	0	1	2
Perforated	0	0	0	3
Fyrchek	0	0	0	3
Fyrchek MR	13	0	2	2
Shaftliner	0	0	0	3
Flamechek	13	0	2	2
Impactchek	0	0	0	3

Notes: II = Ignitibility Index, SOF = Spread of Flame, HE = Heat Evolved, SDI = Smoke Developed Index

- B.1.1.14 Based on the above data and the similarity of the EC08 products EC08 Impact, Fire Partition and Impact MR are likely to present a similar hazard as for either *Aquachek* or *Supaceil*.
- B.1.1.15 From the table it can be observed that *Supaceil* is the most easily ignited with *Aquachek* yielding the highest heat evolved and smoke developed indices. These two materials were selected on the basis that the other materials would achieve similar or better performance.

- B.1.1.16 The polyurethane (GBKS 261) coated fibre cement sheet tested in EWFA 2766200.1 achieved 0 for ignitability index, spread of flame index and heat evolved index and 1 for smoke developed index.
- B.1.1.17 The cement sheet achieved 0 or 1 indices for all criteria in AS 1530.3 tests and the material composition indicates there are very few combustible constituents. It is therefore expected that the CSR cement sheets would expect better performance than the plasterboard samples selected. On this basis it was not considered necessary to test the cement sheet board.
- B.1.1.18 The following Supaceil Lay in Panels with paint or vinyl facings were nominated:
- CSR Gyprock Freshtone Supatone (Painted plasterboard)
 - CSR Gyprock Diamond White (Vinyl faced)
 - CSR Gyprock Ultra Matt (Vinyl faced)
- B.1.1.19 From a consideration of the material properties it was determined that a Vinyl faced specimen would be likely to perform to a lower standard than a painted sample and that the performance of the two vinyl faced panels would be similar. Therefore it was determined that CSR Gyprock Ultra Matt should be tested.
- B.1.1.20 The mineral fibre tiles only have a limited number of combustible constituents, except for the Celotex wet felt product which contains a substantial amount of starch and cellulose whilst the Celotex cast product contained starch but no cellulose. Therefore, it was considered conservative to test the Celotex Hytone wet felt product and apply the results to the cast product.
- B.1.1.21 A review of the AS 1530.3 results showed that the Ecophon Acutex T (painted) sample performed slightly worse with respect to smoke production than the other tiles but all tiles were relatively inert. Therefore the Ecophon Acutex T (painted) sample was selected as the most likely worst case Ecophon product.
- B.1.1.22 Gyprock Perforated Plasterboard with Viledon fabric backing with various perforation configurations are composed of identical materials and vary only in void ratio of the plasterboard panel. As discussed previously, plasterboard presents a relatively low hazard and therefore the performance will tend to be dominated by the properties of the facings and any applied finishes.
- B.1.1.23 While the void ratio of the plasterboard panel may vary between different configurations, the Viledon fabric backing does not. Therefore a panel with a higher void ratio will have a higher ratio of Viledon fabric backing to plasterboard and is considered likely to perform at a lower standard.
- B.1.1.24 Test FH 5549 was performed on "Ovation Slotted, offset" with 37% void ratio which is higher than all other types expect for "Ovation Slotted, aligned" with 39% void, and only a small difference in performance was observed.
- B.1.1.25 Based on the above it is confirmed that the group number and average specific extinction area of the products listed in Section 3 of this report (except for Gyprock Gyptone, Gyprock Rigitone and Gyprock Plus) can be satisfactorily predicted by the test resulted listed in Table A4 and these are presented in Section 5.

B.2 GYROCK GYPTONE PLASTERBOARD PRODUCTS

- B.2.1.1 It is expected that the Gyptone products listed in Section 3 will likely achieve Group 1 and Average Specific Area Extinction (ASEA) of < 250m²/kg if tested in accordance to AS/NZS 3837-1998.
- B.2.1.2 The reason is Gyptone Big Quattro 41 was tested in accordance to AS 3837-1998 and achieved Group 1 and ASEA of < 250m²/kg as shown in Table A5. In addition, Gyptone Big Quattro 41 had the highest percentage of void ratio, when compared to Gyptone Big Quattro 47 and Gyptone Big Line 6. Other than the differences in void ratios, other material properties between the Gyptone plasterboard products are the same. See Table below.

St Gobain Names	Percentage of void ratio (%)
Gyptone Big Quattro 41	16

Gyptone Big Quattro 47	6
Gyptone Big Line 6	13

B.2.1.3 Applying the same principles as discussed in B.1.1.22 and B.1.1.23 of this report it is expected that the Group Number and ASEA results for Gyptone Big Quattro 47 and Gyptone Big Line 6 is likely to be equivalent or better than the results achieved by Gyptone Big Quattro 41.

B.2.1.4 As such, it is expected that the Gyptone products listed in Section 3 will likely achieve Group 1 and Average Specific Area Extinction (ASEA) of < 250m²/kg if tested in accordance to AS3837-1998. These results are presented in Section 5.

B.3 GYROCK RIGITONE PLASTERBOARD

B.3.1.1 It is expected that the Gyprock Rigitone products listed in Section 3 will likely achieve Group 1 and Average Specific Area Extinction (ASEA) of < 250m²/kg if tested in accordance to AS/NZS3837-1998.

B.3.1.2 The reason is Gyprock Rigitone 10/23 was tested in accordance to AS/NZS 3837-1998 and achieved Group 1 and ASEA of < 250m²/kg, as shown in Table A5. Although Gyprock Rigitone 10/23 did not have the highest percentage of void ratio (with reference to B1.1.22 and B.1.1.23 in this report), it is expected that the Group Number and ASEA results of other Gyprock Rigitone products in Section 3 is likely to be similar to that achieved by Gyprock Rigitone 10/23.

B.3.1.3 Upon closer inspection of test results, it was found that Rigitone 10/23 achieved ASEA of 8.5m²/kg.

B.3.1.4 The importance of above observation is that it provides certain level of confidence to the expected performance of the other Rigitone boards with different perforation percentages although they slightly differ between each other.

B.3.1.5 As such, it is expected that the Rigitone products listed in Table 1 in Section 3 will likely achieve Group 1 and Average Specific Area Extinction (ASEA) of < 250m²/kg if tested in accordance to AS 3837-1998. These results are presented in Section 5.

B.4 GYROCK PLUS PLASTERBOARD

B.4.1.1 Gyprock Plus was tested in accordance to AS 3837-1998 and achieved Group 1 and ASEA of < 250m²/kg, as shown in Table A5. As the material was tested to achieve the stated results (table A5), no assessment is required.