JENSEN HUGHES

Master Door hardware assessment

Report sponsor: McGrath Locks Pty Ltd and E Plus Building Products Pty Ltd

Products: McGrath door hardware

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Quality management

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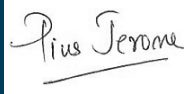
		Signature			
Note- The stated expiry date is dependent on the continued validity of report FCO 3430, FCO 3501, FCO 1794 and FAS200350 throughout the duration of this report's validity period. Therefore, it is essential to read this report in conjunction with FCO 3430, FCO 3501, FCO 1794 and FAS200350.					

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Contents

1. Introduction

This report documents the findings of the assessment to determine the expected fire resistance level (FRL) of McGrath door hardware installed in E-core doorsets in accordance with AS 1530.4:2014[1] and AS 1905.1:2015[2] (as applicable).

Jensen Hughes performed this assessment at the request of the report sponsors listed in Table 1.

Table 1 Report sponsor details

Report sponsor	Address
E Plus Building Products Pty Ltd	12-13 Dansu Court Hallam VIC 3803 Australia
McGrath Locks Pty Ltd	28 Cheviot Street Grange QLD 4051 Australia

2. Baseline test data for full scale doorset

E-core doorsets were previously tested and reported in test reports FSV 0608, FSV 0609, SI 2271. Based on the test data, the doorsets are expected to achieve performance as outlined in Table 2.

E-core doorsets were further tested in accordance with AS 1530.4:2014. Based on the test data, the expected performance of the E-core doorsets is assessed in assessment reports FAS 200350, FCO 3501 and FCO 3430. The tested/assessed performance is summarised in Table 3.

Table 2 Old generation E-core doorset

Test reference	Doorset description	Test/assessment standard	Reference doorset	FRL
FSV 0608	Single leaf plywood faced E-core mini doorset, nominally 35 mm thick	AS 1530.4:1997[3]	A	-/120/30
FSV 0609, FCO 1794	Single leaf plywood faced E-core doorset, nominally 45 mm thick	AS 1530.4:2005[4]	B	-/240/30
SI 2271, FCO 1794	Two leaf plywood faced E-core doorset, nominally 45 mm thick		C	-/240/30

Notes:

- It should be noted that the performance of the doorset varied based on their construction and test standards. The relevant doorsets were referenced in section 5 as defined in this table.
- Refer to E Plus Building Products Pty Ltd for the latest version of assessment reports FCO 1794.

[1] Standards Australia, 2014, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2014, Standards Australia, NSW.
[2] Standards Australia, 2015, Components for the protection of openings in fire-resistant walls Fire-resistant doorsets, AS 1905.1:2015, Standards Australia, NSW.
[3] Standards Australia, 1997, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests of elements of building construction, AS 1530.4:1997, Standards Australia, NSW.
[4] Standards Australia, 2005, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2005, Standards Australia, NSW.

Table 3 New generation E-core doorset

Assessment reference	Doorset description	Test standard	Reference doorset	FRL
FAS 200350, FCO 3430	Single leaf E-core maxi doorset, nominally 45 mm thick	AS 1530.4:2014	D	Up to -/180/30
	Two leaf E-core maxi doorset, nominally 45 mm thick		E	Up to -/120/30
FAS 200350, FCO 3501	Single leaf E-core HD mini doorset, nominally 35 mm thick		F	Up to -/60/30

Notes:

- It should be noted that the performance of the doorset varied based on their construction and test standards. The relevant doorsets were referenced in section 5 as defined in this table.
- Refer to E Plus Building Products Pty Ltd for the latest version of assessment reports FAS 200350, FCO 3501 and FCO 3430.

3. Hardware considered in this report.

A range of door hardware was considered in this report. The considered hardware is listed in Table 4 to Table 7.

Table 4 List of locksets with or without additional furniture in E-core doors

Item	Model	Description	Backset	Reference test/assessment
1.	McGrath Locks ML-Windsor Smart Lock	Smart lock installed with Dormakaba MS 2902 mortice lock	95 mm	FRT210213 R1.0, FRT210213 DHAR1.0
		Smart lock with MS2602 mortice lock	60 mm	FRT210213 R1.0, FAS210358 DHAR1.1 FRT230097 R1.0
		Smart Lock with McGrath locks 60/70 adjustable tubular SS latch backset and standard strike plate	60 mm	FRT220330 R1.0, FAS220379 DHAR1.0 FRT240152 R1.0 FSP1584
			70 mm	
		Smart Lock with Lockwood 530 tubular brass latch with 60, 70 & 127 backset and standard strike plate	60 mm	FRT220330 R1.0, FAS220379 DHAR1.0 FSP1584
			70 mm	
			127 mm	
2.	McGrath locks ML Hamilton smart lock	Smart lock with a MS2902 Mortice lock	95 mm	FRT240012 R1.0, FAS240012 DHAR1.0
		Smart lock with a MS2602 mortice lock	60 mm	FRT240012 R1.0, FAS240012 DHAR1.0 FAS210358 DHAR1.1
3.	McGrath Locks ML Hamilton FM575 outdoor Smart Lock	Smart lock with the McGrath 60/70 adjustable tubular SS latch	60 mm	FRT240152 R1.0, FAS240152 DHAR1.0 FAS220379 DHAR1.0
			70 mm	

Table 5 List of door closers in E-core doors

Item	Model	Description	Reference test/assessment
1.	McGrath LSC ABUS AC7303	Door closer	FRT240012 R1.0, FAS240012 DHAR2.0

Table 6 List of slider arm in E-core doors

Item	Model	Description	Reference test/assessment
1.	McGrath locks ML-DSW-100N door operator – slide arm track	Slider arm track	FRT220330 R1.0, FRT220330 DHAR3.0

Table 7 List of secondary locks in E-core doors

Item	Model	Description	Reference test/assessment
1.	McGrath Locks LSC NEPTUNE NEML280M Mag Lock	Magnetic lock - monitored	FRT240152 R1.0, FAS240152 DHAR2.0

4. Additional supporting data considered in this report.

The proposed hardware was assessed based on supporting test data listed in Table 8 and in compliance with AS 1905.1:2015.

Table 8 Additional supporting test data

Test report	Test date	Test scale	Doorset description	Tested hardware	Test duration	Test standard
FSV1584	19 April 2013	Pilot scale test	Single leaf “E Core product” plywood faced single Mini leaf doorset, nominally 38 mm thick	• Lockwood 530 series latch, having a brass latch bolt, stainless steel bolt retaining plate and strike plate. • Lockwood/Abloy FD480EMC series fully concealed door closer	121 minutes	AS 1530.4:2005
FRT210213 R1.0	15 June 2021	Pilot scale test	Single leaf “E Core product” plywood faced single Mini leaf doorset, nominally 35 mm thick	• DAC Systems Smart Lock with Dormakaba MS2900 Series Mortice Lock • Record DFA 127 Door Operator slide arm track. • Trio Butt Fixed Pin 304SS Hinges	121 minutes	AS 1530.4:2014

Test report	Test date	Test scale	Doorset description	Tested hardware	Test duration	Test standard
FRT220330 R1.0	7 February 2023	Pilot scale test	Single leaf “E Core product” plywood faced single Maxi leaf doorset, nominally 46 mm thick	• McGrath Locks ML-DSW-100N door operator • LOX Locking LES20M Monitored Electric Strike • McGrath Locks DACS Systems Smart Lock with a Lockwood 530 tubular latch with a 70 mm backset • Dormakaba door hinges DKH100/100 FP SSS non-bearing butt hinges stainless steel 2.5 mm × 100 mm × 100 mm • McGrath Locks ML-DSW-100N door operator - slide arm track	121 minutes	AS 1530.4:2014
FRT230097 R1.0	29 August 2023	Full scale test	Single leaf “E Core product” plywood faced single Maxi leaf doorset, nominally 46 mm thick.	• Dormakaba non-bearing hinges (DKH100/100FP FP SSS) • Entro D0753 face mounted door closer and parallel arm bracket. • Dormakaba Mortice Lock – MS 2602 – SSS	121 minutes	AS 1530.4:2014

Test report	Test date	Test scale	Doorset description	Tested hardware	Test duration	Test standard
FRT240012 R1.0	28 March 2024	Pilot scale test	Single leaf “E Core product” plywood faced single Mini leaf doorset, nominally 35 mm thick	• McGrath Hamilton Smart Lock (ML Hamilton) with a MS2902 Mortice Lock. • LSC ABUS AC7303 Door Closer with slide rail • Lockwood Stainless Steel loose pin hinges LW10075LP PSS	121 minutes	AS 1530.4:2014
FRT240152 R1.0	12 July 2024	Pilot scale test	Single leaf “E Core product” plywood faced single Mini leaf doorset, nominally 35 mm thick	• ML Hamilton FM575 Outdoor Smart Lock with a McGrath Locks Adjustable Backset Tubular Latch • Neptune 280 series maglock	121 minutes	AS 1530.4:2014

5. Assessment

5.1 Door hardware assessment in accordance with AS 1905.1:2015

The E-core doorsets were tested in a range of fire resistance tests. The expected performance of the E-core doorset based on these tests and subsequent assessments – FCO 1794, FAS200350, FCO3501 and FCO 3430 – are summarised in Table 2 and Table 3. It should be noted that, FCO 1794, FCO 3501 and FCO 3430 were issued by Infrastructure Technologies. Jensen Hughes has not verified the outcome of these assessment reports. However, for the purpose of this report, it is assumed that the outcomes are accurate. This report needs to be read in conjunction with test/assessment report listed in Table 2 and Table 3. As such, the validity of this report is conditional upon the validity of FCO 1794, FCO 3501 and FCO 3430. Any changes or updates to FCO 1794, FCO 3501 and FCO 3430 may therefore impact the outcome of this report.

As per section 4 of AS 1905.1:2015, door hardware can be assessed based on additional pilot scale or full-scale tests if conducted in accordance with AS 1530.4. The proposed hardware listed in section 3 was tested either in full or pilot scale. The test outcomes are summarised in Table 8 . Based on expected doorset performance listed in Table 2 and Table 3, and pilot/full scale test data summarised in Table 8, the proposed hardware is assessed in compliance with section 4 of AS 1905.1:2015.

This assessment is conditional upon the operational characteristics and materials of the doorset complying with section 2 of AS 1905.1:2015. The field of application of the hardware included in this report is defined by the field of application of the doorset that the door hardware is installed on.

5.2 Applicability of test data to AS 1530.4:2014

It was noted that some pilot scale test was conducted in accordance with AS 1530.4:2005. The stipulations provided in Appendix B11 of AS 1530.4:2005 and AS 1530.4:2014 are not appreciably different. Therefore, the pilot scale test results in accordance with AS 1530.4:2005 can be used to assess the fire resistance performance of the hardware in accordance with AS 1530.4:2014.

5.3 Lockset with or without additional furniture

5.3.1 Assessment based on pilot/full scale test.

Section 4.5 of AS 1905.1:2015 permits the assessment of locksets based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2 and Table 3, pilot scale or full-scale tests listed in Table 8 form the basis of this assessment.

It is noted that, some locksets included additional furniture. In such case, the furniture was tested as part of the pilot scale or full-scale tests.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitute integrity failure. From the pilot scale or full-scale tests, the attained duration of integrity performance of each lockset based on the above criteria is noted.

As the proposed locksets with or without additional furniture (as applicable) did not cause failure up to the noted timeframes in the pilot scale tests or full-scale tests, substituting the locksets with or without additional furniture (as applicable) for the hardware tested in the referenced doorsets listed in Table 2 and Table 3 are not expected to affect their performance. Based on the above, the proposed locksets listed in Table 4 are positively assessed.

5.3.2 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed locksets listed in Table 9 are capable of achieving the FRLs listed in Table 9 – if they are fitted in the referenced E-core doorsets.

Table 9 Fire resistance level of locksets installed in E-core doorset.

Item	Model	Description/ Additional furniture	Reference doorset as listed in Table 2 and Table 3	FRL
1.	McGrath Locks ML-Windsor Smart Lock	Smart lock installed with Dormakaba MS 2902 mortice lock with 95 mm backset	A, B, C, D, E, F	-/120/30*
		Smart lock installed with Dormakaba MS 2602 mortice lock with 60 mm backset	A, B, C, D, E, F	-/120/30*
		Smart Lock with McGrath locks 60/70 adjustable tubular SS latch backset and standard strike plate	B, C, D, E	-/120/30*
		Smart Lock with Lockwood 530 tubular brass latch with 60, 70 & 127 backset and standard strike plate	B, C, D, E	-/120/30*
2.	McGrath locks ML Hamilton smart lock	Smart lock with a MS2902 Mortice lock with 95 mm backset	A, B, C, D, E, F	-/120/30*
		Smart lock with a MS2602 mortice lock with 60 mm backset	A, B, C, D, E, F	-/120/30*
3.	McGrath Locks ML Hamilton FM575 outdoor Smart Lock	Smart lock with the McGrath 60/70 adjustable tubular SS latch	A, B, C, D, E, F	-/120/30*

Notes:

- * Limited to one-way FRL, as the batteries were installed on the exposed side in the tested system
- The listed FRL is the maximum FRL assigned to the hardware. The system FRL needs to be determined in conjunction with the FRL of the referenced doorset. The lowest index between the FRL of the hardware and doorset will be the applicable FRL of any particular combination. Therefore, this report needs to be read in conjunction with the referenced reports listed in Table 2 and Table 3.

5.4 Door closer

5.4.1 Assessment based on pilot/full scale test.

Section 4.5 of AS 1905.1:2015 permits the assessment of door closer based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2 and Table 3, pilot scale or full-scale tests listed in Table 8 form the basis of this assessment.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitute integrity failure. From the pilot scale or full-scale tests, the attained duration of integrity performance of the closer based on the above criteria is noted.

As the proposed closers did not cause failure up to the noted timeframes in the pilot scale tests or full-scale tests, substituting the closers for the hardware tested in the referenced doorsets listed in Table 2 and Table 3 is not expected to affect their performance. Based on the above, the proposed closers listed in Table 5 are positively assessed.

It is noted that, the name of some closers has changed due to marketing purposes. In such instances, the manufacturer has confirmed that, the closer construction remains identical to the tested closer.

5.4.2 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed closers listed in Table 10 are capable of achieving the FRLs listed in Table 10 – if they are fitted in the referenced E-core doorsets.

Table 10 Fire resistance level of closers installed in E-core doorset.

Item	Model	Description/ Additional furniture	Reference doorset as listed in Table 2 and Table 3	FRL
1.	McGrath LSC ABUS AC7303	Door Closer	A, B, C, D, E, F	-/120/30
Note The listed FRL is the maximum FRL assigned to the hardware. The system FRL needs to be determined in conjunction with the FRL of the referenced doorset. The lowest index between the FRL of the hardware and doorset will be the applicable FRL of any particular combination. Therefore, this report needs to be read in conjunction with the referenced reports listed in Table 2 and Table 3.				

5.5 Slider arm

5.5.1 Assessment based on pilot/full scale test.

Section 4.5 of AS 1905.1:2015 permits the assessment of slider arm based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2 and Table 3, pilot scale or full-scale tests listed in Table 8 form the basis of this assessment.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitute integrity failure. From the pilot scale or full-scale tests, the attained duration of integrity performance of the slider arm based on the above criteria is noted.

As the proposed slider arm did not cause failure up to the noted timeframes in the pilot scale tests or full-scale tests, adding the slider arm as an additional item of hardware in the referenced doorsets listed in Table 2 and Table 3 is not expected to affect their performance. Based on the above, the proposed slider arms listed in Table 6 are positively assessed.

It is noted that, the name of some slider arms has changed due to marketing purposes. In such instances, the manufacturer has confirmed that, the slider arm construction remains identical to the tested slider arm.

5.5.2 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed slider arm listed in Table 11 are capable of achieving the FRLs listed in Table 11 – if fitted in the referenced E-core doorsets.

Table 11 Fire resistance level of slider arm installed in E-core doorset.

Item	Model	Description/ Additional furniture	Reference doorset as listed in Table 2 and Table 3	FRL
1.	McGrath locks ML-DSW-100N door operator – slide arm track	Slider arm track	B, C, D, E	-/120/30*

Item	Model	Description/ Additional furniture	Reference doorset as listed in Table 2 and Table 3	FRL
Note – • * - The FRL provided for the slide track assembly described in this item is only valid when used in combination with the identified operator and is conditional on that operator achieving equivalent or greater performance • The listed FRL is the maximum FRL assigned to the hardware. The system FRL needs to be determined in conjunction with the FRL of the referenced doorset. The lowest index between the FRL of the hardware and doorset will be the applicable FRL of any particular combination. Therefore, this report needs to be read in conjunction with the referenced reports listed in Table 2 and Table 3.				

5.6 Secondary locks

5.6.1 Assessment based on pilot/full scale test.

Section 4.5 of AS 1905.1:2015 permits the assessment of secondary lock based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2 and Table 3, pilot scale or full-scale tests listed in Table 8 form the basis of this assessment.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitute integrity failure. From the pilot scale or full-scale tests, the attained duration of integrity performance of the secondary lock based on the above criteria is noted.

As the proposed secondary locks did not cause failure up to the noted timeframes in the pilot scale tests or full-scale tests, adding the secondary locks as an additional item of hardware in the referenced doorsets listed in Table 2 and Table 3 is not expected to affect their performance. Based on the above, the proposed secondary locks listed in Table 7 are positively assessed.

5.6.2 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed secondary locks listed in Table 12 are capable of achieving the FRLs listed in Table 12 – if fitted in the referenced E-core doorsets.

Table 12 Fire resistance level of secondary locks installed in E-core doorset.

Item	Model	Description/ Additional furniture	Reference doorset as listed in Table 2 and Table 3	FRL
1.	LSC NEPTUNE NEML280M	Magnetic lock - monitored	A, B, C, D, E, F	-/120/30
Note The listed FRL is the maximum FRL assigned to the hardware. The system FRL needs to be determined in conjunction with the FRL of the referenced doorset. The lowest index between the FRL of the hardware and doorset will be the applicable FRL of any particular combination. Therefore, this report needs to be read in conjunction with the referenced reports listed in Table 2 and Table 3.				

6. Summary of assessments

The door hardware assessed in this report and their reference outcome table are summarised in Table 13.

Table 13 Summary of assessment

Hardware	Reference table
Locksets	Table 9
Door closer	Table 10
Slider arm	Table 11
Secondary lock	Table 12

7. Conditions and validity

- The conclusions of this assessment may be used to directly assess the 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 resistance testing, and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy of the result. 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 preparing this report. The published procedures for the conduct of tests and the assessment of the test results are the subject of constant review and improvement and it is recommended that this report be reviewed by Jensen Hughes before the end of the validity date.
- The information in this report must 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.
- The data, methodologies, calculations and results documented in this report specifically relate to the tested specimen/s and must not be used for any other purpose. This report may only be reproduced in full. Extracts or abridgements must not be published without permission from Jensen Hughes.