

COMPARATIVE CHART

Compressed Fibre Cement (CFC) VS High Performance Magnesia Cement

STRENGTH AND MOISTURE RELATED DATA: SCYON INTERIOR WET AREA FLOORING

PHYSICAL PROPERTY	SATURATED CONDITION	EQUILIBRIUM CONDITION 23°C – 50% RH	STANDARD
Average Bending Strength Category Type		>7MPa 2 B	AS/NZS 2908.2
Density in kg/m ³ (Oven Dry)	930		AS/NZS 2908.2
Water tightness		Passes	AS/NZS 2908.2
Water Absorption	42.7%		ASTM C1186
EQ Moisture Content		5.6%	ASTM C1186
Moisture Movement 30-90% relative humidity*		A direction 0.05% B direction 0.05%	ASTM C1186
Dimensional Conformance		Passes	AS/NZS 2908.2

ResCom-flooring RESIDENTIAL & COMMERCIAL FLOORING

PHYSICAL PROPERTY	CONDITION	CONDITION	STANDARD
Average Bending Strength		>14MPa	ASTM C1185-08 (2012)
Density in kg/m ³	1000		ASTM C1185-08 (2012)
Water tightness		Passes	ASTM C1185-08 (2012)
Water absorption	13.2%		ASTM C1185-08 (2012)
EQ Moisture content		5.6%	ASTM C1185-08 (2012)
Moisture movement 30-90% relative humidity*		0.064	ASTM C1185-08 (2012)
Humidified deflection (mm) 32c,40%RH, 48hrs	2.18		ASTM C473-12
Dimensional conformance		Passes	ASTM C1185-08 (2012)
Fire classification building		Class A1 _{FL}	EN 13501-1:2007+A1:2009
Flame Spread & Combustibility	0		ASTM E84
FRL Performance	>120min		ASTM E119
Freeze thaw		Passes	ASTM C1185-08 (2012)
Nail-Head pull through (N)	789		ASTM D1037-12 (Section 15)
Lateral nail resistance	2278N		ASTM D1037-12 (Section 13)
Falling ball impact	Unbroken @ 3mtr heights	Passes	ASTM D1037-12 (section 21)
Diaphragm capacity		Passes	ASTM E455-11 & AS/NZS2908.2:2000

All said and done regarding the abilities of magnesia cement, the **BIG QUESTION STILL LINGERS.....**

- ARE ALL Magnesia Cement Boards Made Equal
- Do They All Perform The Same
- What Types of Magnesia Cement Boards Are There
- What Proof Is There That Supports Various Claims of Performance

THE SIMPLE ANSWER IS: NO

NO THEY ARE NOT ALL MADE EQUAL

NO THEY DON'T PERFORM THE SAME

THERE ARE AT LAST COUNT SIX (6) TYPES

- 1: MgO Chloride (MgSO₄) Activated Board** (oldest and longest proven history of performance)
- 2: MgO Silicate Board** (most used form of magnesia cement board)
- 3: MgO Portland Mix Board**
- 4: MgO Phosphate Board**
- 5: MgO Plaster Mix Board**
- 6: MgO Sulphate (MgCl) Board** (the most unstable of all MgO Boards)

COMPARATIVE ANALYSIS OF THE OLDEST TRIED AND PROVEN FORMULATION OF MAGNESIUM CEMENT (MGSO4) BOARD (45YRS) VS THE CLAIMS OF THE NEW (5YRS) SULPHATE (MGCL) BOARD

Example #1

Performance Chart:		XXXXX panel (Sulphate) Board Report #171228005SHF-BP-2-R1		Vs	ResCom® Board SGS and Intertek Laboratories	
Technical Spec	Test Method		Result			Result
Thickness		10mm			10mm	
Flexural <u>Mpa</u>	AS/NZ 2908 Sec 8.1.2.1	13.2		C1185-08	22.9	
Moisture Linear	ASTM C1185-8 Sec 8	0.18			0.064	
Humidity Deflection	ASTM C473-12	No Test Report	?	C473-12	2.64	
Water absorption	ASTM C1185-8 Sec 8	No Test Report	?	C1185-08	12.8	
Water Permeability	AS/NZ 2908 Sec 8.2.2	What Category	?	EN12467		Pass
<u>Water Vapor</u>	EN12467 (E) Sec 5.4.6	No Test Report	?			Pass
Category A	EN12467 (E) Sec 7.3.4					
Freeze Thaw	EN12467 (E) Sec 5.5.2	No Test Report	?		RL = 0.90	Pass
Category A	EN12467 (E) Sec 7.4.1					
Heat Rain	EN12467 (E) Sec 5.5.3	No Test Report	?		No Damage	Pass
Category A	EN12467 (E) Sec 7.4.2					
Mean Density	AS/NZ 290 Sec 8.1.2.2	1			0.9	
Ball Impact	ASTM D1037-12 Sec 21	950mm Height	Broken		3000mm Height	Not Broken
Screw Pull Out	ASTM D1037-12 Sec 16	446(N)		ASTM E386	3845 (N)	
Lateral Nail Pull	ASTM D1037-12 Sec 13	No Test Report	?		1450 (N)	
Nail Pull Through	ASTM D1037-12 Sec 15	No Test Report	?		517 (N)	

Example #2



13/06/2019

SUMMARY REPORT Multi Board (M4) vs ResCom (HMR)

MgO Corp Asia Laboratories comparative test analysis has been carried out by request of [REDACTED]. All testing has been carried out under international standards in a controlled laboratory environment to assure direct equal comparisons to be applied to each product.

Test	Product	Result	Product	Result	Direct Comparison		
	Multi Board M4 (12mm) 8" x 8"		ResCom Board (12mm) 8" x 8"		Variation Between Products Risk to Built Environment		
Formulation	Magnesium Sulphate MgSO4		Magnesium Chloride MgCl2		M4	vs	HMR
Chloride Content		4.30%		1.95%	High	vs	Low
Water Absorbtion		21%		13%	Medium	vs	Low
Moisture Content		>9% to 13%		3.20%	High	vs	Low
Dry / Wet Density	Natural State	1.0g/cm ³	Natural State	1.09g/cm ³	Similar	vs	Similar
Wet / Dry Density	After Drying	0.89g/cm ³	After Drying	1.08g/cm ³	11% Drop	vs	Stable
Av Thickness Error	Thickness of 4 Sides	7.30%	Thickness of 4 Sides	0.25%	High	vs	Low
Dry Strength MpA	Natural State	12.22MpA	Natural State	21.19MpA	Low	vs	>57.6%
		10.65MpA		20.17MpA	Low	vs	>52.8%
Wet Strength MpA	After Soak Test	10.98MpA	After Soak Test	19.35MpA	Low	vs	>56.7%
		10.94MpA		17.63MpA	Low	vs	>62%
Residual Release	After Soak Test	Salt to surface	After Soak Test	Nil	High Risk	vs	Low
Soak Dry Deformation	Risk of Deformation	High	Risk of Deformation	Low	High Risk	vs	Low

The attached reports and the above summary raises serious concerns surrounding the representation and statement of performances made by Multi Board (M4) as displayed on their website and throughout the technical data. MgO Corp has always expressed that the MgSO4 formulations are unstable, unproven and not suitable for use within the building and construction industry as an exterior or interior wall, ceiling, flooring or cladding product. Our company has been monitoring for some time now the introduction of MgCl2 into the sulphate mixtures by the sulphate board manufacturers as they try to overcome the lack of integrity and performance of the MgSO4 products.

Example #3

MgO Corp Asia Laboratory Test Results		Specimens where prepared at in Lab equilibrium conditions	
Test Sample 1:		RD	9mm Comparison
1: Chemical Composition		Sulphate + Binder	MgO Chloride + Binder
2: Residual Chloride Ion Content		0.92%	1.96%
3: Dry Weight		469.5g	674.3g
4: 24hr Water Absorption 27°C		22.80%	17.80%
5: MpA Dry Weight Strength		7.46	25.86

Test Sample 2:		RD	9mm Comparison
1: Chemical Composition		Sulphate + Binder	MgO Chloride + Binder
2: Residual Chloride Ion Content		0.92%	1.96%
3: Dry Weight		529.7g	710.0g
4: 24hr Water Absorption 100°C		21.50%	12.40%
5: MpA Dry Weight Strength		7.46	25.86

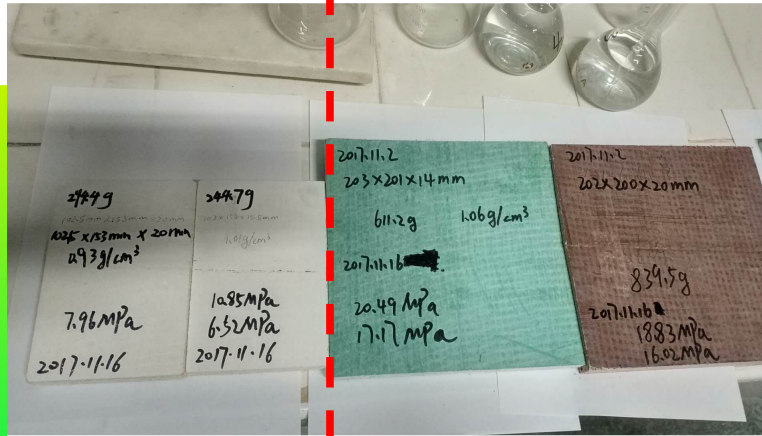
Note* Testing was carried out in accordance to international testing protocol as details under ISO 8336:1993 for that of Fibre Cement Flat Sheet Products and adopted for Magnesium Oxide Board. Standard References: AS/NZS 2809 & 2809.2, EN12467:2012, ASTM C1186-08 2012

Full care was taken to prepare the test samples marked [REDACTED] and comparison test sample marked MgO Corp to be that of an equilibrium state prior to the start of testing.

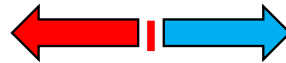
All results are tabled in good faith to the client as to the show of the comparison between products and at no time should be considered as the sole or singular element or cause of the issues found within the building located at [REDACTED] Road Burpengary

The above examples start to highlight the major differences of magnesia cement boards and the importance of assuring that the correct formulations, quality of raw materials, manufacturing processes and independent 3rd party QA is carried out to lessen both the long and short term risks associated with buying a product that does not carry the level of proven performance and protection a project needs.

THE GOOD – THE BAD & THE UGLY TRUTH FILE



The Not So Good Side



The Good Side

THE GOOD – THE BAD & THE UGLY TRUTH FILE



Common
Manufacturing
Facility

VS

Modern HiTech
High Performance
Manufacturing
Facility and QA
Processes



AS I HAVE SHOWN
“THE MAGNESIA CEMENT INDUSTRY HAS BEEN AROUND FOR OVER 800YRS”
SO WHY HAS IT NOT GROWN TO THE STATUS OF OTHER LEADING INDUSTRY PRODUCTS

This I believe is due to some of the following reasons:

1: Modern Day Groups are continually reinventing the wheel without respect or understanding of the proven science and complexity of making a high performance product.

(They just think because it does not burn it is fine and it will fix the problems)

2: Supply companies are trying to compete with entry level plasterboard and the FC sheet industries, which results in cheap inferior products coming into the market based on low pricing points

(not performance)

3: There is confusion within the MgO Industry to what is a good and what is a bad MgO Board. This starts with the companies sourcing the products, because they are only prepared to pay the cheapest price to the manufacturer.

(you get what you pay for)

4: Focus on propaganda surrounding rust and corrosion over the past 5yrs has led to the fast track of inferior MgO based products such as Sulphate Boards, without any consideration of test data that refutes the supplier and trading house claims

(to stop the BS we are happy to share this information with everyone)

5: A lack knowledge and understanding of the application of the products within the construction industry.

(where are the independent engineering, testing, compliance certifications and installation reports)

(more than ever our industry need clarity and support to assure our building are protected)

6: Industry suppliers trying to write their own internal standards

(EG: UK and MOCA from CANADA) for the use of Magnesia Cement boards to bolster their position instead of allowing governments to independently champion such standards like already exist in America under the ICC-ES Magnesia Cement Flat Sheet of which China adopted as industry best standards in late 2018

(there are already trusted 3rd Party Independent Laboratories and Agencies we can all trust)



where to Now - 2020 and Beyond

It is no secret that the building materials industry needs to change and we are all facing real change and challenges moving forward.

The rug is about to be pulled out from under the feet of many in our industry in regards to having to show INDEPENDENT 3rd PARTY TESTING, QUALITY ASSURANCE as proof of performance of all protective systems.

NOT IN HOUSE OPINIONS or IN HOUSE ENGINEERING

The past exemptions clauses within many BUILDING CODES that have allowed for the interpolations of performances of a system are coming to an end.



Intertek

Control No. 5012684

CERTIFIED TO:

BS 476-22 – (10 mm, 12 mm)
Integrity: 120 minutes, 120 minutes
Insulation: 55 minutes, 64 minutes

BS EN 13501-1
Class A1