



MasterRoc® MG 01

High yield, thixotropic, shrinkage compensated cable bolt grout

Material Submittal

About Master Builders Solutions

The Master Builders Solutions brand brings all of our expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry. The know-how and experience of a global community of construction experts form the core of Master Builders Solutions.

We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

Our comprehensive portfolio:

- Concrete admixtures
- Cement additives
- Chemical solutions for underground construction
- Waterproofing solutions
- Sealants
- Concrete repair and protection solutions
- Performance grouts
- Wind turbine grouts
- Performance flooring solutions



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MasterRoc MG 01

High yield, thixotropic cable bolt grout which is shrinkage compensated and best used in civil tunnels and underground mines

How does MasterRoc MG 01 work?

MasterRoc MG 01 is a high yield, shrinkage compensated and thixotropic grout for placement of cable and rock bolts in civil tunnels and underground mines.

Recommended uses:

MasterRoc MG 01 is particularly suitable as a grout used for the encapsulation of roof bolts and cable anchors where the “top-down” grouting method is preferred.

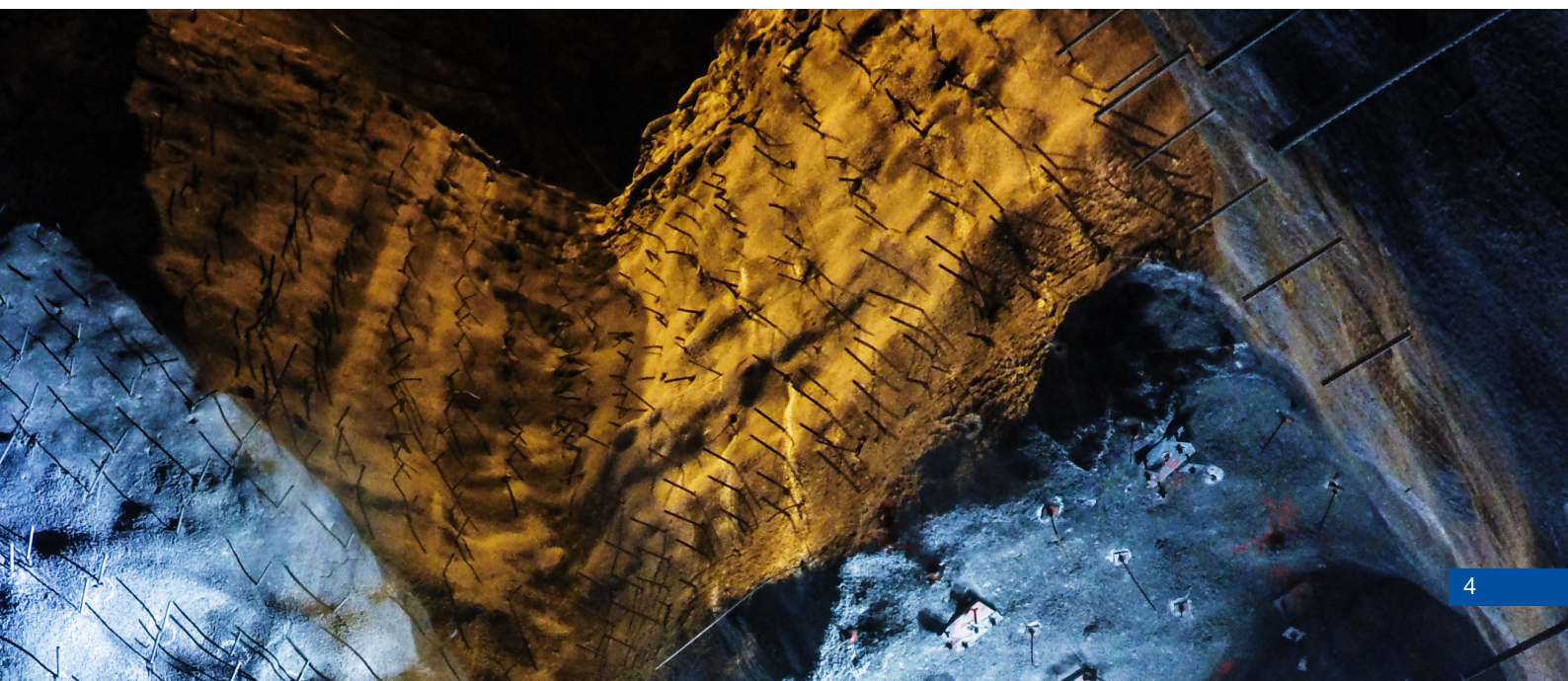
MasterRoc MG 01 has been specially developed to give a high yield (volume) of grout without segregation or bleed whilst providing excellent compressive strengths

What are the unique features of MasterRoc MG 01?

MasterRoc MG 01 is extremely pumpable but shows rapid thixotropy to restrict flow into surrounding strata.

What are the benefits of MasterRoc MG 01?

- Economical to use, due to high yield and rapid thixotropy
- Small grout tube diameters mean smaller diameter drill holes can be used
- Eliminates the requirement for sealing of the collar and plate with cotton waste etc
- Good ultimate strength to ensure the permanence and safety of critical installations
- Extended working time (over 30 minutes at 20°C) enabling easier cleanup of pumps and hoses
- Shrinkage compensated for greater bond strength to surrounding strata
- High bond to steel



Testimonial

MasterRoc MG 01

High Yield, Thixotropic Cable Bolt Grout

Underground Mine, Northern NSW

“At a recent longwall face road, we were met with difficult ground conditions and a sub-par grout for cable bolt anchoring. This combination of factors resulted in only 67% of cable bolts being installed successfully.

After many failed attempts, we began trialling MasterRoc MG 01 which offered large improvements in mixing, pumping and placement.

Once we began using the MG 01 along the face road, more than 88% of the cable bolts were successfully installed on the first attempt, resulting in a faster and safer longwall bolt up.”

Joshua Hurt Mining Engineer, Underground Mine, Northern NSW

MATERIAL DESCRIPTION

MasterRoc MG 01 is a high yield, shrinkage compensated and thixotropic grout for placement of cable and rock bolts in civil tunnels and underground mines.

PERFORMANCE CHARACTERISTICS

Grout strength development is dependent on the amount of mixing water, ambient temperature, age and curing. Typical rates of compressive strength development for 20kg of MasterRoc MG 01 grout with 6.5L of water under controlled laboratory conditions are shown below:

Compressive Strength – Typical results
(AS1478.2 Restrained 50mm cubes at 23°C)

1 Day	30MPa
7 Days	65MPa
28 Days	80MPa

CHARACTERISTICS AND BENEFITS

- Extremely pumpable but shows rapid thixotropy to restrict flow into surrounding strata
- Economical to use, due to high yield and rapid thixotropy
- Small grout tube diameters mean smaller diameter drill holes can be used
- Eliminates the requirement for sealing of the collar and plate with cotton waste etc
- Good ultimate strength to ensure the permanence and safety of critical installations
- Extended working time (over 30 minutes at 20°C) enabling easier cleanup of pumps and hoses
- Shrinkage compensated for greater bond strength to surrounding strata
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MasterRoc[®] MG 01

High yield thixotropic cable bolt grout

MATERIAL DESCRIPTION

MasterRoc MG 01 is a high yield, shrinkage compensated and thixotropic grout for placement of cable and rock bolts in civil tunnels and underground mines.

AREAS OF APPLICATION

MasterRoc MG 01 is particularly suitable as a grout used for the encapsulation of roof bolts and cable anchors where the “top-down” grouting method is preferred.

MasterRoc MG 01 has been specially developed to give a high yield (volume) of grout without segregation or bleed whilst providing excellent compressive strengths.

CHARACTERISTICS AND BENEFITS

- Extremely pumpable but shows rapid thixotropy to restrict flow into surrounding strata
- Economical to use, due to high yield and rapid thixotropy
- Small grout tube diameters mean smaller diameter drill holes can be used
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- Good ultimate strength to ensure the permanence and safety of critical installations
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PERFORMANCE CHARACTERISTICS

Grout strength development is dependent on the amount of mixing water, ambient temperature, age and curing. Typical rates of compressive strength development for 20kg of **MasterRoc MG 01** grout with 6.5l of water under controlled laboratory conditions are shown below:

Compressive Strength – Typical results (AS1478.2 Appendix A. restrained 50mm cubes at 23°C)

1 Day	7 Days	28 Days
30MPa	65MPa	80MPa

MIXING EQUIPMENT

For best results mix using a high mechanical shear or paddle mixer. Any grout pump must have accurate water dosage facilities.

MIXING

MasterRoc MG 01 is supplied ready to use, requiring only the addition of potable water. Do not use hardened or lumpy grout caused by torn or water damaged bags. Fill mixer with correct volume of water to match number of bags of **MasterRoc MG 01**. A good mixer should have an accurate method of determining the water content.

Start the mixer and slowly add **MasterRoc MG 01** powder. Continue mixing the grout until a thick creamy, no-lump consistency is obtained.

Actual amount of water will depend on the desired consistency of the grout required and the grout pump available. As a guide, use 6.5-7.5 litres per 20kg bag.

Do not use excess water (above 7.5 litres for thixotropic mixes). Discard any grout that has been left in excess of 60 minutes. Do not retemper.

PLACEMENT

Master Builders Solutions provide a range of support services which includes operator training and underground audits. Each service package is developed to suit individual site requirements.

It is strongly recommended that a review with fully trained and qualified Master Builders Solutions personnel is conducted prior to placement of **MasterRoc MG 01**.

CLEANING

As with all grouting operations, systematic cleaning of the pump and grout lines with clean water is essential. This should be done immediately after completion of grouting operations. If delays occur for greater than 1 hour, the batched grout should be discarded and the pump and grout lines cleaned.

ESTIMATING DATA

20kg of **MasterRoc MG 01** grout with 7.5 litres of water will yield approximately 14.5 litres (0.0145m³).

PACKAGING

MasterRoc MG 01 is packaged in 20kg moisture resistant paper bags and supplied 64 bags (1.28t) to a pallet.

SHELF LIFE

Pallets should be stored in a dry place. **MasterRoc MG 01** has a shelf life of 12 months.

MasterRoc® MG 01

High yield thixotropic cable bolt grout

PRECAUTIONS

For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.

DISCLAIMER

MasterRoc-MG01 -ANZ-V10-0221

STATEMENT OF RESPONSIBILITY The technical information and application advice given in this MB Solutions Australia Pty Ltd publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use and for ensuring that the application and use of the product is in accordance with the manufacturer's guidelines and recommendations.

NOTE Field service where provided does not constitute supervisory responsibility. Suggestions made by MB Solutions Australia Pty Ltd either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not MB Solutions Australia Pty Ltd, are responsible for carrying out procedures appropriate to a

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Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

MB Solutions Australia Pty. Ltd.
11 Stanton Road
Seven Hills, NSW 2147
Australia

has established and applies
a Quality Management System for

**The Manufacture, storage, sale and distribution of
construction chemical products,
solutions and services to the construction industry.**

An audit was performed, Order No. **770000040**.

Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.

The certificate is valid in conjunction
with the main certificate from **2021-09-15** until **2024-09-13**.

Certificate Registration No.: **12 100 60146/050 TMS**.

Head of Certification Body
Munich, 2021-09-16



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The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

MB Solutions Australia Pty. Ltd.
80 Fairbank Road
Melbourne, VIC 3169
Australia

has established and applies
a Quality Management System for

**The Manufacture, storage, sale and distribution of
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solutions and services to the construction industry.**

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Certificate Registration No.: **12 100 60146/048 TMS**.

Head of Certification Body
Munich, 2021-09-16



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731 Curtin Avenue East
Brisbane, QLD 4009
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www.boral.com.au

TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

LAB SAMPLE NO: 269541

TEST METHODS: ASTM C939: Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts

SAMPLE IDENTIFICATION: MasterRoc MG 01

DATE RECEIVED: 06/07/2022

MIX RATIO: Water / Powder: 0.400

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940		12/07/2022
- 90 minutes		<0.2%	
- 3 hours		<0.2%	
Expansion	ASTM C940		12/07/2022
- 90 minutes		<0.2%	
- 3 hours		<0.2%	
Fluidity (after mixing), 1 L volume of grout	ASTM C939	9 seconds	09/07/2022
Fluidity (45 minutes after mixing), 1 L volume of grout	ASTM C939	12 seconds	09/07/2022

Notes:

- Fluidity was based on RMS B113.2 requirement.
- Sample was provided by the client and tested as received.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File

Julius Alvaro
27/07/2022



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TEST METHODS: ASTM C939: Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts

SAMPLE IDENTIFICATION: MasterRoc MG 01

DATE RECEIVED: 06/07/2022

MIX RATIO: Water / Powder: 0.425

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940		12/07/2022
- 90 minutes		<0.2%	
- 3 hours		<0.2%	
Expansion	ASTM C940		12/07/2022
- 90 minutes		0.4%	
- 3 hours		0.4%	
Fluidity (after mixing), 1 L volume of grout	ASTM C939	9 seconds	09/07/2022
Fluidity (45 minutes after mixing), 1 L volume of grout	ASTM C939	10 seconds	09/07/2022

Notes:

- Fluidity was based on RMS B113.2 requirement.
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FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

LAB SAMPLE NO: 269541

TEST METHODS: ASTM C939: Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts

SAMPLE IDENTIFICATION: MasterRoc MG 01

DATE RECEIVED: 06/07/2022

MIX RATIO: Water / Powder: 0.450

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940		12/07/2022
- 90 minutes		0.2%	
- 3 hours		0.2%	
Expansion	ASTM C940		12/07/2022
- 90 minutes		1.0%	
- 3 hours		1.0%	
Fluidity (after mixing), 1 L volume of grout	ASTM C939	7 seconds	09/07/2022
Fluidity (45 minutes after mixing), 1 L volume of grout	ASTM C939	8 seconds	09/07/2022

Notes:

- Fluidity was based on RMS B113.2 requirement.
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Julius Alvaro
28/07/2022



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TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022


Water/Powder Ratio: 0.400

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.6	12/07/2022
1 Day	25.5	13/07/2022
3 Days	39.9	15/07/2022
7 Days	51.6	19/07/2022
28 Days	TBD	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

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FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022

Water/Powder Ratio: 0.425

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.4	12/07/2022
1 Day	20.8	13/07/2022
3 Days	36.9	15/07/2022
7 Days	50.4	19/07/2022
28 Days	TBD	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

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FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 11/07/2022

Water/Powder Ratio: 0.450

Age	Compressive Strength (MPa)	Date Tested
12 Hours	3.8	11/07/2022
1 Day	18.0	12/07/2022
3 Days	33.0	14/07/2022
7 Days	40.0	18/07/2022
28 Days	TBD	08/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
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Julius Alvaro
27/07/2022

TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

LAB. SAMPLE NO: 269541

SOURCE OF SAMPLE: Master Builders

DATE RECEIVED: 06/07/2022

SAMPLE IDENTIFICATION: MasterRoc MG 01

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Relative Density	14/07/2022	2.91	AS 3583.5

Note:

- Sample was provided by the client and tested as received.

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Approved Signatory Julius Alvaro
Date 27/07/2022 Serial No. CEM100398.JA.1

Accredited for compliance with ISO/IEC 17025 – Testing
This report shall not be reproduced in full without the approval of the Boral MTS Laboratory.
Test results in this Test Report relate only to the samples tested.



NATA Accredited Laboratory
Number: 547


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TEST REPORT

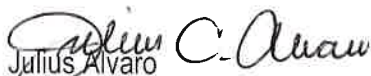
CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD**FILE NO:** 912/22**ADDRESS:** 11 Stanton Road, Seven Hills, NSW 2147**REQUEST NO:** 100398**LAB SAMPLE NO:** 269541
TEST METHODS: ASTM C939: Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts
SAMPLE IDENTIFICATION: MasterRoc MG 01**DATE RECEIVED:** 06/07/2022**MIX RATIO:** Water / Powder: 0.400

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940		12/07/2022
- 90 minutes		<0.2%	
- 3 hours		<0.2%	
Expansion	ASTM C940		12/07/2022
- 90 minutes		<0.2%	
- 3 hours		<0.2%	
Fluidity (after mixing)	ASTM C939		09/07/2022
- 1 L volume of grout		9 seconds	
- 1.725 L volume of grout		23 seconds	
Fluidity (45 minutes after mixing)	ASTM C939		09/07/2022
- 1 L volume of grout		12 seconds	
- 1.725 L volume of grout		26 seconds	

Notes:

- Fluidity was based on RMS B113.2 requirement.
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FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022

Water/Powder Ratio: 0.400

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.6	12/07/2022
1 Day	25.5	13/07/2022
3 Days	39.9	15/07/2022
7 Days	51.6	19/07/2022
28 Days	TBD	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
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 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts
SAMPLE IDENTIFICATION: MasterRoc MG 01**DATE RECEIVED:** 06/07/2022**MIX RATIO:** Water / Powder: 0.425

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940	<0.2% <0.2%	12/07/2022
- 90 minutes			
- 3 hours			
Expansion	ASTM C940	0.4% 0.4%	12/07/2022
- 90 minutes			
- 3 hours			
Fluidity (after mixing)	ASTM C939	9 seconds 16 seconds	09/07/2022
- 1 L volume of grout			
- 1.725 L volume of grout			
Fluidity (45 minutes after mixing)	ASTM C939	10 seconds 19 seconds	09/07/2022
- 1 L volume of grout			
- 1.725 L volume of grout			

Notes:

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TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022

Water/Powder Ratio: 0.425

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.4	12/07/2022
1 Day	20.8	13/07/2022
3 Days	36.9	15/07/2022
7 Days	50.4	19/07/2022
28 Days	TBD	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File


Julius Alvaro
27/07/2022


**Boral Construction Materials
Materials Technical Services**

 Unit 4, 3-5 Gibbon Road
 Baulkham Hills NSW 2153 Australia
 PO Box 400, Winston Hills NSW 2153

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F: +61 (02) 9624 9999

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TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD**FILE NO:** 912/22**ADDRESS:** 11 Stanton Road, Seven Hills, NSW 2147**REQUEST NO:** 100398**LAB SAMPLE NO:** 269541
TEST METHODS: ASTM C939: Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
 ASTM C940: Expansion and Bleeding of Freshly Mixed Grouts
SAMPLE IDENTIFICATION: MasterRoc MG 01**DATE RECEIVED:** 06/07/2022**MIX RATIO:** Water / Powder: 0.450

PROPERTY	TEST METHOD	RESULT	DATE TESTED
Bleeding	ASTM C940		11/07/2022
- 90 minutes		0.2%	
- 3 hours		0.2%	
Expansion	ASTM C940		11/07/2022
- 90 minutes		1.0%	
- 3 hours		1.0%	
Fluidity (after mixing)	ASTM C939		09/07/2022
- 1 L volume of grout		7 seconds	
- 1.725 L volume of grout		13 seconds	
Fluidity (45 minutes after mixing)	ASTM C939		09/07/2022
- 1 L volume of grout		8 seconds	
- 1.725 L volume of grout		14 seconds	

Notes:

- Fluidity was based on RMS B113.2 requirement.
- Sample was provided by the client and tested as received.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File



Julius Alvaro
27/07/2022



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TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1478.2 - Appendix A: Test for Compressive Strength

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 06/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 11/07/2022

Water/Powder Ratio: 0.450

Age	Compressive Strength (MPa)	Date Tested
12 Hours	3.8	11/07/2022
1 Day	18.0	12/07/2022
3 Days	33.0	14/07/2022
7 Days	40.0	18/07/2022
28 Days	TBD	08/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File


Julius Alvaro
27/07/2022

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TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

LAB. SAMPLE NO: 269541

SOURCE OF SAMPLE: Master Builders

DATE RECEIVED: 06/07/2022


SAMPLE IDENTIFICATION: MasterRoc MG 01

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Relative Density	14/07/2022	2.91	AS 3583.5

Note:

- Sample was provided by the client and tested as received.

Mark Lorkovic, Yasha Reis, Mat. File, File

Approved Signatory  Julius Alvaro
Date 27/07/2022 Serial No. CEM100398.JA.1



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**NATA Accredited Laboratory
Number: 547**

TEST REPORT

CLIENT: MASTER BUILDERS SOLUTIONS PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 97846

TEST METHOD: AS 2350.13 - Determination of Drying Shrinkage of Cement Mortars

SAMPLE IDENTIFICATION: MasterRoc MG01

DATE SAMPLED: 28/01/2022

SAMPLE SOURCE: Seven Hills

DATE RECEIVED: 28/01/2022

LAB. SAMPLE NO: 262705

DATE OF CAST: 01/02/2022

Initial Measurement: 02/02/2022

Results

Age	Date Measured	Drying Shrinkage (Microstrain)			Average
		Left Prism	Middle Prism	Right Prism	
7 days	08/02/2022	477	492	500	490
14 days	15/02/2022	577	562	577	570
21 days	22/02/2022	608	608	615	610
28 days	01/03/2022	646	623	638	640

Notes:

- Sample was provided by the client and tested as received.
- Water/Grout ratio as recommended by client: 6.5Kg/20Kg.
- Test samples were mixed with 1350 g of Normensand.
- The mould used for determining the drying shrinkage contains three prisms of 40mm width and 40mm depth incorporating a gauge length 130mm.
- The average reported to the nearest 10 microstrain.
- No determination has been discarded in accordance with Clause 11 of AS2350.13.

Mark Lorkovic, Mat. File, File

Approved Signatory

Julius Alvaro

Date 10/03/2022

Serial No. CEM97846.JA.1



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NATA Accredited Laboratory
Number: 547


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TEST REPORT

CLIENT: MASTER BUILDERS SOLUTIONS PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 97846

TEST METHOD: AS 1478.2 App B – Test for Dimensional Change of Concrete, Mortar or Grout

SAMPLE IDENTIFICATION: MasterRoc MG01

DATE RECEIVED: 28/01/2022

SAMPLE SOURCE: Seven Hills

LAB. SAMPLE NO: 262705

DATE OF CAST: 01/02/2022

Initial Measurement: 02/02/2022

Mix Ratio: 6.5 kg Water per 20 Kg Bag

Results

Age	Date measured	Drying Shrinkage (Microstrain)			Average
		Left	Middle	Right	
7 Days	08/02/2022	584	596	596	590
14 Days	15/02/2022	648	660	652	650
21 Days	22/02/2022	688	704	704	700
28 Days	01/03/2022	708	724	708	710

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the drying shrinkage contains three bars of 25mm width and 25mm depth incorporating a gauge length 250mm.
- The average reported to the nearest 10 microstrain.
- Test samples were mixed with 1350 g of Normensand.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Mat. File, File

Julius Alvaro
10/03/2022

TEST REPORT

CLIENT: MASTER BUILDERS SOLUTIONS PTY LTD

FILE No.: 912 / 22

PROJECT: Testing of Grout Sample SLC Snowy Hydro for chloride content.

REQUEST No.: 97846

TEST PROCEDURE:

AS 1012.20.1 – Determination of Chloride and Sulfate in Hardened Concrete and Aggregates – Nitric Acid Extraction Method

Laboratory Sample No.:	262705
Date Sampled:	28.01.22
Date Received:	28.01.22
Date Tested:	01.02.22
Sample Description:	MasterRoc MG01 Location: Seven Hills
Field No.:	1

TEST RESULTS:

Chloride as Cl ⁻ (%)	0.014
---------------------------------	-------

Sample was provided by the Client.

Mark Lorkovic, Mat. File, File.

Approved Signatory

Otilia Costache

Date 01.02.2022

Serial No.

CHEM97846.OC.1



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**NATA Accredited Laboratory
Number: 547**

TEST REPORT

CLIENT: MASTER BUILDERS SOLUTIONS PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 97846

TEST METHOD: AS 2350.13 - Determination of Drying Shrinkage of Cement Mortars

SAMPLE IDENTIFICATION: MasterRoc MG01

DATE SAMPLED: 28/01/2022

SAMPLE SOURCE: Seven Hills

DATE RECEIVED: 28/01/2022

LAB. SAMPLE NO: 262705

DATE OF CAST: 01/02/2022

Initial Measurement: 02/02/2022

Results

Age	Date Measured	Drying Shrinkage (Microstrain)			Average
		Left Prism	Middle Prism	Right Prism	
7 days	08/02/2022	477	492	500	490
14 days	15/02/2022	577	562	577	570
21 days	22/02/2022	608	608	615	610
28 days	01/03/2022	646	623	638	640

Notes:

- Sample was provided by the client and tested as received.
- Water/Grout ratio as recommended by client: 6.5Kg/20Kg.
- Test samples were mixed with 1350 g of Normensand.
- The mould used for determining the drying shrinkage contains three prisms of 40mm width and 40mm depth incorporating a gauge length 130mm.
- The average reported to the nearest 10 microstrain.
- No determination has been discarded in accordance with Clause 11 of AS2350.13.

Mark Lorkovic, Mat. File, File

Approved Signatory

Julius Alvaro

Date

10/03/2022

Serial No.

CEM97846.JA.1



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NATA Accredited Laboratory

Number: 547

TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1012.9 - Method for determining compressive strength of concrete, mortar and grout

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 12/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022


Water/Powder Ratio: 0.400

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.6	12/07/2022
1 Day	25.5	13/07/2022
3 Days	39.9	15/07/2022
7 Days	51.6	19/07/2022
28 Days	71.6	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File

Approved Signatory  Robert Camilleri
Date 12.08.2022 Serial No. CON1008398.RC.1



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**NATA Accredited Laboratory
Number: 547**

TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1012.9 - Method for determining compressive strength of concrete, mortar and grout

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 12/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022

Water/Powder Ratio: 0.425

Age	Compressive Strength (MPa)	Date Tested
12 Hours	4.4	12/07/2022
1 Day	20.8	13/07/2022
3 Days	36.9	15/07/2022
7 Days	50.4	19/07/2022
28 Days	70.1	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File

Robert Camilleri

Approved Signatory _____

Date 12.08.2022

Serial No. _____

CON1008398.RC.2



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**NATA Accredited Laboratory
Number: 547**

TEST REPORT

CLIENT: MB SOLUTIONS AUSTRALIA PTY LTD

FILE NO: 912/22

ADDRESS: 11 Stanton Road, Seven Hills, NSW 2147

REQUEST NO: 100398

TEST METHOD: AS 1012.9 - Method for determining compressive strength of concrete, mortar and grout

SAMPLE IDENTIFICATION: MasterRoc MG 01

SAMPLE SOURCE: Master Builders

DATE RECEIVED: 12/07/2022

LAB. SAMPLE NO: 269541

Results

Date of cast: 12/07/2022

Water/Powder Ratio: 0.450

Age	Compressive Strength (MPa)	Date Tested
12 Hours	3.8	12/07/2022
1 Day	18.0	13/07/2022
3 Days	33.0	15/07/2022
7 Days	40.0	19/07/2022
28 Days	63.0	09/08/2022

Notes:

- Samples were provided by the client and tested as received.
- The mould used for determining the compressive strength contains three cubes of 75 x 75 x 75 mm in size.
- The specimens for 3, 7 and 28 days have been stored in curing water.
- Test results in this Test Report relate only to the samples tested.

Mark Lorkovic, Yasha Reis, Mat. File, File

Approved Signatory  Robert Camilleri
Date 12.08.2022 Serial No. CON1008398.RC.3



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Test results in this Test Report relate only to the samples tested.

**NATA Accredited Laboratory
Number: 547**



TEST CERTIFICATE

Final
Prior Reports: CERT180533

Cement Australia
18 Station Avenue, Darra, Qld 4076
PO Box 802, Mt Ommaney Qld 4074
Ph: 07 3335 3000
Fax: 07 3335 3227

Certificate Number: **CERT180856**

Issued: 01, June 2018

Page: **1 of 2**

Associated Reports : None

Client:

BASF Australia Ltd.
731 Curtin Avenue East,
Eagle Farm QLD 4009.

Laboratory Sample ID: 18030997

The following test results were obtained by the Cement Australia Darra Laboratory for grout specimens produced at the Darra laboratory 18 Station Ave., Darra, per AS1012.8.3, AS 1478.2, AS1012.9, AS1012.18 and the manufacturers instruction.

Mix description:		MasterRoc MG01	
Mix Id: 180789	Compressive Strength - Restrained		
180797	Shrinkage - Unrestrained		
<u>Manufacturers</u>			
<u>Materials</u>	<u>Instructions</u>	<u>Batched</u>	<u>Water to powder ratio</u>
MasterRoc MG01 Bag #			
DOM:02/2018 B/N			
SLO448N19	20.000kg	4.500 kg	0.350
Water	7.000 kg	1.575 kg	(Laboratory reticulated)
Mix Date : 28/03/2018	Mix time :	6:39	
Temps. (°C) Room: 22.0	Grout :	23.4	
<u>Making and curing test specimens :</u> per AS 1478.2 and AS 1012.8.3			
Compaction : per 1012.8.3 - Grout			
Initial curing : Standard Restraint: Yes			
Time between moulding and standard curing : 24 hr			
Curing Zone : Tropical			

Compressive Strength per AS1012.9 - Restrained (Note 1)						Dimensional Change per AS1478.2					
Specimen Id :		Compressive Strength - 50 mm cubes				Specimen Id :		Drying Shrinkage (µstrain)			
Age	Standard moist curing	Cube 1	Cube 2	Cube 3	Average	Initial curing (A): Standard	Exposure Days	Specimen Number			
Days	TestDate	MPa			MPa	Initial curing (B): Unrestrained		1	2	3	Average
7	04/04/18	69.8	64.6	72.0	68.8	Demoulded : 29/03/2018	7	2592	2624	2592	2600
14	11/04/18	38.7-R	76.5	76.5	76.5	Initial date : 29/03/2018	14	3064	3096	3048	3070
28	25/04/18	84.4	89.0	80.4	84.5		21	3284	3304	3252	3280
							28	3428	3436	3388	3420
							56	3644	3688	3616	3650

Notes:

Note 1 - Cube 1 - 14 day Rejected from average (outside 10% from average)

Approved Signatory



D Kelly
Construction Materials Testing

Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

NATA Accredited Laboratory Number 187



Result Analysis Report

Sample Name:
Mater Roc MG01

SOP Name:

Measured:
Wednesday, 17 March 2021 7:51:33 AM

Sample Source & type:
Supplier = MB Solutions Australia Pty Ltd

Measured by:
abdulnem

Analysed:
Wednesday, 17 March 2021 7:51:34 AM

Sample bulk lot ref:

Result Source:
Measurement

Particle Name:
Silica 1.0

Accessory Name:
Hydro 2000G (A)

Analysis model:
General purpose

Sensitivity:
Normal

Particle RI:
1.544

Absorption:
1

Size range:
0.020 to 2000.000 um

Obscuration:
12.23 %

Dispersant Name:
Water

Dispersant RI:
1.330

Weighted Residual:
3.764 %

Result Emulation:
Off

Concentration:
0.0077 %Vol

Span :
2.401

Uniformity:
0.743

Result units:
Volume

Specific Surface Area:
1.26 m²/g

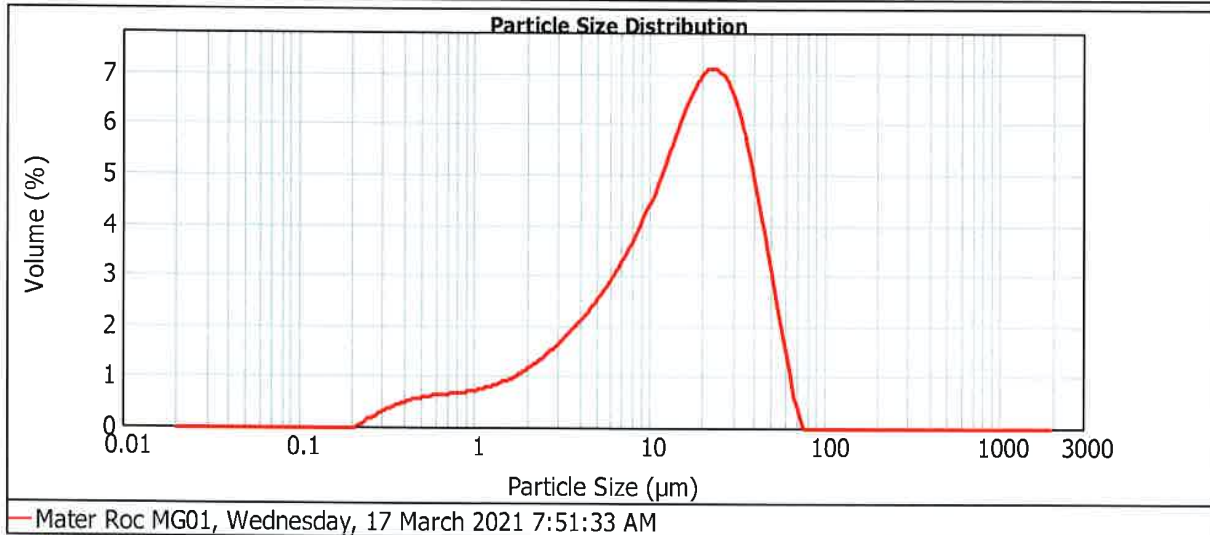
Surface Weighted Mean D[3,2]:
4.755 um

Vol. Weighted Mean D[4,3]:
18.671 um

d(0.1): 2.266 um

d(0.5): 15.629 um

d(0.9): 39.792 um



Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.010	0.00	0.105	0.00	1.096	0.71	11.482	4.67	120.226	0.00	1258.925	0.00
0.011	0.00	0.120	0.00	1.259	0.77	13.183	5.19	138.038	0.00	1445.440	0.00
0.013	0.00	0.138	0.00	1.445	0.85	15.136	5.69	158.489	0.00	1659.587	0.00
0.015	0.00	0.158	0.00	1.660	0.94	17.378	6.10	181.970	0.00	1905.461	0.00
0.017	0.00	0.182	0.00	1.905	1.06	19.953	6.36	208.930	0.00	2187.762	0.00
0.020	0.00	0.209	0.04	2.188	1.19	22.909	6.39	239.883	0.00	2511.886	0.00
0.023	0.00	0.240	0.17	2.512	1.35	26.303	6.17	275.423	0.00	2884.032	0.00
0.026	0.00	0.275	0.28	2.884	1.52	30.200	5.66	316.228	0.00	3311.311	0.00
0.030	0.00	0.316	0.36	3.311	1.71	34.674	4.92	363.078	0.00	3801.894	0.00
0.035	0.00	0.363	0.43	3.802	1.93	39.811	4.00	416.869	0.00	4365.158	0.00
0.040	0.00	0.417	0.49	4.365	2.16	45.709	2.98	478.630	0.00	5011.872	0.00
0.046	0.00	0.479	0.54	5.012	2.41	52.481	1.95	549.541	0.00	5754.399	0.00
0.052	0.00	0.550	0.57	5.754	2.68	60.256	0.99	630.957	0.00	6606.834	0.00
0.060	0.00	0.631	0.59	6.607	2.98	69.183	0.06	724.436	0.00	7585.776	0.00
0.069	0.00	0.724	0.61	7.586	3.33	79.433	0.00	831.764	0.00	8709.636	0.00
0.079	0.00	0.832	0.63	8.710	3.72	91.201	0.00	954.993	0.00	10000.000	0.00
0.091	0.00	0.955	0.66	10.000	4.17	104.713	0.00	1096.478	0.00		
0.105	0.00	1.096	0.66	11.482	4.67	120.226	0.00	1258.925	0.00		

Operator notes: LSN 251790



Mr. Muans Abdulnebe
Laboratory Section Head - Chemistry
Boral Material Technical Services
Unit 4, 3-5 Gibbon Rd,
BAULKHAM HILLS NSW 2153

Respirable Crystalline Silica Content of LSN251790: Master Builders Solutions MasterRoc MG01

Executive Summary

The Globally Harmonised System of Classification and Labelling of Chemicals (GHS) has been introduced by the Work Health and Safety (WHS) Regulations in Australia as a means of classifying workplace hazardous chemicals and communicating their hazards through labelling and safety data sheets.

Crystalline silica has been classified as carcinogenic to humans (lung) by the International Agency for Research on Cancer (IRAC Group 1 carcinogen; GHS Category 1A; Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 1). Crystalline silica is only carcinogenic if it is respirable (Respirable Crystalline Silica known as RCS) and reaches the deepest part of the lungs. If the concentration of RCS is <0.1% w/w in a product then it does not have to be classified as carcinogenic and labelled as such under GHS. The Safety Data Sheet also does not have to state that the product is carcinogenic if the RCS is <0.1%w/w. The RCS concentration can be measured using the SWeRF (Size Weighted Respirable Fraction) Method to determine if the RCS is >0.1%w/w.

The SWeRF Method was used on sample LSN 251790 Master Builders Solutions (MasterRoc MG01) provided by Mr. Muans Abdulnebe.

The RCS was determined to be **<0.008%** and is about 10 times under the 0.1% RCS criteria concentration for being classified as a carcinogen.

1. Background

The Globally Harmonised System of Classification and Labelling of Chemicals (GHS) has been introduced by the Work Health and Safety (WHS) Regulations in Australia as a means of classifying workplace hazardous chemicals and communicating their hazards through labelling and safety data sheets.

Crystalline silica has been classified as carcinogenic to humans (lung) by the International Agency for Research on Cancer (IRAC Group 1 carcinogen; GHS Category 1A; Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 1). Crystalline silica is only carcinogenic if it is respirable (Respirable Crystalline Silica known as RCS) and reaches the deepest part of the lungs. If the concentration of RCS is <0.1% w/w in a product then it does not have to be classified as carcinogenic and labelled as such under GHS. The Safety Data Sheet also does not have to state that the product is carcinogenic if the RCS is <0.1%w/w.

The RCS concentration can be measured using the SWeRF (Size Weighted Respirable Fraction) Method to determine if the RCS is >0.1%w/w.

The SWeRF Method allows two techniques to be used:

- Calculation
- Sedimentation

The Calculation technique relies on determining the amount of respirable dust in a sample from measurement of the Particle Size Distribution and then using a bulk analysis for quartz to determine the % of crystalline silica in the sample or product.

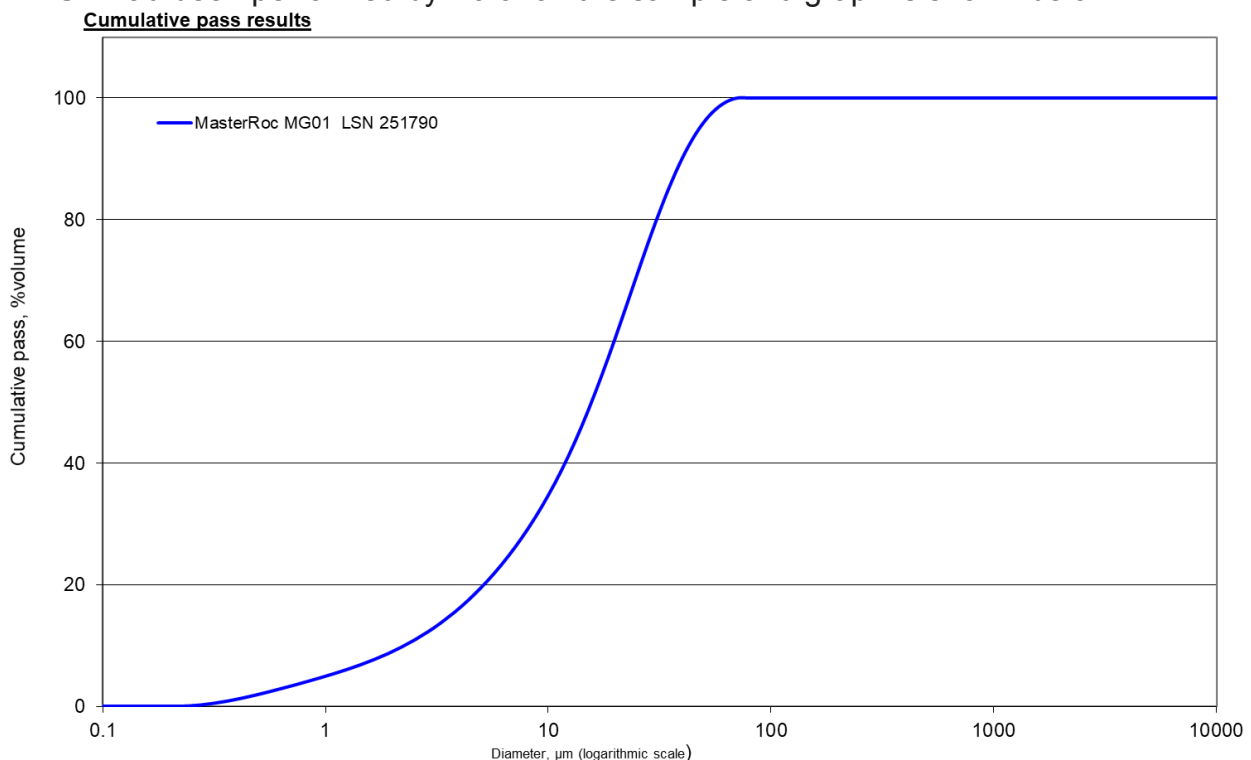
The Sedimentation technique relies on the material to be tested to be mixed with a fluid and allowed to settle so coarse particles sink faster than fine particles. Using Stokes Law the settling time can be calculated and the respirable fraction is extracted and analysed. The Sedimentation technique is more robust than the Calculation technique because in mixtures of minerals there can be different destitution of minerals in the different size fractions. Laurie Glossop has seen this many times, especially in mining concentrates etc. It is our Opinion the Sedimentation technique should be used to provide more certainty about RCS in products. Often the concertation of the RCS is less than in the bulk material.

Boral provided a representative sample of LSN 251790 Master Builders Solutions MasterRoc MG01.

2. Analysis of LSN 251790 Master Builders Solutions MasterRoc MG01 Provided by Mr. Muans Abdulnebe.

Sample LSN251790 Master Builders Solutions MasterRoc MG01 was provided by Mr Muans Abdulnebe and was analysed by the SWeRF Sedimentation technique. Mr Muans Abdulnebe provided a bulk sample of product which was a fine powder.

A PSD had been performed by Boral on the sample and graph is shown below:



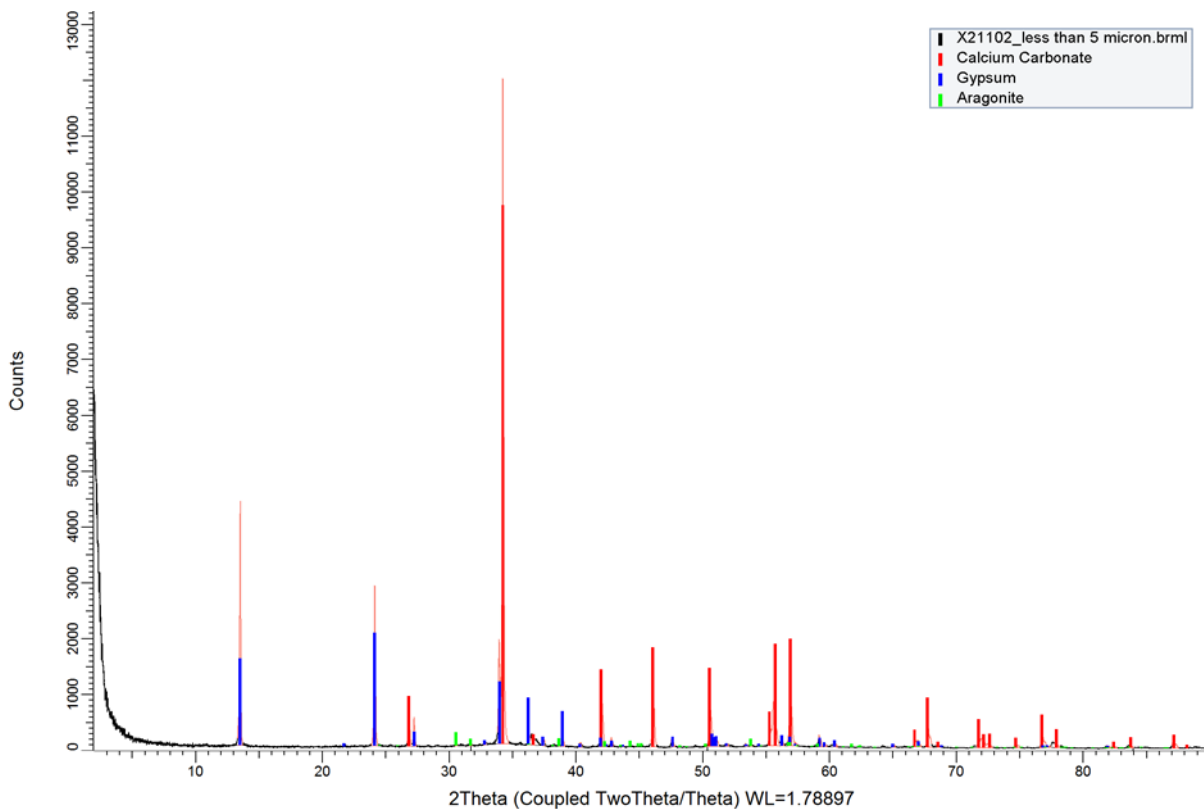
Essentially all of the sample is <75µm which is the size fraction sent to the X-Ray and Particles Laboratory, Institute for Future Environments at Queensland University of Technology. This sample was elutriated to produce a <5µm (respirable fraction)

Table of < 5 micron yield

X21102	1
Boral MasterRoc MG01 LSN251790	
Sample Mass	9.825
Mass elutriated	0.145
Yield (< 5 micron, %)	1.476

As can be seen from the Table above 1.5% of the bulk material was in the respirable fraction.

The XRD of <5µm is shown below:

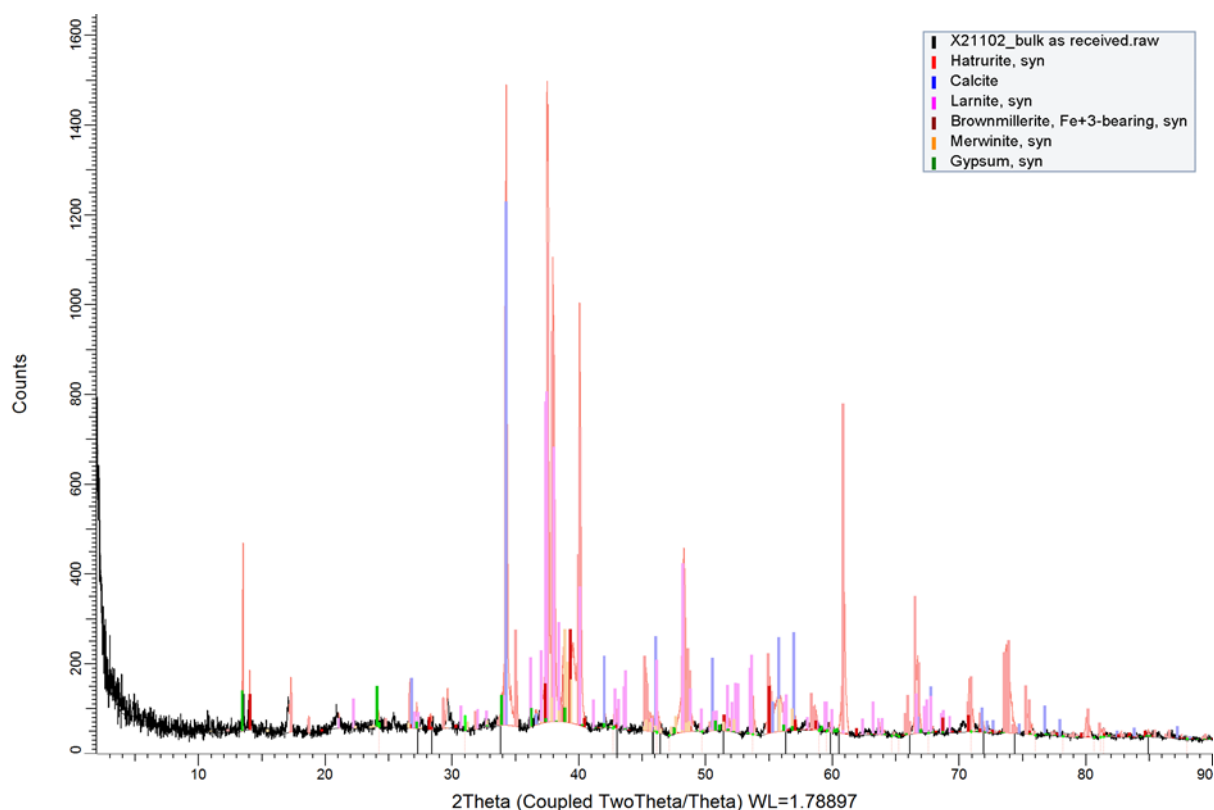


Quantification of < 5µm extract

X21102 Boral MasterRoc MG01 LSN251790	1 < 5 micron
Aragonite	0.8
Calcite	34.1
Gypsum	11.3
Amorphous	53.8

The Quantitative XRD shows that the < 5µm extract has a high concentration of amorphous material which is fairly typical of material that is very fine. There was no RCS detected (<0.5%).

It was decided to check the crystalline silica content in the bulk material. Some bulk material was then analysed by Quantitative XRD:



The concentration of the minerals detected is shown below.

X21102 Boral MasterRoc MG01 LSN251790	1 As received
Brownmillerite	5.8
Calcite	6.4
Anhydrite	0.7
Gypsum	0.9
Hatrurite	46.0
Larnite	13.7
Merwinite	4.0
Amorphous	22.5

Once again no quartz was detected in the bulk (<0.5%). Many of the minerals present is what you would see in Portland Cement.

2.1 Calculation of RCS in the LSN251790 Master Builders Solutions MasterRoc MG01

As no RCS was detected in the XRDs of either the <5 µm or the bulk we can calculate the < concentration of RCS:

$$0.5 \text{ (Detection Limit\%)} \times \text{Weight Percentage } <5 \text{ } \mu\text{m from elutriation (1.5\%)}$$

$$\text{RCS\%} = <0.5\% \times 0.015 \text{ (<5 } \mu\text{m fraction)} = <0.008\%$$

3. Conclusion

The RCS of the Boral LSN 251790 Master Builders Solutions MasterRoc MG01 was determined to be <0.008% and is at least 10 times under the 0.1% RCS criteria concentration. The product would not have to be classified as carcinogenic.

Yours sincerely



Laurie Glossop B.Sc Ph.D COH MAIOH FAIOH


4th May 2021

Concrete Test Report

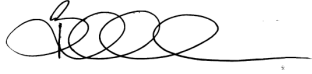
Client: John Holland & CPB Contractors

Project: Rozelle Interchange 3B - Site A - WestConnex M4M5 Link

Accredited for compliance with ISO/IEC 17025. - Testing



ACREDITED FOR TECHNICAL COMPETENCE



NATA Accredited Approved Signatory: Pam Beddie
Site No: 5606 (Concrete Laboratory Manager)
Date of Issue: 1/04/2021
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

COMPRESSIVE STRENGTH OF GROUT CUBES

Details of Sampled Grout

Grout Specimens and Results

Date & Time Batched	Time Sampled	Plant Name	Grout (°C)	Specimen	Dimensions	Density	Curing	Date of	Age	Comp.	Marks	Fail	Location & Remarks
Truck No	Time Moulded	Docket No	Compact	Ident.	(mm)	(kg/m3)	Initial Std	Test	(days)	Strength	Mode		
Load / Prog. Load		Mix Code	Slump(mm)		Width 1 Width 2		(hrs) (days)			(MPa)			
			Design Measured										
31/03/21	11:00	N/A	N/A	WRAG 267A	74.8 74.7	N/A	N/A	0	31/03/21	6h	3.3	N	200 Mil Accelerant
N/A		N/A	N/A	WRAG 267B	74.7 74.9	N/A	0	31/03/21	7h	5.8	N		
N/A	N/A	GROUT	N/A	WRAG 267C	74.8 74.8	N/A	0	31/03/21	8h	8.5	N		
				WRAG 267D	74.6 74.9	N/A	0	31/03/21	9h	12.5	N		
				WRAG 267E	74.8 74.7	N/A	0	31/03/21	10h	16.0	N		
				WRAG 267F	74.9 74.8	N/A	0	31/03/21	11h	21.0	N		

Notes

1. Sampling in accordance with AS 1012.8.3 Clause 5.2
 2. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated
 3. Initial curing in accordance with AS 1012.8.3 Clause 9.3.2
 4. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a)
 5. Compressive strength in accordance with AS 1012.9
 6. Density in accordance with AS 1012.12.1
- Sampling was not performed by this laboratory. Data reported on initial curing, consistency and age at test is not covered by this laboratory, therefore notes 1-3 may not apply.

Remarks

FailureMode: N = Normal
Samples submitted by client and tested as received.

Concrete Test Report

Client: John Holland & CPB Contractors

Project: Rozelle Interchange 3B - Site A - WestConnex M4M5 Link

Accredited for compliance with ISO/IEC 17025. - Testing



ACCREDITED FOR TECHNICAL COMPETENCE



NATA Accredited Approved Signatory: Pam Beddie
Site No: 5606 (Concrete Laboratory Manager)
Date of Issue: 1/04/2021
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

COMPRESSIVE STRENGTH OF GROUT CUBES

Details of Sampled Grout

Grout Specimens and Results

Date & Time Batched	Time Sampled	Plant Name	Grout (°C)	Specimen	Dimensions	Density	Curing	Date of	Age	Comp.	Marks	Fail	Location & Remarks
Truck No	Time Moulded	Docket No	Compact	Ident.	(mm)	(kg/m3)	Initial Std	Test	(days)	Strength	Mode		
Load / Prog. Load		Mix Code	Slump(mm)		Width 1 Width 2		(hrs) (days)			(MPa)			
			Design Measured										
31/03/21	11:00	N/A	N/A	WRAG 268A	74.5 74.7	N/A	N/A	0	31/03/21	6h	5.6	N	400 Mil Accelerant
N/A		N/A	N/A	WRAG 268B	74.7 74.8	N/A	0	31/03/21	7h	8.3	N		
N/A	N/A	GROUT	N/A	WRAG 268C	74.6 74.8	N/A	0	31/03/21	8h	12.5	N		
				WRAG 268D	74.8 74.7	N/A	0	31/03/21	9h	21.0	N		
				WRAG 268E	74.5 74.8	N/A	0	31/03/21	9h	22.0	N		
				WRAG 268F	74.6 74.9	N/A	0	31/03/21	9h	22.0	N		

Notes

1. Sampling in accordance with AS 1012.8.3 Clause 5.2
 2. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated
 3. Initial curing in accordance with AS 1012.8.3 Clause 9.3.2
 4. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a)
 5. Compressive strength in accordance with AS 1012.9
 6. Density in accordance with AS 1012.12.1
- Sampling was not performed by this laboratory. Data reported on initial curing, consistency and age at test is not covered by this laboratory, therefore notes 1-3 may not apply.

Remarks

FailureMode: N = Normal
Samples submitted by client and tested as received.

Concrete Test Report

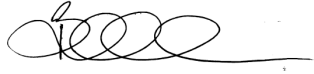
Client: John Holland & CPB Contractors

Project: Rozelle Interchange 3B - Site A - WestConnex M4M5 Link

Accredited for compliance with ISO/IEC 17025 - Testing



ACREDITED FOR TECHNICAL COMPETENCE



NATA Accredited Site No: 5606
Approved Signatory: Pam Beddie (Concrete Laboratory Manager)
Date of Issue: 1/04/2021
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

COMPRESSIVE STRENGTH OF GROUT CUBES

Details of Sampled Grout				Grout Specimens and Results											
Date & Time Batched	Time Sampled	Plant Name	Grout (°C)	Specimen	Dimensions		Density	Curing		Date of	Age	Comp.	Mark	Fail	Location & Remarks
Truck No	Time Moulded	Docket No	Compact	Ident.	Width 1	Width 2	(kg/m3)	Initial	Std	Test	(days)	Strength	Mode		
Load / Prog. Load		Mix Code	Slump(mm)					(hrs)	(days)			(MPa)			
			Design	Measured											
31/03/21	11:00	N/A	N/A	WRAG 269A	74.8	74.8	N/A	N/A	0	31/03/21	6h	7.1	N	800 Mil Accelerant	
N/A		N/A	N/A	WRAG 269B	74.6	74.9	N/A	0	31/03/21	7h	12.5	N			
N/A	N/A	GROUT	N/A	WRAG 269C	74.7	74.7	N/A	0	31/03/21	8h	24.5	N			
				WRAG 269D	74.9	74.8	N/A	0	31/03/21	8h	21.5	N			
				WRAG 269E	74.6	74.7	N/A	0	31/03/21	8h	23.0	N			
				WRAG 269F	74.9	74.9	N/A	0	31/03/21	8h	22.0	N			

Notes	Remarks
<ol style="list-style-type: none"> Sampling in accordance with AS 1012.8.3 Clause 5.2 Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated Initial curing in accordance with AS 1012.8.3 Clause 9.3.2 Standard curing in accordance with AS 1012.8.3 Clause 9.4(a) Compressive strength in accordance with AS 1012.9 Density in accordance with AS 1012.12.1 <p>Sampling was not performed by this laboratory. Data reported on initial curing, consistency and age at test is not covered by this laboratory, therefore notes 1-3 may not apply.</p>	<p>FailureMode: N = Normal Samples submitted by client and tested as received.</p>

Grout Trial Mix Test Report

Client: MB Solutions Australia Pty Ltd
 11 Stanton Road
 Seven Hills NSW 2147

Principal:

Project No.: TESTSYDC01576AA


Project Name: Trial Mix

Project Location:

Lot No.: **TRN:**



Accredited for compliance with ISO/IEC 17025 - Testing.
 NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.



Approved Signatory: Maaria Pajula
 Geotechnician
 NATA Site Number: 431
 Date of Issue: 29/08/2022

Trial Mix Details

Mix Identification:	MasterRoc MG 01				
Room Temperature (°C)	21.5	Mix proportions:		Water (g)	1400
Room Humidity (%)	50	Cement (g)	3500	Additive 1 (g)	
Grout Temperature (°C)	22.0	W/C Ratio (%)	40.00	Additive 1 description	
Date Tested	18/08/2022				

Expansion and Bleeding of Freshly Mixed Grout

Test Area Initial Temperature (°C)	21.6	Grout Temperature at Start (°C)	22.0							
Test Area Final Temperature (°C)	21.6	Date Tested	18/08/2022							
Time elapsed (minutes)	15	30	45	60	90	120	150	180	240	Final bleed (%)
Expansion (%)	0.40	0.40	0.20	0.20	0.20					0.20
Bleed (%)	0.00	0.00	0.20	0.20	0.20					
Combined expansion and bleed (%)	0.38	0.40	0.40	0.40	0.40					

B114.2 Criteria: Early expansion = < 2% at 3 hours, Final bleed = <0.5%

Flow of Grout

Efflux (secs) - Standard 1.725L	13.0	Ambient Temperature (°C)	21.6	Mix Preparation	Date Tested	18/08/2022
Efflux (secs) - Time Delayed 45mins	15.0	Mix Temperature (°C)	22.0	Completion of mixing (mins)	1	

B114.2 Criteria: After mixing = < 20 seconds, After 45 minutes = ±3 seconds

Changes in Height of Grout (Not Tested)

Mix Temp (°C)	Cylinder 1			
Test Age	1 Day	3 Days	14 Days	28 Days
Test Date				
Change in Height (%)				
Temperature (°C)				
Relative Humidity (%)				

Compressive Strength of Grout Cubes (Not Tested)

Specimen ID	Date Sampled	Date Tested	Consistency		Density (kg/m ³)	Age (Days)	Compressive Strength (Mpa)
			Width 1	Width 2			

Notes

1. Sampling in accordance with AS 1012.8.3 Clause 5.2
2. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated
3. Initial curing in accordance with AS 1012.8.3 Clause 9.3.1
4. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a)
5. Compressive strength in accordance with AS 1012.9
6. Density in accordance with AS 1012.12.1
7. #Mechanical mixing of grout in accordance with ASTM C305
8. Flow of grout (Flow cone method) in accordance with ASTM C939
9. Expansion and bleeding of freshly mixed grout in accordance with ASTM C940

Remarks

Batch: DOM: May/2022 B/N: SL1502 04
 # NATA does not cover the performance of this service.

Grout Trial Mix Test Report

Client: MB Solutions Australia Pty Ltd
 11 Stanton Road
 Seven Hills NSW 2147


Principal:

Project No.: TESTSYDC01576AA


Project Name: Trial Mix

Project Location:

Lot No.: **TRN:**



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Approved Signatory: Maaria Pajula
 Geotechnician
 NATA Site Number: 431
 Date of Issue: 29/08/2022

Trial Mix Details

Mix Identification:	MasterRoc MG 01				
Room Temperature (°C)	21.5	Mix proportions:		Water (g)	1575
Room Humidity (%)	50	Cement (g)	3500	Additive 1 (g)	
Grout Temperature (°C)	22.2	W/C Ratio (%)	45.00	Additive 1 description	
Date Tested	18/08/2022				

Expansion and Bleeding of Freshly Mixed Grout

Test Area Initial Temperature (°C)	21.5	Grout Temperature at Start (°C)	22.0							
Test Area Final Temperature (°C)	21.5	Date Tested	18/08/2022							
Time elapsed (minutes)	15	30	45	60	90	120	150	180	240	Final bleed (%)
Expansion (%)	0.60	0.60	0.60	0.40	0.40					
Bleed (%)	0.00	0.20	0.20	0.20	0.20					
Combined expansion and bleed (%)	0.63	0.60	0.60	0.60	0.60					

B114.2 Criteria: Early expansion = < 2% at 3 hours, Final bleed = <0.5%

Flow of Grout

Efflux (secs) - Standard 1.725L	9.0	Ambient Temperature (°C)	21.5	Mix Preparation	Date Tested	18/08/2022
Efflux (secs) - Time Delayed 45mins	10.0	Mix Temperature (°C)	22.0	Completion of mixing (mins)	0	

B114.2 Criteria: After mixing = < 20 seconds, After 45 minutes = ±3 seconds

Changes in Height of Grout (Not Tested)

Mix Temp (°C)	Cylinder 1			
Test Age	1 Day	3 Days	14 Days	28 Days
Test Date				
Change in Height (%)				
Temperature (°C)				
Relative Humidity (%)				

Compressive Strength of Grout Cubes (Not Tested)

Specimen ID	Date Sampled	Date Tested	Dimensions (mm)		Density (kg/m ³)	Age (Days)	Compressive Strength (Mpa)
			Width 1	Width 2			

Notes

1. Sampling in accordance with AS 1012.8.3 Clause 5.2
2. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated
3. Initial curing in accordance with AS 1012.8.3 Clause 9.3.1
4. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a)
5. Compressive strength in accordance with AS 1012.9
6. Density in accordance with AS 1012.12.1
7. #Mechanical mixing of grout in accordance with ASTM C305
8. Flow of grout (Flow cone method) in accordance with ASTM C939
9. Expansion and bleeding of freshly mixed grout in accordance with ASTM C940

Remarks

Cement batch: DOM: May/2022 B/N: SL1502 04
 # NATA does not cover the performance of this service.

Grout Trial Mix Test Report

Client: MB Solutions Australia Pty Ltd
 11 Stanton Road
 Seven Hills NSW 2147


Principal:

Project No.: TESTSYDC01576AA


Project Name: Trial Mix

Project Location:

Lot No.: **TRN:**



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Approved Signatory: Maaria Pajula
 Geotechnician
 NATA Site Number: 431
 Date of Issue: 29/08/2022

Trial Mix Details

Mix Identification:	MasterRoc MG 01				
Room Temperature (°C)	21.5	Mix proportions:		Water (g)	1487
Room Humidity (%)	50	Cement (g)	3500	Additive 1 (g)	
Grout Temperature (°C)	21.9	W/C Ratio (%)	42.50	Additive 1 description	
Date Tested	18/08/2022				

Expansion and Bleeding of Freshly Mixed Grout

Test Area Initial Temperature (°C)	21.5	Grout Temperature at Start (°C)	22.0							
Test Area Final Temperature (°C)	21.5	Date Tested	18/08/2022							
Time elapsed (minutes)	15	30	45	60	90	120	150	180	240	Final bleed (%)
Expansion (%)	0.00	0.00	0.00	-0.20	-0.20					
Bleed (%)	0.00	0.00	0.00	0.20	0.20					
Combined expansion and bleed (%)	0.00	0.00	0.00	0.00	0.00					

B114.2 Criteria: Early expansion = < 2% at 3 hours, Final bleed = <0.5%

Flow of Grout

Efflux (secs) - Standard 1.725L	11.0	Ambient Temperature (°C)	21.5	Mix Preparation	Date Tested
Efflux (secs) - Time Delayed 45mins	12.0	Mix Temperature (°C)	21.9	Completion of mixing (mins)	1

B114.2 Criteria: After mixing = < 20 seconds, After 45 minutes = ±3 seconds

Changes in Height of Grout (Not Tested)

Mix Temp (°C)	Cylinder 1			
Test Age	1 Day	3 Days	14 Days	28 Days
Test Date				
Change in Height (%)				
Temperature (°C)				
Relative Humidity (%)				

Compressive Strength of Grout Cubes (Not Tested)

Specimen ID	Date Sampled	Date Tested	Consistency		Density (kg/m ³)	Age (Days)	Compressive Strength (Mpa)
			Width 1	Width 2			

Notes

1. Sampling in accordance with AS 1012.8.3 Clause 5.2
2. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated
3. Initial curing in accordance with AS 1012.8.3 Clause 9.3.1
4. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a)
5. Compressive strength in accordance with AS 1012.9
6. Density in accordance with AS 1012.12.1
7. #Mechanical mixing of grout in accordance with ASTM C305
8. Flow of grout (Flow cone method) in accordance with ASTM C939
9. Expansion and bleeding of freshly mixed grout in accordance with ASTM C940

Remarks

Batch: DOM: May/2022 B/N: SL1502 04
 # NATA does not cover the performance of this service.

Report No: CON:SYDC22W02174
Issue No: 1

Concrete Test Report

Client: MB Solutions Australia Pty Ltd
 11 Stanton Road
 Seven Hills NSW 2147

Project No.: TESTSYDC01576AA

Project Name: Trial Mix

Project Location:

Lot No.: **TRN:**

Supplier:



Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.

Ben Kirk

Approved Signatory: Ben Kirk
 (Geotechnician)
 NATA Accredited Laboratory Number:431
 Date of Issue: 6/10/2022

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

Details of Sampled Concrete Concrete Specimens and Results

Date & Time Batched	Time Sampled	Plant Code	Grade(MPa)	Air(%)	Specimen	Dimensions	Density	Curing	Prep	Date of	Age	Strength	Mark	Fail	Location & Remarks
Truck No	Time Moulded	Docket No	Agg(mm)	Compact	Ident.	(mm)	(kg/m ³)	Initial	or	Test	(days)	(MPa)		Mode	
Load / Prog. Load	Mix Code	Mix Code	Slump(mm)	Slump(mm)	Avg.	Diameter		(hrs)	Cap						
			Design	Measured		Height		(days)	Type						
															Slump Only
															Slump Only
															Slump Only

COMPRESSIVE STRENGTH OF GROUT CUBES

Details of Sampled Grout Grout Specimens and Results

Date & Time Batched	Time Sampled	Plant Code	Grout (°C)	Specimen	Dimensions	Density	Curing	Date of	Age	Comp.	Mark	Fail	Location & Remarks
Truck No	Time Moulded	Docket No	Compact	Ident.	(mm)	(kg/m ³)	Initial	Test	(days)	Strength		Mode	
Load / Prog. Load	Mix Code	Mix Code	Slump(mm)		Width 1	Width 2	(hrs)			(MPa)			
			Design	Measured			(days)						
22/08/22			22	4001A	74.2	75.0	1860	23/08/22	1	41.5		N	
				4001B	74.4	75.2	1860	23/08/22	1	39.5		N	
				4001C	74.2	74.0	1960	25/08/22	3	55.5		N	
				4001D	74.6	74.5	1940	25/08/22	3	54.0		N	
				4001E	74.2	75.0	1880	29/08/22	7	59.5		N	
				4001F	74.0	75.2	1880	29/08/22	7	60.5		N	
				4001G	73.2	75.4	1920	19/09/22	28	65.0		N	
				4001H	73.3	75.2	1940	19/09/22	28	64.5		N	

Notes	Remarks
1. Sampling in accordance with AS 1012.1 2. Grout sampling in accordance with AS 1012.8.3 Clause 5.2 3. Compaction in accordance with AS 1012.8.3 Clause 7.2(e)(i), unless otherwise stated 4. Initial curing in accordance with AS 1012.8.3 Clause 9.3.2 5. Standard curing in accordance with AS 1012.8.3 Clause 9.4(a) 6. Compressive strength in accordance with AS 1012.9 7. Density in accordance with AS 1012.12.1	FailureMode: N = Normal

Contact Us

We welcome your comments and feedback

Please direct any correspondence to:

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Visit us at: www.master-builders-solutions.com/en-au

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