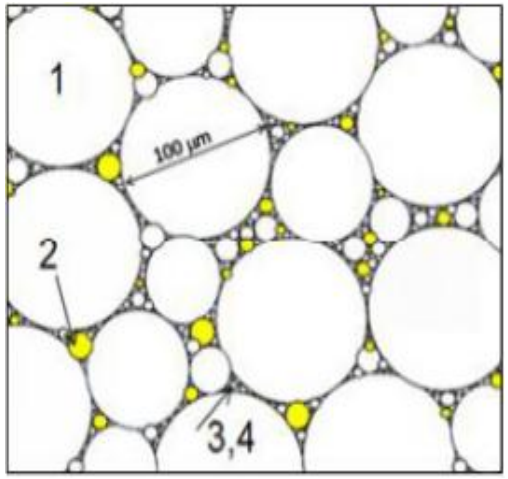
Thermal Insulating Coating

What is C-COAT?

- C-COAT is an acrylic water based coating that is designed for heat blocking on various surfaces.
- It consists of exceptionally fine vacuumed ceramic, glass and acrylic spheres and other fillers to block heat.
- The heat flux is reduced by reflection, convection and significantly slows heat transfer through the coating due to very low thermal conductivity factors.
- As little as 0.5mm thickness will have a dramatic effect on the transfer of heat to/from the substrate.
- 1.0mm thickness of C-COAT has an equivalent thermal insulation to >200mm thickness of glass wool insulation, without the issue of CUI.
- It is suitable to be applied to a various range of substrates.



1. Gas filled ceramic, glass/silicate spheres
2. Gas filled acrylic spheres
3. Solid acrylic binder
4. Pigment

C-COAT™

THERMAL INSULATING COATING SYSTEMS

1.0mm of C-COAT

REPORT ON THERMAL CONDUCTIVITY OF LIQUID CERAMIC INSULATION COATING

Material Lab

ماتيريال لاب

Test Data

Item No.	Test Name	Test Result
1	Average Thermal Conductivity (W/mK)	0.004

Test method variation : ASTM C 518-10

Remarks :

(i) Specimen was conditioned in such away that change in mass with in 24hrs, was less than 1%.

(ii) Preparation of specimen was carried out by Material Lab

(iii) Conditioning of specimen was carried out in accordance with ASTM C 518-10, Cla 7.3.

(iv) Thermal conductivity of Liquid ceramic insulation coating aklarm was measured measuring the "K" value of polystyrene foam. This polystyrene was coated with Liquid ceramic insulation coating aklarm and "K" value was measured again. Reported value is the difference in the "K" value.

Authorized Signatory

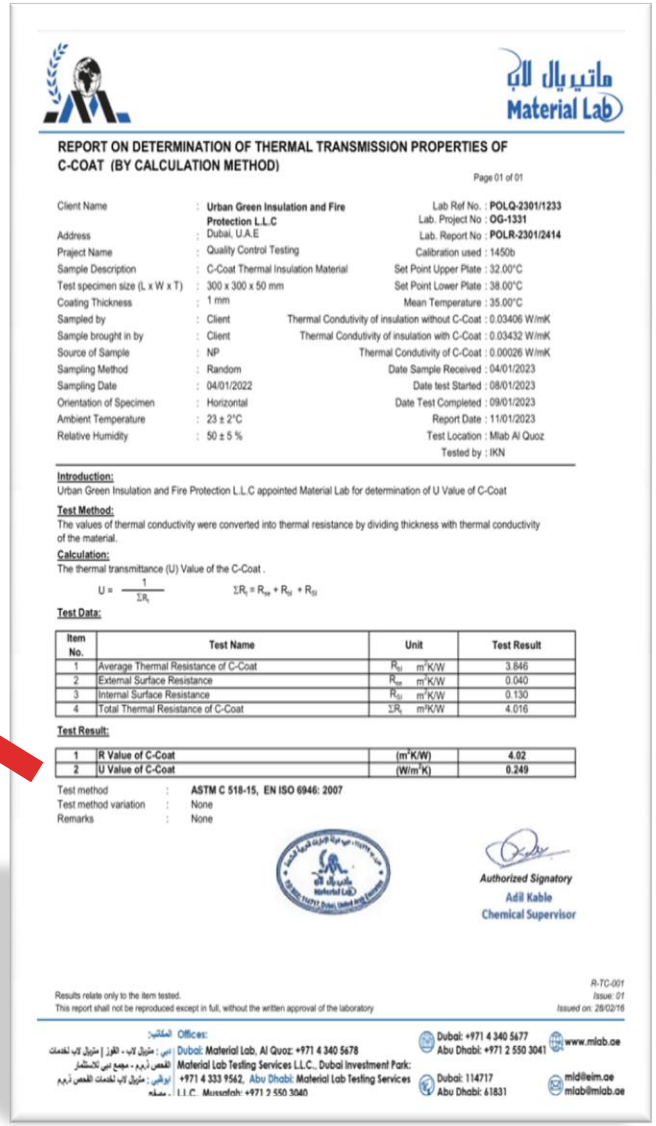
Sohail Zafar

Laboratory Manager

Note : This test accredited by ENAS

Material Lab - Dubai, P.O. Box: 114717, Tel. +971 4 3406676, Fax : +971 4 3406677

Material Lab Gulf Testing Sol - Abu Dhabi: P.O. Box - 61831, Tel. +971 2 5503040 Fax: +971 2 55036



Material Lab

ماتيريال لاب

REPORT ON DETERMINATION OF THERMAL TRANSMISSION PROPERTIES OF C-COAT (BY CALCULATION METHOD)

Page 01 of 01

Client Name	: Urban Green Insulation and Fire Protection L.L.C	Lab Ref No.	: POLQ-2301/1233
Address	: Dubai, U.A.E	Lab. Project No	: OG-1331
Project Name	: Quality Control Testing	Lab. Report No	: POLR-2301/2414
Sample Description	: C-Coat Thermal Insulation Material	Calibration used	: 1450b
Test specimen size (L x W x T)	: 300 x 300 x 50 mm	Set Point Upper Plate	: 32.00°C
Coating Thickness	: 1 mm	Set Point Lower Plate	: 38.00°C
Sampled by	: Client	Mean Temperature	: 35.00°C
Sample brought in by	: Client	Thermal Condutivity of insulation without C-Coat	: 0.03406 W/mK
Source of Sample	: NP	Thermal Condutivity of insulation with C-Coat	: 0.03432 W/mK
Sampling Method	: Random	Thermal Condutivity of C-Coat	: 0.00026 W/mK
Sampling Date	: 04/01/2022	Date Sample Received	: 04/01/2023
Orientation of Specimen	: Horizontal	Date test Started	: 08/01/2023
Ambient Temperature	: 23 ± 2°C	Date Test Completed	: 09/01/2023
Relative Humidity	: 50 ± 5 %	Report Date	: 11/01/2023
		Test Location	: Mlab Al Quoz
		Tested by	: IKN

Introduction:

Urban Green Insulation and Fire Protection L.L.C appointed Material Lab for determination of U Value of C-Coat

Test Method:

The values of thermal conductivity were converted into thermal resistance by dividing thickness with thermal conductivity of the material.

Calculation:

The thermal transmittance (U) Value of the C-Coat .

$$U = \frac{1}{\Sigma R_t} \qquad \Sigma R_t = R_{se} + R_{ij} + R_{si}$$

Test Data:

Item No.	Test Name	Unit	Test Result
1	Average Thermal Resistance of C-Coat	R_{ij} m^2K/W	3.846
2	External Surface Resistance	R_{se} m^2K/W	0.040
3	Internal Surface Resistance	R_{si} m^2K/W	0.130
4	Total Thermal Resistance of C-Coat	ΣR_t m^2K/W	4.016

Test Result:

1	R Value of C-Coat	(m^2K/W)	4.02
2	U Value of C-Coat	(W/m^2K)	0.249

Test method : ASTM C 518-15, EN ISO 6946: 2007

Test method variation : None

Remarks : None

Authorized Signatory

Adil Kable

Chemical Supervisor

R-TC-001

Issue: 01

Issued on: 28/02/16

Results relate only to the item tested.

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COAT™
THERMAL INSULATING
COATING SYSTEMS

Energy loss through the:

A) Sidewalls of a home accounts for nearly 35% of the total energy loss

B) Windows 10%

C) Doors 15%

D) Foundation 15%

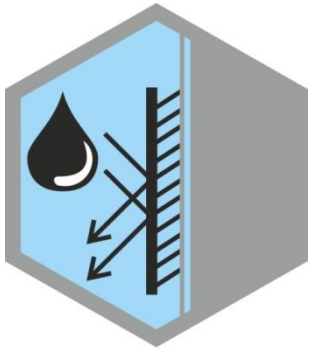
E) Roof 25%

C-COAT Features

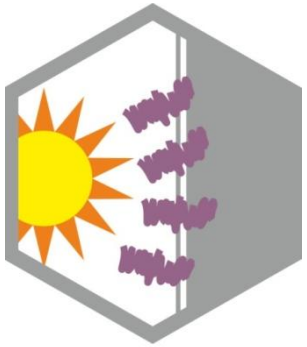
C-COAT™
THERMAL INSULATING
COATING SYSTEMS

ENERGY
EFFICIENCY

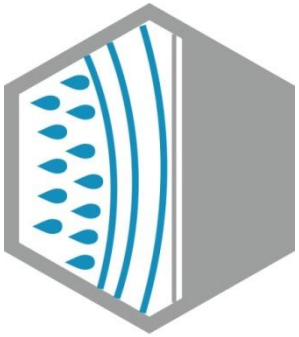
RESPECTS THE
ENVIRONMENT



ANTI CORROSION



ULTRAVIOLET
RESISTANT



HIGH LEVEL OF
WATER PROOFING

WATER RESISTANT

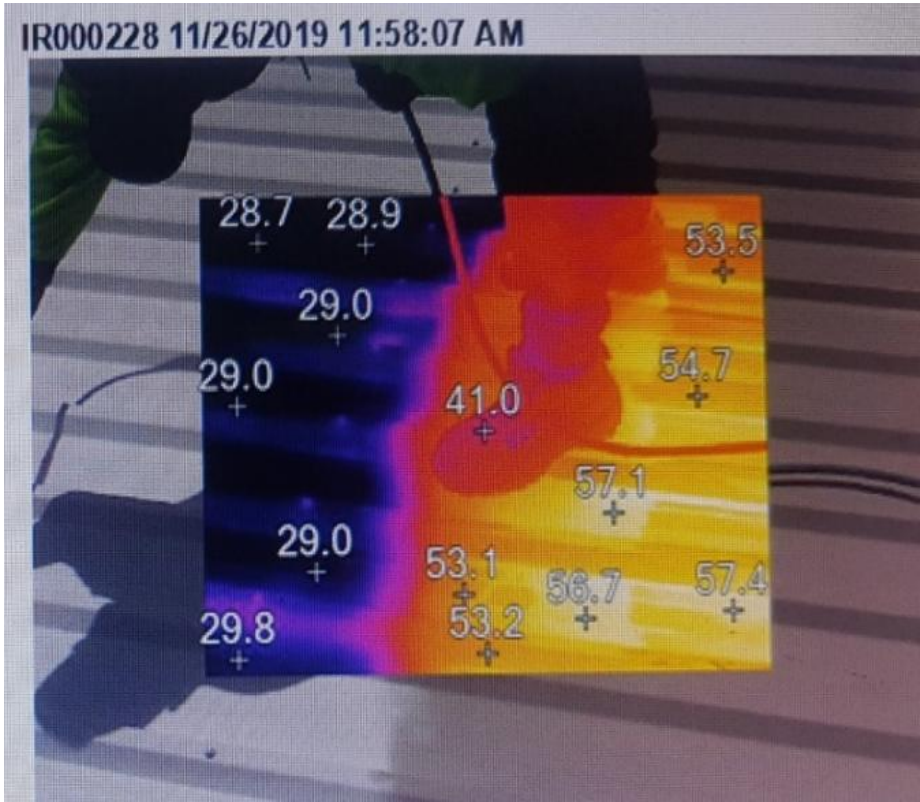
HIGH ADHESION
TO METALS

PREVENTS FUNGI
AND MOULD

C-COAT Advantages

C-COAT™
THERMAL INSULATING
COATING SYSTEMS

1. Saves approximately up to 70% of Energy
2. High Thermal Resistance (equivalent R-value)
3. Seamless application
4. Durability
5. Ability of insulating the irregular surfaces
6. Improved Air Sealing
7. Reduced risk of Thermal bridging



C-COAT™

THERMAL INSULATING
COATING SYSTEMS

0.5-1.0mm of C-Coat reduces A/C load

by 20-25%

RESULTING

up to 30%-40% saving on energy

ENERGY
EFFICIENCY

COAT™
THERMAL INSULATING
COATING SYSTEMS

Easy to apply over shaped surfaces!

C-COAT Benefits

C-COAT™
THERMAL INSULATING
COATING SYSTEMS

- Thin-film means you lose less space if used inside a structure compared with traditional insulation.
- You can insulate new or old structures
- Can be applied before services are installed or after without interruptions
- There are no toxic vapours, no isocyanates
- Can be applied to the external face of the structure – eliminates production downtime and protects from corrosion.
- Fire retardant properties – Non Flammable

C-COAT Benefits

- Applied through standard airless, brush or roller
- Can be applied at surface temperatures of 10-90°C without any changes to the product. (Up to 150°C if watered down and built up in thinner layers)
- C-COAT Operating range of -60°C to 600°C
  - 100F - Insulating Paint to 100°C continuous with peaks of 120°C
  - 250ST - Standard to 200°C continuous with peaks of 250°C for no more than 2hrs.
  - 300HT - HiTemp to 300°C continuous with peaks of 350°C for no more than 2hrs.
  - 600HTP - HiTemp Pro 600 withstand up to 600°C continuous exposure with peaks of 630°C
- Can be tinted - recommended to use a Top Coat if a particular colour is required
- Works to cool the surface and insulating immediately

Where to use?

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THERMAL INSULATING
COATING SYSTEMS

The applications are almost endless, but the following are common uses:

- Roof insulation – internal or external
- Wall insulation – Internal or external
- Pipes (avoid CUI, save space, make a “safe to touch” surface, improve ease of inspection)
- Tanks (water, chemical processing)
- Hot water systems
- A/C ducting

Where to use?

- Workshops and sheds to improve productivity and worker safety
- Refrigerated buildings or single rooms
- Refrigerated transport (save weight and space!)
- Poultry & Livestock sheds
- Hydroponic facilities
- Potato, Sugar and other bulk food storage
- Anywhere condensation is a problem
- Anywhere where corrosion under insulation is a problem

Where to use?

COAT™
THERMAL INSULATING
COATING SYSTEMS

- Sensitive storage space
- Volatile wet and dry chemical storage
- Demountable buildings
- School halls and classrooms
- Covered walkways and patios
- PVC shade structures

Tests Reports for C-Coat

C-COAT™
THERMAL INSULATING
COATING SYSTEMS

1. VOC Content
2. Formaldehyde Content
3. CE Certification
4. R Value
5. Determination of Thermal Conductivity
6. Determination of Thermal Transmission Properties
7. The Diffuse reflection coefficient of the coating film.
8. The Mass fraction of non-volatile substance of coating film.
9. The determination of hardness, SHORE “A” of the coating film.
10. The Solar Reflective Index of the coating film.
11. The Adhesion of the coating film.
12. The Determination of water permeability of the coating film.
13. The DRY TIME of the coating film.
14. The Impact strength of the coating film.
15. The Resistance to the static effects of water of the coating film.
16. Temperature Stability of the coating $+100^{0}$
17. The Appearance of the coating film.
18. The Elasticity of the coating film.

CLIENT LIST

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COATING SYSTEMS

ABI Coating Specialists Pty Ltd - AU	Lockwell Holdings - THAILAND
Aliran GD Gastron Sdn Bhd - MALAYSIA	Mackay Consolidated Ind. - AU
Apoorva Enterprises - INDIA	MMG Dugald River Mine - AU
Aryuwat Co. - THAILAND	Nano Care Solutions Pvt Ltd - INDIA
Australian Gas Infrastructure - AU	NEWNANO TECHNOLOGIES - INDIA
Award Plastics - NZ	Quality Site Welding - AU
Axalta Coating Systems - AU	RACV Limited - AU
Banyo Pilot Plant - AU	Retail Sale - AU
BEKAMENT - SERBIA	Road Science NZ
Blastmasters - AU	S.C. INSTEL TOP GRUP - ITALY
BusTech - AU	SA Engineering - AU
Camso Loadstar Mitchelin - SHRI LANKA	Scott Flett Architecture - AU
Camso Mitchelin - VIETNAM	Sealmech Sizonke Trading Nelspruit - St AFRICA
CharCoat - INT	Shield Crete Australia - AU
Clean Mines Pty Ltd - AU	Sirris - BELGIUM
CoLAB NET4CO2 - PORTUGAL	Tankweld Instalations - AU
ELGI Equipment Limited - AU	TC Weldpro Pty Ltd - AU
EngPro Systems Pty Ltd - AU	Tex-Fab Industries Pvt Ltd - INDIA
Ewing Engineering Contractors - NZ	The Space Ship Company - USA
Furnace Engineering - AU	Tianjin Boroo Petroleum - CHINA
GEM Industrial Pty Ltd - AU	UNIKOREA - KOREA
Gilmour Space Technologies - AU	URBAN GREEN INSULATION - QATAR
Hymax - Korea	International Group for Modern Coatings - EGYPT

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सत्यमेव जयते

शं नो वरुणः

INDIAN NAVY

suez

GALACTIC

Environment, Health and Safety

C-COAT™ THERMAL INSULATING COATING SYSTEMS

- Biggest Enviro benefit is the reduction in power usage for heating and cooling.
- Helps prevent heat stroke, dehydration and exhaustion of workers.
- The product has minimal odour and is non-hazardous and is non dangerous goods.
- Clean-up is simple as all you need is water for all C-COAT products
- If overspray occurs it is easily removed without damaging the substrate (we recommend avoidance measures as appropriate)
- Use of a P1 or better dust mask, safety glasses and gloves are recommended for the applicator, although the dust mask is technically not required. Wash off any paint with warm soapy water where it contacts the skin.

Testing – Containers in WA

- 2 containers set up in Bennco Group's yard in Tom Price, WA.
- Containers were of identical construction and had identical, brand new air-conditioners installed with identical power monitors.
- Containers were washed down with pressure washer and alkaline degreaser prior to arrival Monday 3rd April '17
- First day – primed with a mist coat in the morning, first coat of 0.5mm on all sides and roof in the afternoon.

Prime coat complete

Nearing

end of first coat

First Coat

Finished

Testing – Containers WA

- First Day – Temperature observations

With Just Primer Coat >

< Without primer coat

29.1°C ambient inside half way through coating, 38.6°C in uncoated container.

34°C in primed section of roof, 20°C after freshly coated to 0.5mm.

Uncoated container roof 46-49°C

Testing – Containers WA

- Second Day – Application of second coat on roof in the morning to give about 1.0mm total thickness.
- Application of C-Coat on walls in the afternoon was completed.

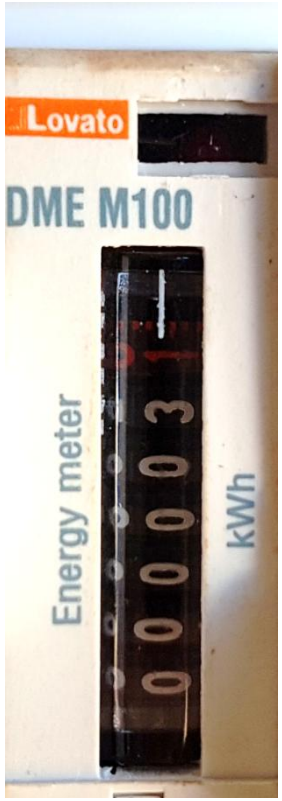
Testing - Containers WA

- Third Day – Application of C-Coat Top Coat on roof in the morning.
- Test run with A/C from 12:30 to 1:30.

Coated Container After Test 24.3°C

Coated Container

Before Test, 29.2°C >



<Uncoated Container Before Test, 36.0°C

After 1hr running:

- Uncoated used

  1.0 kWh to drop temp by 2.6°C

- Coated used

  0.5 kWh to drop the temp 4.9°C

Nearly twice the cooling with half the power!

<Uncoated Container After Test, 33.4°C

Testing - Containers WA

- Video of readings after test running for 1hr is available on website: www.c-coat.com.au and YouTube channel: https://youtu.be/b-onMQJ86EI

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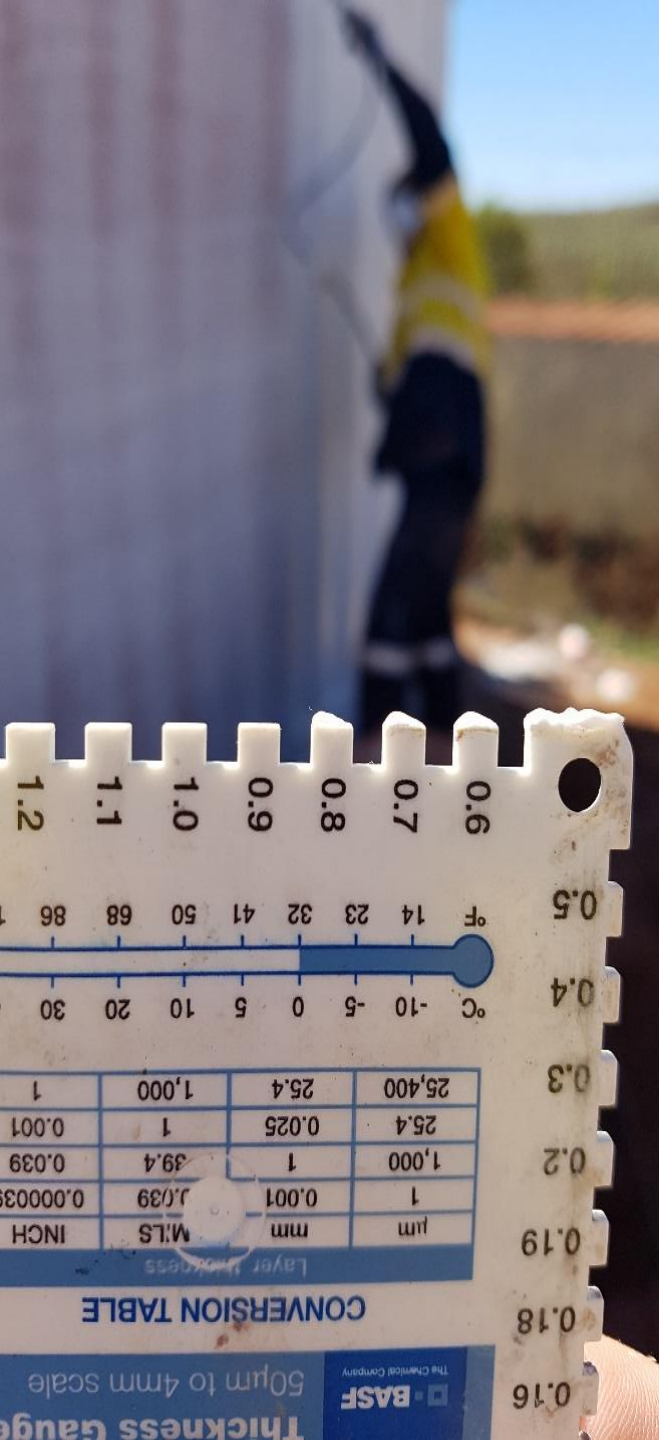
COATING SYSTEMS

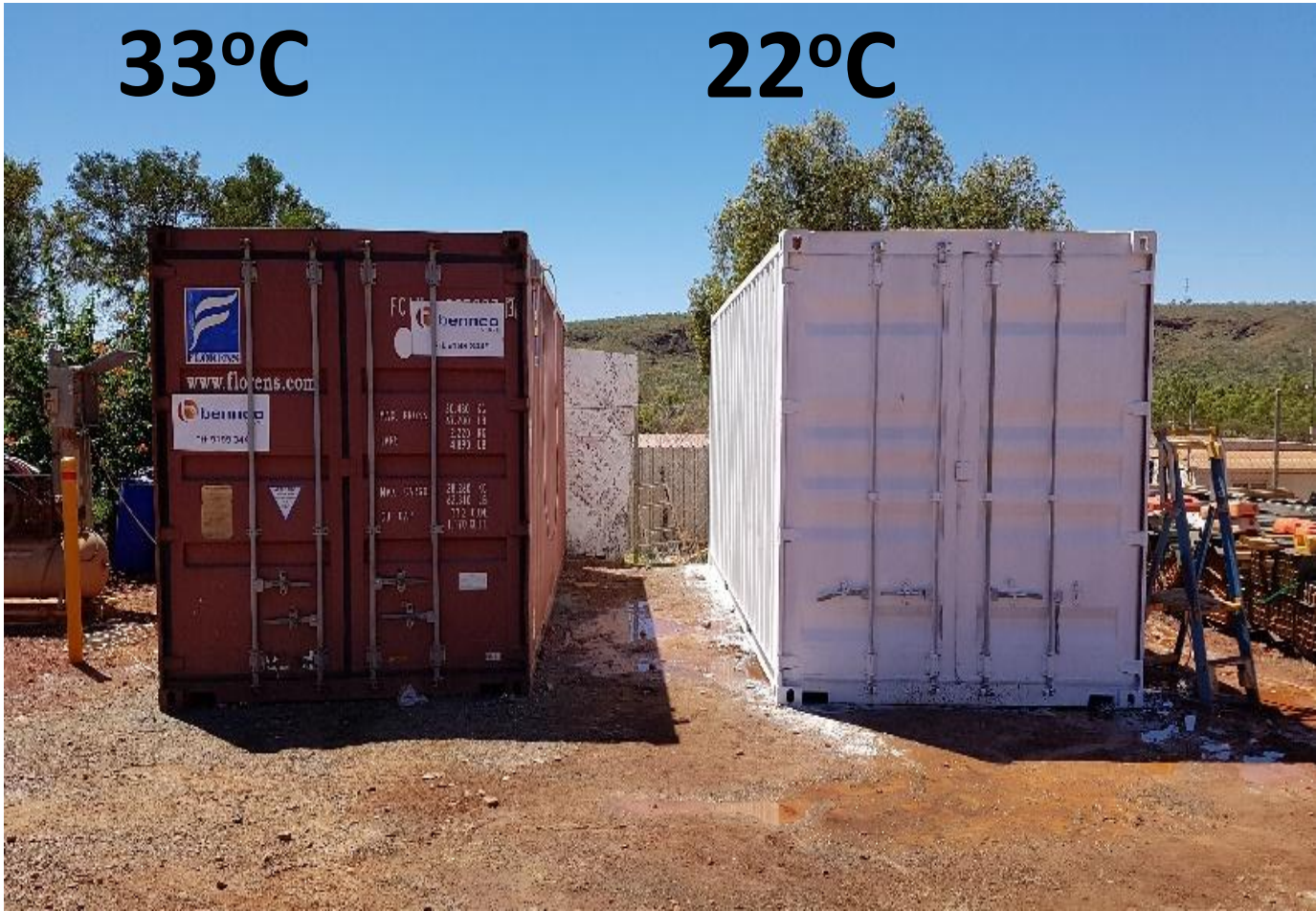


Air-conditioner used:
1.0kw
Inside Temperature

33ºC

Air-conditioner used:
0.6kw
Inside Temperature

22ºC



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Thank You!