UNIZAK
GENERAL TRADING

Multifunctional Coating

UNIZAK
GENERAL TRADING

An Ideal Eco-Friendly, All-Weather Protection Solution for Today's Global Warming and Environmental Protection.

Introducing SunBless: Your solution for year-round comfort. Enjoy energy savings of up to 60%. Say goodbye to sweltering summers and extreme winters – experience cooler interiors in summer and warmer interiors in winter with SunBless. SunBless helps decrease surface temperatures on concrete up to 20°C and on metal surfaces up to 35°C. Experience the power of SunBless, a coating solution that delivers remarkable performance while aligning with your eco-conscious values. Transform your space with SunBless for cutting-edge features and environmental responsibility.

SRI
112

92.7% World's Highest Sunlight Reflection

K 0.09 W/(m.k)

Highest Thermal Insulation

High Elasticity

Water Proofing

Minimizes Leakages, Seepages, Cracks, Fungus

Highly Adhesive

4X better than Japanese Industrial Standards

Bacteria Free Environment Healthy Atmosphere

Prevents Mold and Condensation

FEATURES

Highly Durable

Up to 15 Years

of Life Expectancy

Eco-Friendly

Negligible VOCs

Non-Toxic

Protects Buildings on Coasts

Protects against Corrosion from Seal Salt Winds

Prevents Acidic Corrosion

Great Energy Savings

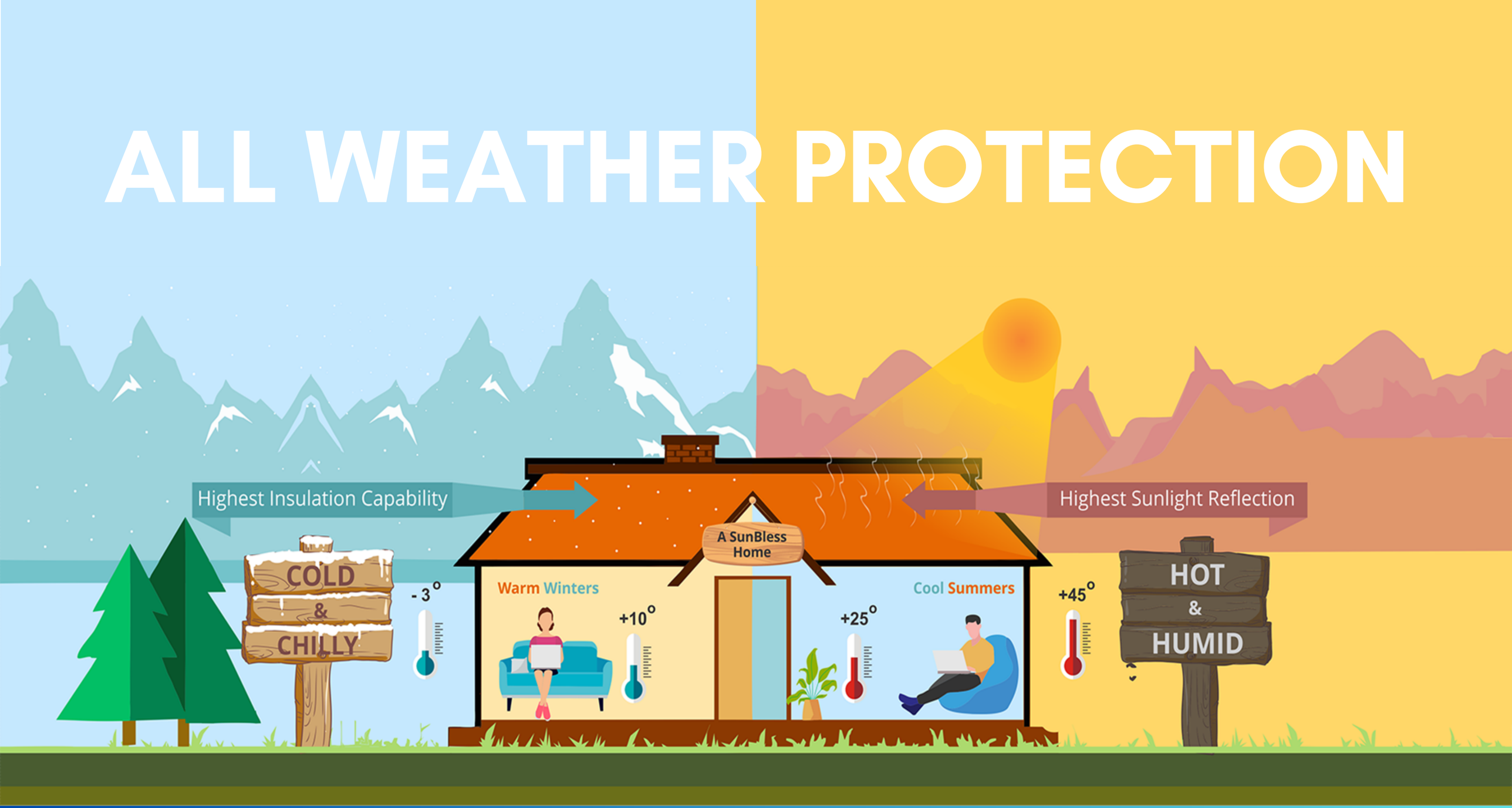
Up to 60% of Air Conditioning usage

Highest Ambient Temperature Reduction

Up to 40%

reduction in ambient temperatures

ALL WEATHER PROTECTION



ONE PRODUCT, MULTIPLE APPLICATIONS

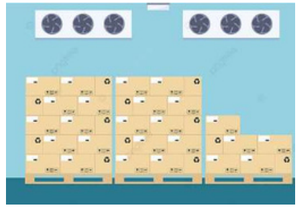
Residential Buildings, Apartments

Shopping Malls, Corporate Offices

Govt. Offices, Schools, Colleges, Banks

Hospitals, Laboratories

Industries –Auto, Chemical, Pharma



Cold Storages, Temperature Controlled Warehouse

Movie, Drama Theatres

Showrooms, Shops

Railways Stations, Rail Car, Metros

Public Transport, City Bus

Cool Vans

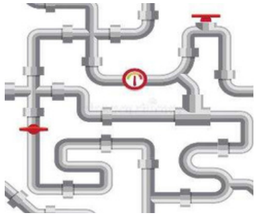
Military Bases, Tents

Bus, Cars, Motorcycles

Airports, Aerobridges

Public Places, Entertainment Parks, Stadiums

Power Stations, Steam Pipes



Water, Steam Pipes

Water StorageTanks

Industrial Applications

Military Tents, Storage Tents

Gas Tanks

17-18°C

of average external roof Temperature was observed

13-14°C

of average internal roof Temperature was observed beneath the roof ceiling

6°C

of average internal roof Temperature was observed below false ceiling with a gap of nearly 4 feet from the roof

32.22%

of savings in Electricity Consumption was observed

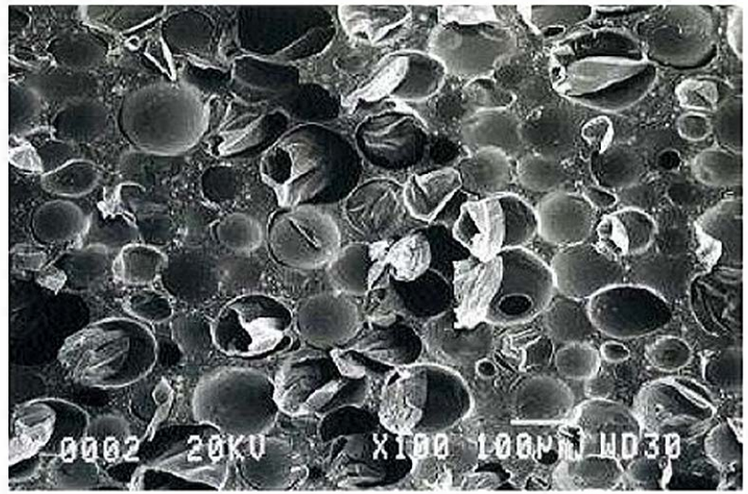
Note: Savings in electricity consumption from air conditioning and/or heating usage may vary based on climatic and geographical conditions. Based on our studies, **savings can be expected anywhere up to 60%.**

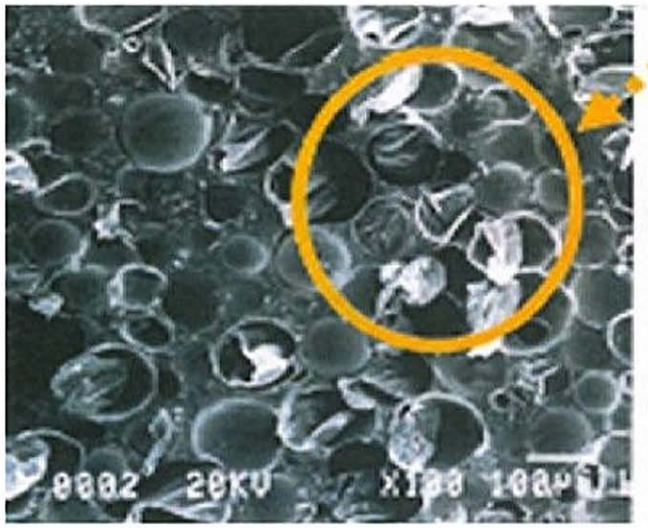
PATENTED TECHNOLOGY

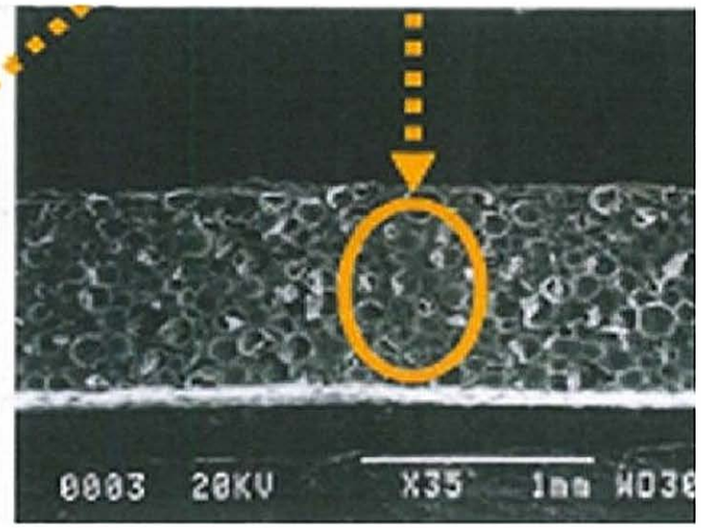
Patent Title Heat: Insulating Coating Film and Heat-Insulating Composition
Granted in: Japan and USA

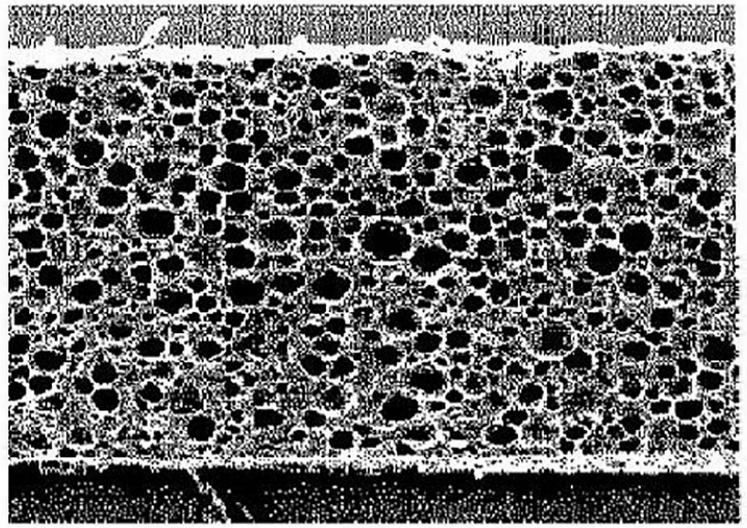
The present invention is a heat-insulating coating film which, when having been formed on, for example, the surface of an outer wall or inner wall of a dwelling, can achieve excellent heat-insulating performance and far-infrared-reflecting performance and which is excellent in terms of adhesiveness and durability.

SunBless has micro spheres or hollow spheres that help achieve its superior results.



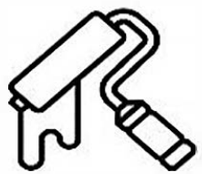






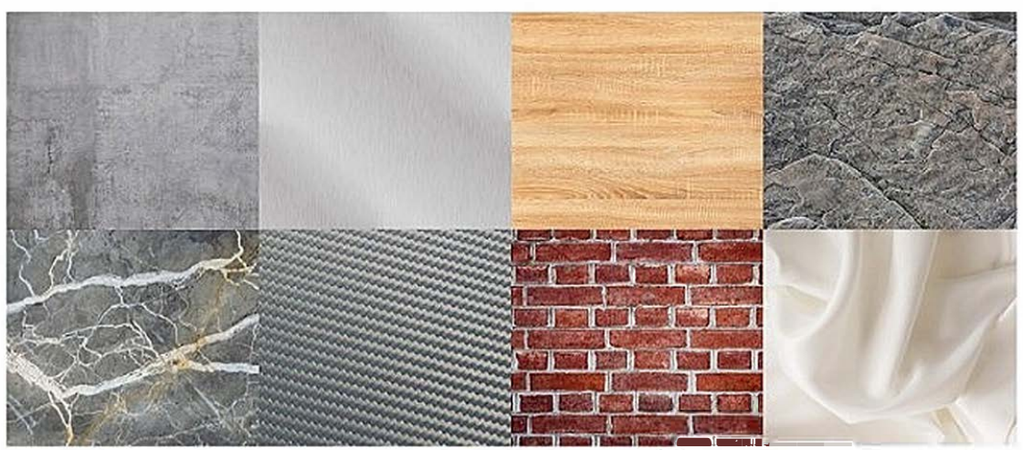
APPLICATIONS

SunBless can be applied using brush, roller or spray gun.

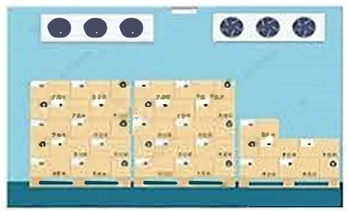


SunBless is can be applied on various types of surfaces including:

- Reinforced Cement Concrete
- Galvanised Iron Sheet
- Stainless Steel
- Mild Steel
- Metal
- Wood
- Stone
- Brick
- Carbon-Fiber
- Cloth
- Marble
- And many other surfaces



Buildings - Schools, Colleges, Hospitals, Offices, etc.



Cold Storages, Temperature Controlled Warehouses

Industries -Auto, Chemical, Pharma

Showrooms, Shops

Railways Stations, Rail Car, Metros

Bus, Cars, Motorcycles, Refrigerated Trucks and Vans

Military Bases, Tents

Shopping Malls, Corporate Offices

Airports, Aerobridges

Power Stations, Steam Pipes

Water StorageTanks

Public Places, Entertainment Parks, Stadiums

APPLICATION METHOD

Multifunctional Coating

1. Surface Preparation

Surface preparation is an extremely crucial part of the SunBless application procedure. The surface preparation method will vary based on the requirement of treatment a surface needs. The most commonly used methods are shown below.

Water Jetting to remove dust

Sand-Papering to make smooth surfaces rough

2. Mixing

To ensure the product's features are fully activated, it is crucial to mix it accurately. An electric stirrer is used to achieve a uniform thickness. Add 400ml of water twice, allowing an interval between additions. SunBless has to be mixed for minimum 10 minutes.

SunBless being mixed using an electric stirrer

3. Application

The coating has to be applied in two coats. It can be applied using either roller, brush or airless spray gun depending on the requirement. The paint had to be applied in an up and down and side by side fashion to achieve evenness.

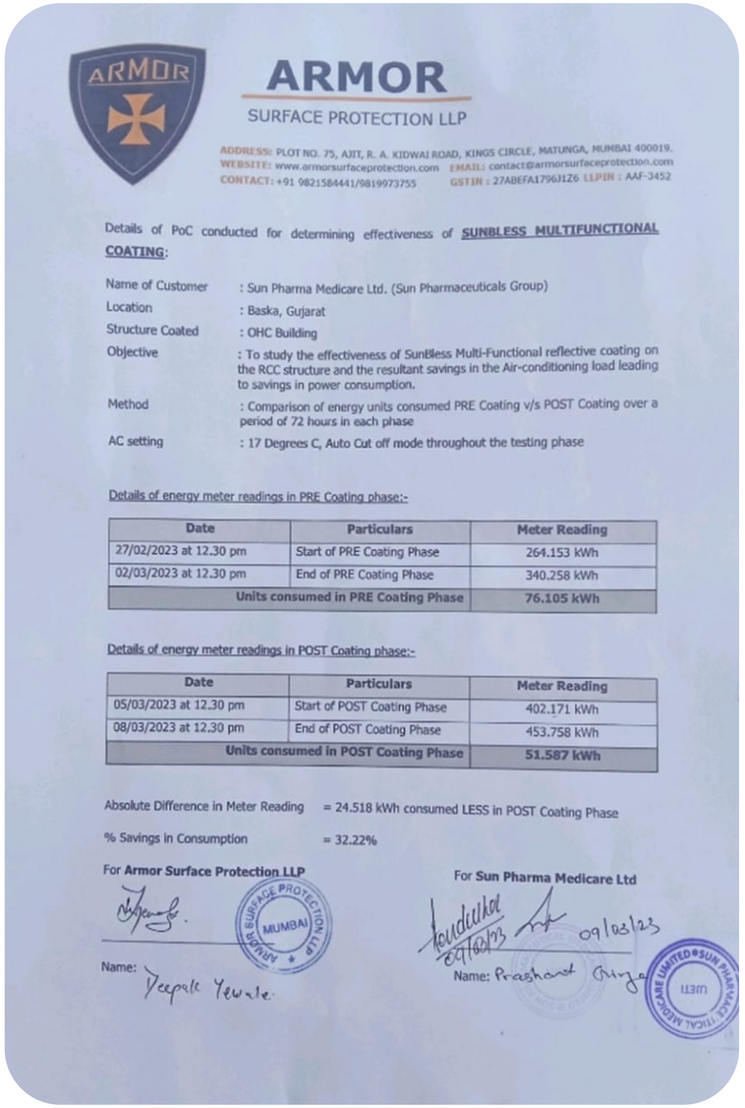
SunBless being applied in an up and down and side by side fashion

CASE STUDY: SUN PHARMACEUTICALS LTD.

- To study the effectiveness of SunBless Multi-Functional Coating on an RCC structure and the resultant savings in the air-conditioning load leading to savings in power consumption, we conducted a joint test study with Sun Pharmaceuticals Ltd.

- It was jointly decided to compare the energy units consumed PRE Coating v/s POST Coating over a period of 72 hours in each phase, with the air conditioner set at 17°C, Auto Cut off mode throughout the testing phase.

Units of Energy Consumed Pre Coating	**76.105kWh**
Units of Energy Consumed Post Coating	**51.587kWh**



ARMOR

SURFACE PROTECTION LLP

ADDRESS: PLOT NO. 75, AJIT, R. A. KIDWAI ROAD, KINGS CIRCLE, MATUNGA, MUMBAI 400019.
WEBSITE: www.armorsurfaceprotection.com EMAIL: contact@armorsurfaceprotection.com
CONTACT: +91 9821584441/9819973755 GSTIN : 27ABEFA1796J1Z6 LLPIN : AAF-3452

Details of PoC conducted for determining effectiveness of **SUNBLESS MULTIFUNCTIONAL COATING**:

Name of Customer	: Sun Pharma Medicare Ltd. (Sun Pharmaceuticals Group)
Location	: Baska, Gujarat
Structure Coated	: OHC Building
Objective	: To study the effectiveness of SunBless Multi-Functional reflective coating on the RCC structure and the resultant savings in the Air-conditioning load leading to savings in power consumption.
Method	: Comparison of energy units consumed PRE Coating v/s POST Coating over a period of 72 hours in each phase
AC setting	: 17 Degrees C, Auto Cut off mode throughout the testing phase

Details of energy meter readings in PRE Coating phase:-

Date	Particulars	Meter Reading
27/02/2023 at 12.30 pm	Start of PRE Coating Phase	264.153 kWh
02/03/2023 at 12.30 pm	End of PRE Coating Phase	340.258 kWh
	Units consumed in PRE Coating Phase	**76.105 kWh**

Details of energy meter readings in POST Coating phase:-

Date	Particulars	Meter Reading
05/03/2023 at 12.30 pm	Start of POST Coating Phase	402.171 kWh
08/03/2023 at 12.30 pm	End of POST Coating Phase	453.758 kWh
	Units consumed in POST Coating Phase	**51.587 kWh**

Absolute Difference in Meter Reading = 24.518 kWh consumed LESS in POST Coating Phase

% Savings in Consumption = 32.22%

For **Armor Surface Protection LLP**

Name: Deepak Yewale

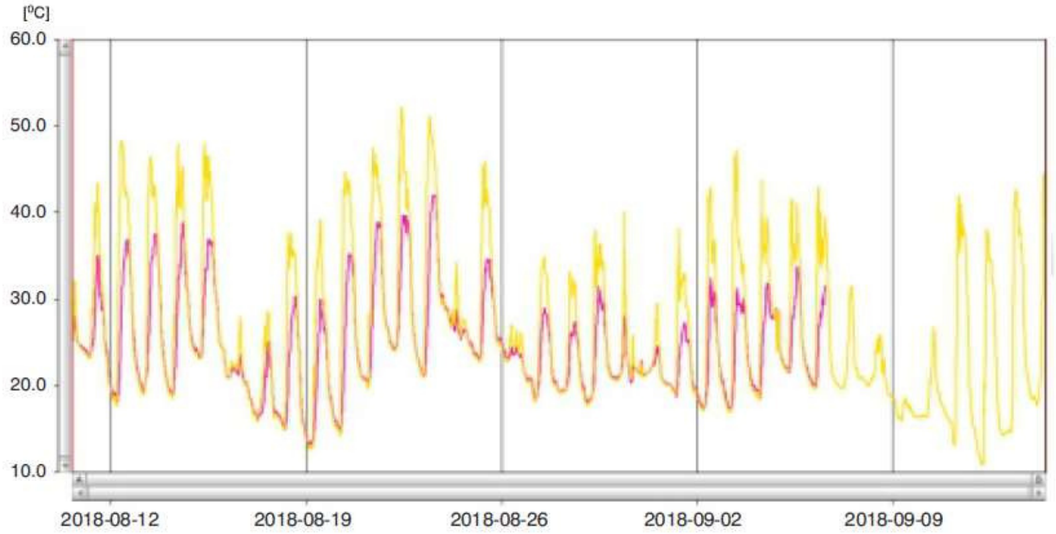
For **Sun Pharma Medicare Ltd**

09/03/23

Name: Prashant

CASE STUDY: SHIPPING CONTAINER

SunBless applied containers improves product shelf life and reduces perishable goods losses. Used for transporting Medicines, Wine, Vegetables, Fruits, Onions, Milk Products, Soft Drinks, Food Products, all temperature sensitive products.



表示範囲 2018-08-10 14:46:00 - 2018-09-14 11:37:00
計算範囲 2018-08-10 14:46:00 - 2018-09-14 11:37:00

No.	チャンネル名	記録間隔	データ数	単位	最大値	最小値	平均値
No.1	TR41_582C0743 Temp	10 min.	3882	℃	42.0	13.2	24.7
No.2	TR41_582C0745 Temp	10 min.	5022	℃	52.2	10.9	26.2

SunBless applied containers recorded **9 to 14℃** lower temperatures, inside the container.

CASE STUDY: MORDE

Introduction:
Morde Foods Pvt. Ltd. is a well known name in the cocoa product manufacturing industry. Morde wanted to understand the impact of SunBless on the electricity consumption of their refrigerated containers where they stored their raw material.

Methodology:
Two containers were identified with the same electricity consumption. One container was coated with SunBless while the other was kept as it is. The electricity consumption of both these containers were recorded by monitoring their individual energy units for a period of 14 days.

Challenge:
Since both these containers were insulated with thick insulation panels, getting electricity savings was technically not possible. The delta in the external surface temperature and internal surface temperature was 48°C even before the application of SunBless.

Container used for the study

Surface temperature of the roof of the container from external and internal side

Result:

112.98kWh
average energy was consumed before coating SunBless

106.99kWh
average energy was consumed after coating SunBless

5.30%
of average energy saving was observed post coating SunBless on an already insulated container

CASE STUDY: MUMBAI METRO

SunBless
Multifunctional Coating

Introduction:

1. To address water leakage issues in Mumbai Metro's newly constructed Line 2A and Line 7 stations, the Delhi Metro Rail Corporation (DMRC) installed bund walls atop the pillars to mitigate water ingress.
2. However, vibrations from frequent train movements led to the development of multiple cracks in these bund walls, starting the problem again.
3. The issue was successfully resolved by applying SunBless coating to the bund walls.

Bund Wall Side View

Water falling onto the station

Bund Wall Top View

Bund Wall

Methodology:

1. The area was thoroughly cleaned before the application of SunBless.
2. SunBless was applied in the areas inside, on top and outside of the bund walls.
3. The drains were then blocked and water was filled inside the bund walls for 48 hours to check for leakages.

SunBless applied on and around the bund walls

Water filled inside the bund wall for testing

Result:

1. SunBless sealed all existing cracks and will prevent the formation of new cracks. It provided for enhanced structural integrity and seepage prevention.
2. Each pillar has been thoroughly tested and certified after application of SunBless.
3. SunBless is DMRC's solution for Mumbai Metro.

CASE STUDY: SUPERMARKET CHAIN

- Supermarkets in Japan form a large and significant consumer group in the National Energy Demand.
- The management of Supermarket Chain in Japan decided to encourage energy efficient practices and implement a scheme for the shops nationwide, by choosing the right and best available energy efficient products.
- Problems they were looking to tackle were: reduce air-conditioner usage, reduce electricity costs, water seepages through walls, reduce unwanted noise during heavy rains and control humidity to best possible level.

Supermarket's Challenge - To target 25% Reduction in Air Conditioner electricity costs and incorporate the best available energy efficient practices, in order to support the cause of global warming

Supermarket Outside Ambient Temp. Measurement for 24 Hours Measurement unit kept close to roof on steel frame for correct data analysis

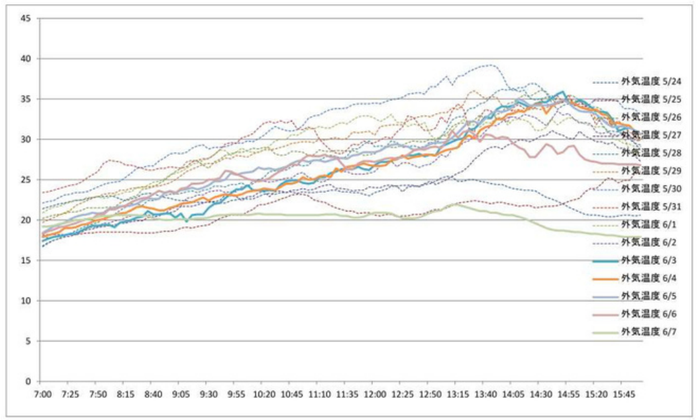
SURFACE TEMPERATURE OF UNCOATED AREA: 60°C

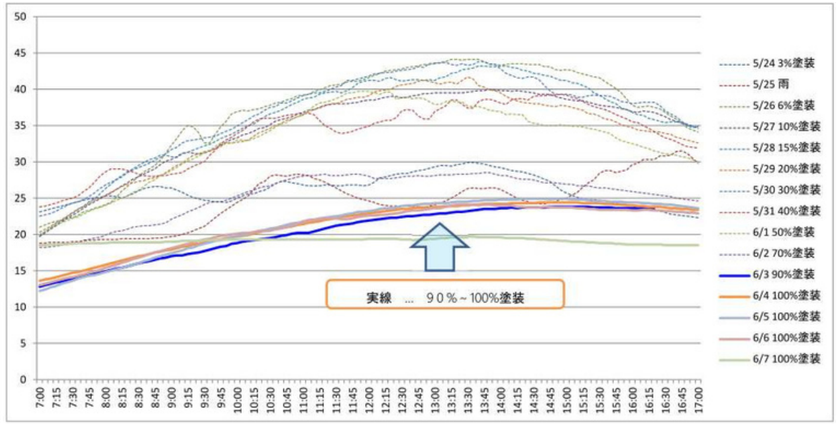
Supermarket Roof Ceiling Temperature Measurement Measurement unit kept on insulation material to avoid other temp and air effect

SURFACE TEMPERATURE OF COATED AREA: 30°C

SUNBLESS BEING COATED ON SUPERMARKET ROOF

SUPERMARKET - 1





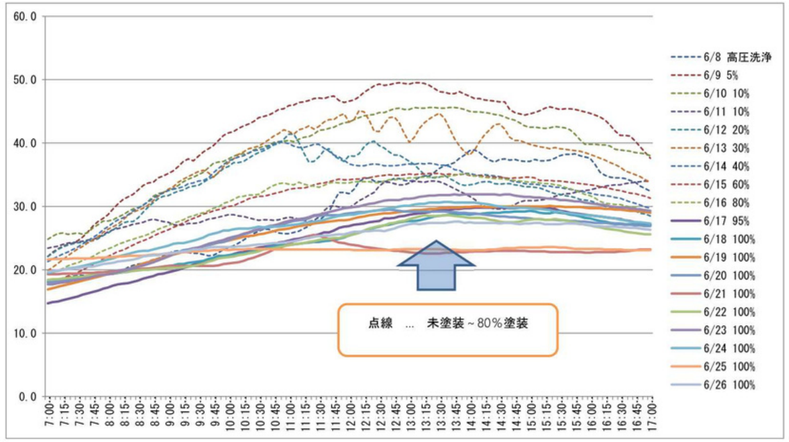
Area of Roof Coated	4,000 sq.m.
Air Conditioning Power Consumption measured in Summer	1st July to 25th August
Air Conditioner Power Consumption in Previous Year before coating	24,268 kwh
Air Conditioner Power Consumption After Coating	14,408 kwh
Reduction in Electricity Consumption	9,860 kwh

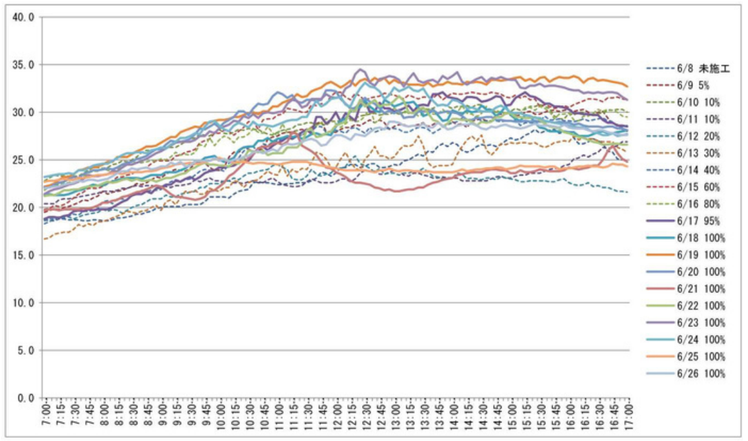
- Supermarket Roof Ceiling Temperature Measurement
- Measurement unit kept on insulation material to avoid other temp and air effect

- Supermarket Outside Ambient Temp. Measurement for 24 Hours
- Measurement unit kept close to roof on steel frame for correct data analysis

SUPERMARKET - 2

SUNBLESS COATED SUPERMARKET ROOF





Ambient Temperature Record

Supermarket Management minimised Air-Conditioning usage during Spring to significantly reduce cooling load. With the application of SunBless, they observed an average 62% reduction in Air-Conditioning load during Spring and over 33% load reduction during fully operational Summer conditions.

SUPERMARKET - 3

- Supermarkets incur higher energy costs and contribute to greenhouse gas emissions due to their constant use of air conditioning, running 24 hours a day.
- However, many supermarkets are adopting energy-saving measures such as SunBless and displaying eco-friendly building marks on their signs.
- Supermarkets have witnessed significant air conditioner energy savings ranging from 22% to 38%. These savings depend on factors such as the size of the store, its proximity to the sea or mountains, and the store's temperature control policy.

SUPERMARKET - 4

CLIENTELE

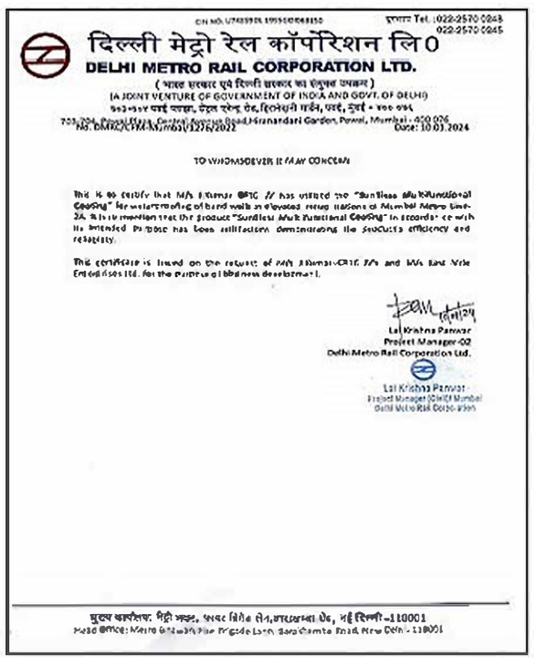
SunBless has been used by 100+ satisfied customers, including:

1. World Trade Center, Mumbai
2. Saifee Hospital Trust
3. Indoco Remedies Ltd.
4. Evonik Catalysts Pvt. Ltd.

WORLD TRADE CENTER®
MUMBAI

MVIRDC®

EVONIK
Leading Beyond Chemistry



दिल्ली मेट्रो रेल कॉर्पोरेशन लि०
DELHI METRO RAIL CORPORATION LTD.
(भारत सरकार एवं दिल्ली सरकार का संयुक्त उपक्रम)
(A JOINT VENTURE OF GOVERNMENT OF INDIA AND GOVT. OF DELHI)

Date: 10.01.2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s Kumar ORIC // has utilized the "SunBless Multifunctional Coating" for waterproofing of brick walls in elevated metro stations of Mumbai Metro Line-3A. It is mention that the product "SunBless Multifunctional Coating" in seconds" as with its intended purpose has been satisfactorily demonstrating the products efficiency and reliability.

This certificate is issued on the request of M/s Kumar ORIC // and M/s Sant Nrle Enterprises Ltd. for the purpose of business development.

Lal Krishna Panwar
Project Manager-02
Delhi Metro Rail Corporation Ltd.

Lal Krishna Panwar
Project Manager (Civil) Mumbai
Delhi Metro Rail Corporation Ltd.

मुख्य कार्यालय: मेट्रो भवन, फायर ब्रिगेड लेन, बाराखम्बा रोड, नई दिल्ली-110001
Head Office: Metro Bhawan, Fire Brigade Lane, Barakhamba Road, New Delhi - 110001

Nanavati
Super Speciality Hospital

To
M/s Sun Bless Coatings Private Limited

I am a satisfied user of SunBless – Multifunctional coating the product used by me in my hospital, is global standard product. I have applied SunBless coating on external walls and terrace of my residence in Mumbai. It is working good & I am happy with it.

Day by day the summer heat in Mumbai is increasing and last couple of years we have seen much more hotter weather than ever before. This is making our lives miserable and unable to afford AC, we need to switch on AC continuously for almost 18 to 20 hours everyday in May & September due to which our electricity bill is increasing drastically. I am looking for some solution to reduce the heat inside the building.

I heard about SunBless having excellent features of insulation, isolation, thermal heat resistant, waterproofing, cool roof, reflective, shade etc. purposes. I was instructed by SunBless Ltd. to apply it on the roof of the building from outside.

My personal experience about SunBless after application in May 2022 is

- I could feel reduction in air conditioning requirement in the room at night and the overall setting temperature of AC is 24 or 25 degrees Celsius to 26 or 27 degrees easily.
- The roof is currently cooler in comparison to usage in July 2022.
- The electricity bills are reduced by 25 to 30% due to less air conditioning usage.
- My family is feeling comfort through roof usage in the form of living space and better ventilation.

I think SunBless could be successful product in India to save electricity bills, and making people comfortable. This could be a great contributor for global warming solution.

Dr. Ali Irani
HOD,
Physiotherapy & Sports Medicine
Nanavati Max Super Speciality Hospital

Prof. Dr. Ali Irani
M.P.Th. (Ortho) (Gold Medalist)
Consultant Physiotherapist
Head of Department Physiotherapy & Sports Physiotherapy
Nanavati Super Speciality Hospital,
S. V. Road, Vile Parle (W),
Mumbai - 400 056. Mob: (0) 91 22 6767 6767

SUDARSHAN

Sudarshan Chemical Industries Limited
Plot No. A-106, Phase II, Additional Ambernath Industrial Area,
Ambernath (East), Dist. Thane - 421 506, Maharashtra, India.
Tel. : +91 251 2620 321, Fax : +91 251 2620 322
CIN No. L24119MH1951PLC008429
Email : info@sudarshan.com
Website : www.sudarshan.com

Date: 9th March 2020

To
Mr. Sudesh Rokade
Arihan Technologies Pvt Ltd /Hayakawa Kogyo India Pvt. Ltd.

Dear Mr. Sudesh

Greetings!

Sudarshan Chemicals is one of largest Pigments, Chemical manufacturer in India. Due to our pan India location near coastal area, and chemical process we were facing periodical roof damage, plant tempora interruption, environmental issues and we were in constant search of new technology that could address our problems. In past we tried many products, contractors but we could not achieve desired solution on roof leakage control in chemical environment.

We applied SunBless – Thermoreflective coating in May 2019 to roof of our laboratory (where water leakage and temperature control was critical) and tested the performance for 9 months. We are highly satisfied with the SunBless performance and we can say that our water leakage problem 100% solved and we could not see leakage in heavy rains of 2019. We have noticed ceiling temperature reduction that could save our AC utilization bills and we will be reducting AHP full time.

I would like to compliment on SunBless Quality, Performance and its features to address multiple problems in our product. I appreciate the timely completion and the excellent workmanship.

We have decided to give you SunBless coating orders for our plants in Medha, Storage sheds and School canteen too. We hope further source reduction with water leakage prevention will help all such cuts and buildings.

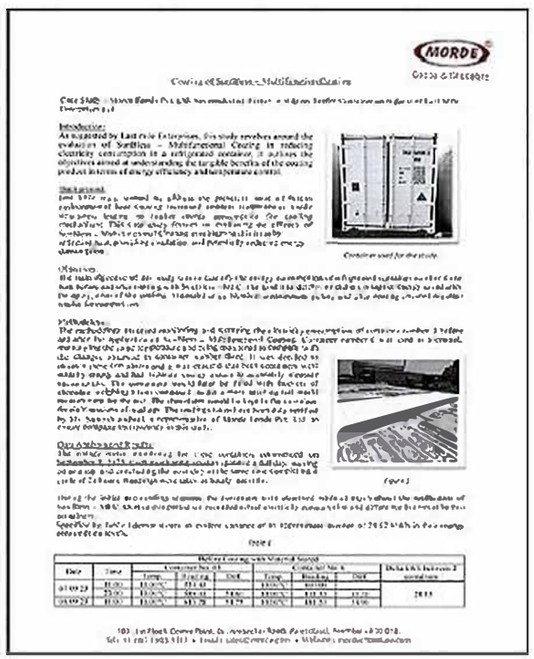
Thanking you

Yours faithfully

For M/s Sudarshan Chemical Ltd

(D.B. Joshi)
Dy General Manager (Civil)

Sudarshan Chemical Industries Limited
Plot No. A-106, Phase II, Additional Ambernath Industrial Area,
Ambernath (East), Dist. Thane - 421 506, Maharashtra, India.
Tel. : +91 251 2620 321, Fax : +91 251 2620 322
CIN No. L24119MH1951PLC008429
Email : info@sudarshan.com
Website : www.sudarshan.com



MORDE
Coatings & Chemicals

Coating of SunBless – Multifunctional Coating

Case Study – Morde Roofs Pvt. Ltd. has conducted Pioneer – a unique SunBless Coating on one of its roofs. Description of

Introduction:
As requested by Last mile Enterprises, this study revolves around the evaluation of SunBless – Multifunctional Coating in reducing electricity consumption in a refrigerated container. It outlines the objectives aimed at understanding the tangible benefits of the coating product in terms of energy efficiency and temperature control.

The Project
[illegible] was carried out to address the problem and evaluate performance of heat control measure implemented under the [illegible] scheme being [illegible] to reduce energy consumption for cooling refrigerators. This study aims to focus on evaluating the effects of SunBless – Multifunctional Coating on the [illegible] of refrigerated containers, providing insights into its potential to enhance energy efficiency and reduce operational costs.

Container used for the study

Objectives:
The main objectives of this study are to quantify the energy consumption of refrigerated containers with and without the application of SunBless – Multifunctional Coating. It also aims to assess the impact of the coating on the internal temperature of the containers and to evaluate the potential cost savings associated with its application.

Methodology:
The methodology involved monitoring and recording the hourly consumption of containers number 3 before and after the application of SunBless – Multifunctional Coating. Consistent control conditions were maintained throughout the study period to ensure accurate comparisons. The containers were filled with [illegible] of chocolate weighing 5 tons each. To [illegible] a short interval [illegible] measurements were taken. The chocolate used in the containers was [illegible] to ensure consistency in the product being stored. The refrigerated containers were operated by M/s Sarosh Pathak, a representative of Morde Roofs Pvt. Ltd. to ensure adherence to operational standards.

Figure 1

Data Analysis and Results:
The energy data recorded for the [illegible] was analyzed to [illegible] the [illegible] and calculate the savings achieved. The [illegible] was calculated by [illegible] the energy consumption before the application of SunBless – Multifunctional Coating from the consumption after the application. Specifically, [illegible] was calculated by subtracting the post-application energy consumption from the pre-application consumption. The percentage reduction in energy consumption was then determined by [illegible] the energy savings by the pre-application consumption and multiplying by 100.

Table 1

Date	Time	Container No. 03			Container No. 04			Delta (04 Before & After)
		Temp.	Set Temp.	Unit	Temp.	Set Temp.	Unit	
07.09.23	11:00	13.0°C	13.0°C		13.0°C	13.0°C		
	23:00	13.0°C	13.0°C		13.0°C	13.0°C		
08.09.23	11:00	13.0°C	13.0°C		13.0°C	13.0°C		
	23:00	13.0°C	13.0°C		13.0°C	13.0°C		

103, 1st Floor, Crown Point, Dr. Ambedkar Road, Parel (East), Mumbai - 400 012.
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TESTS CONDUTCED

SunBless has gone through 70+ tests going beyond industry standards to prove it's various applications and its credibility.

A		Basic Paint Properties Test		
1	a	Drying time @ 25deg C Surface dry	IS 101 Pt-3 Sec 1	2 Hr 50 min
	b	Drying time @ 25deg C Hard dry	IS 101 Pt-3 Sec 1	7 Hr 30 min
	c	Drying time @ 25deg C Tack free	IS 101 Pt-3 Sec 1	24 Hr
2	a	Drying time @ 35deg C Surface dry	IS 101 Pt-3 Sec 1	2 Hr
	b	Drying time @ 35deg C Hard dry	IS 101 Pt-3 Sec 1	5 Hr 30 min
	c	Drying time @ 35deg C Tack free	IS 101 Pt-3 Sec 1	20 Hr
3	a	Drying time @ 40deg C Surface dry	IS 101 Pt-3 Sec 1	1 Hr 20 min
	b	Drying time @ 40deg C Hard dry	IS 101 Pt-3 Sec 1	3 Hr 30 min
	c	Drying time @ 40deg C Tack free	IS 101 Pt-3 Sec 1	16 Hr 30 min
4	a	Tensile Strength (Tested at 24 hrs after drying)	ASTM D 412	6.1 kg./sq.cm.
	b	Elongation (Tested at 24 hrs after drying)	ASTM D 412	172%
5	a	Adhesion Test (Pull-Off)	ASTM D4541	1.07MPa
	b	Volume Solid	ASTM D 2697-03	54.8%
6	a	Abrasion Resistance (2000 CYCLE)	ASTM D 4060-19	2.2mg
7	a	Impact Test (1kg - 100cm)	ASTM D 2794	Passes
8	a	Heat Resistance 140 deg for 12 hours	N/A	No oozing, cracks, deformation
9	a	Cold Resistance -20 deg for 12 hours	N/A	No cracks on film
10	a	Flash Point	IS 101 : (Part 1/sec 6) 1987	Higher than 105°C
	b	Finish	IS 101: (Part 3/sec 4) 1987	Smooth & Matt
11	a	Temperature stability (55deg-48Hr)	IS 428-2013	Free from lumps
12	a	Zinc Oxide	IS 6947 Part 3 : 1975	1.4%
	b	Zinc Content	IS 14946 : 2001	1.1%
13	a	Washability	IS 15489 Annx G	Passes
14	a	Avg. gloss Reading (GU)	ASTM D 523	3.7

B		Thermal/Solar/Cool Tests tested to the specification of - ASTM E 1980-19, EN 12898:2019, EN 673:2011, EN 410:2011, (ASTM G154)		
24	a	Solar Direct Reflectance	ASTM E 1980-19 EN 12898:2019 EN 673:2011 EN 410:2011	0.8841
	b	Solar Emissivity		0.933
	c	Solar Reflectance Index (SRI) under different wind conditions		114 W m-2 K-1
	d	Surface Temperature (Ts) under different wind conditions		41.7°C
25	a	Accelerated Aged Solar Direct Reflectance	ASTM D7897 (ASTM E 1980-11 + ISO 9050/EN 410 + BS EN 12898 and EN 673 + ASTM C1371)	0.8637
	b	Accelerated Aged Solar Emissivity		0.933
	c	Accelerated Aged Solar Reflectance Index (SRI) under different wind conditions		111 W m-2 K-1
	d	Accelerated Aged Solar Reflectance Index (SRI) under different wind conditions		110 W m-2 K-1
	e	Accelerated Aged Solar Reflectance Index (SRI) under different wind conditions		109 W m-2 K-1
	f	Accelerated Aged Surface Temperature (Ts) under different wind conditions		43.5°C
	g	Accelerated Aged Surface Temperature (Ts) under different wind conditions		41°C
	h	Accelerated Aged Surface Temperature (Ts) under different wind conditions		38.9°C

SunBless has been tested using a various of standards including:

SunBless has been tested at the most renowned institutions and NAB certified laboratories including:

CARBSE CENTER FOR ADVANCED RESEARCH IN BUILDING SCIENCE AND ENERGY

JPIA

Kulkarni LABORATORY

ELCA

C		Water Resistance		
15	a	Moisture vapor permeability	IS 101 : (Part 6 /sec 3) 1999	51.6mg/ccmm thickness
16	a	Water repellency	IS 5410	Passes
17	a	Resistance to Constant Humidity - 500 hrs	ISO 6270-2	No blistering, no rusting

D		Corrosion Protection Tests		
26	a	Formaldehyde	ASTM 06191-97	1.6 ppm
27	b	Volatile Organic Compounds	ASTM 03960:05	36.5 gm/L
28	a	Aromatic Hydrocarbon	ASTM D 3257	GC
29	a	Dichloromethane	ASTM D 4457 - 02	Not detected
30	a	Mercury (Hg)	(AAS) Atomic Absorbtion Spectrography	less than 0.01 mg/L
	b	Lead (Pb)	(AAS) Atomic Absorbtion Spectrography	less than 0.01 mg/L
	c	Cr+6 by UV / Visible spectrum	ISO 3856-5:1984	less than 0.01 mg/L
	d	Antimony (Sb)	(AAS) Atomic Absorbtion Spectrography	less than 0.01 mg/L
	e	Arsenic (As)	LAB METHOD (AAS) Atomic Absorbtion Spectrography	less than 0.01 mg/L
	f	Cadmium (Cd)	ISO 3856 - 4	less than 0.01 mg/L

E	Tests Conducted In JPIA		
1	Moisture Resistance	JIS K 5600-7-2:1999	There is free from crazing, blisters, peeling and lowering of luster on surface of test piece
2	Resistance to neutral spray (Salt Spray)	JIS K 5600-7-1: 1999	Test 1: There is free from crazing, blistering, peeling and rust. Test 2: Same as above
3	Water Resistant	JIS K 5600-6-1:1999	There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece.
4	Alkali resistance	JIS K 5600-6-1:1999	There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece.
5	Repeated Warming and Cooling test	JIS K 6909:2014	Test 1: There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece. Test2 and 3: Same as above.
6	Permeability Test Method B	JIS K 6909:2014	Test 1, Test 2, Test 3: 0.2 average value: 0.2
7	Water Vapour Transmission Rate g/m2 · 24 Hours	JIS Z 0208:1976	Test 1: 17.8 Test 2: 17.4 Test 3: 19.5 average value 18.2
8	Abrasion Resistance	JIS H 8682- 3:2013	There is free from the break of paint film
9	Accelerated weathering	JIS K 5600-7- 7:2008	There is free from crazing, blister, peeling as well as free from remarkable discoloration on surface of test piece.

F		Corrosion Protection Tests		
18	a	Resistance to Lube Oil	IS 101:(Pt7 Se 2) 1998	No blistering, flaking, corrosion
	b	Resistance to Diesel	IS 101:(P17 Se 2) 1998	No blistering, flaking, corrosion
19	a	Resistance to Petrol	IS 101:(Pt7 Se 2) 1998	No blistering, flaking, corrosion
20	a	Resistance to Neutral spray	ASTM B117	No corrosion, blistering or rusting
21	a	Alkali Resistance	IS 2932 Pt 1 Annx F	No disintegration, blistering
22	a	Acid Resistance	IS 2932 Pt 1 Annx E	No disintegration, blistering
23	a	Resistance to Acetic Acid	ISO 9227 (AASS)	No rust

TESTS CONDUCTED AT JAPAN PAINT INSPECTION AND TESTING ASSOCIATION

Sr.	Test items	JIS Standard	Test Method	Result
1	Moisture Resistance	JIS K 5600-7-2:1999	Part 7: Long-period performance of film- Section 2: Resistance to humidity (Continuous condensation) 5. Rotary method Test period: 240 hours Evaluation: There shall be free from crazing, blister, peeling and lowering of luster.	There is free from crazing, blisters, peeling and lowering of luster on surface of test piece
2	Resistance to neutral spray (Salt Spray)	JIS K 5600-7-1: 1999	Part 7: Long-period performance of film – Section 1: Resistance to neutral spray Test period: 1,000 hours Evaluation: There shall be free from crazing, blisters, peeling and rust.	Test 1: There is free from crazing, blistering, peeling and rust. Test 2: Same as above
3	Water Resistant	JIS K 5600-6-1:1999	Part 6: Chemical property of film – Section 1: Resistance to liquids (General methods) Test period: 7 days Test liquid: deionized water Test temperature: 23°C Evaluation: There shall be free from crazing, blistering, peeling, as well as free from remarkable discoloration and lowering of luster on surface of test piece.	There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece.
4	Alkali resistance	JIS K 5600-6-1:1999	Part 6: Chemical property of film – Section 1: Resistance to liquids (General methods) Test period: 30 days Test Liquid: 5 w/v% sodium carbonate aqueous solution Test temperature: 23°C Evaluation: There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece.	There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece.

Sr.	Test items	JIS Standard	Test Method	Result
5	Repeated Warming and Cooling test	JIS K 6909:2014	Coating materials for textured finishes of buildings 7.11 Repeated warming and cooling test.	Test 1: There is free from crazing, blister, peeling as well as free from remarkable discoloration and lowering of luster on surface of test piece. Test2 and 3: Same as above.
6	Permeability Test Method B	JIS K 6909:2014	Coating materials for textured finishes of buildings 7.13 Permeability test method B	Test 1, Test 2, Test 3: 0.2 average value: 0.2
7	Water vapor Transmission Rate g/m2 · 24 Hours	JIS Z 0208:1976	Testing methods for Determination of the Water Vapor Transmission Rate of Moisture-Proof Packaging Materials (Dish Method)	Test 1: 17.8 Test 2: 17.4 Test 3: 19.5 average value 18.2
8	Abrasion Resistance	JIS H 8682-3:2013	Anodizing of aluminium and its alloys- Measurement of Abrasion resistance of anodic oxidation coatings- Part-3: Falling sand abrasion resistance test. Abrasive material: silicon carbide abrasive material C (F80) Abrasive material falling amount: 10 L	There is free from the break of paint film
9	Accelerated weathering	JIS K 5600-7-7:2008	Testing methods for paints-Part 7: Long-period performance of film Section 7: Accelerated weathering and exposure to artificial radiation (Exposure to filtered xenon-arc radiation) Test conditions Test period: 2,000 hours Spectral distribution Irradiance: 60W/m2(300 to 400 mm) Black panel temperature: 63 ±3 °C Test panel wetting cycles: cycle A Evaluation crazing, blistering, peeling, discoloration	There is free from crazing, blister, peeling as well as free from remarkable discoloration on surface of test piece.

FOR MORE DETAILS

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