

# Product

for Ceiling Energy Board



*Tested, Passed & Certified by*



Product ID No  
041 - 037  
MADE FROM RECYCLED  
WASTE MATERIALS

## Product Introduction

Ceiling Energy Board uses bio technology from Japan and Korea that can generate and emit negative ions and far Infrared rays using natural radiation materials, i.e. Silicate Materials which effectively reduce secondary smoke in the air. The result is better quality air and a cleaner environment with fresh negative ions.

It also arouses molecule resonance within the our body cells, promoting better blood circulation through the FIR waving.

Ceiling Energy Board's low thermal conductivity and excellent insulation properties can help to reduce heat generation and energy consumption of the air conditioning system. The micro fibre or fibreglass can also be installed in contact with the ceiling to further enhance its thermal qualities and provide additional heat penetration control.

Ceiling Energy Board is the best alternative choice of ceiling boards and a new favorite in the worldwide environment protection vogue.



Suspended Ceiling

Plaster Ceiling and Dry Wall

### Product Specifications

Product Properties	Suspended Ceiling	Plaster Ceiling
Length x Width In mm	605 x 1210	900 x 1800
Thickness In mm	6.8mm	8.8mm
Average Weight In kg/m <sup>2</sup> at EMC	6.7 kg/m	7.9 kg/m

### Product Features

#### APPLICABLE GREEN CREDITS

NRNC EE1, EES, EQ4, MR2

NREB EE1, EES, EQ4, MR2

RNC EE1, EE3, EQ5, EQ6, MR4

#### Tested and Certified by:

- SIRIM Malaysia
  - chemical, fire, flexural strength, fungi, bacteria tests.
- Jabatan BOMBA Malaysia (Class O)
- PSB Singapore
  - RoHS, emission and VOCs tests.
- Korea Far Infrared Association (KFIA)
  - ION & FIR analysis, emissivity, power.
- Societe Generale de Surveillance (SGS)
  - microbiological and heavy metal tests.

### GREEN

1. Energy Saving
  - Heat insulation
  - Thermal insulation
2. Eco Friendly
  - Recycle Content
  - Reuse
  - Sustainable
  - Durable
  - Paperless

### CLEAN

1. Purify air
  - Neutralizes dust
  - Reduces indoor pollution
  - Reduces odor
2. Reduce air borne allergens which causes asthma and sinus.
3. Prevents the spread and protects from haze, CO2 and secondary cigarette smoke.
4. Anti and reduce bacteria, viruses and fungi
5. Controls mould and humidity
6. Reduces fungus growth

### SAFE

1. Does not produce toxic fumes of hazardous substance that are harmful to health.
2. Passed Emission Test and Formaldehyde Test from PSB Singapore.
3. Passed ROHs (Restriction of Hazardous Substances) of Europe Standard.
4. Reduce the harmfulness of Geopathogenic zone, radiation and electromagnetic wave.
5. Fire resistant (Class O)

### HEALTHY

1. Improve blood circulation
2. Increase body temperature
3. Activate body cells
4. Negative ion helps to increase oxygen level
5. reduce stress, improve strength and energy
6. Increase productivity and efficiency
7. Improves memory and concentration
8. Stronger Alpha brain waves
9. Improve studying

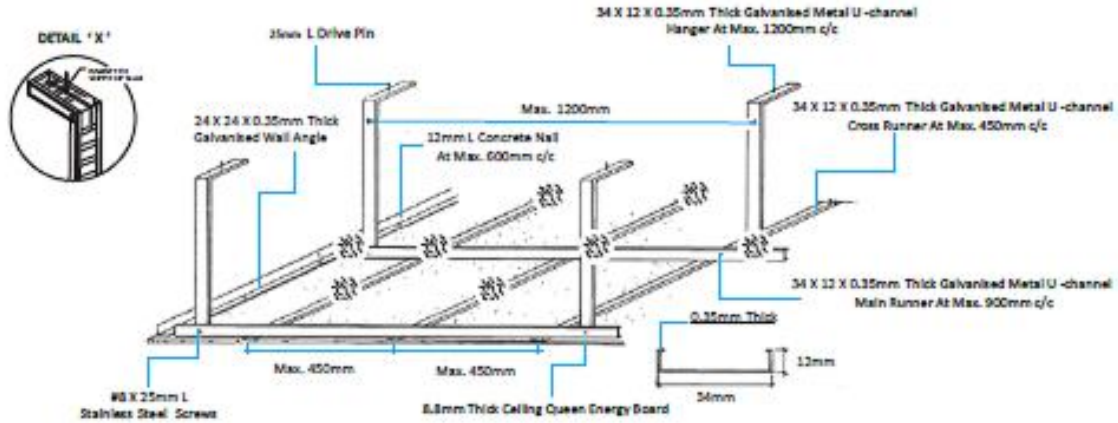
### ECONOMICAL

1. Multiple functions and longer usage

### GREEN LABELS / ACCREDITATION



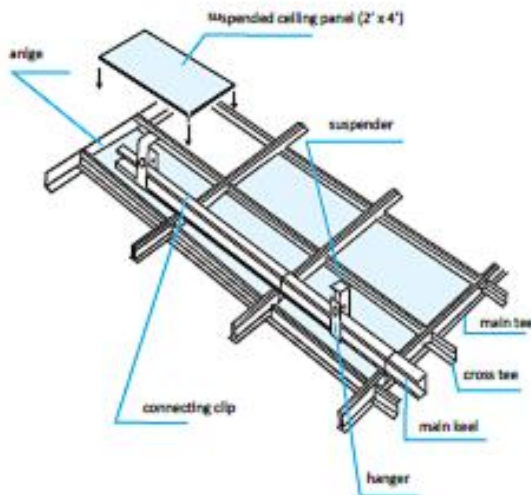
## Method of Installation



Plaster Ceiling Suspension System For Ceiling Energy Board

### Method of Installation

- 1) After conceal M & E works around false ceiling areas cleared and plastering works completed, frame works for Ceiling Energy Board ceiling will be installed to required dimension to correct level.
- 2) During the installation process, M&E items must be carefully placed to ensure there is no damage.
- 3) Galvanized Metal Suspension System  
Suspension system shall consist of 3.4 cm x 1.2 cm galvanized steel Main Tee runner spaced at 120 cm center to center in one direction and 45 cm center to center the other direction. G. L metal is to be suspended and bracket power-fixed to the structural soffit.
- 4) Board Fixed On To Galvanized Metal Suspension.  
Board thickness shall be 8.8 mm thick. Board to be temporary fixed in position with joint to be grouted at the back and over metal with fibreglass or gypsum plaster. After grouting has set, remove all temporary fixing and flush up joint with stopping compound. Allow for drying before painting.



### Ceiling Tee Specifications

Profile	Splice Size	Length (mm)	Height (mm)	Weight (kg/m)
Main Tee	34x12	1200	34	15.8
Cross Tee	34x12	450	34	15.3
Cross Tee	34x12	900	34	15.3
Wall Angle	24x24	600	24	14.0

#### Connection of Main Tee



Connection of Main Tee & Cross Tee

Suspension Ceiling System For Ceiling Energy Board (Metric Size)

# A FRESH ENVIRONMENT, naturally

## CEILING ENERGY BOARD

### product specifications



### Ceiling Energy Board specification

Product Properties	Specifications
Thickness in mm	6.8mm ( Suspended Ceiling ) 8.8mm ( Plaster Ceiling )
Length x Width in mm*	600 x 1200 ( Suspended Ceiling ) 900 x 1800 ( Plaster Ceiling )
Average Weight in kg/m <sup>2</sup> at BMC	6.7 ( Suspended Ceiling ) 7.9 ( Plaster Ceiling )

Plaster Ceiling



Suspended Ceiling



We provide the following services to our product user :

- Quality Control Sticker
- Product Inspection
- Product Assurance Certificate
- After sales services  
( Product Warranty on manufacture defect and ionic function 10 years)
- List of Product Distributors and Installers (East and West Malaysia)

Heavy Metal Pollution

Formaldehyde Pollution

Pesticides Pollution

Chemical Pollution

Biological Pollution

Electromagnetic waves and radiation

Combustion Gases Pollution (CO, CO<sub>2</sub>, VOCs, NOx)

**Is your environment BEING POLLUTED?**

Safe

Green

Healthy

Non Toxic

Energy Saving

Oxygen

negative ion

**A FRESH ENVIRONMENT, naturally**

product knowledge - what are negative ions

**What are "Negative Ions"?**

Ions are atoms or molecules which carry an electrical charge and negative ions carry electric negative charge with an extra number of electrons. The gas elements in the atmosphere do not exist exactly as molecule and some exist as a dissociated state of the ion, of which the molecule or granule (called negative ion) with negative electric not only can promote human synthesis and vitamin storage, but can also activate the human physical activity. It has a very important effect to the human body and other activities.

Negative Ion is called "AIR VITAMIN".



product knowledge - what is negative ion



Breathe air into your lungs and dissolves in the water lining of the alveoli, Oxygen clings to red blood cells and carry to our brain and body cells.

Negative Ion is called **Air Vitamin**

- Human needs 10 litres of fresh air per minute.
- Negative ion helps to increase oxygen level.

Negative ions are needed in order to take in oxygen.

Ceiling Energy Board can generate and emit 500~750 negative ions/cm<sup>3</sup>, providing fresh air like green urban environment within the space they are installed.

Negative ions help to form oxygen carrying negative atoms O<sup>2-</sup>(H<sup>2</sup>O), which improve oxygen intake and CO<sup>2</sup> output of our lungs.

Scientific Research :

Tchijewsky's colleague, Dr. D. A. Lapitsky, tried raising small animals in air completely devoid of oxygen. He added only negative ions to the air as they were about to die from asphyxiation. At which point, their respiration frequency drastically increased, as they began to sit up and run around the chamber (Tchijewski, 1960).

Negative Ion Content in Environment

Environment	Negative ion Content
Nature forest and waterfall	50,000 ions/cm <sup>3</sup>
Mountain and seashore	5,000 ions/cm <sup>3</sup>
Countryside and wild field	700~1,500 ions/cm <sup>3</sup>
Urban park	400~600 ions/cm <sup>3</sup>
Green street area	100~200 ions/cm <sup>3</sup>
Urban residential rooms	40~50 ions/cm <sup>3</sup>
Air conditioning confined space	0~25 ions/cm <sup>3</sup>

## product knowledge - what are far infrared rays



**Sunlight** contains various light frequency waves. Far Infrared Rays are part of the sunlight spectrum which are invisible to the naked eye. They are also known as Biogenetic Rays. Biogenetic Rays have been proven by scientists to promote the growth and health of living cells, especially in plants, animals and human beings.

The normal absorption of resonant frequency for human body is 4 to 14um. This frequency wave band is called Far Infrared Wave, it can penetrate the human body at 2 to 3um. This penetration improves body circulation and raises the body temperature.

### Benefit of Far Infrared Rays...

- Improve blood circulation
- Regulate blood flow
- Increase body temperature
- Activate body cells
- Speed up cells repair
- Relieve pain and muscle tension
- Better sleep
- Reduce fatigue
- Reduce radiation and electrical wave



## product features - energy efficiency

Ceiling energy Board's low thermal conductivity and excellent insulation properties can help to reduce heat generation and energy consumption of the air conditioning system. The micro fibre or fibreglass can also be installed in contact with the ceiling to further enhance its thermal qualities and provide additional heat penetration control.

- Energy saving
- Heat and thermal insulation
- Alternative to ionizer and air purifier



Tested by PSB Singapore



ASTM C518 : 1991

Thermal conductivity

W/m<sup>2</sup>K 0.10570  
(Kcal/mh<sup>2</sup>K) 0.09088

Proposed GBI Points

Energy efficiency  
EE1, EE3, EE5.



product features - improves indoor air quality



Ceiling Energy Board provides protection from secondary smoke and haze...



Ceiling Energy Board can reduce odour and VOC

Negative Ion, **NATURAL AIR PURIFIER** to improve Indoor air quality

- Increases Negative Ions (air vitamin) and Oxygen level
- Neutralizes secondary cigarette smoke, haze and combustion gases
- Neutralizes and reduces airborne dust
- Neutralizes and reduces indoor pollution
- Neutralizes and reduces volatile organic compounds (VOCs) and Formaldehyde pollution

Proposed GBI Points  
Indoor Environmental Quality  
EQ1, EQ3, EQ4, EQ5, EQ6



product features  
- improves asthma and  
other respiratory conditions



Ceiling Energy Board helps to reduce respiratory problems, such as asthma, allergy symptoms, sinus, etc...

It can be difficult to breathe easy when the air today is filled with pollutants of all kinds, from dust and allergens to toxic chemicals. Respiratory problem such as asthma, bronchitis, or hay fever, allergic asthma-the best remedy is **FRESH & CLEAN AIR...** Negative ion helps breathing and improve oxygen absorption

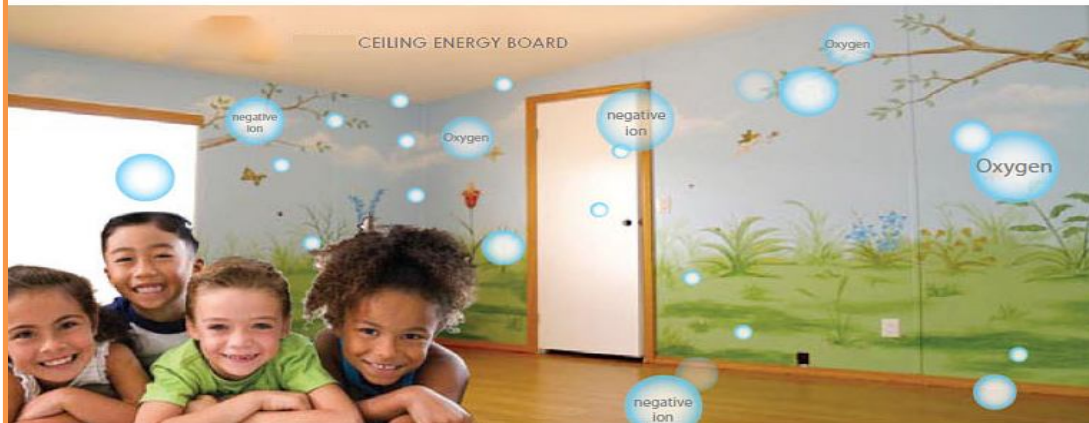
scientific research :

"In Britain, two Oxford University statisticians conducted a study among 100 victims of asthma, bronchitis, and hay fever chosen at random from a list of people who are placed in negative ion environment in the hope that it would help their problems..."

"Brazilian Hospitals have commonly used ionizing devices for the treatment of breathing problems, including allergies, following a test involving 36 children with asthmatic allergies".

( Reprinted from "Economy Daily News" - January 30, 2002 )

Dr. I. Kombuch mounted experiments at Northeastern Hospital, and at the Frankford Hospital in Philadelphia where he was able to report that 63% of patients suffering from hay fever or bronchial asthma "have experienced partial or total relief" from negative ion environment.



## product features - refresh and energise



**REFRESH AND ENERGISE**

Negative ions improve oxygen level in our body, and Far Infrared Rays enhance the delivery of oxygen and nutrients in the blood cells to the body's soft tissue areas. It helps to :

- upgrade the power of concentration
- reduce stress, Improve strength and energy
- Increase productivity and efficiency

**Negative Ion boosts oxygen level**

By promoting abundant oxygen level in the blood, negative ions help normalize brain functions resulting in relaxation and calmness.

scientific research :  
In 1984, a study was published in the "Journal of Abnormal Child Psychology" named, "Negative Air Ionization Improves Memory and Attention in Learning-Disabled and Mentally Retarded Children."

L. H. Hawkins, from the Human Biology and Health Department of the University of Surrey in England

Technology Review, Jan 1983 v86 p74(1). Full Text COPYRIGHT 1983 Massachusetts Institute of Technology Alumni Associatio



## product features - helps in studying



**Negative Ion helps in studying**

- Improves memory power
- A slower, stronger pulse rate of Alpha brain waves
- Improves concentration and attention
- Sharpens mental functioning and reduces error rates in studying
- Better mood for studying

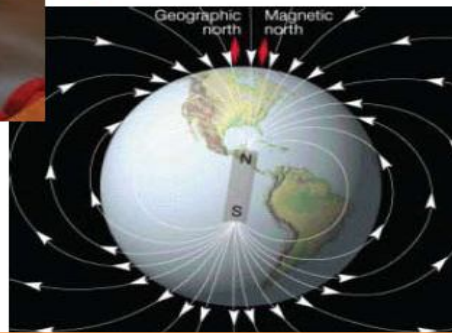


scientific research :  
They scored "significantly higher" on these tests when they were in the negative ion-enriched room, where they also showed (via the electroencephalogram) a slower, stronger pulse rate of Alpha brain waves.

( 1980, Dr. Sulman, Head of the Department of Applied Pharmacology at Hebrew University in Jerusalem )

product features  
- reduces radiation and electromagnetic

Ceiling Energy Board helps to **reduce Radiation and electromagnetic waves** from mobile phone, TV, computer, microwave oven, refrigerator, air conditioner and other electrical appliances.



Negative Ions help to reduce the harmfulness of **Geopathogenic Zone, Radiation and Electromagnetic Waves.**

product features  
- promotes health

Ceiling Energy Board  
**contributes to GOOD HEALTH**

- Improves metabolism
- Strengthens the body's immune system
- Control Migraine Headaches
- Stops Fatigue
- Improves Sleep
- Alleviates Depression

Scientific Research.  
A Trial of Negative Ion Generation Versus Light-Emitting Diode Phototherapy for Seasonal Affective Disorder (SAD)".  
clinicaltrials.gov.  
Terman M, Terman JS (December 2006).  
Dr. Michael Terman, Columbia University Medical Center.



# Happy & Healthy Life



product features  
- anti bacteria and microbial

Ceiling Queen Energy Board helps to reduce  
**bacteria, virus and airborne microbial!**



negative ion

Oxygen

Oxygen

negative ion



Hotel



Hospital and Ward



Shopping Center

Tested and certified by: **SGS**

SGS Test Report : Certificate Of Analysis		
Microbiological Test	Total Aerobic Count ( 37C for 48 hours )	Not detected
	E.Coli	Not detected
	Staphylococcus	Not detected
	Salmonella	Not detected
	Yeast & Mould	Not detected

Tested and certified by: **QAS**

Function Of Test	Method Of Test	Product Technical Data	Bio Ray Multiple Board
Fungi Test	ASTM G 21	Resistance Of Synthetic Polymeric Material to Fungi ( At 28°C For 28 days )	Passed Rating 1 Traces Of Growth >10%
Bacteria Test	ASTM G22	Resistance To Bacteria ( At 37°C for 28 days )	Growth Mit > 10%
	ISO 22801:2000	Antimicrobial activity and efficacy	Value Of antimicrobial Activity Passed with 3.0

Scientific Research:

Studies Proving the Effectiveness of Negative Ions

A recent study by the U.S. Dept. of Agriculture found that ionizing a room led to 52% less dust and 95% less bacteria in the air (since many of the pollutants found in the air reside on floating dust particles).

The U.S.D.A. also performed another study to test the effectiveness of negative ionization at removing airborne Salmonella Enteritidis.

Proposed GBI Points

Indoor Environmental Quality  
EQ1, EQ3, EQ4, EQ5, EQ6



product features - anti fungus

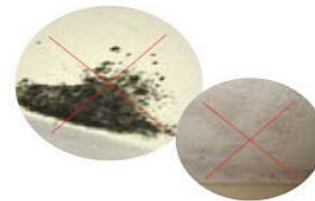
Ceiling Energy Board is

- Controls mould, humidity and fire-resistant interior ceiling board
- Ideal replacement for regular board throughout the home and office
- Paperless design resists mould and fungus

Ceiling Energy Board is a new generation paperless board designed as a replacement for traditional paper-based gypsum board, regular plaster ceiling and suspended ceiling for specific application. Ceiling Energy Board can absorb extra moisture from the room to reduce the fungus and mould's growth and also absorbs the moisture level when the humidity is too low.

Tested and certified by: **QAS**

Function Of Test	Method Of Test	Product Technical Data	Bio Ray Multiple Board
Fungi Test	ASTM G21	Polymeric Material to Fungi ( At 28°C For 28 days )	Traces Of Growth >10%
	ASTM G21	Resistance Of Synthetic	Passed Rating 1



Negative ion reduces mould and fungus growth



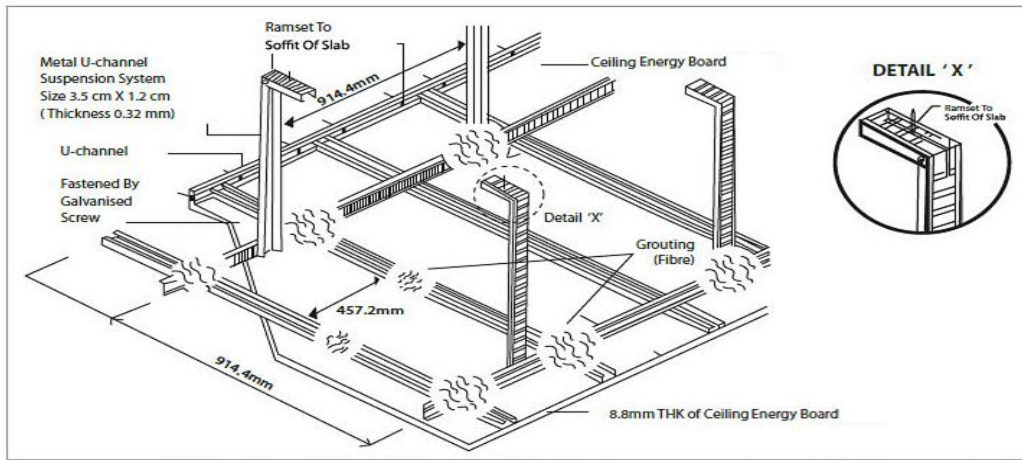
Proposed GBI Points

Indoor Environmental Quality  
EQ1, EQ4



product specifications  
- suspension system

proposed ceiling batten suspension system  
for Ceiling Energy Board



product certification



- Ceiling Energy Board does not produce toxic fumes or hazardous substance that are harmful to health.

Passed ROHS  
(Restriction of Hazardous Substances)  
(European Standard)

Ceiling Energy Board is  
**GREEN, SAFE and HEALTHY**

It passed Emission Test

- 1) Total Volatile Organic Compounds (TVOC) Emission Rate
- 2) Formaldehyde Emission Rate
- 3) 4-Phenylcyclohexene Emission Rate
- 4) Total Phthalates Emission
  - Dibutyl Phthalate (DBP)
  - Diethyl Phthalate (DEP)
  - Di-octyl Phthalate (DOP)
  - Diethylnexyl Phthalate (DEHP)
  - Butylbenzyl Phthalate (BBP)
  - Dimethyl Phthalate (DMP)
- 5) Total Particles Emission



CEILING ENERGY BOARD

Tested, Passed & Certified by



Product ID No  
041-007  
MADE FROM REUSED  
WASTE MATERIALS

## product GBI Points

Ceiling Energy Board uses bio technology from Japan and Korea that can generate and emit negative ions and far infrared rays by using natural radiation material, such as silicate minerals.



### PRODUCT FEATURES

#### Safe

- Does not produce toxic fumes of hazardous substances that are harmful to health. (Passed RoHs of European Standard).
- Passed Emission Test and Formaldehyde Test from PSB Singapore.
- Passed heavy metal tests from SGS Malaysia and PSB Singapore.
- Passed fungus test, bacteria test and biological test from SIRIM and SGS.
- Passed Fire resistance tests from BOMBA (Class O) and SIRIM BS : 476 part 4, part 6 & part 7.

Proposed for Green Building Index (GBI) Malaysia :

GBI CREDITS	ASSESSMENT CRITERIA	CRITERIA POINT
Energy efficiency	• EE1 Minimum EE Performance	3
	• EE5 Sustainable Maintenance	3
Indoor Environmental Quality	• EQ1 Minimum IAQ Performance	2
	• EQ3 Sound Insulation	2
	• EQ4 Good Quality Construction	1
	• EQ5 Volatile Organic Compounds	1
	• EQ6 Formaldehyde Minimisation	1
Materials & Resources	• MR2 Materials Reuse and Selection	2
	• MR4 Recycled Content Materials	1
	• MR5 Regional Materials	1
Innovation	• IN1 Innovation in Design & Environmental Design Initiatives	5



#### Energy Efficient

- Energy saving
- Heat/thermal insulation
- Alternative to ionizer and air purifier

#### Improves Indoor Air Quality

- Purifies the air and provides a fresh environment
- Reduction on sensitiveness such as asthma and sinus
- Prevents the spread of and protects from haze, secondary smoke, pollen, bacteria, viruses and fungus
- Neutralises odour, smoke, dust and CO2
- Neutralises volatile organic compounds (VOCs)

#### Eco-friendly

- Made from reused and recycled content materials

#### Economical

- Fire-resistant
- Multiple function and longer usage

### GREEN LABELS / ACCREDITATION



Cert No: 041-037  
Made from reused  
Waste Materials

### OTHER RATINGS

