



**MANUBHAI INDUSTRIES PTE LTD**  
**Quality Fiji Made Products**

**TECHNICAL DATA INFORMATION**  
**RIGID CELLULAR EXPANDED POLYSTYRENE**

**MANUBHAI INDUSTRIES PTE LTD**

Mia Mahajan Rd, Ba, Fiji Islands  
Phone: (679) 667 0013 | Fax: (679) 667 0818

✉ [info@manubhaiindustries.com.fj](mailto:info@manubhaiindustries.com.fj)  [www.manubhaiindustries.com.fj](http://www.manubhaiindustries.com.fj)

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# MANUBHAI INDUSTRIES PTE LTD

## Introduction

### *EPS or Expanded Polystyrene ~*

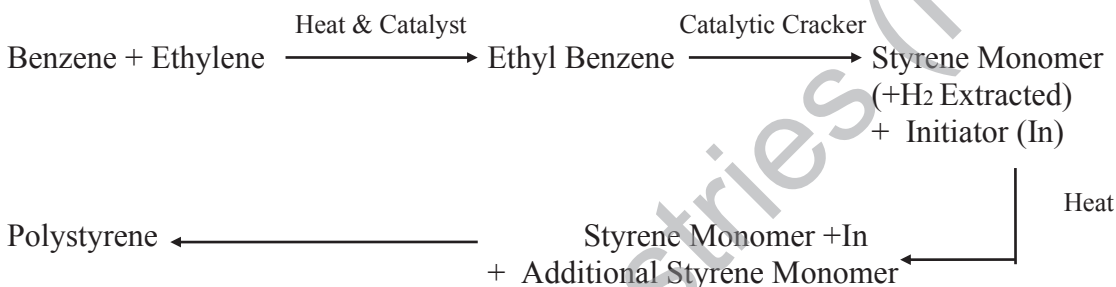
Expanded polystyrene is an inexpensive, versatile, light weight cellular plastic material made up of fine spherical shaped cells which are comprised of 98% air. This air is trapped within the closed hollow cells of the particles forming a strong stable material.

EPS has a very high strength to weight ratio which, dependent of the density of the material, offers exceptional compressive and flexural strength, and dimensional stability characteristics.

### *Where it comes from ~*

EPS is manufactured from Expandable Polystyrene bead, which are particles of polystyrene polymer containing a CFC - Free expanding agent. This raw expandable polystyrene is manufactured from Styrene Monomer. Styrene monomer is manufactured around the world from by-products of the production of gas, petroleum, and steel.

The chemical composition of polystyrene as it is manufactured is as follows:



### *How it is manufactured ~*

The expandable polystyrene is softened by heating with steam causing hollow cells to be formed within the particle due to the blowing or expanding agent (normally pentane). This expansion causes the raw bead particles to expand up to 50 times their original volume.

Blocks of MIL are manufactured by resoftening the expanded bead with steam and fusing them together under pressure in a mould. These blocks are then cut with hot wires to form sheets and profiled shapes. Shaped MIL is manufactured by fusing softened beads in specially designed moulds.

## TECHNICAL INFORMATION

### *PHYSICAL PROPERTIES ~*

Manubhai Industries Pte Ltd's range comprises of block moulded and shape moulded expanded polystyrene products. MIL block foam is manufactured to AS1366 Part 3 ~ 1992 and contains a flame retardent.

The minimum physical properties specified in this standard are the minimum requirements to which MIL foam complies, however if physical properties outside this standard are required, a tailor made class of MIL foam can be designed to meet these requirements. The nominal densities used to manufacture expanded polystyrene are as listed in the standard, however the physical properties may be achieved using other densities, depending on raw material and other variables. The table below lists the minimum physical properties of MIL foam as it compares to AS1366 Part3 ~ 1992.

<i>Physical Property</i>	<i>Unit</i>	<i>Class</i>						<i>Test method used to measure compliance</i>
		<i>L</i>	<i>SL</i>	<i>S</i>	<i>M</i>	<i>H</i>	<i>VH</i>	
Average Density	kg/cum	11	13.5	16	19	24	28	---
Identification Colour per AS1366.3	Colour	Blue	Yellow	Brown	Black	Green	Red	
Compressive strength at 10% deformation (min).	kPa	50	70	85	105	135	165	AS2498.3
Cross breaking strength (min).	kPa	95	135	165	200	260	320	AS2498.4
Rate of water vapour transmission (max) measured parallel to rise	ug/m2s	710	630	580	520	460	400	AS2498.5
Dimensional stability (max)	%	1	1	1	1	1	1	AS2498.6
Thermal resistance (min) at 25 degree C.(50mm Sample)	m2K/W	1	1.13	1.17	1.20	1.25	1.28	AS2464.5 or AS2464.6
Thermal Conductivity (min) at 0 degree C. (50mm Sample)	W/mK	0.039	0.037	0.036	0.035	0.034	0.032	
Flame propagation: median flame duration	s	2	2	2	2	2	2	AS2122.1
eight value (max)	%	15	18	22	30	40	50	
median volume retained	%	12	15	19	27	37	47	
eight value (max)								

## ***FLOATATION PROPERTIES ~***

The density of MIL Foam is low compared to water, with a nominal density range from 13 to 28 kg/m<sup>3</sup> compared with water at 1000 kg/m<sup>3</sup>. The water buoyancy per cubic meter of MIL Foam is determined by subtracting its kg/m<sup>3</sup> density from 1000. The result is the weight in kilograms, which a cubic meter of MIL Foam can support when fully submerged in water.

## ***CHEMICAL PROPERTIES ~***

MIL Foam is resistant to virtually all aqueous media, including diluted acids and alkalis. It is also resistant to water-miscible alcohol such as methanol, ethanol and I-Propanol, and also to silicone oils.

MIL Foam has limited resistance to paraffin oil, vegetable oils, diesel fuel, and Vaseline. These substances may attack the surface of MIL Foam after long term contact. MIL Foam is not resistant to hydrocarbons, chlorinated hydrocarbons, ketones and esters.

Paint containing thinners and solutions of synthetic adhesives fall into this category, and this should be taken into account in any painting or bonding operations. Anhydrous acids such as glacial acetic acid and fuming sulfuric acid destroy MIL Foam.

## ***RESISTANCE TO FUNGI AND BACTERIA ~***

Fungus attack has not been observed on MIL Foam. It does not support bacterial growth. Surface spoilage (in the form of spilt soft drink, sugar, etc) can however supply the nutrient for fungal or bacterial growth.

## ***RESISTANCE TO ANTS, TERMITES, AND RODENTS ~***

Since it has no food value, MIL Foam does not attract ants, termites, or rodents. However, it is not a barrier to them. Ants, termites and rodents may chew through MIL Foam to reach food or establish a comfortable home.

## ***TOXICITY ~***

The heat of combustion of solid polystyrene polymer is 40,472 kJ/kg – Combustion products are carbon dioxide, water, soot (carbon), and to a lesser extent carbon monoxide.

A CSIRO report comments that the toxicity of gases associated with the burning of EPS is no greater than that associated with timber. Toxicity of thermal decomposition products of EPS appears to be no greater than for wood and decidedly less than other conventional building products i.e.

Polystyrene	CO=0.09	plus	CO <sub>2</sub> =0.01	Total=0.10
White Pine	CO=0.09	plus	CO <sub>2</sub> =0.003	Total=0.09

## FLAMMABILITY PROPERTIES ~

Expanded polystyrene products are combustible and should not be exposed to open flame or other ignition sources.

Properly cured, Flame Retardant EPS is not an ignitability risk.

Insulation material, as with other organic material, must be considered combustible and to constitute a fire hazard if improperly used or installed. Expanded polystyrene (Fire Grade) contains a fire retardant additive to inhibit accidental ignition from small fire sources.

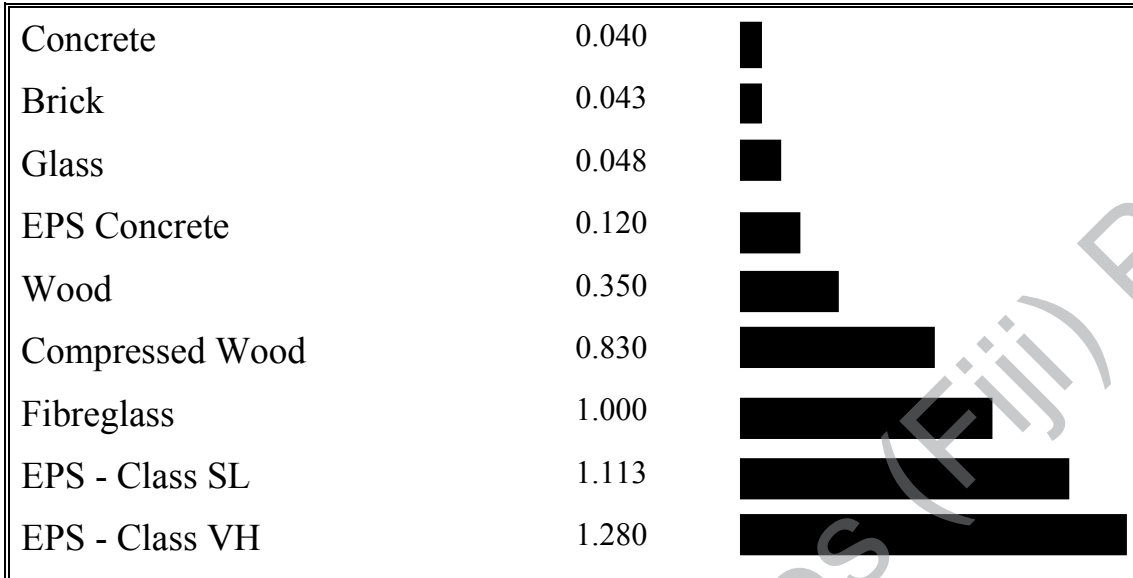
Please refer to the table below for a comparison of expanded polystyrene with other common building materials.

Material	Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Produced Index (0-10)
Expanded Polystyrene - with sizational 450 facing	0	0	0	0 - 1
Expanded Polystyrene - sandwich panel with 0.65mm steel	0	0	0	0
Expanded Polystyrene	12	0	3	5
Rigid Polyurethane	18	10	4	7
Australian Hardboard - Bare	14	6	7	3
- Impregnated with fire retardant (4.75mm)	0	0	0	7
Australian Softboard - Bare	16	9	7	3
- Impregnated with fire retardant (12.7mm)	4	0	0	7
T&G Boarding (25x100) - Bluegum	11	0	3	2
- Oregon	13	6	5	3
Plywood, Coachwood veneer (4.75mm) - Bare	15	7	7	4
- Impregnated with fire retardant	12	0	3	5

## THERMAL PROPERTIES ~

Due to the low k value (thermal conductivity value) and high R value (thermal resistance value) of expanded polystyrene, it is an excellent insulating material. This is brought about by stabilized air trapped within the cellular structure of the EPS polymer.

The exceptionally high R value of expanded polystyrene as compared to other commonly used insulating materials can be seen below (all figures based on 50mm thick samples).



Expanded polystyrene has long term performance at a wide range of temperatures. Changes in mechanical properties and structural integrity are minimal between a temperature range of -75degrees C and 80 degrees C.

### *k Values*

k Value is the thermal conductivity of a material. This can also be expressed as a C Value, which is the amount of heat energy transmitted through a unit area of a structure per unit of temperature difference between the hot and cold surfaces.

The lower the k value the better the insulating material. Expanded polystyrene has an extremely low k value compared to other materials used in similar applications.

To determine the k value for different classes of EPS, the following should be applied:

1. Determine average or mean temperature of the insulation:

$$\text{Mean T degrees C} = \frac{\text{Temp. on outside of insulation} + \text{Temp. on inside of insulation}}{2}$$

2. Apply mean temperature to table below for class of EPS being used:

Temp degrees C	L	SL	S	M	H	VH
0	0.0389	0.0370	0.0360	0.0349	0.0337	0.0321
5	0.0397	0.0378	0.0367	0.0356	0.0343	0.0327
10	0.0406	0.0386	0.0375	0.0362	0.0349	0.0333
15	0.0414	0.0394	0.0382	0.0369	0.0356	0.0340
20	0.0422	0.0402	0.0390	0.0376	0.0362	0.0346
25	0.0430	0.0410	0.0397	0.0383	0.0368	0.0352
30	0.0438	0.0418	0.0405	0.0390	0.0374	0.0358
35	0.0446	0.0426	0.0412	0.0397	0.0381	0.0365
40	0.0454	0.0434	0.0420	0.0404	0.0387	0.0371
45	0.0463	0.0442	0.0427	0.0410	0.0393	0.0377
50	0.0471	0.0450	0.0435	0.0417	0.0399	0.0383
55	0.0479	0.0457	0.0442	0.0424	0.0406	0.0390
60	0.0487	0.0465	0.0450	0.0431	0.0412	0.0396

### R Value

R Value is the thermal resistance of a material, which expresses the ability of a particular thickness of a material to resist heat flow. The higher the R Value, the better the insulating material. Expanded polystyrene has an extremely high R Value compared to other materials used for similar applications, as seen on the comparison table on the previous page.

To determine the R Value for different thickness and different classes of EPS, the following should be applied:

$$R \text{ Value} = \frac{\text{Thickness of material m}}{\text{k value (thermal conductivity) of material W/mK}}$$

for example, to determine the R value of 150mm SL Class EPS at a mean temperature of 25 degrees C:

$$= \frac{0.150 \text{ m}}{0.0410 \text{ W/mK}}$$

$$R = 3.66 \text{ m}^2\text{K/W}$$

to determine the thickness of Class SL required to achieve a R Value of 2.5 under the same conditions:

$$\text{Thickness} = R \text{ Value} \times k \text{ Value}$$

$$= 2.50 \times 0.0410$$

$$= 0.103 \text{ m} = 103 \text{ mm}$$

## ***ACOUSTIC PROPERTIES ~***

By itself, expanded polystyrene only offers a limited absorption of airborne sound, due to the air trapped in the closed cell structure.

Coated with a suitable material, that offers a high acoustic absorption rate, expanded polystyrene can offer a light weight cost effective alternative to other sound insulation materials and systems.

## ***RATE OF WATER VAPOUR TRANSMISSION ~***

In conditions where the adverse effects of moisture are present, expanded polystyrene has one of the highest resistance levels of all materials used for insulation. Expanded polystyrene has a low water vapour transmission rate, however it is not considered as an adequate vapour barrier. In applications where high humidity and high temperature differentials are present, and adequate vapour barrier should be installed.

Manubhai Industries (Fiji) Pte Ltd



# SAFETY DATA SHEET

Revision Date : 10 October 2019

## Section 1 – Identification

**Product Name** : 277E  
**Product Type** : Flame Retardant  
**Product Use** : Impregnant polystyrene with blowing agent  
**Manufacturer** : IRPC Public Company Limited  
 299 Moo. 5 Sukhumvit Road, Amphur Muang, Rayong THAILAND  
**Emergency Call** : +66(0)38 802560  
**Website** : [www.irpc.co.th](http://www.irpc.co.th), <https://polimaxx.irpc.co.th>

## Section 2 – Hazards Identification

### Classification according to Regulation (EC) No. 1272/2008 (CLP) and GHS Classification :

This product is not classified as dangerous according to Regulation (EC) No 1272/2008 and GHS

**Pictogram** : Not Applicable

**Signal Word** : Not applicable

**Hazard Statement** :

-

**Precautionary Statement** :

-

## Section 3 – Composition / Information on Ingredients

Chemical Name	CAS Number	EC Number	Percent weight
Polystyrene	9003-53-6	Polymer	94-96
Pentane	109-66-0	203-692-4	5-6
Flame Retardant Additives	Proprietary	-	<1

## Section 4 – First-aid Measures

- Skin Exposure** : Flush skin and hair with running water (and soap if available).If molten material comes in contact with the skin, cool under ice water or a running stream of water.DO NOT attempt to remove the material from the skin.Get medical attention.
- Eyes Exposure** : Flush with water for at least 20 minutes.Remove contact lenses, if worn.Get immediate medical attention.
- Inhalation** : Remove person to fresh air.Get medical attention if breathing difficulties continue.
- Ingestion** : DO NOT induce vomiting.If contamination of the mouth occurs, wash out thoroughly with water. Seek medical advice.

## Section 5 – Fire-fighting Measures

- Suitable extinguishing agents** : Foam, CO<sub>2</sub>, Dry chemical powder, water spray or fog.  
Avoid using direct streams of water on molten burning material.
- Hazards during fire-fighting** : Carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), other pyrolysis products typical of burning organic material.
- Protective equipment** : Wear self-contained respiratory protective device.

## Section 6 – Accidental Release Measures

- Personal precautions** : Avoid breathing vapors, mist or gas.
- Environmental precautions** : Discharge into the environment must be avoided.
- Cleanup :**  
Sweep/shovel up or spray with water and collect in a suitable container.Place waste in an appropriate container for disposal.

## Section 7 – Handling and Storage

- Handling** : Use with adequate ventilation.Appropriate grounding is required. (Prevent against static electricity).Avoid smoking, naked lights or ignition sources.Avoid contact with eyes and skin.
- Storage conditions** : Keep separated from incompatible substances.Do not place in direct sunlight. Store in a dry place away from ignition sources and strong oxidizers.Store in cool location and ventilated place.

Section 8 – Exposure Controls / Personal Protection

**Exposure limits** :

Component Name	Reference	TWA		STEL			
		ppm	mg/m3	ppm	mg/m3		
Pentane	ACGIH TLV	1000	2950	-	-		
	OSHA PEL	1000	2950	-	-		

**Personal protective equipment**

- Respiratory protection : Wear respiratory protection if ventilation is inadequate.
- Eye protection : Chemical workers goggles recommended.
- Protective clothing : Gloves required when handling hot material. In case of fire, wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.
- Ventilation : Provide adequate ventilation when processing material at elevated temperatures.
- Other protective equipment :
- Engineering Controls :

## Section 9 – Physical and Chemical Properties

<b>Appearance</b>	: Bead
<b>Odour</b>	: Characteristic odor
<b>Colour</b>	:
<b>Boiling Point</b>	: Not Applicable
<b>Initial Boiling Point</b>	: 0
<b>Flash Point</b>	: 345 - 360°C
<b>Melting Point</b>	: Not Applicable
<b>Vapour Pressure</b>	: Not Applicable
<b>Auto ignition temperature</b>	: Not Applicable
<b>Solubility</b>	: Insoluble in water
<b>Viscosity</b>	: Not Applicable
<b>Upper/Lower flammability or explosive limit</b>	: Not Applicable
<b>pH</b>	: Not Applicable
<b>Relative density</b>	: Not Applicable
<b>Vapour density</b>	:
<b>Partition characteristics</b>	:
<b>Specific Gravity</b>	: 1.04 (Water = 1)
<b>Partition coefficient: n-octanol/water</b>	: Not Applicable
<b>Decomposition temperature</b>	: Not Applicable
<b>Explosive properties</b>	: Not Applicable
<b>Softening Point</b>	: > 100 ?C

## Section 10 – Stability and Reactivity

<b>Stability</b>	: Stable under normal ambient temperature.
<b>Condition to Avoid</b>	: Avoid heat, sparks, open flames and other ignition sources.DO NOT heat without adequate ventilation.
<b>Material to Avoid</b>	: Avoid solvents and oxidizing agents.
<b>Dangerous decomposition</b>	: Carbon monoxide (CO), carbon dioxide (CO2), other pyrolysis products typical of burning organic material.

## Section 11 – Toxicological Information

### Acute Toxicity :

Chemical name	Route	Species	Acute Toxic Value
Pentane	Oral	Rat	LD50 >2,000 mg/kg

### Irritating/corrosive effects

- Eye Irritation : May cause eye irritation.  
 Skin Irritation : May cause skin irritation.  
 Inhalation : May cause allergic respiratory response.  
 Ingestion : Swallowing larger amounts may cause injury.

## Section 12 – Ecological Information




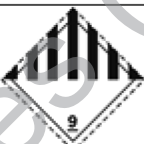
- Eco-toxicity** : No relevant studies found.  
**Persistence and degradability** : The product is not easily biodegradable.  
**Bio-accumulative potential** : No data available.  
**Mobility in soil** : No data available.  
**Other adverse effects** : No data available.

## Section 13 – Disposal Considerations

### Disposal methods:

Transfer to an approved disposal area in accordance with national, state and local regulations.  
 Recycling uncontaminated packaging recommended. Package must be recycled in compliance with national legislation and environmental regulations.

## Section 14 – Transport Information

Regulatory information	UN number	Classes	Packing group	Label	Additional information
DOT	2211	9	III		POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor
ADR/RID	2211	9	III		POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor
IMDG CODE	2211	9	III		POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor
ICAO/IATA	2211	9	III		POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor

## Section 15 – Regulatory Information

### US Toxic Substances Control Act

All components of this product are on the TSCA Inventory.

### European Inventory of Existing Chemical Substances (EINECS)

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

### Canada – WHMIS

Material is not controlled under WHMIS.

## Section 16 – Other Information

DOT	: Department of Transportation
ADR	: European agreement concerning the international carriage of dangerous goods by road.
RID	: Regulations concerning the international carriage of dangerous goods by rail.
IMDG-CODE	: International maritime dangerous goods code
ICAO	: International Civil Aviation Organization
IATA	: International air transport association
GHS	: Globally Harmonized System of Classification and Labeling of Chemicals
OSHA	: Occupational Safety and Health Administration
WHMIS	: Workplace Hazardous Materials Information System

### NFPA – USA

Health : 0                      Flammability : 1                      Reactivity : 0

### HMIS

Health : 0                      Flammability : 1                      Reactivity : 0

### SDS Information

GHS Revision :

Revision Date :

Print Date :

The information above is believed to be accurate and represents the best of our knowledge, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

# SAFETY DATA SHEET

Product Name **EXPANDED POLYSTYRENE**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Supplier Name** MANUBHAI INDUSTRIES PTE LTD  
**Address** Mia Mahajan Road, Ba  
**Telephone** (+679) 667 0013  
**Fax** (+679) 667 0818  
**Synonym(s)** RIGID CELLULAR EXPANDED POLYSTYRENE  
  
**Use(s)** FOAM • INSULATING COMPOUND • PACKAGING  
**SDS Date** 1 November 2019

## 2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

**UN No.** None Allocated      **DG Class** None Allocated      **Subsidiary Risk(s)** None Allocated  
**Packing Group** None Allocated      **Hazchem Code** None Allocated

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
PENTANE	C5-H12	109-66-0	<0.1%
STYRENE	C8-H8	100-42-5	<0.1%
POLYSTYRENE BEADS	Not Available	Not Available	>60%

## 4. FIRST AID MEASURES

**Eye** If in eyes, hold eyelids apart and flush continuously with running water for at least 15 minutes.  
**Inhalation** If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.  
**Skin** Exposure is considered unlikely. Skin irritation is not anticipated.  
**Ingestion** Due to product form and application, ingestion is considered unlikely.  
**Advice to Doctor** Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

**Flammability** Combustible. May evolve toxic gases (carbon oxides, styrene, hydrocarbons) when heated to decomposition. Expanded polystyrene (Fire Grades) contains a fire retardant additive to inhibit accidental ignition from small fire sources. May shrink, melt, or drip.  
**Fire and Explosion** Dust generated from handling, cutting, or storage may form explosive mixtures with air. Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.  
**Extinguishing** Dry agent, carbon dioxide or water fog. Prevent contamination of drains or waterways.  
**Hazchem Code** None Allocated



## 6. ACCIDENTAL RELEASE MEASURES

**Spillage** If spilt, collect and reuse where possible.

## 7. STORAGE AND HANDLING

**Storage** Store in a cool, dry, well ventilated area, removed from moisture, hydrocarbon solvents, acids, esters, amines, aldehydes, heat or ignition sources and foodstuffs. Ensure packages are adequately labelled, protected from physical damage and sealed when not in use.

**Handling** Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

## 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

### Exposure Stds

Ingredient	Reference	TWA		STEL	
Pentane	SWA (AUS)	600 ppm	1770 mg/m <sup>3</sup>	750 ppm	2210 mg/m <sup>3</sup>
Styrene, monomer	SWA (AUS)	50 ppm	213 mg/m <sup>3</sup>	100 ppm	426 mg/m <sup>3</sup>

### Biological Limits

Ingredient	Reference	Determinant	Sampling Time	BEI
STYRENE	ACGIH BEI	Maldelic acid plus phenylglyoxylic acid in urine	End of shift	400 mg/g creatinine
	ACGIH BEI	Styrene in venous blood	End of shift	0.2 mg/L

**Engineering Controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

**PPE** Personal Protective Equipment is not required under normal conditions of use. When using large quantities or where heavy contamination is likely, wear: dust-proof goggles and rubber or PVC gloves. Where an inhalation risk exists, wear: a Class P1 (Particulate) respirator. If cutting or sanding with potential for dust generation, wear: a Class P1 (Particulate) respirator.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	FORMED OR SHEETED SOLID	<b>Solubility (water)</b>	INSOLUBLE
<b>Odour</b>	ODOURLESS	<b>Specific Gravity</b>	0.01 to 0.04
<b>pH</b>	NOT AVAILABLE	<b>% Volatiles</b>	NOT AVAILABLE
<b>Vapour Pressure</b>	NOT AVAILABLE	<b>Flammability</b>	COMBUSTIBLE
<b>Vapour Density</b>	NOT AVAILABLE	<b>Flash Point</b>	NOT AVAILABLE
<b>Boiling Point</b>	NOT AVAILABLE	<b>Upper Explosion Limit</b>	NOT AVAILABLE
<b>Melting Point</b>	NOT AVAILABLE	<b>Lower Explosion Limit</b>	NOT AVAILABLE
<b>Evaporation Rate</b>	NOT AVAILABLE		
<b>Autoignition Temperature</b>	NOT AVAILABLE	<b>Decomposition Temperature</b>	> 240°C
<b>Partition Coefficient</b>	NOT AVAILABLE	<b>Viscosity</b>	NOT AVAILABLE

## 10. STABILITY AND REACTIVITY

**Chemical Stability** Stable under recommended conditions of storage.

**Conditions to Avoid** Avoid heat, sparks, open flames and other ignition sources.

**Material to Avoid** Incompatible with hydrocarbon solvents, acids (eg. nitric acid), esters, amines, aldehydes, heat and ignition sources.

**Hazardous Decomposition Products** May evolve toxic gases (carbon oxides, styrene, hydrocarbons) when heated to decomposition.

**Hazardous Reactions** Polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>Health Hazard Summary</b>	Low toxicity. This product may present a hazard if boards/panels are sanded, drilled or cut with dust generation.
<b>Eye</b>	Due to product form and nature of use, the potential for exposure is reduced. Product may only present a hazard if dust is generated. Contact may result in mechanical irritation.
<b>Inhalation</b>	Exposure considered unlikely. An inhalation hazard is not anticipated unless cut, drilled or sanded with dust generation, which may result in irritation of the nose and throat.
<b>Skin</b>	Low irritant. Prolonged or repeated contact may result in mild irritation due to mechanical action.
<b>Ingestion</b>	Ingestion is considered unlikely due to product form.
<b>Toxicity Data</b>	PENTANE (109-66-0) LC50 (Inhalation): 364 g/m <sup>3</sup> /4 hours (rat) LCLo (Inhalation): 325 g/m <sup>3</sup> /2 hours (mouse) LD50 (Intravenous): 446 mg/kg (mouse) STYRENE (100-42-5) LC50 (Inhalation): 9500 mg/m <sup>3</sup> /4 hours (mouse) LCLo (Inhalation): 4000 ppm/4 hours (rabbit) LD50 (Ingestion): 316 mg/kg (mouse) TCLo (Inhalation): 20 ug/m <sup>3</sup> (human - ears, eyes, sense of taste)

## 12. ECOLOGICAL INFORMATION

<b>Environment</b>	Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.
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## 13. DISPOSAL CONSIDERATIONS

<b>Waste Disposal</b>	Reuse where possible or return to manufacturer (the manufacturer may have a method/solution for neutralisation available). Contact the manufacturer for additional information.
<b>Legislation</b>	Dispose of in accordance with relevant local legislation.

## 14. TRANSPORT INFORMATION

### NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

<b>Shipping Name</b>	None Allocated			
<b>UN No.</b>	None Allocated	<b>DG Class</b>	None Allocated	<b>Subsidiary Risk(s)</b> None Allocated
<b>Packing Group</b>	None Allocated	<b>Hazchem Code</b>	None Allocated	

## 15. REGULATORY INFORMATION

<b>Poison Schedule</b>	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).
<b>AICS</b>	All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

<b>Additional Information</b>	ABBREVIATIONS: ACGIH - American Conference of Industrial Hygienists. ADG - Australian Dangerous Goods. BEI - Biological Exposure Indice(s). CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds. CNS - Central Nervous System. EC No - European Community Number. HSNO - Hazardous Substances and New Organisms. IARC - International Agency for Research on Cancer. mg/m <sup>3</sup> - Milligrams per Cubic Metre. NOS - Not Otherwise Specified. pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). ppm - Parts Per Million. RTECS - Registry of Toxic Effects of Chemical Substances. STEL - Short Term Exposure Limit. SWA - Safe Work Australia. TWA - Time Weighted Average.
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## EXPANDED POLYSTYRENE

### HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

It is based on information concerning the product which has been provided to RMT by the manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While MIL has taken all due care to include accurate and up -to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

# POLYSTYRENE PRODUCTS DRAWINGS

## EXPANDED POLYSTYRENE

### HEALTH EFFECTS FROM EXPOSURE:

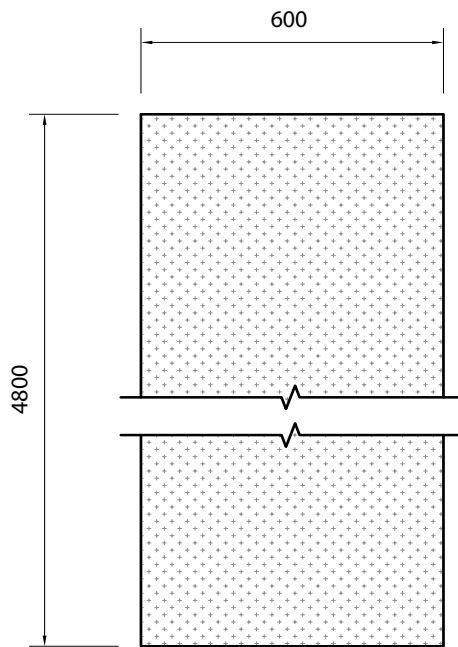
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

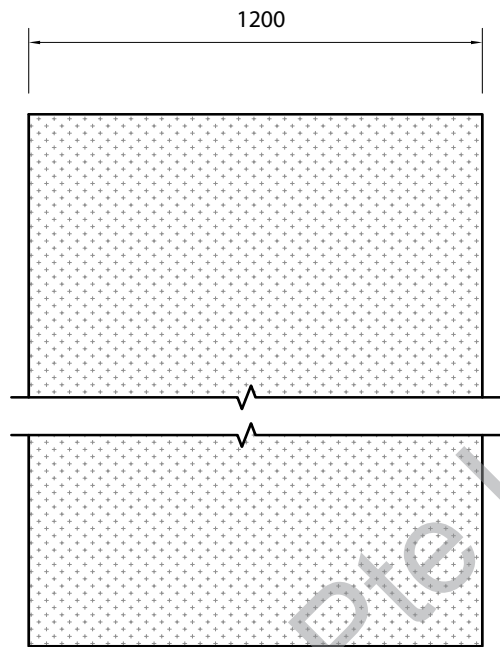
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

It is based on information concerning the product which has been provided to RMT by the manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

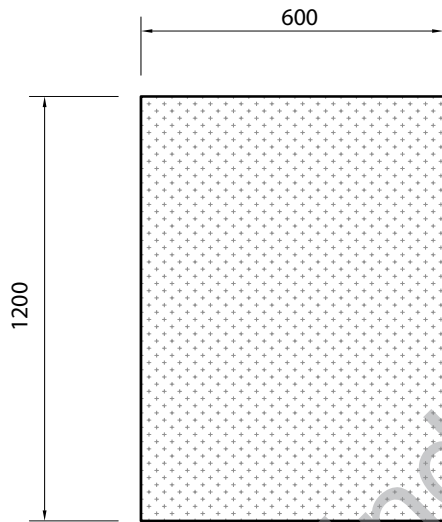
While MIL has taken all due care to include accurate and up -to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.



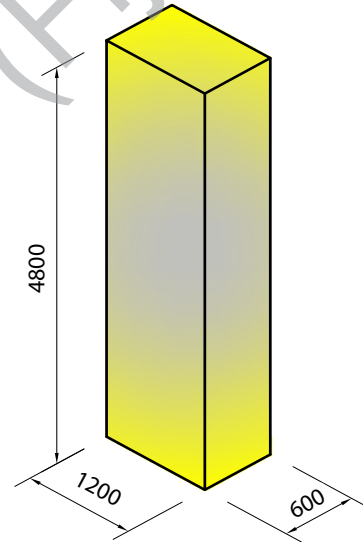
**FRONT VIEW - POLYSTYRENE BLOCK**  
SCALE: 1:25



**END VIEW - POLYSTYRENE BLOCK**  
SCALE: 1:25



**PLAN VIEW - POLYSTYRENE BLOCK**  
SCALE: 1:25

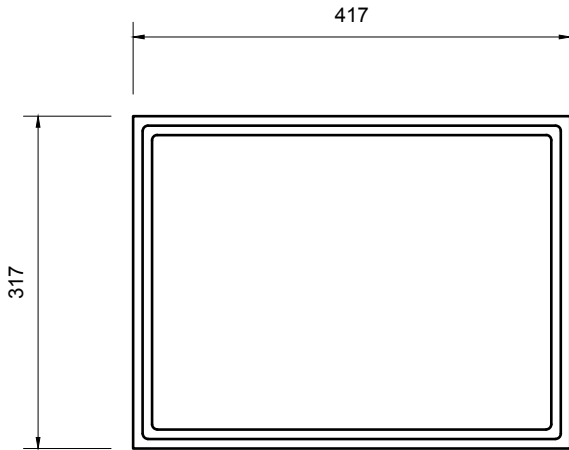


**POLYSTYRENE BLOCK**

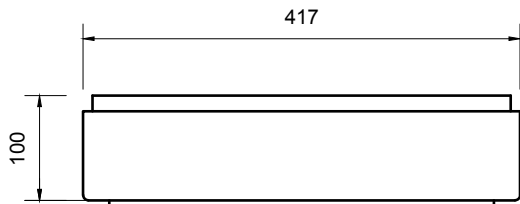


**POLYSTYRENE BLOCK**

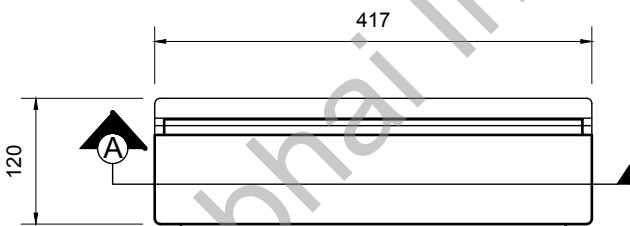
# ICE BOX PLAN (BOX-01)



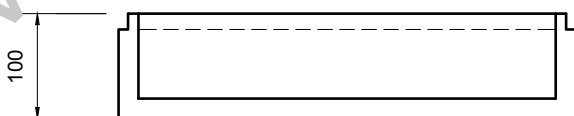
(BOX-01)  
ICE BOX PLAN VIEW  
SCALE: 1:7



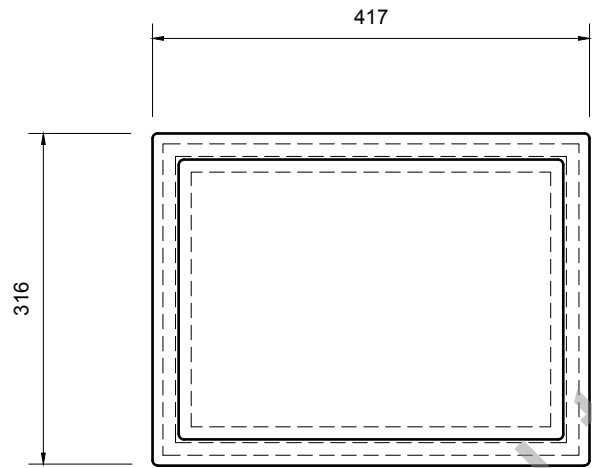
(BOX-01)  
ICE BOX ELEVATION VIEW  
SCALE: 1:7



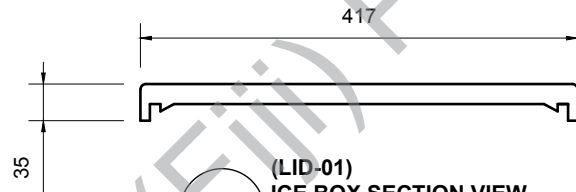
ICE BOX ELEVATION VIEW  
SCALE: 1:7



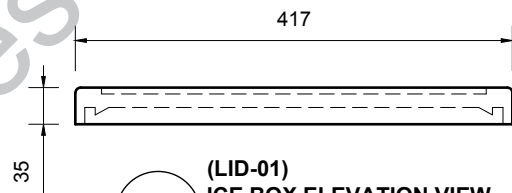
(BOX-01)  
ICE BOX SECTION VIEW A-A  
SCALE: 1:7



(LID-01)  
ICE BOX PLAN VIEW  
SCALE: 1:7



(LID-01)  
ICE BOX SECTION VIEW  
SCALE: 1:7



(LID-01)  
ICE BOX ELEVATION VIEW  
SCALE: 1:7

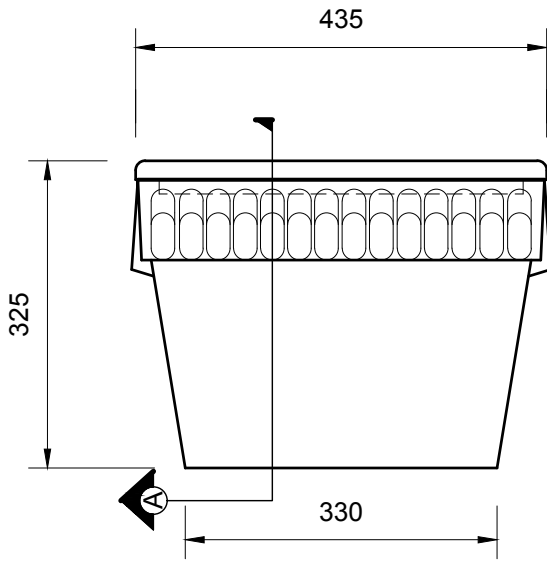


(LID-01)  
ICE BOX - 3D VIEW

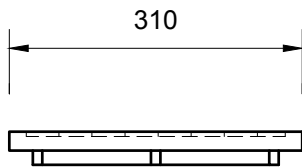


(LID-01)  
ICE BOX LID - 3D IMAGE

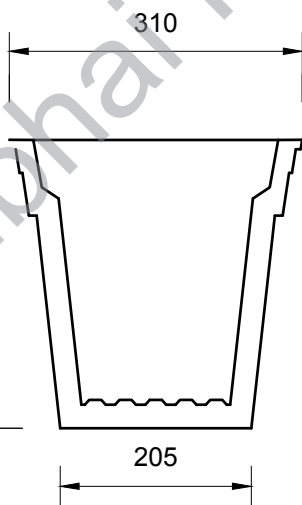
# ICE BOX PLAN (BOX-02)



**ICE BOX ELEVATION VIEW**  
SCALE: 1:8



**(LID-02) ICE BOX SECTION VIEW**  
SCALE: 1:8



**(BOX-02) ICE BOX SECTION VIEW**  
SCALE: 1:8



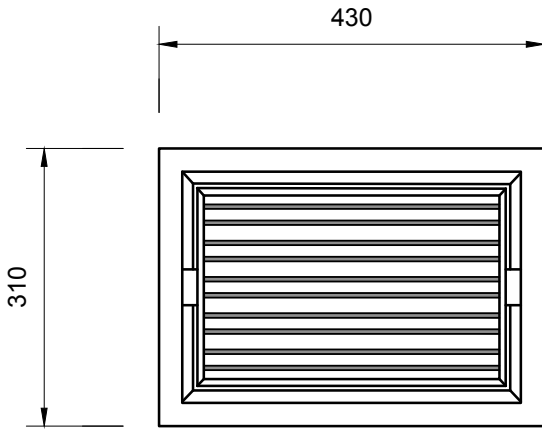
**(BOX-02) ICE BOX WITHOUT LID 3D IMAGE**



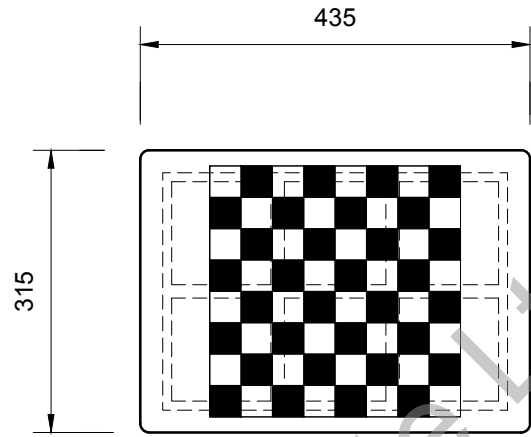
**(LID-02) ICE BOX LID 3D IMAGE**



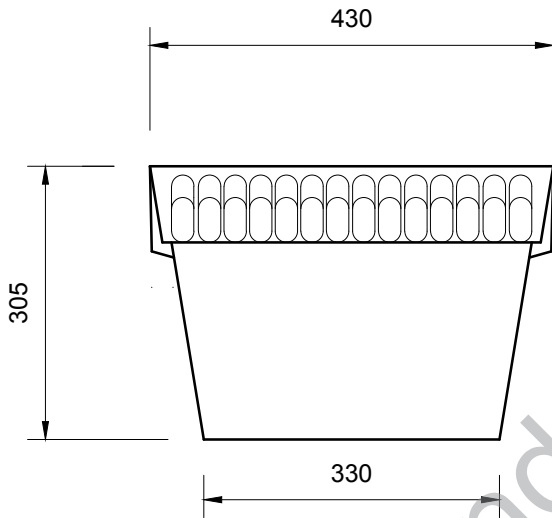
**ICE BOX PLAN (BOX-02)**



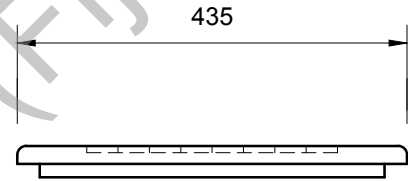
**(BOX-02)**  
**ICE BOX PLAN VIEW**  
SCALE: 1:8



**(LID-02)**  
**ICE BOX PLAN VIEW**  
SCALE: 1:8



**(BOX-02)**  
**ICE BOX ELEVATION VIEW**  
SCALE: 1:8

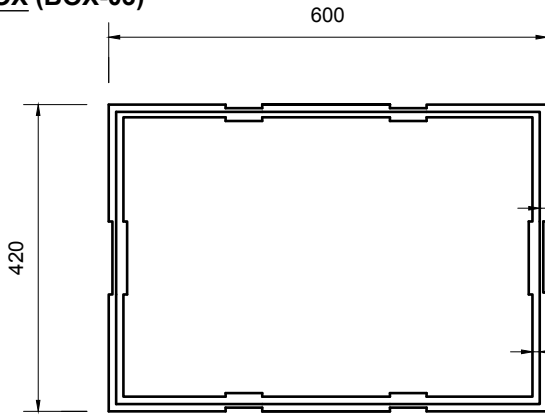


**(LID-02)**  
**ICE BOX ELEVATION VIEW**  
SCALE: 1:8

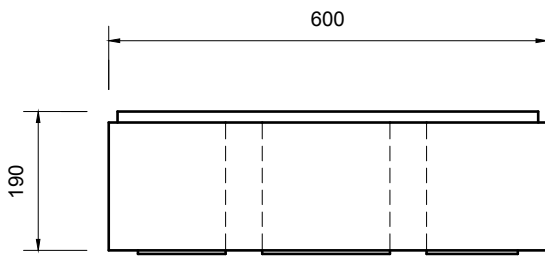


**(BOX-02)**  
**ICE BOX WITH LID 3D IMAGE**

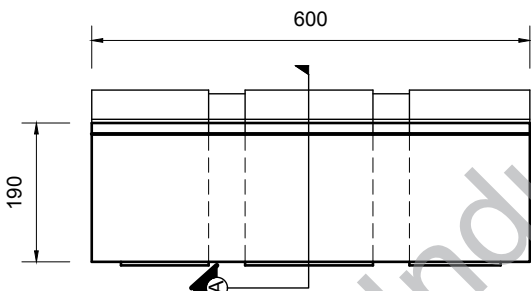
**ICE BOX (BOX-03)**



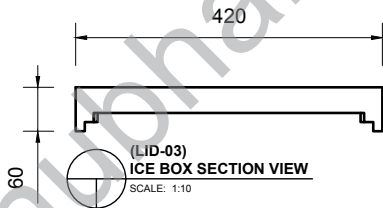
(BOX-03)  
ICE BOX PLAN VIEW  
SCALE: 1:10



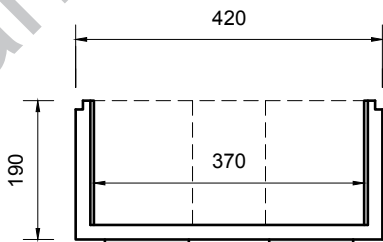
(BOX-03)  
ICE BOX ELEVATION VIEW  
SCALE: 1:10



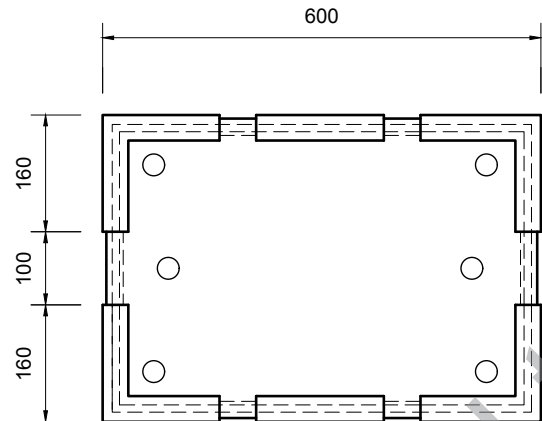
ICE BOX PLAN VIEW  
SCALE: 1:10



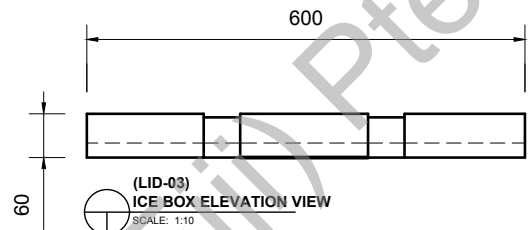
(LID-03)  
ICE BOX SECTION VIEW  
SCALE: 1:10



(BOX-03)  
ICE BOX SECTION VIEW  
SCALE: 1:10



(LID-03)  
ICE BOX PLAN VIEW  
SCALE: 1:10



(LID-03)  
ICE BOX ELEVATION VIEW  
SCALE: 1:10



ICE BOX WITHOUT LID

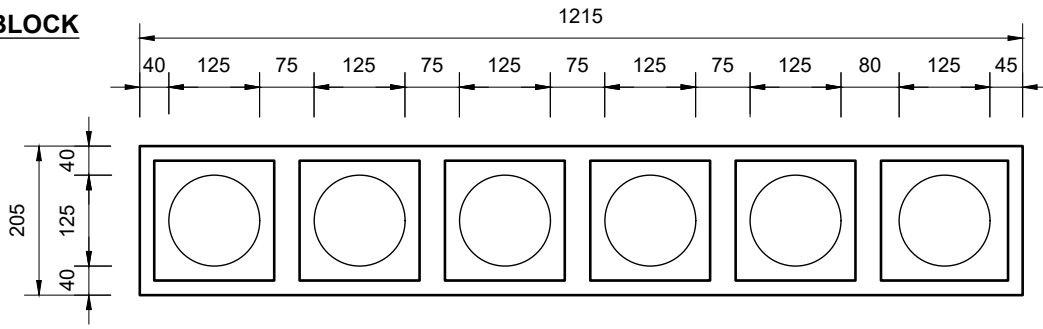


(ICE BOX-03)  
ICE BOX 3D VIEW

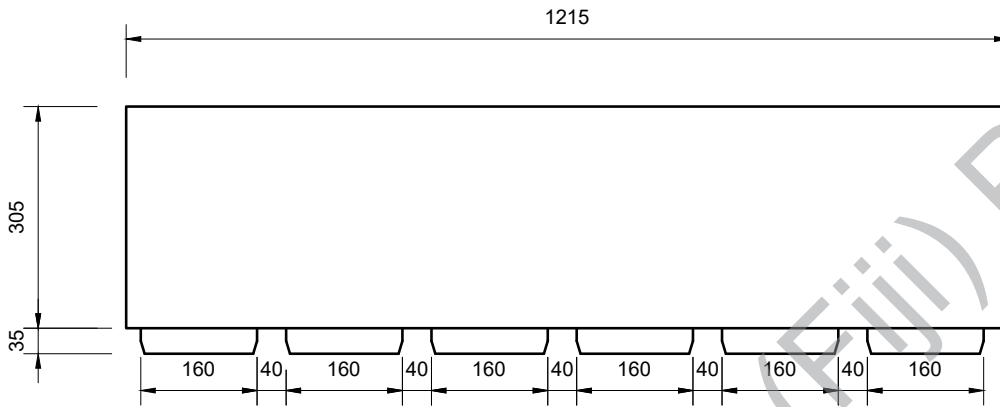


(LID-03)  
ICE BOX LID 3D VIEW

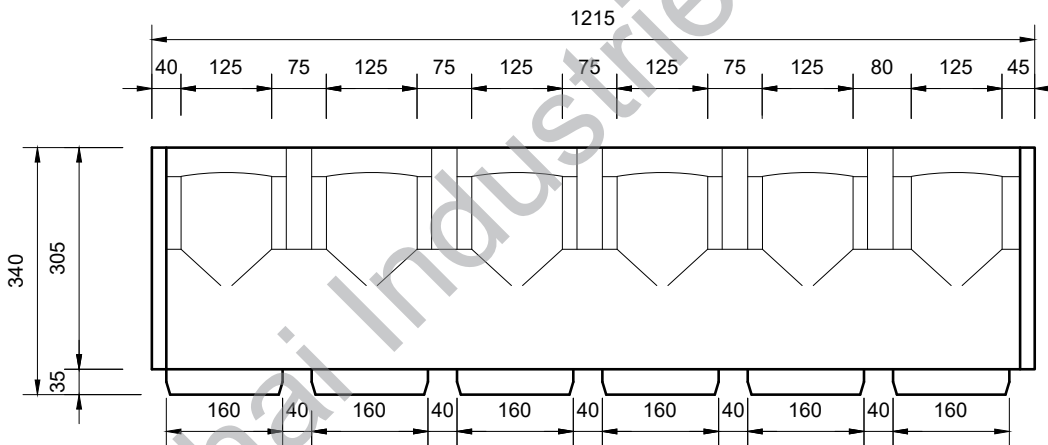
**BIFF BLOCK**



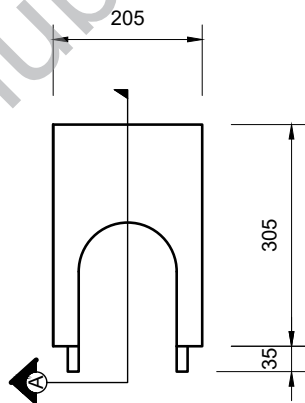
**BIFF BLOCK PLAN VIEW**  
SCALE: 1:10



**BIFF BLOCK SIDE ELEVATION**  
SCALE: 1:10



**BIFF BLOCK SECTION VIEW**  
SCALE: 1:10

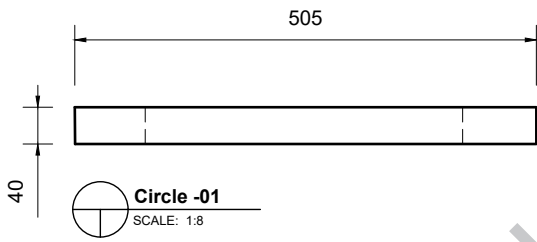
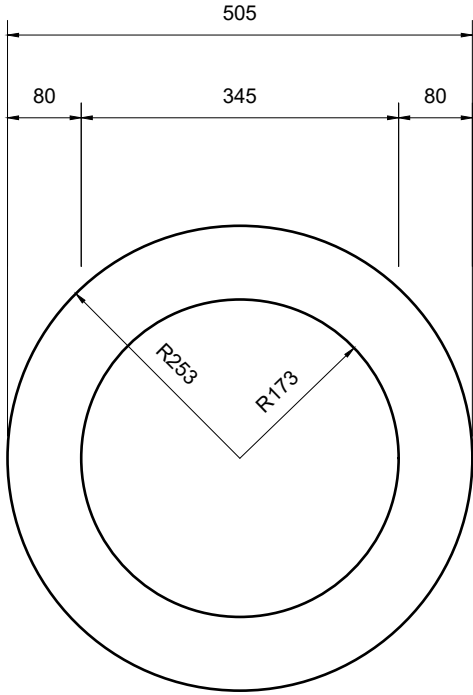


**BIFF BLOCK FRONT ELEVATION**  
SCALE: 1:10

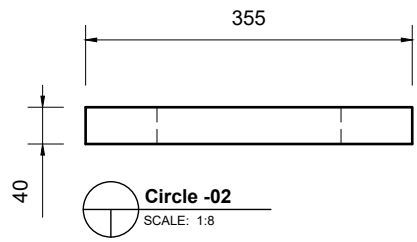
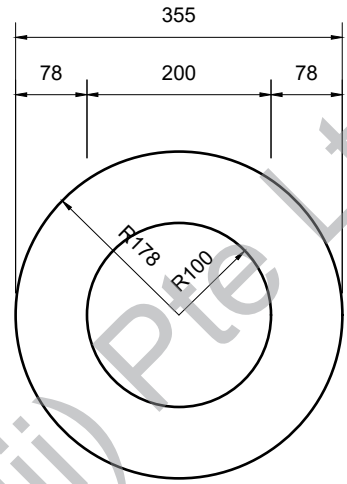


**BIFF BLOCK 3D IMAGE**

# CIRCLES



Circle -01  
SCALE: 1:8



Circle -02  
SCALE: 1:8

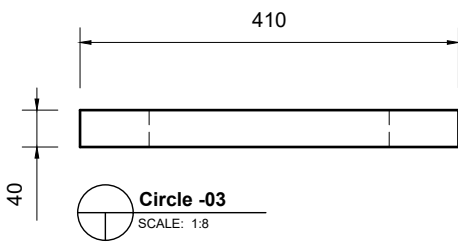
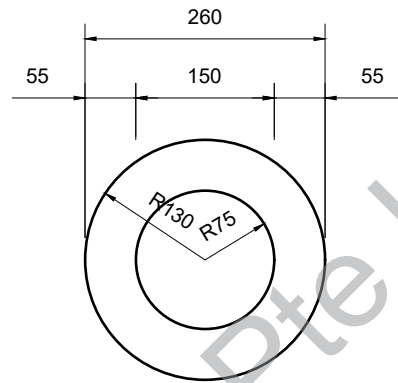
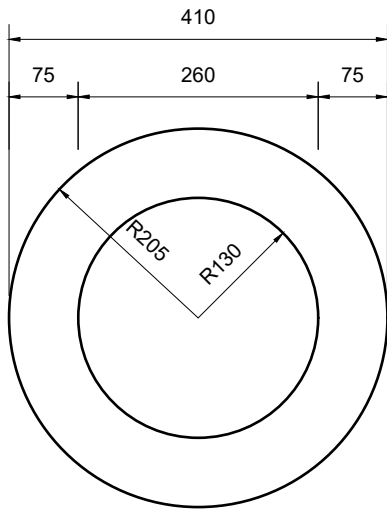


Circle -01 3D IMAGE

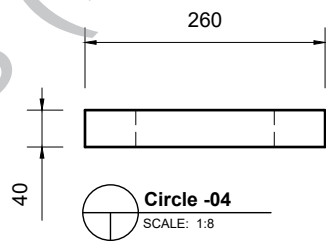


Circle -02 3D IMAGE

# CIRCLES



Circle -03  
SCALE: 1:8



Circle -04  
SCALE: 1:8

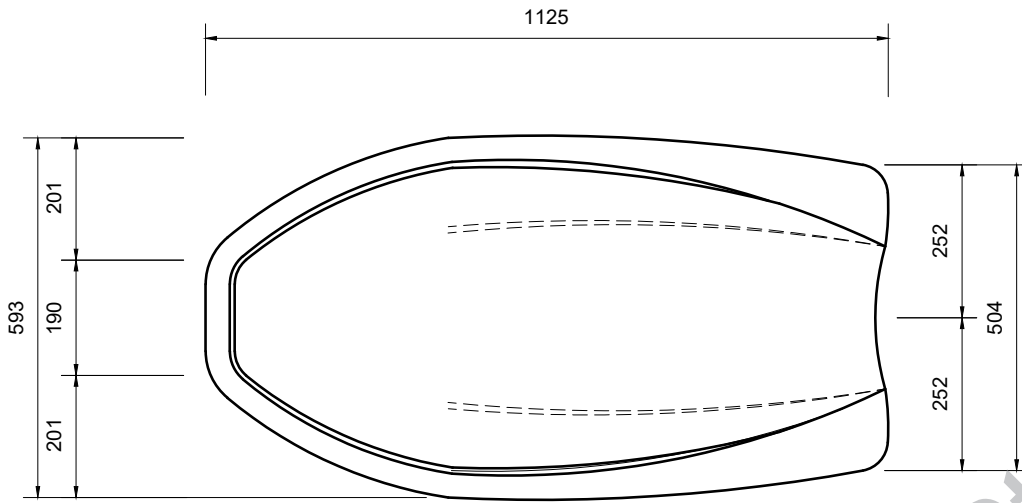


Circle -03 3D IMAGE

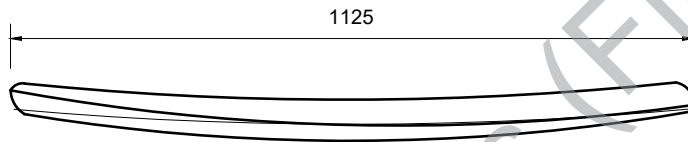


Circle -04 3D IMAGE

**PADDLE BOARD**



**PADDLE BOARD PLAN VIEW**  
SCALE: 1:12



**PADDLE BOARD ELEVATION VIEW**  
SCALE: 1:12



**PADDLE BOARD 3D VIEW**