



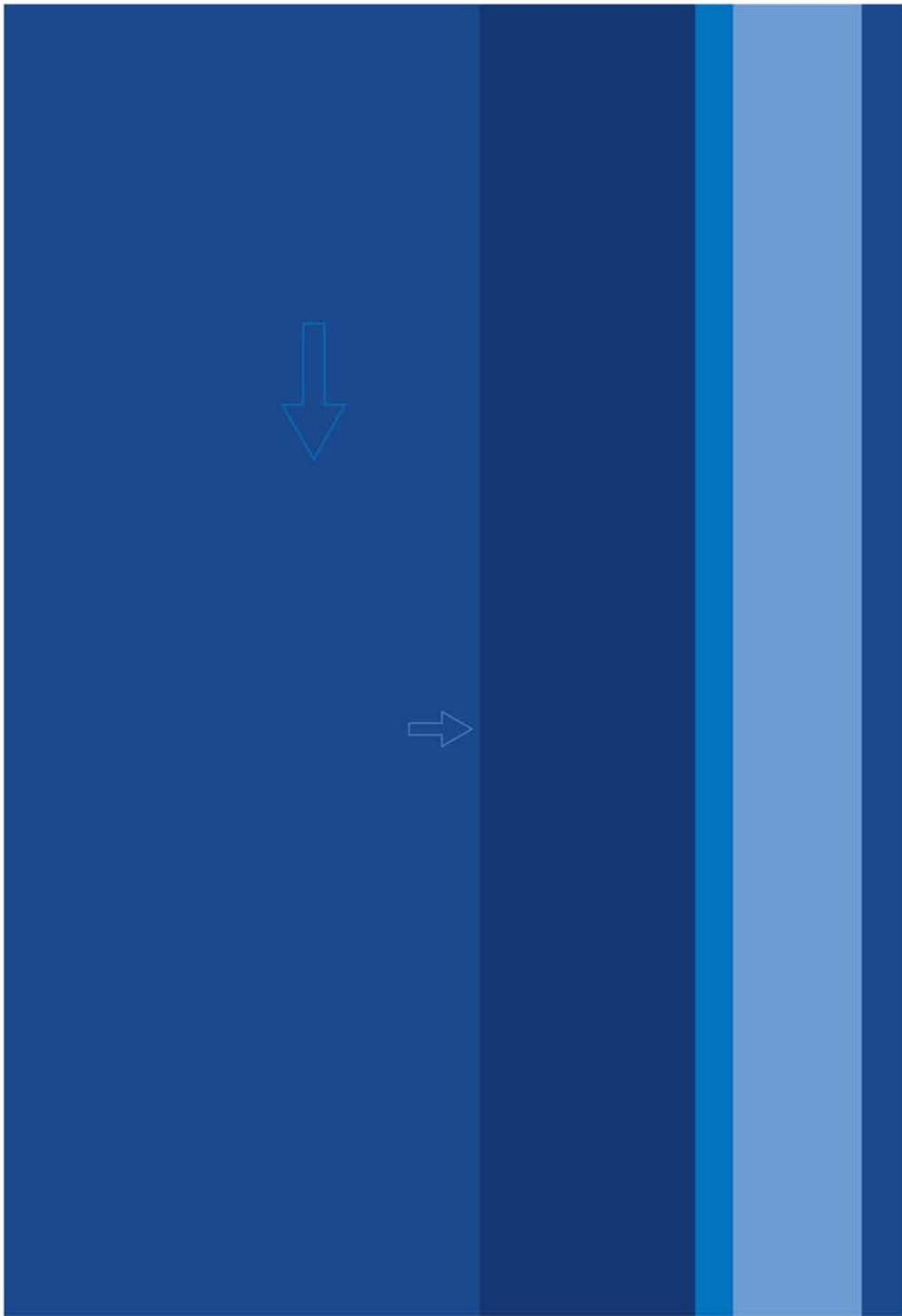
## Products & Solutions

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# 12

## Solutions

Functioned as...  
Built in...  
Applied for...



# 14



## Products

Flatpicks  
Steel Containers

# 2

## Introduction

Ark prefab could be your one-stop solution for prefab modular building system.  
Easy for packing & transportation, flexible in structures...



# 30



## Accessories

Accessories meeting various requirements from different regions and countries around the globe are available from ARK, such as certificates for SAA(Australia), PSE(Japan), CSA(Canada), SABS(South Africa), CE(Europe) and UL(US).



## Introduction



Ark prefab could be your one-stop solution for prefabricated modular building system.

Ark modular units are usually sized by 8' x 10', 8' x 16', 8' x 20', 8' x 24', and 8' x 30', in which 8' x 20' is the standard and most often chosen type with 2 tonnes in weight.

### Advantages:

#### Easy Transportation

For the flatpicks, 4 to 6 units are usually packed together into one bundle, which is in one standard 20' sea container size and transported by standard shipping truck. Flatpicks are packed into the sea containers, in which way 6 x 20' flatpicks can be contained in one 40' sea container.

**Sea Freight:** The Ark cabin structure when flat packed for transportation is designed in accordance with a standard ISO shipping container. The corner casting structure enables lifting capability utilizing a crane in the same manner as a standard ISO shipping container.

**Transportation:** The dimensions of the forklift pockets on the cabin structure is 85mm x 260mm which enables forklift capability on site;

**Road Freight:** Due to the structure being the same dimensions as a standard ISO shipping container road freight is efficient and easy to handle the cargo.





## Introduction



### Fast Installation & Completion

To design as flexible but robust modular structures as possible and increase the speed of completion then rescue your time!

ARK is also planning to store at least 2 groups of installation workers so that we are able to provide professional site construction services to our customers.

Turn-key solution due to all components being flat packed, including the roof structure, floor, wall panels, doors, windows and interior decoration.

Up to 40% time saving on construction over traditional building techniques due to all structural elements being prefabricated.

Construction of a single cabin can be undertaken with only two skilled workers.





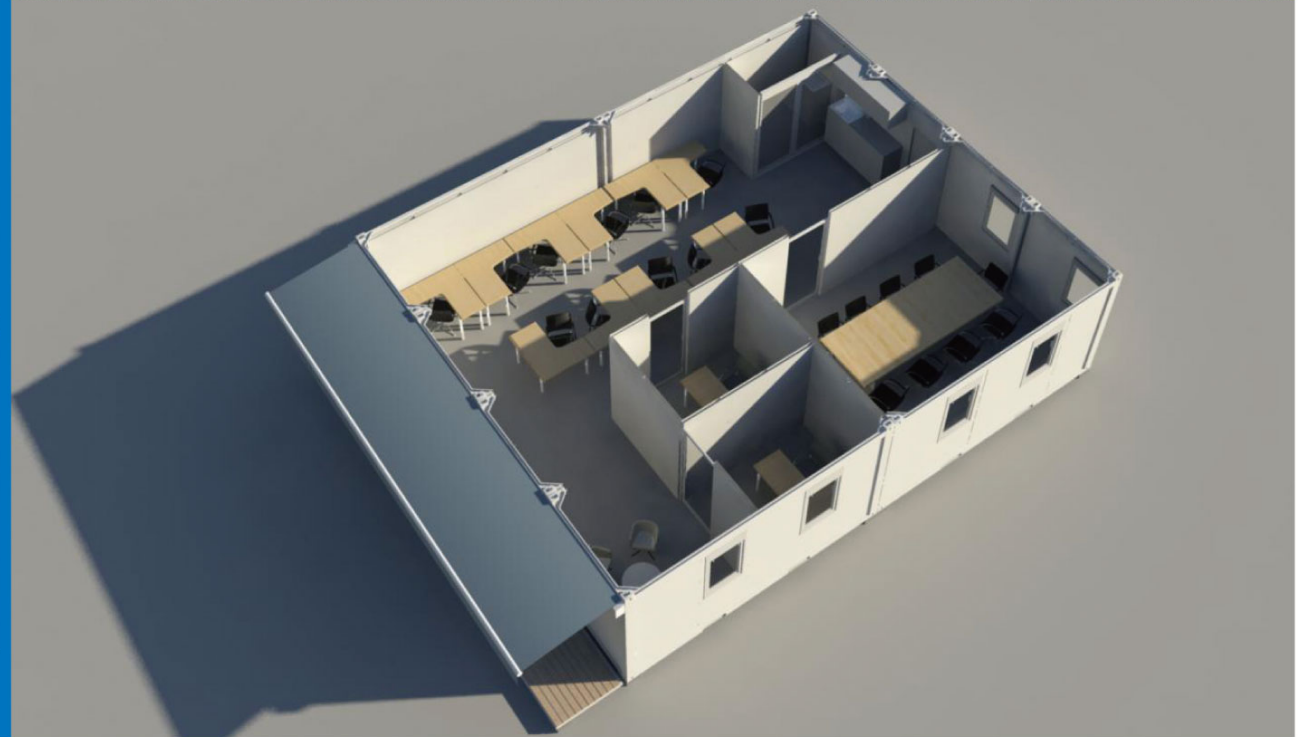
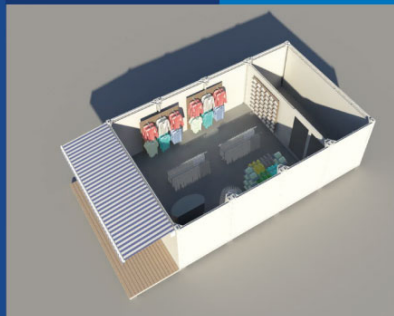
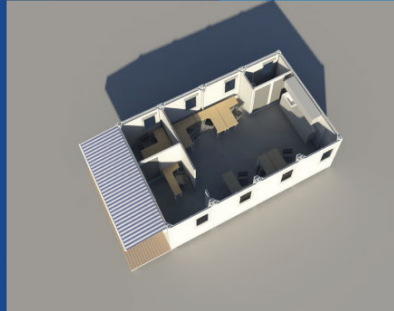
## Introduction



## Flexible Combination



- The ARK cabins can be assembled and then disassembled for re-transportation via road, train or sea.
- Individual cabins can be linked together to form larger structures at ease through the Ark Smart linking kit.
- Internal wall panels can be removed and changed at the clients' discretion to provide flexible layout options.
- ARK units can be functioned in various ways and combined flexibly, providing enough and comfortable space for the owner. Like a bundle of units can be put together as laundry, dozens of units can be combined as kitchen/mess.





## Introduction



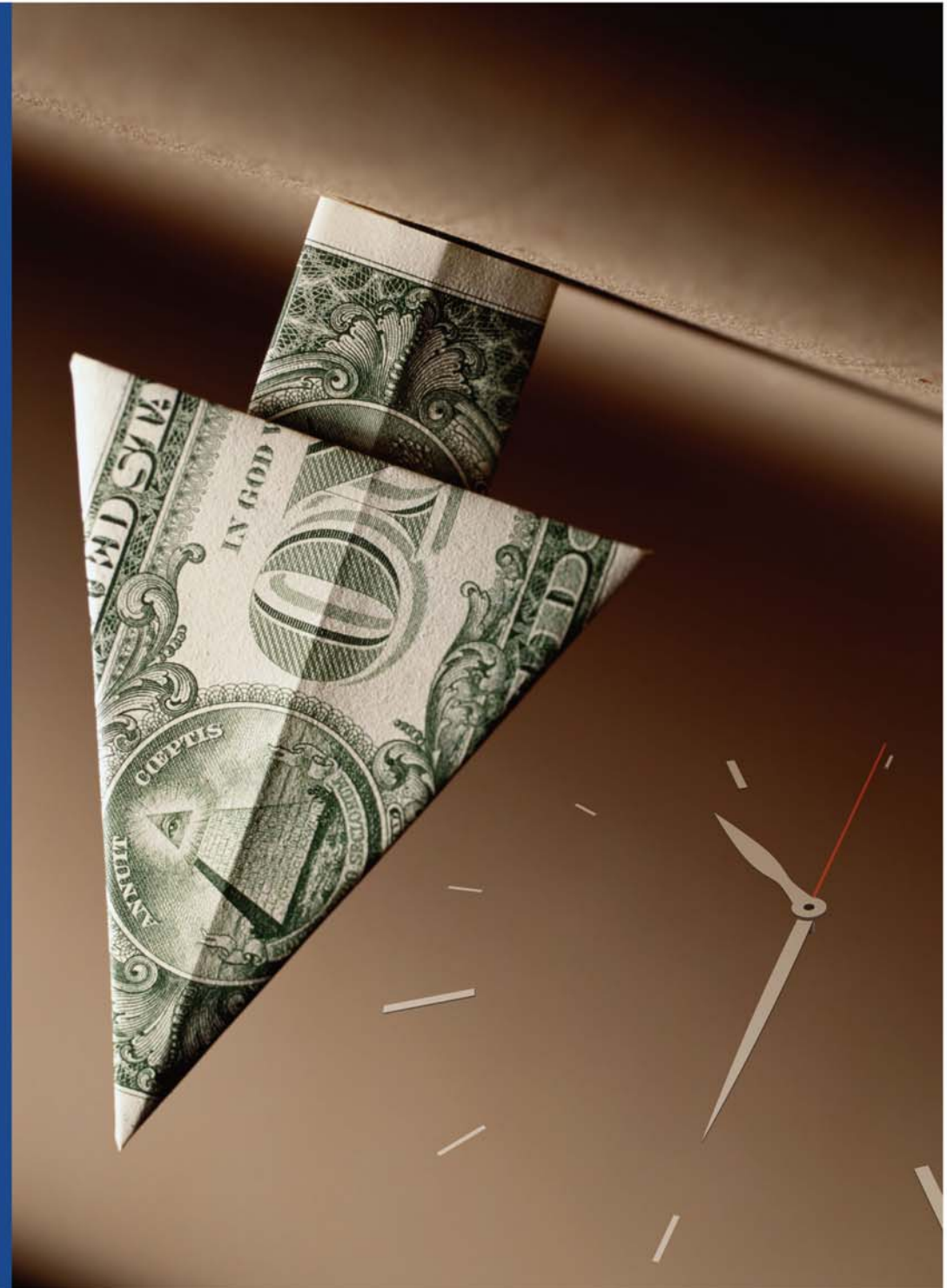
### Cost Saving



Transportation costs are reduced by up to 75% compared with Traditional Architecture or modified containers.

Construction time is reduced by up to 40%.

The ability to change internal layouts or relocate structures provides cost savings.





## Introduction



### Green & Sustainable



Mineral wool which is used primarily for insulation in the structures can be recycled.

The structure of the cabin is made from steel and once the client has no further use of the structure the steel can be recycled.

Ark's manufacturing facilities are energy efficient with strict governance on wastage of materials and water supply.

The most important, ARK cabins could be disassembled after finishing one project and reused for another one as the cabin units are made of flexible structures; and the cabins can also be transported to another site for reusing.







## Solutions



### Functioned as:

- Accommodations: Senior, Junior, Workers;
- Kitchen & Mess;
- Laundry;
- Sanitary Blocks;
- Office Blocks;
- Medical Units;
- Recreation Units;
- Training Rooms;
- Storage Rooms.

### Built in:

2-level with Overroof, Single-level with Overroof, Single-level Combined Blocks

### Applied for:

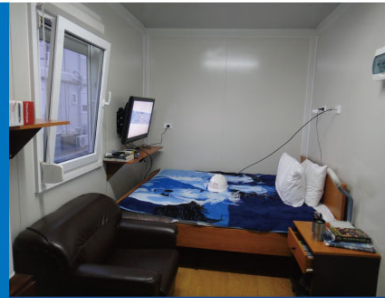
#### 1.1 Disaster Relief

ARK is committed to assisting in disaster relieving projects by delivering school units, hospital units and accommodation units to the disaster-affected areas, such as for the Haiti Earthquake, Chile Earthquake, New Zealand's Christchurch Earthquake and the more recent Japan Tsunami events. In addition, Ark regularly provides accommodation facilities for humanitarian organizations including the United Nations and the Red Cross.

#### 1.2 Exploration / Drilling / Mining / Oil and Gas Production/Military Camp Construction Site

As the demand for resources is increasing year on year around the globe, ARK has been dispatching more and more modular units for site projects globally in recent years, like the ExxonMobil LNG Project in PNG, and the mining camps construction in South America. For any projects, accommodation blocks, office building, ablution blocks, recreation rooms, Medical Facilities, Kitchen & Mess, Laundries, Storage Rooms etc are available from us.

Standards are critical to our production and services, with both the customer company's standards and the local government standards obeyed, and the products certified through certain tests.



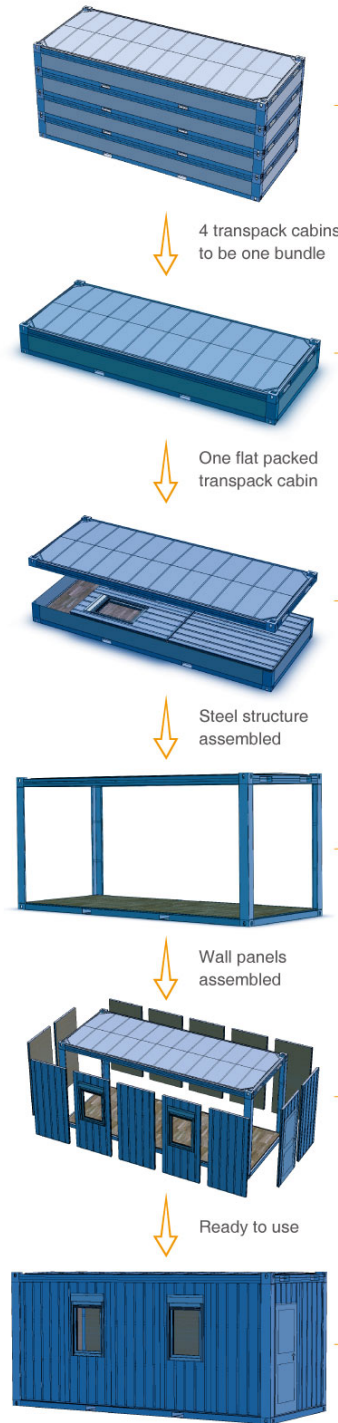
# Ark

## Flatpacks



### 1. Theory:

Flatpacks are the most convenient and popular kind of us, which means all things needed to build one container house are packed together with the roof and the floor into a flatpack, and 4 flatpacks packed into one bundle. When building, the four corner posts connect the roof and the floor with strong-strengthened bolts; then the walls are made up of the flexible panels systems, after which the container house is built up.



## 2. Merits:

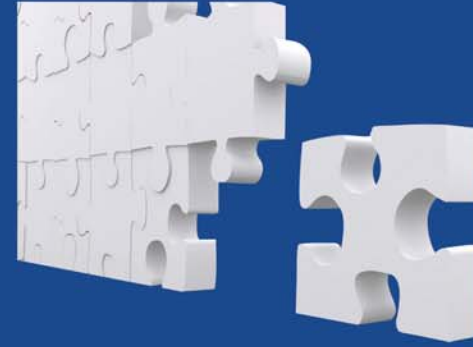
- High-strength galvanized steel structure frame including roof, floor and corner posts;



- Perfect Insulation;



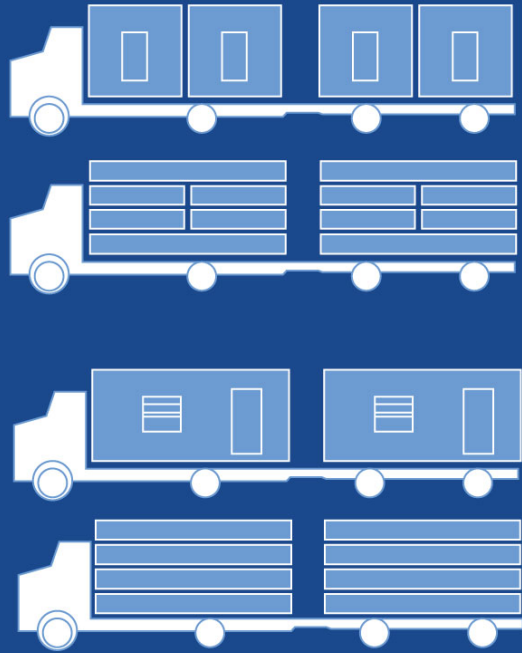
- Flexible Wall Panel Systems, which could be converted as the customer's wish;



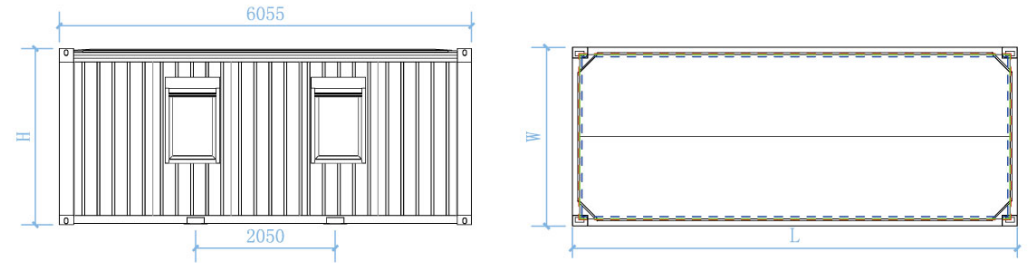
- Different electrical standards to match with most countries in the world; such as CE, UL, CSA, AS;



- ISO Standard Package and Transportation.

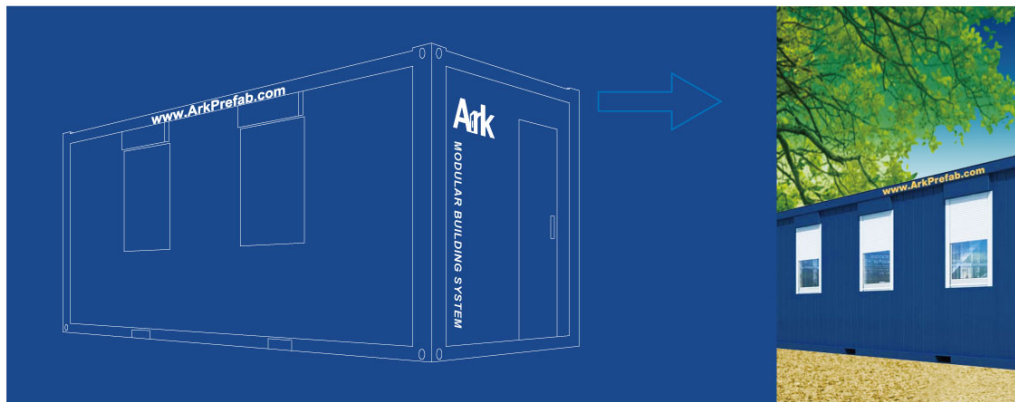


## Specifications Flatpacks



Flatpack Size	L	W <sup>3</sup>	H	Exterior		Interior		Height <sup>2</sup> (Package)	Weight <sup>1</sup>
				L	W	H	L		
Type	8' x 10'	2989mm	2435mm	2590mm	2795mm	2240mm	2300mm	432mm (6 in one Bundle)	1150
	8' x 16'	4885mm							1600
	8' x 20'	6055mm							1750
	8' x 24'	7296mm							1950
	8' x 30'	9120mm							2000
	10' x 20' <sup>4</sup>	6055mm							3000mm
			2790mm	2500mm	648mm(4 in one Bundle)	2000			
			3000mm	2810mm	864mm(3 in one Bundle)	2300	2400		
					1296mm(2 in one Bundle)	2550	2800		
						2020	2220		

- 1: The mentioned weights are valid for standard configuration and can vary depending on configuration and equipment;
- 2: 6 flatpacks in one bundle means there's no wall panel inside; the others depend on the configuration and equipment;
- 3: The width of the walkway floors can be customized, but cannot be packed in flatpacks;
- 4: If transported in flatpacks, one bundle will need 3 standard 20' GP shipping space.



## Insulation

### Mineral Wool

Density: 40 kg/m<sup>3</sup>-120 kg/m<sup>3</sup>  
(120kg/m<sup>3</sup> = 0.25 W/m<sup>2</sup> K)

Others: Flammability Class A - non combustible;  
Smoke density class Q1 - low smoke emission;  
Certification: CE & GL;  
Temperature adjustment -50c & 120c. K=0.044W/m.k;  
Water Ratio ≤ 0.5%;  
Hygroscopic Coefficient ≤ 5% & ≥ 98%.



### PU Foam

Density: 30 kg/m<sup>3</sup>-40 kg/m<sup>3</sup>  
(40kg/m<sup>3</sup> = 0.044W/m<sup>2</sup>.k)

Others: Flammability Class B1-non -combustible;  
Smoke density - low smoke emission;  
Compressive strength ≥ 150MPa;  
Water vapor absorption ≤ 6.0ng(Pa.m.s));  
Hygroscopic Coefficient ≤ 4%.

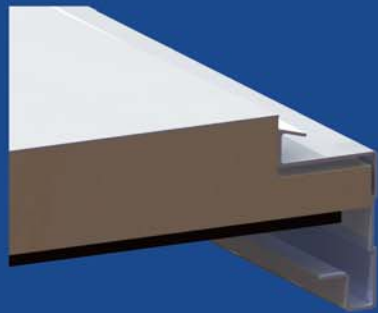


### Glass Wool

Density: 16 kg/m<sup>3</sup>-24 kg/m<sup>3</sup>

Others: Flammability Class A - non combustible;  
Smoke density class Q1 - low smoke emission;  
Certification: CE & GL.

## Roof



Steel Frame:  
4mm thick cold rolled & welded steel profiles;

Roof Cover:  
0.5mm thick galvanized sheet & double folded in the roof middle

Insulation Thickness:	Ceiling Panels:
100mm	9mm chipboard(V20), white(Usual)
50mm	50mm Steel Sandwich panel(Option1)
100mm	12.7mm Glass Magnesium Board(Option2)

## Corner Posts

4mm thick cold rolled & welded steel profiles;  
screwed to the floor and roof frame.

3mm thick cold rolled & welded steel profiles;  
screwed to the floor and roof frame.



## Floor

Steel Frame: 4mm thick cold rolled & welded steel profiles;

Insulation Thickness: 10mm PU + 50mm Insulation

Subfloor: 0.5mm thick, galvanized steel sheet

Floor Board: **18mm OSB(Oriented Strand Board) (water resistant(V 100)):**

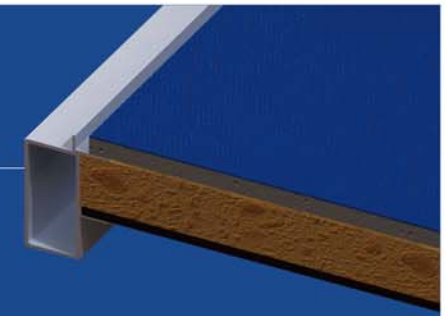
The board complies with the emission value E1;  
Parallel compressive strength=35.7MPa;  
Formaldehyde emission ≤ 0.4mg/100g;  
1.5mm thick vinyl sheet;  
Flammability class B1 - hardly combustible;  
Smoke density class Q1 - low smoke emission;  
Welded seams.

### Fiber cement floor:

Density: 1.26kg/cm<sup>3</sup> K=0.18W/m.k ;  
Waterproof, moisture content =0.13% / m<sup>2</sup> ;  
Formaldehyde emission =0.2mg/100g;  
Deformation, parallel to the bending elasticity =6055MPa

### 18mm thick marine grade floor:

Parallel compressive strength=88MPa;  
Formaldehyde emission ≤ 0.4mg/100g;  
Deformation, parallel to the bending elasticity =8030MPa;  
Waterproof, moisture content ≤ 6.0% / m<sup>2</sup>



## Wall Panels

Exterior Cladding: 0.5mm thick corrugated or flat galvanized and coated steel sheet

Insulation: 60mm, 70mm, 80mm, 100mm

Internal Cladding: Laminated E1-EmissionValued 9mm thick chipboard; white

### 12.7mm thickness Glass-Magnesium Board:

Parallel compressive strength=18.1MPa  
Formaldehyde emission =0.1mg/100g  
Water expansion ratio =0.2%  
Low smoke and non flammable  
Flammability class A1 - non-combustible  
Smoke density: low smoke emission

0.5mm thick galvanized and coated color steel sheet

## Doors

Diameter: 870mm x 2040mm;  
1500mm x 2040mm;  
Can be Customized

Material: Steel-Made; Right or Left Open;  
Galvanized Steel Sheet;  
40mm thick insulation;  
Steel-Frame

Aluminium-Made; Right or Left Open;  
Galvanized Aluminium Sheet;  
40mm thick insulation;  
Aluminium-Frame

Glass;  
5mm glass thick + 9mm Low-E insulation thick + 5mm glass thick;  
Aluminium Metal or U-PVC Frame

## Windows

Diameter: 800mm x 1100mm; 915mm x 1200mm; 652mm x 714mm

Frame Material: U-PVC; U=0.7-1.8 W/m<sup>2</sup>.k

Glass: Double-layer Glass 4/16/4; U=3.0 W/m<sup>2</sup>.k  
Low-E insulated glass 4/16/4 U=2.3 W/m<sup>2</sup>.k

Hardware: hinge, lever handle (Siegenia brand, Roto brand etc)



## Electrical System

CEE Socket&Plug: 16A-50A; IP44-IP67

Wirings: 1.5mm<sup>2</sup>-10mm<sup>2</sup>

Voltage: 110V-240V

Circuit Breaker: 10A-250A

Light Fittings: 2 x 36W

Switch: WiFi

Standard: CE; AS; CSA; PSE; UL

Earthing: 1 galvanized strip iron earth electrode (25 x 4 mm) with fastening.  
The protective earthing installation on site must be carried out by the buyer/hirer.



## Painting Color

RAL9002  
RAL5010  
RAL1018  
Customized

### Painting Thickness

Frame: 40-50 µm primer  
40-50 µm topcoat

Wall Panel: 50 µm thickness

### Paint Type

Primer: Epoxy resin amine paint

Topcoat: Chlorinated rubber resin paint





## Modified & Special Steel Container Merits

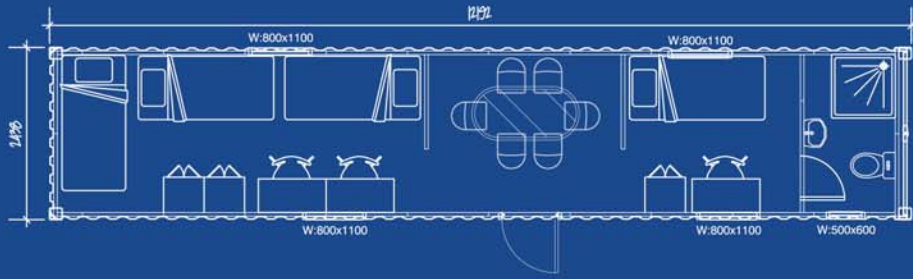
Modified & Special Steel Containers are both made from steel frames and decorated into container houses, like Generator Units, Storage Units, Camp Accommodations, Mechanical Units, which are usually applied in the extremely cold areas such as North America and Russia.



### Steel Container

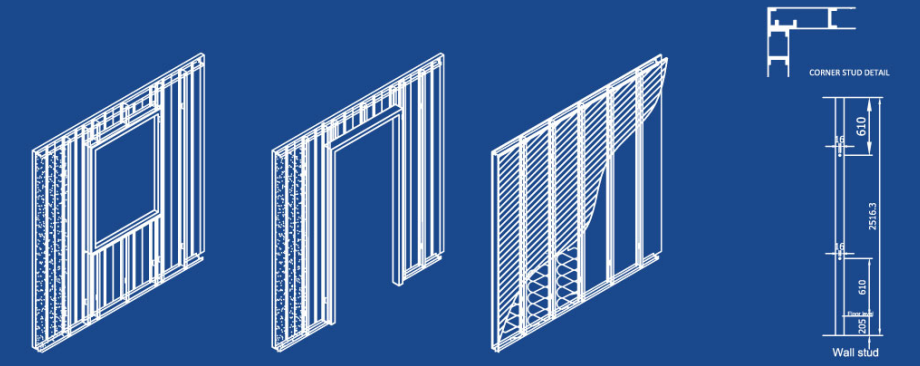
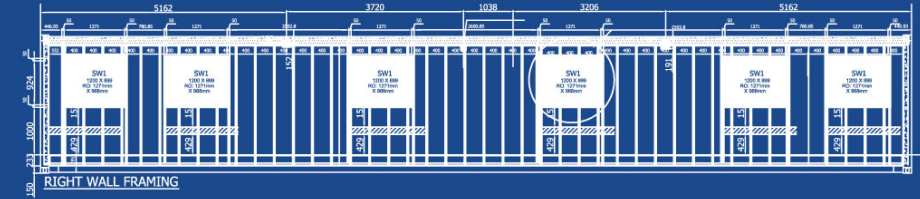
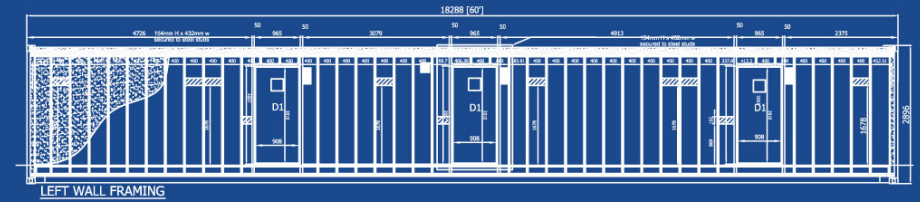


- Load bearing capacity greater than 40ton
- 360 degree insulation without thermal break
- Pre installed electrical and plumbing
- Sustainable materials through recycling
- Easy to transport (although more expensive than a flat-pack)
- More expensive to manufacture than flat-pack
- Customized interiors pre fitted in the factory
- Available: explosive rooms, bulletproof rooms, spray booths etc.





Property	Unit	Requirement	
		Minimum	Maximum
Air permeance (mandatory material testing)	L/S@75 Pa	No min.	0.02
Air permeance (optional system testing)	L/S@75 Pa	No min.	0.05
Apparent core density	kg/m <sup>3</sup>	28	No max.
Compressive strength	kPa	170	No max.
Dimensional stability volume change at:			
★ -20 C	%	No min.	-1
★ 80 C	%	-1	+8
★ 70 C, 97+/-3%RH	%	No min.	+14
Surfacer burning characteristics ★ flame spread	No units	No min	500
Open-cell content volume	%	No min	8
Initial thermal resistance of 50-mm-thick specimen after 3 days at 23+/- 2 C	M <sup>2</sup> .° C/W	2.5	No max.
Conditioned thermal resistance of a 50-mm-thick specimen after ★ 180 days at 23+/- 2 C or ★ 90 days at 60+/- 2 C	M <sup>2</sup> .° C/W	Declare	No max.
Long-term thermal resistance of a 50-mm-thick specimen ★ Type 1 ★ Type 2	M <sup>2</sup> .° C/W	1.8 2.0	No max.
Tensile strength	kPa	200	No max.
Volatile organic emissions	No units	Pass	No max.
Water absorption by volume	%	No min.	4
Water vapour permeance of a 50-mm-thick specimen	ng/(Pa.s.m <sup>2</sup> )	No min.	60





## Accessories

Accessories meeting various requirements from different regions and countries around the globe are available from ARK, such as certificates for SAA(Australia), PSE(Japan), CSA(Canada), SABS(South Africa), CE(Europe) and UL(US).



The central graphic is a circular collage of images representing various accessories and components. At the top, there are white PVC pipes. To the right, a server room with blue cables is visible. Below that is a white A.O. Smith water heater. At the bottom right, a kitchen area with stainless steel counters is shown. At the bottom center, a white toilet is depicted. To the left of the toilet is a power plug. At the top left of the collage, a bedroom with a bed is shown. The entire collage is set against a blue background with a white circular border. In the center of this collage is a blue circle containing six certification logos: CE (Europe), SABS (South Africa), CSA (Canada), PSE (Japan), UL (US), and SAA (Australia).