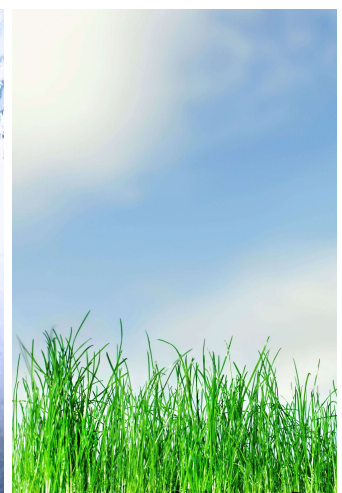
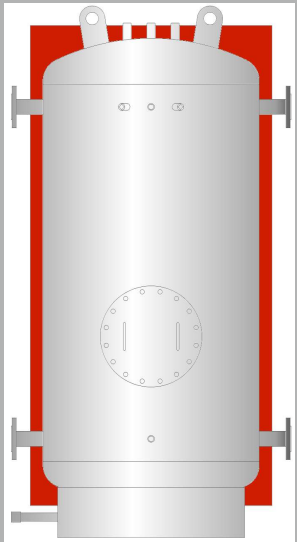


## Product Guide

# HEATING SOLUTIONS THERMAL STORES

*Inventive Engineering*





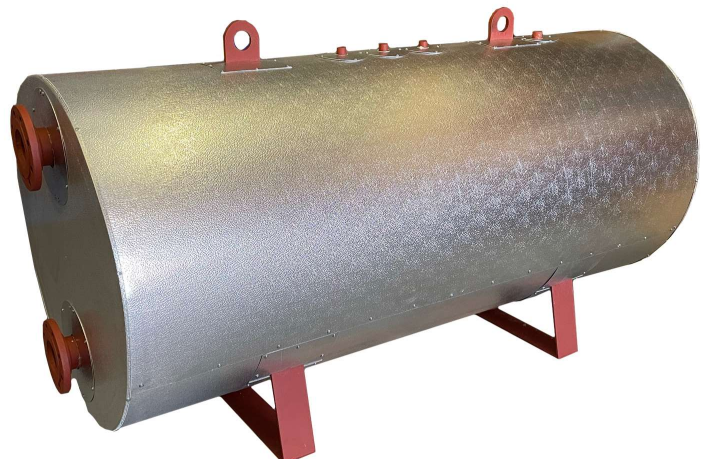
## Thermal Stores

Arbe Integrated Engineering offer various type of thermal stores to suit multiple applications. These are split into 4 types:

- AFTA - Standard thermal stores supplied with connections to suit each application, plain internally.
- AFTA-SEC - Standard thermal stores manufactured in bolted sections, designed for applications with restricted access, with connections to suit each installation, plain internally or with baffle plates & sparges.
- AFPA - Traditional thermal stores with internal baffle plates to suit various system designs. The Arbe AFPA vessel range are for applications where the vessel height is restricted so baffle plates are fitted to aid stratification, or where the flow and return temperatures are close.
- AFSA - Traditional thermal stores with a centralised perforated plate. The AFSA vessels are designed to slow water transit times between the flow and return connections by slightly increasing the pressure drop in the vessel. These are mainly used where stratified temperatures are not critical.

The vessels can be supplied in various materials such as:

- Mild steel
- Stainless steel 304L
- Stainless steel 316L
- Duplex stainless steel
- Galvanised steel





## AFTA Thermal Stores

The Arbe AFTA series of thermal stores are utilised to store heating water produced by an external heat source such as a CHP, heat pump or a biomass boiler, in closed circuits. The vessels are supplied plain as standard with material options available as below.

Each vessel is generally supplied with 4 off system connections and other connections as listed. The vessels can also be supplied with multiple sensor connections for use with equipment such as CHP units or biomass boilers

- AFTA** – Carbon steel shell
- AFZA** – Galvanised steel shell
- AFXA** – Stainless steel shell - 304L
- AFXXA** – Stainless steel shell - 316L

### Insulation

All vessels are supplied uninsulated as standard. We can factory fit 50mm to 200mm BCO foil-faced mineral wool insulation, or phenolic insulation

### Casing

Standard: Stucco Aluminium casing  
Optional: Stainless Steel or Aluzinc







## AFTA Thermal Stores

The Arbe AFTA vessels are manufactured to suit each application, but below shows the standard dimensions of the range. Please contact our sales office for further information.

All dimensions are in mm unless specified otherwise

Connections marked as DN are flanged PN16

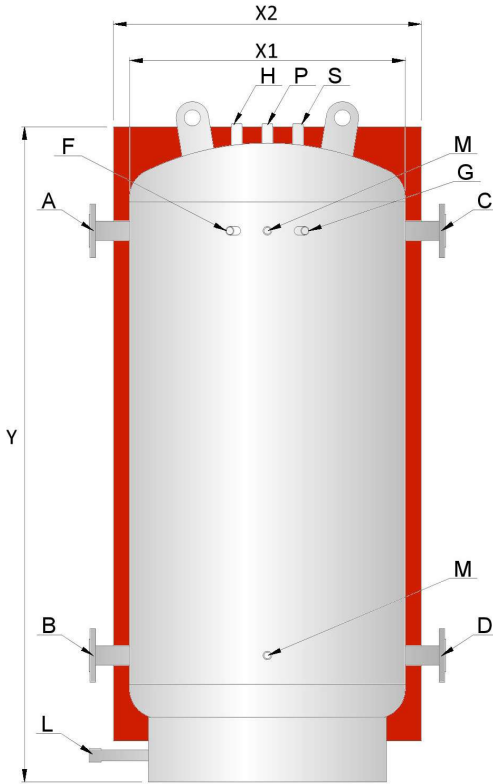
Connections marked as “ are screwed BSP female.

Capacity (Litres)	AFTA Vessels - Standard Vessel Dimensions & Connection Sizes												
	X1	Y	Z	A / B	C / D	F	G	H	K	L	M	P	S
100	400	1140	1015	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
200	450	1600	1475	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
300	550	1615	1490	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
400	650	1580	1535	DN50	DN50	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
500	700	1685	1640	DN50	DN50	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
600	800	1590	1545	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
700	800	1790	1625	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
800	850	1815	1770	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
900	900	1825	1780	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1000	900	1985	1940	DN100	DN100	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1250	1050	1870	1825	DN100	DN100	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1500	1100	2015	1970	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
2000	1200	2220	2175	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
2500	1300	2335	2290	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
3000	1400	2425	2380	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
3500	1500	2475	2430	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
4000	1500	2755	2710	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
4500	1600	2745	2700	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
5000	1700	2725	2680	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
6000	1800	2890	2845	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
7000	1900	3025	2980	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
8000	2000	3105	3060	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
9000	2000	3425	3380	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
10000	2100	3445	3400	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"

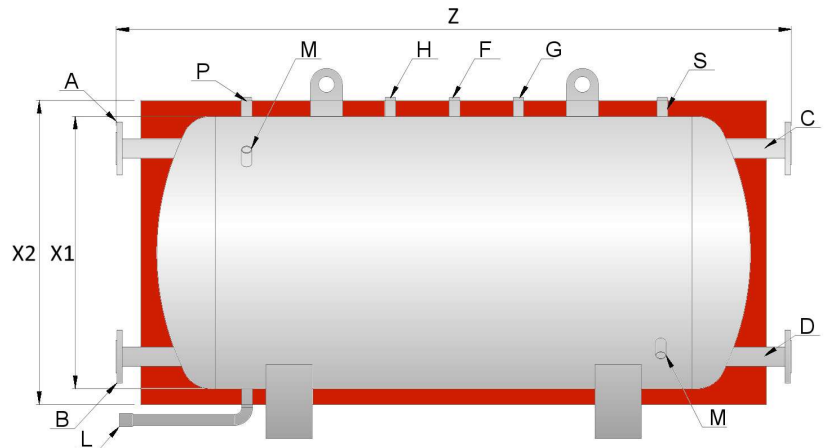
## AFTA Thermal Stores



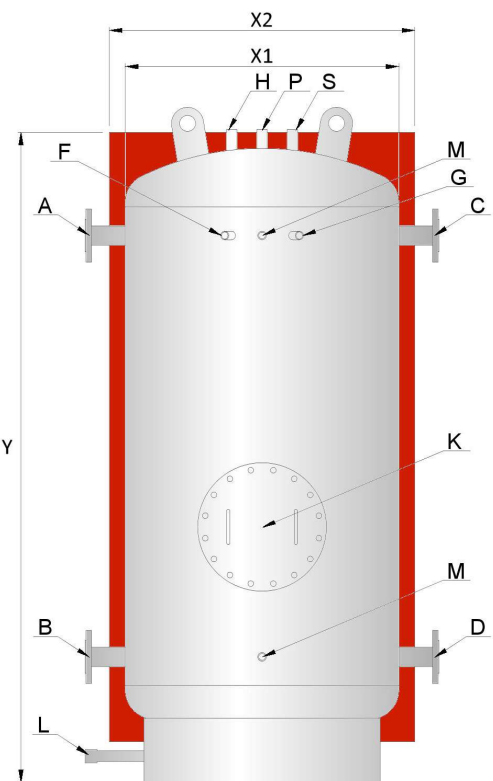
The Arbe AFTA vessels are manufactured to suit each application, but below shows the standard dimensions of the range. Please contact our sales office for further information.



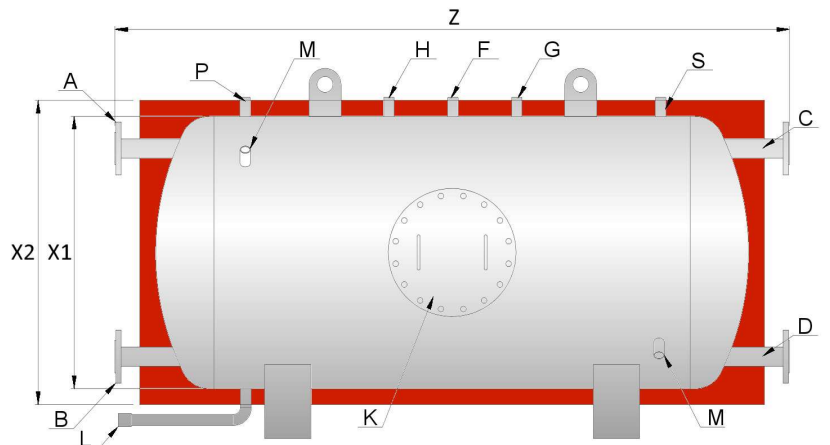
**AFTA-V VESSEL - NO INSPECTION OPENING**



**AFTA-H VESSEL - NO INSPECTION OPENING**



**AFTA-V VESSEL - WITH INSPECTION OPENING**

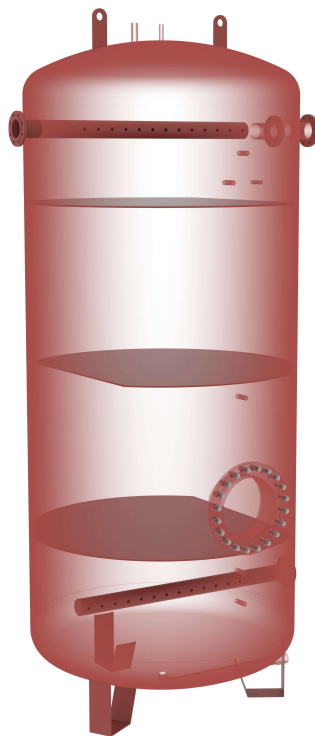


**AFTA-H VESSEL - WITH INSPECTION OPENING**



## AFPA Thermal Stores

The Arbe AF series of thermal stores can be designed to suit each application, ensuring maximum efficiency of the system. The vessels contain a multiple quantity of baffle plates, designed to suit each application. The baffle plates aid in the stratification of the tank temperatures which helps with the system operation, in installations such as with CHP units and heat pumps, mainly in systems where the flow and return temperatures are close. They are also recommended where the diameter/height ratio is less than 1:1.5. For example, a 1500 litre vessel needs to be installed but the maximum height is 1800mm, the recommended vessel would be diameter 1200mm x 1790mm tall. The ratio would be 1:1.28 so an AFPA vessel would be required.



### Thermal Store Design

#### Baffle Plates

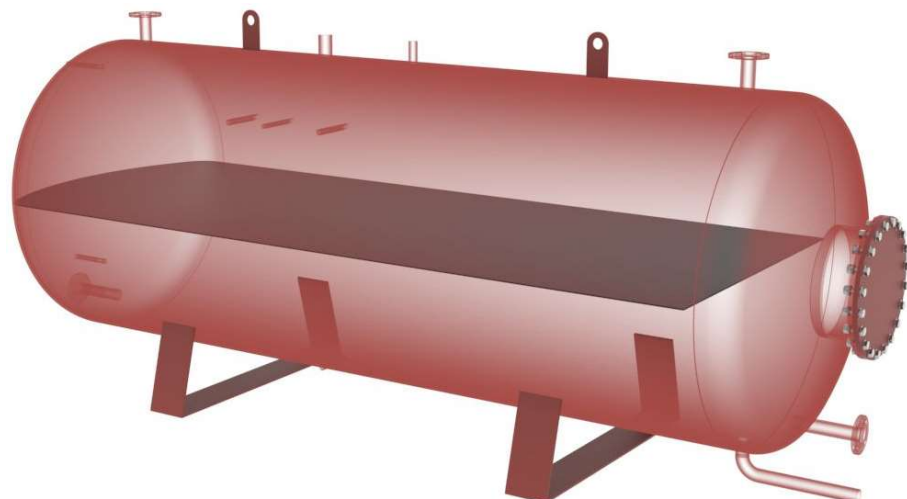
Used to separate the hotter and colder areas within the vessel, increasing stratification within the vessel. This ensures optimal operation of the heat input equipment

#### Sparge Pipes:

Used to evenly distribute inlet water and direct the flow to the best area within the vessel, maximising storage capacity within the tank and increasing stratification

## Horizontal Thermal Stores

Where it is not possible to install a vertical thermal store, Arbe can design a vessel with a horizontal orientation. The units are supplied with baffle plates to separate the hot and cold zones, ensuring optimum operation.





## AFPA Thermal Stores

The Arbe AFPA vessels are manufactured to suit each application, but below shows the standard dimensions of the range. Please contact our sales office for further information.

All dimensions are in mm unless specified otherwise

Connections marked as DN are flanged PN16

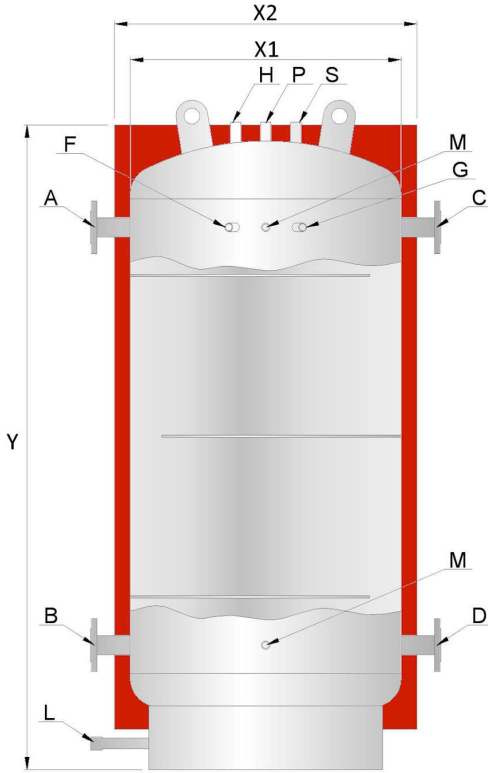
Connections marked as “ are screwed BSP female.

Capacity (Litres)	AFPA Vessels - Standard Vessel Dimensions & Connection Sizes												
	X1	Y	Z	A / B	C / D	F	G	H	K	L	M	P	S
100	400	1140	1015	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
200	450	1600	1475	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
300	550	1615	1490	1½"	1½"	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
400	650	1580	1535	DN50	DN50	½"	¾"	¾"	DN200	1¼"	½"	½"	½"
500	700	1685	1640	DN50	DN50	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
600	800	1590	1545	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
700	800	1790	1625	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
800	850	1815	1770	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
900	900	1825	1780	DN80	DN80	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1000	900	1985	1940	DN100	DN100	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1250	1050	1870	1825	DN100	DN100	½"	¾"	¾"	DN300	1¼"	½"	½"	½"
1500	1100	2015	1970	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
2000	1200	2220	2175	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
2500	1300	2335	2290	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
3000	1400	2425	2380	DN100	DN100	½"	¾"	1"	DN400	1¼"	½"	½"	½"
3500	1500	2475	2430	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
4000	1500	2755	2710	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
4500	1600	2745	2700	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
5000	1700	2725	2680	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
6000	1800	2890	2845	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
7000	1900	3025	2980	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
8000	2000	3105	3060	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
9000	2000	3425	3380	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"
10000	2100	3445	3400	DN150	DN150	½"	¾"	1"	DN400	1¼"	½"	½"	½"

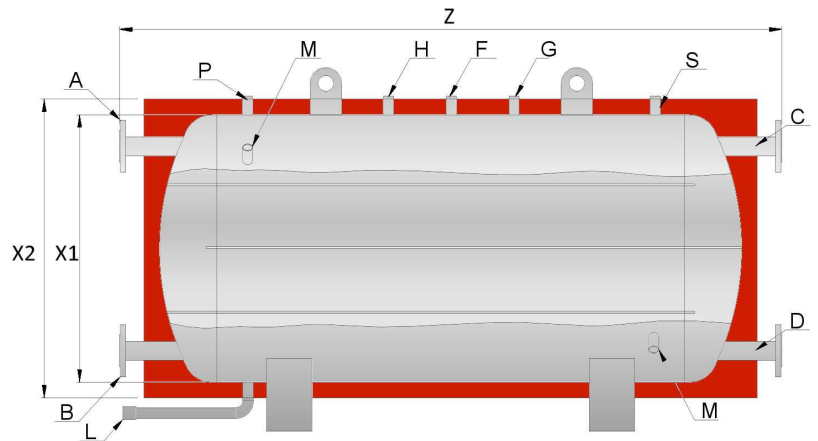
## AFPA Thermal Stores



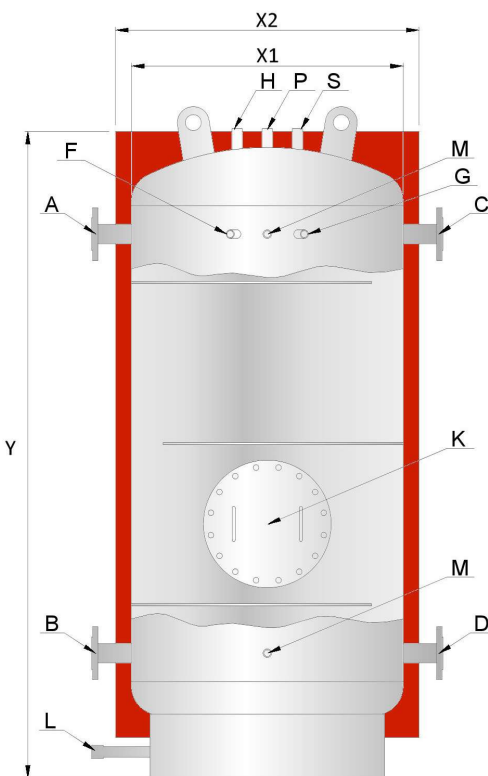
The Arbe AFPA vessels are manufactured to suit each application, but below shows the standard dimensions of the range. Please contact our sales office for further information.



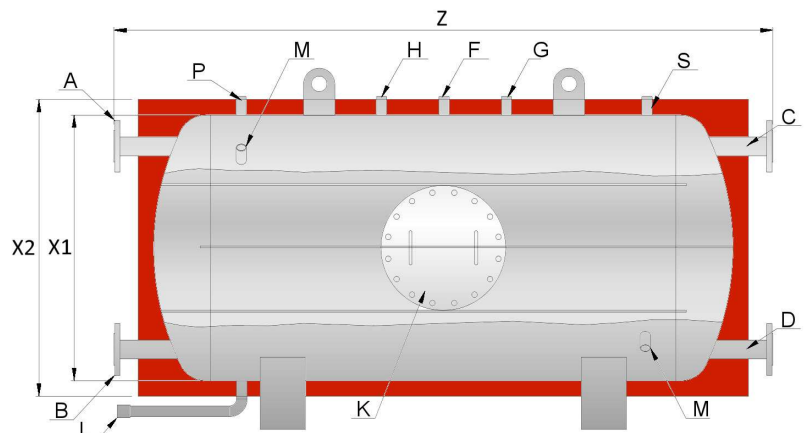
**AFPA-V VESSEL - NO INSPECTION OPENING**



**AFPA-H VESSEL - NO INSPECTION OPENING**



**AFPA-V VESSEL - WITH INSPECTION OPENING**



**AFPA-H VESSEL - WITH INSPECTION OPENING**



## AFTA-SEC Thermal Stores



The Arbe AFTA-SEC series of thermal stores are a range of sectional thermal stores for applications where access is limited, such as through trapdoors, down staircases and single doors. The vessels are bespoke to each application and designed to suit site requirements. Generally, the buffer vessels have a maximum design pressure of 6 BarG but can be higher if required.



### AFTA-SEC Thermal Store Design

The vessels have steel body flanges that are bolted together on site using lifting equipment such as A Frame lifting beams. The vessels are supplied with all gaskets and bolting as required.

The vessels can also be designed with other features as required by the application such as:

- Baffle Plates
- Sparge Pipes
- Multiple access hatches

Materials Available:

- AFTA-SEC** – Carbon steel
- AFZA-SEC** – Galvanised steel
- AFXA-SEC** – Stainless steel 304L





## Insulation

The range of thermal stores supplied by Arbe are insulated with 2 different types of insulation, depending on the capacity of the vessel. Vessels are finished in a stucco aluminium casing as standard, suitable for internal and external applications or with stainless steel or Aluzinc cladding as options. For applications where the vessel is to be installed externally the insulation is specifically designed for this.

### High Density Mineral Fibre Insulation

The insulation consists of high quality mineral fibre rolls, faced with reinforced aluminium foil, with a nominal density of  $45 \text{ kg/m}^3$ .

### Fire Properties

Reaction to Fire, Euroclass: A1 - EN 13501-1

Combustability: Non-Combustible - EN ISO 1182:2002, Class O According to BS476: Part 6 1989 and Part 7 1997

### Thermal Conductivity

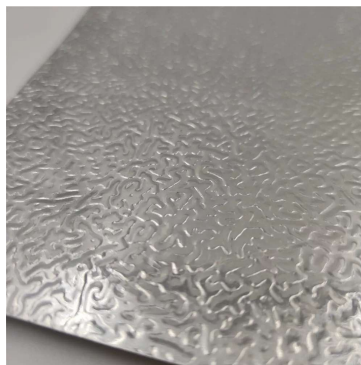
Thermal Conductivity (Declared) in  $10^\circ\text{C}$   $\lambda_{10}$   $0.034 \text{ W/m}_k$







Thermal Conductivity (Declared) in  $50^\circ\text{C}$   $\lambda_{10}$   $0.039 \text{ W/m}_k$

Thermal Conductivity (Declared) in  $100^\circ\text{C}$   $\lambda_{10}$   $0.048 \text{ W/m}_k$

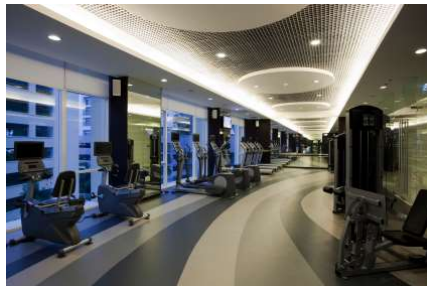
### Moisture Properties

Water Absorption, Short Term WS,  $W_p \leq 1 \text{ kg/m}^2$  EN 1609



 Suitable for Heating Systems  
 Suitable for Potable Systems  
 Suitable for Chilled Systems  
 Suitable for Steam Systems  
 Suitable for Renewable Systems  
 Suitable for Boosted Water Systems

Key to Product Suitability

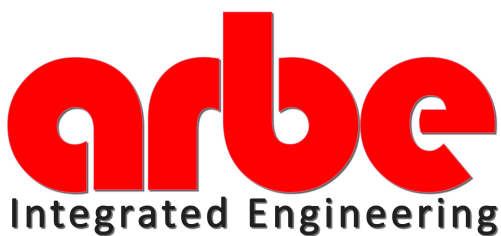


**Design | Supply | Manufacture | Install | Commission**

DHW & LTHW Generation  
 Booster Sets & Pressurisation  
 Steam Packages & Equipment  
 Condensate Removal & Recovery

Heat Exchangers  
 Package Plantrooms  
 Gas & Biomass Boilers  
 CHP & Heat Recovery

Solar Energy  
 Chillers & Heat Pumps  
 Buffer Vessels  
 Complete HVAC Integration



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 mail@arbe.co.uk www.arbe.co.uk