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RENTING A LOW-COST REFRIGERATED/ DEEP FREEZE CONTAINER – A GOOD OFFER OR A MONEY PIT?

IF YOU'RE LOOKING AROUND FOR A REFRIGERATED OR DEEP-FREEZE CONTAINER, YOU'LL FIND A WIDE RANGE OF OFFERS, SOME AT TEMPTINGLY LOW PRICES. BUT WILL YOU ULTIMATELY SAVE MONEY? OR WILL YOU FALL INTO THE COST TRAP? WE'VE CRUNCHED THE NUMBERS.

If you're in search of the right refrigerated/deep-freeze container and you look around on the internet, you'll find a wide range of offers. In some cases, the differences in price are very striking. Some providers rent out containers at surprisingly low prices. But when you look more closely, what may appear at first glance to be an attractive offer may prove to be a cost trap. As a general rule, such containers have significantly less insulation than those offered by supposedly more expensive competitors.

THIS WILL HAVE CONSEQUENCES: THE THINNER THE INSULATION ON THE WALLS, CEILING AND FLOOR OF THE CONTAINER, THE MORE ELECTRICITY YOU WILL CONSUME FOR REFRIGERATION/DEEP-FREEZING.

The rental cost may be lower, but the electricity costs will be higher, not to mention the question of environmental sustainability – a key topic these days.

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HOW MUCH INSULATION DOES A REFRIGERATED/DEEP-FREEZE CONTAINER NEED?

The lower the container's insulation thickness, the higher the electricity costs, as we have already pointed out. A direct comparison of the numbers will give you a clear picture. To understand this, let's take a look at the U-value.

WHAT IS THE U-VALUE?

The U-value, formerly known as the k-value, indicates the thermal transmittance of the insulation of walls, floors and ceilings. The U-value indicates how much heat passing through 1 m^2 of insulation will pass from the outside into the inside, based on a temperature difference of 1 °K. The unit of measurement is W/m^2K.

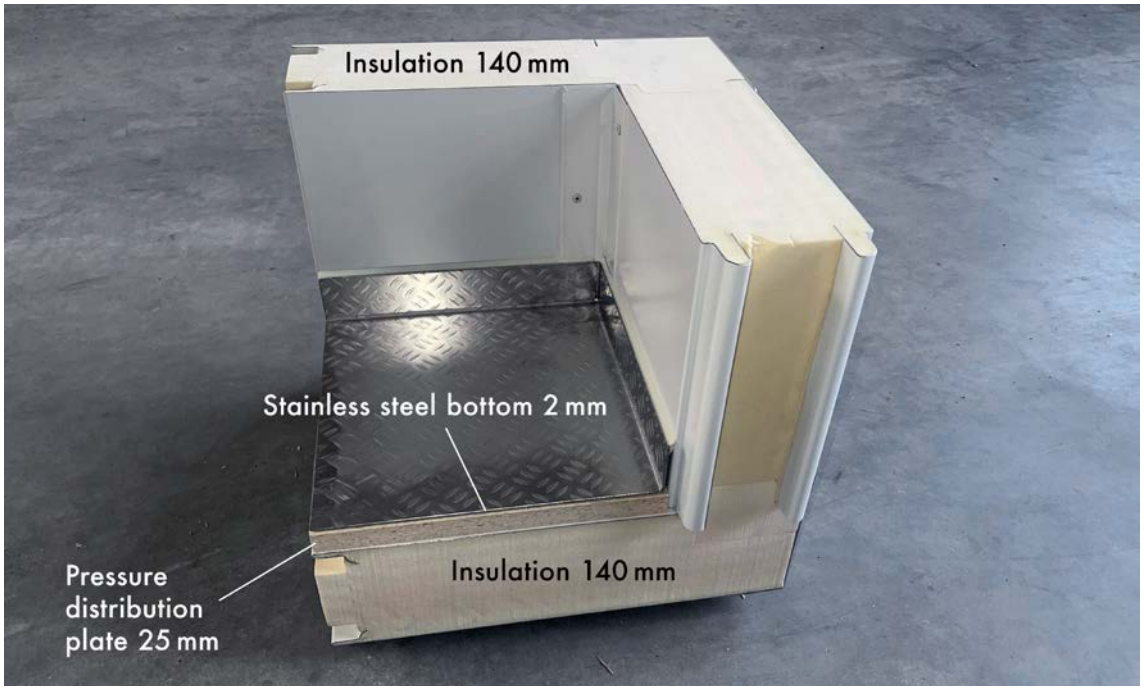
The lower the U-value, the better the insulation, as shown in the table below:

INSULATION	U-VALUE
60 mm	0,338 W/m^2K
80 mm	0,247 W/m^2K
100 mm	0,196 W/m^2K
120 mm	0,162 W/m^2K
140 mm	0,139 W/m^2K
170 mm	0,114 W/m^2K
200 mm	0,096 W/m^2K
220 mm	0,087 W/m^2K

INSULATION

When evaluating insulation and the foam used in insulation panels, it is important to determine the thermal conductivity coefficient (the unit of measurement is W/mK). This gives an indication of how well a material conducts heat or how suitable it is for insulation against heat.

The thermal conductivity of our panels is 0.0196 W/mK.



WHAT IS HEAT FLUX?

Heat flux is the process whereby heat from one location with a higher temperature flows to a location with a lower temperature to even out the difference. The unit of measurement is W/m². The greater the difference between the ambient temperature and the desired temperature inside, the harder the cooling system has to work.

The basic principle is: the better the insulation, the lower the heat flux.

For example, if the outside temperature is +30 °C and the container is to be cooled to −20 °C, with an insulation thickness of 63.5 mm for the walls, 80 mm for the ceiling and 80 mm for the floor – which results in an average U-value of 0.35 W/m²K – the heat flux will be 17.5 W/m²:

- U-value of 0.35 × ((+30 outside temperature – (−20 inside temperature)) = 17.5 W/m²

If we repeat the same calculation but with better insulation – i.e. a material that we at Gabler use, with insulation thickness of 140 mm – the heat flux figure is significantly lower:

- 0.139 × 50 = 6.95 W/m²

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RESULTS OF OUR CALCULATIONS

You can see from our direct comparison that based on the specified temperature difference, a lower insulation thickness results in heat flux of 17.5 W/m². With insulation thickness of 140 mm, the heat flux figure is just 6.95 W/m². In other words, the thicker insulation reduces the heat flux by around 60 %, and significantly less electricity is used as a result.

EXAMPLE:
For our 20-foot refrigeration/deep-freeze container with insulation thickness of 140 mm, operating for 15 hours with an ambient temperature of +30 °C and a temperature of – 20 °C inside the container, and at an electricity price of CHF 0.30/kW, the electricity cost is CHF 11.70 per day.

Consumption in kilowatt hours:	(2,602 Watt × 15 hours) / 1,000 = 39 kWh per day
Electricity cost in CHF	39 kWh × CHF 0.30 = CHF 11.70 per day

For a competitor's container, the electricity costs are up to 75 % higher, i.e. an extra CHF 8.80 per day or CHF 268.00 per month or CHF 3,216.00 per year.

Based on an additional energy usage of 29 kW per day, the additional CO_2 emissions are around 382 kg of CO_2 per month or 4590 kg of CO_2 per year.

SUMMARY: WHAT TO BEAR IN MIND WHEN RENTING A REFRIGERATED/DEEP-FREEZE CONTAINER

Now, you know that the insulation thickness and quality are of key importance. There's also another factor – the width of the doors. The wider the doors, the more cold air is lost when you open them, and the higher your electricity costs. As a general rule, a door opening of 90 cm is enough if you're loading palettes into the refrigerated container.

OUR TIP:
Take a close look at what you're being offered, and pay attention to the details when you are comparing offers from different providers. This is the only way to avoid annoying cost traps. With Gabler, there aren't any cost traps. We may not have the lowest prices at first glance, but if you actually run the numbers, you'll see that Gabler ultimately saves you money.

GET IN TOUCH!
We'll be happy to provide you with advice and find you the right solution. We look forward to hearing from you.
For further information, visit www.gabler-container.ch/en

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