

Whitepaper Healthcare

Maintain quality of temperature sensitive **medical aids** during transport



Medical devices are vital. They are used by doctors during the diagnosis, treatment and support of an illness or disability, the RIVM explains. There is a huge amount covered by the term ‘medical devices’. Some medical devices, such as human tissues and blood, must be stored and transported refrigerated or frozen. This way, harmful bacteria don’t stand a chance and the aids remain usable for as long as possible. The essential quality is then guaranteed. What should you take into account when transporting these resources? We’ll tell you more about it in this whitepaper.

Within pharmaceutical logistics and the storage and transport of medical products, temperature stability plays an important role in quality maintenance. For example, blood samples must remain chilled or frozen, while human medicines often have to remain at a temperature of 15 to 25 °C. Phase Change Material can be the solution in every situation. Which aids do you use in what situation? We’ll explain it to you!

Optimal condition of blood products

To ensure that blood products are administered to a patient in optimal condition, the blood must be treated according to precise instructions in the period preceding this. Both during processing and storage at the blood bank, during transport between locations and during storage in the hospital.

The best storage temperature for blood products is between 2 and 6 degrees Celsius. Partly because the risk of bacterial growth is particularly low at this temperature. That is why blood is stored in special refrigerators. These refrigerators are equipped with a temperature gauge and an alarm. Once at temperature for administration, blood products should only be administered within 6 hours to ensure that the blood is in optimal condition.

Transport from A to B

Cooling blood products and other medical supplies on location is not so much the challenge. With the right equipment this should be a breeze. However, transport involves new barriers. Fortunately, there are several options to keep your medical aids chilled during transport:



The cooling van

The cooling van is actually a refrigerator on wheels. This can be a very good means of transport for the planned transport of large quantities of blood and medical supplies. The capacity of the van is then fully utilized and external conditions are well controlled. However, for small or ad hoc transports of blood and medical supplies, the refrigerated van is not the most durable and fast solution. For example, using an entire van to transport

a small amount of blood samples is not very efficient and environmentally conscious. Moreover, the costs are also quite high and you depend on the availability of a cooling van.



Cooling packaging

Chilled packaging materials can be a solution for the transport of smaller quantities or ad hoc deliveries of blood products or other medical supplies. You can think of coolants, such as gel packs, in combination with absorption materials and well-insulated packaging boxes. This allows transports of 24 hours to be bridged. Depending on external conditions, even shipments that are on the road for up to 48 hours. So you create a kind of mobile refrigerator, which does not cost electricity on the road. The big advantage for you? The blood products and medical supplies can also be transported in regular means of transport, such as in the car or by post. In addition, the packaging materials can be used several times.

Cooling with gel packs

Transporting blood products under the right conditions is extremely important, but fortunately this does not mean that it is difficult. As described above, you can choose to transport the medical supplies refrigerated by using gel packs, among other things.

Gel packs are leak-proof polypropylene bags, filled with a cooling gel. The regular gel packs are suitable for transport where the goods must be kept cool at 2 to 8 degrees Celsius. They are usually used for transports of up to 24 hours, but depending

Keep your products cool with **Original gel packs**



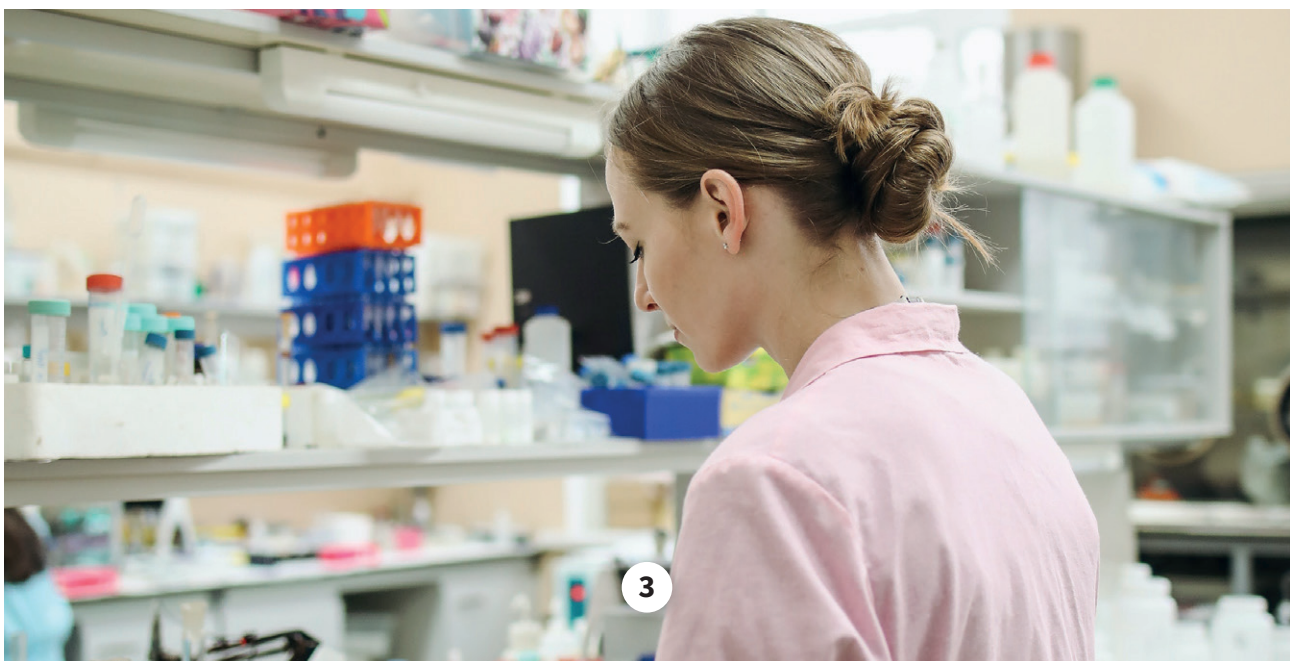
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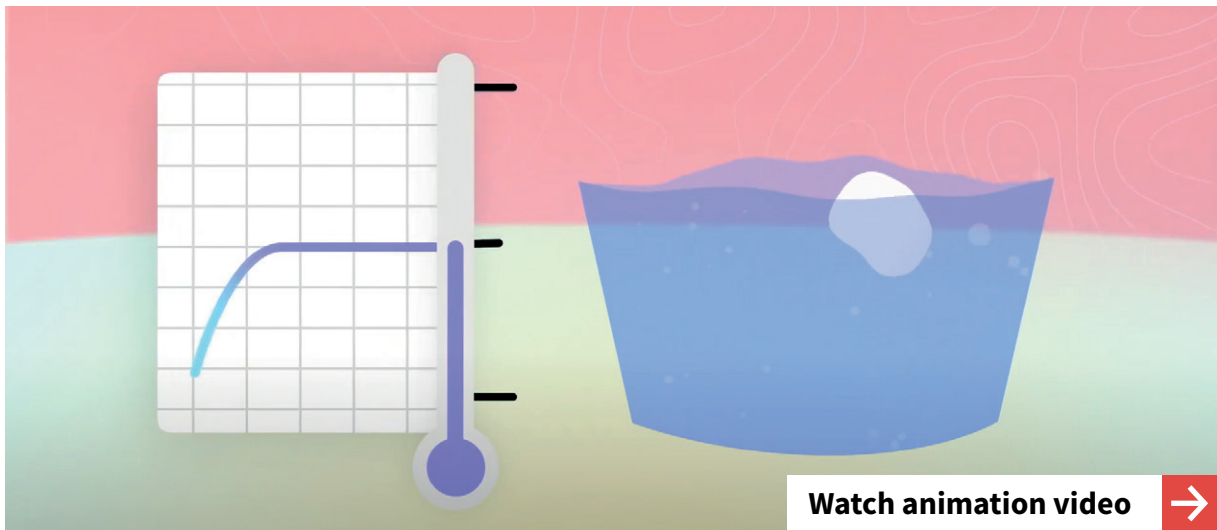
on external conditions, they can also be used for transports of up to 48 hours.

Gel packs are available in all shapes and sizes. This way you can come up with a customized solution for your application. For blood tubes, for example, segmented gel packs are ideal. These are linked gel packs: gel packs that consist of several compartments. In this way you can create a roll containing the blood tubes, so that they are cooled all around. In addition, there is no room left for air currents, which promotes temperature stability.

Shouldn't your medical devices be transported at a temperature of 0 to 8 degrees, but frozen or at an ambient plus temperature? Then one of our Phase Change Material products is probably the solution for you! Keep on reading and find out.



Might sound complicated, that Phase Change Material. In this video we explain it to you as simple as possible!



Phase Change Material voor andere temperatuurranges

[Phase Change Material \(PCM\)](#) is a collective name for all materials that can change phase. During the transition from one phase to the other, the energy storage around this temperature is stable throughout the transition. By accurately determining the melting or solidifying point, PCM remains within a desired temperature range for a long time.

At Coolpack we use the principle of Phase Change Material to develop temperature solutions for refrigeration, freezer and ambient transport and storage. This allows us to reach temperature ranges from $-65\text{ }^{\circ}\text{C}$ to $+89\text{ }^{\circ}\text{C}$! We produce the disposable and reusable cooling elements on location in Assendelft, so that we have full control over quality.

In [this case study](#), Renan Zorer, Business Development Executive at medical packaging specialist DPG Intelsius, explains how they use Coolpack's $+20$ degree PCM elements in their packaging solutions for pharmaceutical customers.

Well-insulated packaging

For maximum cooling, pack the blood tubes together with the segmented gel packs in a well-insulated EPS box. EPS boxes are polystyrene boxes with a high insulation capacity. The thicker the wall, the higher the insulation capacity.

Advantages of Phase Change Material



High energy storage

The thermal storage is highest around the solidification/melting point



Temperature Stability

Remains at the temperature of the melting point until PCM completely changes phase



Accurately determined

By adapting the recipe according to proven standards



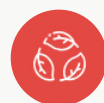
Cooling or heating without an external source

No on-site (electrical) cooling or heating required



Reliable solutions

Constant, proven effectiveness for vital sectors, among others



Sustainable

Extended use of renewable energy through storage and reuse



In the medical sector, absorption materials such as absorption mats are also often used. The function of absorption mats is to collect and retain moisture that arises along the way. This means that the tools remain dry and tidy, even with light condensation. In some cases it is therefore advisable to add absorption mats in the EPS boxes.

Another way to prevent surface condensation from coming into contact with medical supplies is to use the so-called No sweat gel packs. The bag of the gel pack consists of several layers, with a cover of non-woven material. This outer layer absorbs the condensation created during shipping.

Tailored advice

Are you curious about the possibilities for your specific issue? At Coolpack we have more than 50 years of experience in supplying the best cooling materials. Our product range varies from standard to custom-made refrigerated packaging, gel packs, ice packs, absorption mats and EPS boxes to total

solutions for refrigerated and conditioned transport. Everything to ensure that your medical devices and other goods arrive at their destination in optimal condition. Our team is happy to provide you with specialized advice.

Thanks to our own production facilities on site in Assendelft, tailor-made solutions can be delivered that are specifically designed for your application. Coolpack's products are of excellent quality and meet all legal requirements.

Do you have questions, would you like to place an order or would you like to receive personal advice? Please feel free to [contact](#) us using the information on this page. Our team is there for you.

