



Global Transport and Logistics

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Storing dangerous goods

Cocoa beans are highly flammable

Chocolate is arguably the most loved food in the world. From chocolate cake, ice cream and fudge, to the delectable chocolate-covered treats you find on the supermarket shelves, it seems this sweet has a hold of every man, woman and child around the world.

However, there is a darker side to this seemingly innocent delight. A dangerous side that is even more perilous than adding a few extra kilos to your waistline. Chocolate, or more so cocoa, is highly flammable. If it catches fire, the blaze is difficult to extinguish since cocoa powder contains 10 to 20 per cent fat and has a huge surface area in powder form.

But don't be too alarmed. The main danger lies when storing or transporting it in large quantities.

Effective collaboration leads to an effective solution

After two major cocoa blazes in The Netherlands, DSV and Cargill Cocoa & Chocolate decided to work together on designing a new, inherently fire-safe approach to storing cocoa. Two new warehouses have been specially equipped to store cocoa products, and in particular cocoa powder.



Spraying a cocoa blaze with water has little to no effect. Prevention is always better than cure. That is why we teamed up with DSV to build a new, safe warehouse for cocoa products – a warehouse that would significantly reduce the chance of a fire. And this warehouse is a global first for the cocoa sector.

Gijs Vorstman, Supply Chain Director of Cargill Cocoa & Chocolate

Keeping oxygen levels low to prevent a fire

In the warehouse, oxygen levels are lowered from the normal 21 per cent to 16-17 per cent. At these levels, cocoa will only smoulder or smoke but not catch fire.

If the cocoa does catch fire, carbon dioxide will be blown into the warehouse from two large tanks holding liquid CO₂. This will reduce the oxygen level to 12 per cent, effectively extinguishing the fire. "The concept has been around for a while, but this is a very innovative application of that approach," says Gijs.

Automated inbound and outbound movements

In principle, no warehouse employees are required to work in the low oxygen environment. Fully automated VNA/AGVs (very narrow aisle automated vehicles) will transport the cocoa internally.

This automation leads to both efficiency-savings and reduces the risk of human error, making the warehouses a good investment for Cargill. "Naturally, we don't want to price ourselves out of the market with hugely expensive warehouses. With DSV we have used an automation concept that has been around for a while in a very innovative way," says Gijs Vorstman.

Site manager Remco Innemee, DSV Solutions, is happy with the collaboration between Cargill and DSV:

"The combination of new legislation relating to cocoa product storage and both parties' focus on fire prevention has resulted in an extremely innovative warehouse," says Remco.

The warehouses have been running smoothly since opening, without a flame in sight. So rest assured – your chocolate is in safe hands.

About Cargill Cocoa & Chocolate

Cargill Cocoa & Chocolate provides stability in the dynamic world of cocoa. Their impressive infrastructure and organization in the cocoa bean producing countries allow them to buy high quality beans, essential to produce the finest chocolate and cocoa ingredients. Expertise in processing, supply chain management, market information and technical services complement the package of ingredients that Cargill offers to the food industries of the world.

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