

Green Ecomate Foam For Zero Appliances

The PU Foam blowing in the production line of Zero Appliance is fully green. As a follow on from the Montreal Protocol phase out of R11 in South Africa in 1995, Zero Appliances changed to R141b as their blowing agent for polyurethane foam.



R11 with an ODP (Ozone Depleting Potential) of 1 was one of the first man made chemicals to be phased out under the Montreal Protocol. The second phase of the Montreal Protocol is to stop the global production of the remaining substances with an ODP. As from 1 January 2016, South Africa will ban the importation of R141b in any form because of its ODP of 0.11.

In planning ahead of the ban on R141b, Zero Appliances changed to Ecomate® (methyl formate) as the blowing agent. Several challenging issues were experienced with methyl formate e.g. requirements associated with high pressure dispensing equipment and high inventory of chemicals to be held on site.

No Impact on the Environment

After considering other PU foam blowing agent options e.g. R134a, HFC 365 mfc, HFC245fa and with the technical guidance and know how of Rigifoam, Ecomate® was chosen as the new blowing system for the production line at Zero Appliances.

Ecomate® (Methyl Formate) has no impact on the environment. It has zero Ozone Depleting Potential (ODP), zero Global Warming Potential (GWP) and is Volatile Organic Compound (VOC) compliant – i.e. it will not contribute to the formation of smog. The mixed two part chemicals are supplied to Zero Appliances in easy to handle 1000Litre IBC's. At the

production line the two part chemicals are thoroughly mixed and dispensed into the cavities of the appliance casings using specialised High Pressure dispensing equipment which regulates accurately the quantity poured into each cavity.

Improved Thermal Performance

Once dispensed the liquid chemicals expand 30 times and fills all empty spaces, joints and the smallest of openings between metal components. Once expanded the appliance has a closed cell insulation

of uniform density and long lasting thermal efficiency.

After final assembly each appliance undergoes a performance test before being packaged for dispatch.

“After changing to Ecomate®, we have noticed an improvement in performance of about 3°C in thermal holding efficiency on our test line and we are now back to where we were with R141b. The density of the PU with Ecomate® is more uniform throughout the appliance and will certainly impact on its thermal efficiency.

Changing to Ecomate® has certainly also improved our cash flow. With Resichem we operate on a just in time delivery basis and has reduced our on site stock of chemicals without detrimental impact on our rate of production”, Ken Sharp, factory manager



THE FUTURE IS BRIGHT, THE FUTURE IS GREEN

Resichem is a proud supplier of **ecomate®** based polyurethane foam used by **ZERO MEDICAL** to insulate their Sure Chill medical fridges sent into Africa. These fridges supply safe and efficient medicines and vaccines to millions of people

Helping to save lives. Helping to save the Earth!

ecomate® by Foam Supplies Inc is a patented blowing agent with Zero ozone depleting potential that helps protect the environment - while providing excellent insulation to products for a variety of industries.

**WHEN YOU USE *ecomate®*
YOU TOO WILL BE SAVING LIVES!**

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Leaders in Absorption Refrigeration

Zero Appliances have more than 60 years of experience in the manufacture of domestic and commercial refrigerators with absorption systems. Although more expensive than a conventional compression vapour refrigerator, the Zero absorption system has no moving parts, no compressor, needs little maintenance and relies solely on a source of heat to maintain the required temperature in the refrigerators or chest freezers. The source of heat

can either be from a gas burner or from an electric heater. The absorption system has been in use for decades and proven throughout the world.

Less Reliant on Eskom Power

The domestic appliances of Zero have a strong appeal in areas that lack a reliable power supply from the national grid or has no power at all.

Zero Appliances has a 15,000m² manufacturing plant on a 28,000m² site in Chloorkop, about 35kms from the centre of Johannesburg. The many staff members mass produce thousands of absorption domestic refrigerators annually. Zero also assemble gas stoves and in the past two years have added medical vaccine refrigerators to their product range.

Ground Breaking Technology for Vaccine Refrigerators

The Zero Medical Refrigerators also has high performance Ecomate® PU insulation but unlike their traditional products it has a patented Sure Chill® refrigeration system with a compressor which can be powered from the grid or solar power.

The ground breaking Sure Chill® technology of Welsh origin, has a conventional compressor which forms ice in a tank and continuous water jacket incorporated within the walls, top and bottom of the

refrigerator. The only part of the refrigerator without a water jacket is the door.

Ice is formed by a small R134a refrigeration system when connected to a grid power supply or by a R600a system when powered by solar. Model ZLF100AC of 124 litre storage capacity, has a R134a AC refrigeration system and the ZLF100DC model, also of 124 litre capacity, has a R600a refrigeration system powered by DC current for a solar system.

Solar or Grid Power

After being powered by AC or DC (direct battery-less solar) and ice has formed in the storage bank, the Zero Medical will have a holdover time in excess of 400 hours. Adding to the performance of low energy and long holdover time, there is no formation of ice on any of the inside surfaces of the cabinet and no possibility of freezing any of the vaccine.

Shelf Life of Vaccines Increased

The Zero Medical unit with the patented Sure Chill® system has met the stringent WHO specifications (PQS code E003/036 & E003/037) for vaccine cabinets for use in developing countries. Maintaining the temperature of vaccines within the correct temperature range as specified by WHO for remote areas is of prime importance to safe guard their effectiveness. Assessments

done in the past have proven that many vaccines administered have been ineffective because of expired shelf life after exposure to high temperatures for extended periods or by freeze damage against frozen surfaces in refrigerators or hold over plates.

Vaccine Volumes to Increase Eight Fold

Vaccines to be administered to populations in developing countries are predicted to increase 8 fold during the next 10 years. Such high volumes of vaccine will be more reliant on reliable refrigerated storage to remain effective during long supply chains across remote areas.

Field maintenance of the Zero Medical has been made simple by the top mounted refrigeration unit which can be unplugged and replaced as a unit without any skilled labour.

Smaller Carbon Footprint

“The change to the Ecomate® foaming system, our conventional absorption systems and the new Medical Vaccine Refrigerator are all part of our mission to provide reliable refrigeration with the smallest carbon footprint and least dependence on electric power. Our next step is to reduce the reliance of our production facility and offices on the national grid”, Gerád Wessels, Group Operations Director, Zero Appliances. 



Vaccine medical unit with Sure Chill® Refrigeration



ecomate®

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