

SAFE HANDLING AND USE OF VITEC IMPREGNATED PRODUCTS

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Section 1.

1.1 Product Name: VITEC Non-Corrosive Conductive Foams

1.2 Composition: Flexible polyurethane foams are produced by the reaction between a high molecular weight polyol and toluene diisocyanate (TDI) and/or diphenyl methane diisocyanate (MDI) in the presence of catalysts, surfactants and blowing agents, resulting in a flexible cellular product having a predominantly open-celled structure.

VITEC conductive foams are produced by the post treatment of the polyurethane foam with a water based latex compound. This compound contains a high loading of a conductive carbon black, an additive of low oral toxicity. The additive is 'bound' to the foam substrate by the cured latex film and is water insoluble. VITEC conductive foams are supplied in sheets, rolls, cut parts or laminated boxes.

NB: No Chloro-Fluoro-Carbons (CFC's) are used during any of the production stages indicated above.

1.3 Intended Uses:

Protective packaging of static sensitive devices. Insertion of the leads of devices. Customers are urged to ensure that the type and grade of foam is entirely suitable for their own purposes, VITEC can provide technical assistance if required.

Section 2. Health Hazards

The basic polyurethane polymer and therefore polyurethane impregnates are considered to be of low toxicity and should present no hazard from skin contact or by ingestion. VITEC conductive foams contain conductive carbon black, an additive of low oral toxicity. The presence of such an additive is not expected to present a hazard by skin contact or ingestion.

Section 3. Storage Precautions

Storage areas for conductive foams should, be segregated from work and process areas. The quantities of material present, at anytime, in workrooms and production areas, where most people spend their working day, should be kept to a minimum. Finished products should also be kept segregated from work areas, in a despatch bay or finished goods area. Persons should not have to pass through storage areas to reach other parts of the premises, such as work areas and offices. A strict no smoking policy should be applied to all areas where VITEC conductive foams are stored, handled or used.

Section 4. Fire Precautions

Some VITEC conductive foams can be ignited by small ignition sources such as a match, while others are more resistant and may require much larger ignition sources. However, all VITEC conductive foams will burn fiercely when involved in fires. Fires involving VITEC conductive foams spread very quickly and large amounts of dense black smoke and toxic gases are evolved. Once ignited, the fire is likely to become well established in the first minute, thereafter to progress rapidly into a substantial fire by the third or fourth minute, by which time the developing smoke and combustion products will present a serious danger. A high standard of general fire precautions, including adequate means of escape, are therefore most important. Systems for detecting fire and/or initiating fire extinguishing appliances, e.g. sprinklers, the training of employees in the use of fire extinguishers and hose reels and the regular practice of fire drills will contribute to life safety and minimising fire damage. It is vitally important that employees are instructed on the action to take in case of fire. Extinguishing media to be used in case of fire are carbon dioxide, water and dry foam. Persons attempting to fight fires involving VITEC conductive foams should wear self contained breathing apparatus and suitable protective clothing.

4.1 Sources of Ignition

Smoking - In premises where VITEC conductive foams are stored or used, smoking should be strictly controlled. Smoking should be prohibited in all work and storage areas and only allowed in designated protected areas, away from highly flammable materials.

Space Heating - VITEC conductive foam stores should be preferably not heated, but where it is considered necessary, the following recommendations should be followed :-

1. Use hot water or low-pressure steam radiators, by indirectly fired hot air systems or oil-filled panel heaters.
2. Portable gas or oil-fired heating appliances should not be used. Electrical Equipment - Protection of the electrical installation is recommended to reduce the risk of fire from an electrical fault.

Naked Flames - Any naked flame is a potential source of ignition and should not be permitted in work or storage areas, other than in connection with a properly controlled manufacturing process, such as flame lamination. Welding and cutting equipment which involves the application of heat should only be used under strictly controlled conditions using a "permit to work" system.

Transport Vehicles - It may be necessary for vehicles, such as fork lift trucks, to enter areas where foam is stored or used. Unless they have been specifically designed to operate in hazardous areas, vehicles powered by internal combustion engines should not be used. Foam may be ignited by a hot exhaust system. For the same reason road vehicles should not be permitted to enter these areas. The battery charging stations for electrically operated trucks should be vented to atmosphere to remove potentially explosive gases and should not normally be located in areas where polyurethane foam is stored or used. Section

5. Handling and Further Processing

It is not anticipated that any skin irritation when handling VITEC conductive foams will occur. Equipment such as band-knives, slitters, etc should have sharp, smooth edge blades for cutting foam. Saw-tooth type blades will produce dust. Buffing, crumbing or cutting with saw-tooth blades will produce foam dust, which, if allowed to accumulate will product a fire hazard. A high standard of housekeeping is required to remove dust deposits regularly. Local exhaust ventilation may be necessary to remove the dust formed, at source. Dust collectors used, must be fitted with explosion relief panels. Cutting with smooth edge band-knives will not produce a large volume of dust, but adequate precautions should be taken to avoid a build-up to nuisance levels, as this can cause discomfort to nose and throat. Hot-wire cutting should be avoided, this will release toxic fumes containing isocyanates into the atmosphere. Flame lamination processes, for bonding foam to fabrics, produces combustion products from the foam as it passes over the burner. These fumes contain isocyanates and emissions from these processes must be controlled by an efficient extraction system. These processes are registrable under The Control of Industrial Air Pollution (Registration of Works) Regulations 1989. Advice on this should be obtained from Her Majesty's Inspectorate of Pollution. Section

6. Housekeeping

A high standard of housekeeping is vital to safety at all stages from receiving VITEC conductive foam into storage until the finished goods leave the factory. Where VITEC conductive foam is cut, worked or used all off-cuts, scrap and waste should be cleared up and removed at frequent intervals and taken to a safe place outside the building or to a container within a fire-separated area. Due to the low resistivity of Vitec conductive foams, they should not be exposed to any live electrical sources. Section

7. Waste Disposal

VITEC conductive foam waste should be disposed of by an authorised licensed waste disposal contractor under the Control of Pollution Act 1974. Advice on disposal can be obtained from the Local Authorities.

The data given here is based on our current knowledge and experience. The purpose of this data sheet is to describe the product in terms of its safety requirements. The data does not signify any warranty with regard to the product's properties. Note also, it is considered that existing test methods and standards regarding flammability do not accurately predict the behaviour or performance of foam under actual fire conditions. Results from existing test methods refer to the effect of a small flame source on a specific sample tested under controlled conditions. Terms such as : "self-extinguishing", "flame retardant", or "zero burn rate" should only be interpreted with respect to the above test methods and standards, and do not reflect properties of products under actual fire conditions. It should be noted however that the term "flame retardant foam" is in common usage but serves only to distinguish foam formulated with recognised F.R. additives from that which does not.

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