

Technical Information Sheet – TIS 02

Health and Safety Information on Azote® products

INTRODUCTION

This information sheet provides general guidance on the storage, handling and processing of all Azote® range products. Plastazote® foams are of expanded crosslinked polyethylene materials, whilst Evazote® foams and Supazote® foam are expanded crosslinked ethylene copolymers.

There is no essential difference in the hazards associated with any of the materials and the information given below also applies to all the products of Zotefoams plc unless otherwise specified in separate information sheets. More specific information on a product and its suitability for certain applications can be found on the relevant safety information sheet, the property information sheet or further technical information sheets. For further information beyond these documents please contact our technical support team.

POTENTIAL HAZARDS

Toxicity

Azote foams are inert and have good chemical resistance. Cytotoxicity and Skin irritation tests have shown suitability for medical applications in direct contact with skin. Extraction tests have shown compliances with various standards regarding leaching of heavy metals or organic chemicals. Further information can be found in the technical information sheets TIS 19, TIS 20, TIS 25 and TIS 27. If documentation beyond that provided on the technical information sheets is required please contact our technical support team.

Inhalation (Fume Evolution)

There is no release of any noxious fumes from Azote foams at ambient temperature. However decomposition products due to exposure to high temperatures or fire can be harmful. Please refer to the information given below on guidance for handling and storage as well as the safety information sheet for the product concerned.

Ingestion

Ingestion of Azote foam should be avoided, although the material is inert and can be regarded as toxicologically harmless. This excludes some flame-retardant grades as they contain additives, which could be harmful if swallowed.

Physical Contact

Azote foams are not considered to be skin irritants. Minor skin abrasions may however occur in applications of some Plastazote® grades due to the hardness of the material and surface cellular structure. Particles of foam may cause physical irritation if they get into eyes. No cases of allergic reactions to Azote foam have been confirmed in over thirty years of use and this is supported by cytotoxicity and sensitisation test results. For further information on these tests please consult the technical information sheet TIS 25.

FIRE, IGNITION AND BURNING CHARACTERISTICS

When Plastazote® foam is heated in air, softening will occur at temperatures above 70 °C (slightly lower for Evazote® and Supazote®). The extent of softening will depend on the time of exposure and the temperature. Melting points for Plastazote® grades are in the range of 105 – 125 °C (for Evazote® foams 85 – 90 °C; for Supazote® foam 70 – 80 °C) and decomposition will occur at about 300 °C. It should be noted that Plastazote® and Evazote® foams are crosslinked and do not actually melt and flow at this temperature but soften significantly. Long term exposure to temperatures around or above the melting point but below the decomposition temperature will result in the foam shrinking significantly, in extreme cases back to a solid material. Short term (i.e. several minutes) exposure at temperatures above the melting point can however be used to soften the material to allow thermoforming.

Above the decomposition temperature Azote foams will break down to produce carbon monoxide and water as well as small amounts of various hydrocarbons and aldehydes. The gases produced by the breaking down of the material may ignite, and if they do they will provide heat of combustion pyrolysing more foam and any other material in the vicinity. Under flaming conditions the main combustion products are carbon dioxide and water, although if insufficient oxygen is present, or when the flame is extinguished, the smoke may contain appreciable quantities of carbon monoxide, acrolein and other aldehydes. Burning can be accompanied by the release of flaming molten droplets of polymer, which could ignite adjacent flammable materials.

Some flame-retardant grades contain additives designed to reduce the ignitability and flame spread from small heat sources. In a full-scale fire these materials can burn to give dense black smoke and acrid fumes.

Please note that these comments can only be of a general nature since the conditions of a real fire can never be fully predicted.

RECOMMENDED PRECAUTIONS FOR TRANSPORTATION, HANDLING AND STORAGE

General

Azote® foams are normally supplied as sheets, blocks or rolls as manufactured with process skins. Material may be supplied loose or stretch-wrapped on pallets. Split sheets are supplied stretch-wrapped on pallets, wrapped in paper or polyethylene bags.

The products are chemically stable at room temperature and as no fumes are produced under normal conditions no special precautions need to be taken on this account. Azote® foams can show deterioration in physical properties if exposed for extended periods to strong sunlight, and this will apply also to the film used for wrapping stacked pallets. It is therefore recommended that materials are stored out of direct sunlight. Additionally, the outer surfaces of products wrapped in transparent film and exposed to strong sunlight have been found to reach temperatures sufficiently high to cause shrinkage and warping of sheets at the top and side of the stack. This particularly applies to Evazote® foam and Supazote® foam. It is due to a 'greenhouse' type of effect and is an additional reason for recommending storage out of direct sunlight.

The handling and stacking of Azote® foam, as with all insulating materials, can generate static electric charges, which may discharge through operators causing minor discomfort. Such static discharges may cause ignition of vapours from flammable solvents and such materials (together with any other materials likely to ignite or suffer damage from static discharge) should not be stored adjacent to Azote® foam. It should be noted that conductive and static dissipative foam grades will act as channels for static discharge when they are brought into contact with charged materials. (Further information on static discharges and presence of flammable materials is given in the fabrication guidelines below)

Azote® foams are combustible, and good housekeeping is necessary to minimise the possibility of accidental fires. Excessive heating can cause Azote® foam to decompose giving off combustible fumes with consequent fire danger. Azote® foam should be stored well away from any direct heat source. Users who stock large quantities are recommended to review their precautions with regard to fire and consult the local fire prevention officer.

Due to the thermoplastic nature of the materials prolonged exposure to heat sources such as hot water pipes or radiators may cause shrinkage or deformation (often when heat and pressure are present) of the foam sheets. In extreme cases such heat exposure can cause deterioration of the material similar to that observed during exposure to direct sunlight. To avoid thermal expansion, which is a reversible process, it is advisable to store samples in ambient conditions. If materials are stored in an area without temperature control, problems in fabrication can be avoided by moving materials to the fabrication area at least 24 hours before work begins. This will allow the material to be conditioned to the temperature of use.

Fire - Action In The Event Of a Fire Involving Azote® Foam

Any commonly available extinguisher may be used. Water, particularly in the form of a spray, has been found to be very effective but may be inadvisable in certain circumstances; e.g. in close proximity to electrical installations. It is recommended that advice should be sought from the local Fire Authority on fire fighting equipment and procedures.

RECOMMENDED ADDITIONAL PRECAUTIONS

Effect of Heat

As with all polyolefin-based materials, Azote® foam undergoes minor thermal degradation at temperatures approaching 200 °C and small quantities of organic volatiles are generated.

Processing Methods

General

The following notes are given to indicate hazards associated with the main processes used to convert foam sheets into finished parts. Good housekeeping by segregation and removal from the working areas of off-cuts and waste should be adopted. Machines should be cleaned regularly to remove any build up of dust and to eliminate the risk of a dust explosion.

Knife Cutting

For this technique it is recommended that, if continuous sharpening of the knives is employed, the grinding wheels are enclosed or so arranged that sparks cannot impinge on any off-cuts or dust produced by this process.

Static build up on large cut areas has been observed and although this is not hazardous, for employee comfort some form of dissipation may be necessary. Efficient earthing or ionisation of the air has been used satisfactorily.

Press Cutting

No special employee protection is necessary beyond the normal safety precautions for power-operated presses.

Bandsawing and Routing

No special employee protection is necessary but woodworking machinery regulations should be observed.

Hot Wire cutting and Heat Laminating

Safety interlocks, which cut off the heat supply when Azote® foam is in contact with but not moving past the heat source are recommended. Small quantities of fumes are produced during this process and it is recommended that these be extracted to the outside of the building.

Grinding

Profiles can be formed in Plastazote® foam using coarse grit grinding wheels. For this technique continuous extraction of the dust produced is recommended. The dust exhaust system should be earthed to prevent static build up, and regularly cleaned out.

Operators should wear goggles as required by Health and Safety Regulations. Whilst not physically harmful the dust generated can cause discomfort and normal standards of personal hygiene should be maintained.

Thermoforming

Azote® foam may be formed by heating to an appropriate temperature prior to cooling in intimate contact with a cold former. Plastazote® LD foam grades, Evazote® foam grades and Supazote® foam at and below densities of 50 kg/m³ can be handled under recommended conditions (general overview available on TIS 23, further support available on request) without gloves and do not cause burning when applied to the human body.

However, for operators who have to handle large amounts of heated Plastazote® foam it is recommended that for comfort gloves should be worn (cotton or corduroy have been found satisfactory). In handling grades with a density greater than 50 kg/m³ or for handling HD and HL grades, the wearing of corduroy gloves is recommended to prevent burning of the hands.

Excessive heating can cause Azote® foam to decompose giving off combustible fumes and there is a consequent danger of fire. Operators of such equipment should be aware of this hazard. Should a fire occur, power to heaters should be switched off and the fire extinguished using a carbon dioxide fire extinguisher. In moulding operations, users should observe the normal precautions for handling heavy moulds in power operated processes.

Adhesives

The exposure of operators to the solvents contained in some adhesives may be subject to legal constraints. The suppliers of adhesives should be contacted for further details. In addition, the handling, stacking or fabrication of foams can generate static charges. The use of solvent-based adhesives in circumstances where static charges could accumulate may increase the risk of fire. This risk can be reduced by adequate ventilation. When large areas of plastics foam may acquire a static charge, special static discharge facilities such as ionised air-blowers or corona discharge bars may also be needed.

RECOMMENDED FIRST AID TREATMENT

Eye injuries

Any material entering the eye should be flushed with copious quantities of water. Medical attention should be obtained if soreness or redness persists.

Inhalation of Fumes (from overheated material)

An affected person should be removed as quickly as possible into fresh air, kept warm and artificial respiration applied as necessary. Medical attention should be obtained immediately.

Burns

Any molten material on the skin should be cooled as quickly as possible; e.g. in cold water, but should not be pulled off. Medical attention should be obtained immediately.

Ingestion

Rinse mouth with water and obtain medical attention.

Nasal and Aural

If small sections of Azote[®] foam become lodged in the passages of the ears or nose, medical attention should be sought for their removal.

Medical Attention

It is important that medical staff involved should be advised of the nature of the material being handled and its likely decomposition products. Specific information can be found on the relevant safety datasheet and general descriptions are given in this document.

WASTE DISPOSAL

Due to the fire risk with all organic foams, off-cuts and discarded wastes should not be allowed to accumulate in loose piles but should be stored in containers which are themselves preferably non-combustible. Waste may be disposed of by controlled incineration or burial but the requirements of pollution control legislation must be observed. Advice on the preferred method should be obtained from the Local Authority Waste Disposal Officer. For guidance information on recycling and re-use of the material please see TIS 26.

APPLICATIONS FOR FOOD PACKAGING, MEDICAL APPLICATIONS OR TOYS

A summary of information on compliance of Azote® foam with standards for these applications is available on the technical information sheets TIS 19, TIS 20, TIS 25 and TIS27 respectively. More detailed information can be made available on request.

THIRD PARTY MATERIALS

The customer should ensure that he has received from other manufacturers or suppliers all technical data and other information relating to materials used or stored in conjunction with Zotefoams plc products.

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