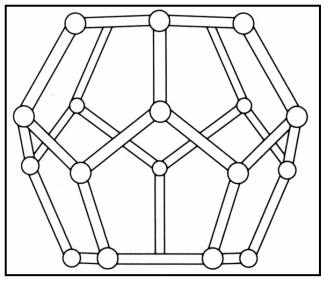
Zotefoams plc



Technical Information Sheet - TIS 15
(previously T6)
Adhesive Bonding of Azote Foams

Adhesives are widely used to bond Plastazote® and Evazote® foams to a variety of substrates. Their use is complimentary to that of heat bonding – a technique commonly used to produce foam laminates and foam rolls without adhesives.

ADHESIVE SELECTION

Several factors should be considered when selecting the best adhesive type for a particular purpose. Typical factors that govern the choice of adhesive are listed below:

- Adhesive cost
- The nature of the material to be bonded – their chemical composition, physical characteristics and surface features
- The strength of bond required and whether it should be temporary or permanent, flexible or rigid
- Are certain characteristics of the bonded material also required in the bond, i.e. conductivity
- The environment in which the bond will be expected to perform, i.e. chemical, physical and climatic conditions
- The options available for the method of adhesive application and the associated equipment requirements
- The potential hazards associated with application and use, i.e. carrier solvents can post fire and health risks unless appropriate precautions are taken

RECOMMENDED ADHESIVES TYPES

The most suitable adhesives types for use with Plastazote®, Evazote® and Propozote® foams are briefly described below:

Synthetic Rubber Contact Adhesives
This type of adhesive is normally applied to both surfaces by spreader, brush or spray techniques. When carrier solvents have evaporated and both surfaces are dry to the touch the bonding is achieved by pressing the two surfaces together. Handling strength is usually achieved within seconds. These adhesives are commonly formulated with inflammable solvents although some products with non-flammable solvents are available. The less hazardous, water based contact adhesive systems generally yield a bond with lower strength.

Conventional Pressure Sensitive Adhesives
This type of adhesive is normally applied to one surface using a doctor blade applicator or roller coating equipment and produces a permanently tacky surface after drying. It can be used for the production of self adhesive items where the coated surface is protected by a temporary layer of release paper. Alternatively the second substrate can be applied directly to form the final bond. The advantage of these adhesives is that bonding can be carried out at any time after coating since the surface remains permanently tacky. The solvent hazards are often the same as those mentioned for contact adhesives.

Hot Melt Pressure Sensitive Adhesives
These adhesives are formulated for spray application but can be applied by normal hot melt methods. They offer a high performance permanently tacky bonding system without the solvent hazards or drying delays associated with conventional pressure sensitive adhesives. This makes them ideal for large area applications.

Hot Melt Adhesives
This type of adhesive is applied through various thermostatically controlled applicators ranging in size from hand held guns for small work pieces to extrusion coaters for roll laminations. These adhesives are solvent free thermoplastic resins that become liquid when heated. They are normally applied to one substrate with the second substrate being applied while the adhesive is still molten. As the adhesive cools it hardens to form a flexible bond which is rapidly developing handling strength.

Double Sided Tapes
Double sided tapes utilise pressure sensitive adhesives pre-coated onto a roll of release paper. The adhesive can either be supported by a carrier such as tissue or be unsupported as in the case of transfer tapes. They offer a convenient alternative to the use of bulk adhesives without the drying delays or solvent hazards. These tapes are normally applied directly onto one surface with the release liner still attached. To create the final bond the release liner is peeled of and the second substrate mated to the first using light pressure. Small areas can be bonded by manual techniques whereas larger areas often require the use of driver nip-rollers. Synthetic rubber based adhesive tapes have been found to give the best adhesion to Plastazote® and Evazote® foams although acrylic based adhesive tapes may be required for applications in under severe service conditions.

Thermoplastic film
Thermoplastic film adhesives are thin layers of solvent free thermoplastic resins coated onto a roll of release paper. To form a bond it is necessary to activate the film by heating and then applying pressure whilst the film is cooling in contact with the substrate or substrates. Such materials can be used to bond dissimilar substrates and offer the advantage of eliminating solvent hazards and reducing drying delays.

METHODS OF USE

(a) Preparation

Ensure that the surfaces to be joined are clean and free of any contaminants.
It is especially important to ensure that lubricating agents such as silicone oils are not used in any previous conversion process as they will strongly interfere with the bonding process. For most adhesive systems with the exception of double sided adhesive tapes it is desirable to use a cut cell foam surface to achieve maximum bond strength. This is due to the contribution made by mechanical “keying” to the bond strength.

(b) Surface Pre-Treatment

Provided the correct type of adhesive is selected it should not be necessary to pre-treat the foam surface to achieve adequate adhesion. However, where pre-treatment facilities such as corona discharge or flame treatment are available they may be used to enhance the bond strength achieved for demanding applications.

(c) Application

Techniques of adhesive application range from brushing and spreading through to more sophisticated methods such as spraying and coating. Adhesives are often available in a variety of forms allowing a choice of application technique. The techniques normally associated with sheet materials and small parts are brushing, spreading and spraying. Contact and pressure sensitive adhesives are available in these forms. Ht melt adhesives for ‘spot’ bonding are also available. Roll materials allied to more sophisticated handling methods allow the use of techniques such as roller coating, knife coating and automated spraying. Contact, pressure sensitive and hot- melt adhesives are available for use in this way.

‘Dry’ adhesives are available in the form of double sided tapes and thermoplastic films. These systems are well suited to roll applications since they are generally available in this form. They can, however, also be useful in sheet applications using manual techniques, especially where other conversion processes provide the conditions necessary for bonding, e.g. compression moulding of laminates.

Detailed information on the application of particular adhesives can be obtained from the manufacturers.

HEALTH AND SAFETY

The recommended conditions of storage and use for each adhesive may differ widely. Details should be obtained directly from the manufacturer. For general health and safety guidance on the use of adhesives with Plastazote® and Evazote® foams users are referred to our technical information sheet TIS 02 which is available on the website or by request.

RECOMMENDED ADHESIVES

As pointed out above the choice of adhesive depends on many factors. As it is impossible to give accurate guidance for the vast range of possible uses we only give a list of adhesive manufacturers and the types of adhesive they produce. To gain information on a specific use please contact the adhesive manufacturer and discuss your needs.

To make a recommendation the adhesives manufacturer will require a comprehensive summary of the application (type of substrates, type of application, required bond strength etc.) For this purpose the foam materials should be regarded as:

- Plastazote® LD foam – crosslinked low density polyethylene foam
- Plastazote® HD foam – crosslinked high density polyethylene foam
- Evazote® EV and VA foam – crosslinked ethylene vinyl acetate copolymer foam

Zotefoams plc
675 Mitcham Road
Croydon
CR9 3AL
United Kingdom
Telephone: +44 (0) 20 8664 1600
Telefax: +44 (0) 20 8664 1616

Zotefoams Inc.
55 Precision Drive
Walton, Kentucky,
41094
USA
Telephone: +1 859 371 4046
Freephone: (800) 362-8358 (US Only)
Telefax: +1 859 371 4734

ISO 9001:2000
FM 01870

ISO 14001
EMS 36270

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MANUFACTURERS

Name	Type of adhesive	Address	Telephone	Website/ email
3M United Kingdom PLC	- Contact - Conventional pressure sensitive - Double coated adhesive tapes	Tapes & Adhesives Group 3M United Kingdom PLC 3M House 28 Great Jackson Street Manchester M15 4PA UK	+44 (0)870 6080050	http://www.3m.com innovation.uk@mmm.com
Adhesives International Ltd	- Contact - Hot melt - other	North Leigh Business Park Woodstock Road North Leigh Witney, Oxon OX8 6RN UK	+44 (0)1993 882749 Fax: +44 (0)1993 883887	http://www.adhesivesintnl.com/ info@adhesivesintnl.com
Alfas Industries Ltd	- Contact - Double coated adhesive tapes - other	Bentall Business Park Glover District 11 Washington NE37 3JD UK	+44 (0)1914 190505 Fax: +44 (0)1914 192200	http://www.alfas.com sales@alfas.com
Alpha Adhesives & Sealants Ltd	- Contact - Conventional pressure sensitive	86 St Marys Row Moseley, Birmingham B13 9EF UK	+44 (0)121 5592225 Fax: +44 (0)121 4424669	
Apollo Chemicals Ltd	- Contact - Double coated adhesive tapes - other	Sandy Way Amington Industrial Estate Tamworth B77 4DS UK	+44 (0) 1827 54281 Fax: +44 (0) 1827 53030	http://www.apolloadhesives.co.uk enquiries@appoloadhesives.com
Avery Dennison Specialty Tape Europe	- Double coated adhesive tapes	Avery Dennison Belgium Specialty Tape Division Tieblokkenlaan 1 2300 Turnhout Belgium	+32 (0)14 404811 Fax: +32 (0)14 404855	http://stde.averydennison.com

Name	Type of adhesive	Address	Telephone	Website/ email
Avery Dennison Specialty Tape USA	- Double coated adhesive tapes	Marketing Department 250 Chester Street - #5M Painesville Ohio 44077 USA	+1 440 3583256 Freephone: 800 6487636 Fax: +1 440 3583298	http://stus.averydennison.com psa.tape@averydennison.com
Bostik Ltd	- Hot Melt pressure sensitive - Hot Melt - other	Common Road Stafford ST16 3EH UK	+44 (0)1785 272727 Fax: +44 (0)1785 257236	http://www.bostik.co.uk
Collano Xiro AG		Industriestrasse 18 3185 Schmitten Switzerland	+41 26 4978111 Fax: +41 26 497810	http://www.collano.com/en
Cornelius Chemical Co Ltd	- Contact - Hot melt - Conventional pressure sensitive	Cornelius House Woodside Dunmow Road Bishops Stortford CM23 5RG UK	+ 44 (0) 1279 714300 Fax: + 44 (0) 1279 714320	http://www.cornelius.co.uk
DATAC Adhesives		Globe Lane Industrial Estate Dukinfield SK16 4XE UK	+44 (0) 161 6660667 Fax: +44 (0) 161 343 2713	
FENTAC Adhesives Limited	- Contact - Hot melt	Baird Court Park Farm North Wellingborough NN8 6QJ UK	+44 (0)1223 893771 Fax:+44 (0)1223 893546	http://www.fentac.co.uk feedback@fentac.co.uk
Guttacoll Klebstoffe GmbH & Co.		Alter Postweg 19 21614 Buxtehude Germany	+49 (0)4161 70780	
Tremco Limited	- Contact	393 Edinburgh Avenue Slough SL1 5JX UK	+44 (0)1753 691696 Fax: +44 (0)1753 822640	http://www.tremcoeurope.com

This list is for general guidance only and not intended to be exhaustive.

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