Products that this data relates to available in Australia from:

Metro Foam Products
15 Fariola Street SILVERWATER NSW 2128
Phone: 02 9748 8588
Fax: 02 8003 9810
Email: richard@metrofoam.com.au
Web: metrofoam.com.au

DATA SHEETS FOR ULTRALON P.E. AND E.V.A. FOAMS

If you have any queries regarding any of the information contained in these Data Shets, please do not hesitate to contact:
Ultralon Products (NZ) Ltd, PO Box 19-639, Christchurch, New Zealand.
Phone: 64 3 389 4325 Fax: 64 3 389 8061 Email: ultralon@xtra.co.nz Website: www.ultralon.co.nz

Data Sheet 1. Sheet Size and Material Property Information.

Ultralon foam is moulded using Ultralon's unique foam process.

The foam structure is formed in a relatively small mould which, when opened, allows the foam to dramatically expand to a sheet size that is 100% to 250% larger than the mould size.

The sheet size is therefore not fixed by the mould size, but by the expansion process. Consequently untrimmed sheets have a tolerance of +/- 20mm to +/- 40mm depending on the density.

High density foams are usually supplied as untrimmed sheets.

Low density sheets are normally supplied as trimmed sheets with a tolerance of -0 to +10mm.

Ultralon foam has a fine cell structure. Each cell is a bubble of gas confined by the cell wall. Heating the material pressurizes that gas and this causes the gas to permeate through the cell walls. Therefore the sheet size decreases when cooled by the volume of gas that is lost.

The foam may undergo expansion and contraction in transit if exposed to extremes of heat.

Closed Cell Foam Shrinkage.

Closed cell foams change in dimension when heated for a period of time. The degree of change and its permanence is dependant on the following factors :

Temperature.

Polyolefin foams subjected to temperatures up to 60 °C (for E.V.A.) and 70 °C (for P.E.) have negligible shrinkage. At higher temperatures the degree of change becomes unpredictable.

Thickness.

Thick samples will shrink at a slower rate than thin samples. However the overall shrinkage, in time, will be the same. Halving the thickness approximately doubles the percentage shrinkage in a given time.

Density.

Higher density foams shrink at a slower rate and to a lesser degree than low density foams. (< 45 kg/m3).

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Cell Size.

All of the Ultralon foams are characterized by their fine cell structures. When compared with coarse-celled foams of similar polymer type, density, and thickness, the fine-celled product will shrink at a slower rate.

Polymer Type.

E.V.A. foams shrink at a faster rate and to a greater degree than P.E. foams of the same density and thickness.

Application Conditions.

Foams which are subject to compression or tension in their proposed applications will exhibit quite different shrinkage behaviour when exposed to heat as well.

General Comment.

It is recommended that applications where heat during processing or service may limit the selection of a foam grade for a particular use are discussed with an Ultralon representative.

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Data Sheet 2. Thermo-forming and Thermo-moulding.

Ultralon foam is a unique thermo-forming and thermo-moulding material.

Both processes involve heating the foam above its softening temperature and its subsequent cooling in a deformed state, i.e. deformed in a mould.

The behaviour of the foam at the high temperature is the unique and beneficial factor of Ultralon foam.

The foam is stable with low shrinkage and little variation between manufacturing batches.

Thermo-forming.

The heating of foam and the subsequent placing of the material in a mould in which it is cooled in a deformed state.

Thermo-moulding.

The placing of the material in a mould in which it is deformed. The mould is then heated to a suitable temperature and then cooled.

Because of the reduced handling of heated material, the thermo-moulded process can operate at high temperatures and produce higher quality or more complex moulding results.

Ultralon can assist with the design of equipment for clients to mould on site.

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Data Sheet 3. Fabrication Methods.

Ultralon foam is a material that is easily fabricated by a range of techniques.

Cutting.

Bandsaw.

Bandsawing using a toothless blade is a very effective method of cutting two dimensional shapes. More than one piece can be cut at a time by stacking the foam in layers. Either the foam or the bandsaw can be tilted to produce angled profiles. The bandsaw can be used in conjunction with a cam following device to automate the cutting of complex shapes.

Guillotine.

The use of a paper guillotine is an efficient method of producing a large number of straight cuts. A paper guillotine has some sideways movement during vertical cutting.

Die Cutting (Clicking).

This method enables complex shapes and holes to be cut in a single operation. The cost of tooling is relatively low.

The lower density foams deform while cutting. Because of the materials elasticity a straight edged cut will result in a concave edge when it "springs back". The compression of the foam by "packing" the die cutting knife can reduce this characteristic.

Trimming.

Profiled Edges.

The use of a shaped routing tool in conjunction with a cam following device can produce edges profiled to templates.

The use of horizontal shaft grindstones (straight profile or shaped) can be used in a cam following situation to produce contoured shapes. These can be particularly complex when several passes are made or the cam following profile is independent on each side.

The use of a vertical shaft grindstone (or roller with sandpaper), when used with a cam follower, is effective in producing a vertical edge where a superior finish to that achieved by bandsaw or die cutting is required.

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Buffing.

This is the use of a horizontal shaft grindstone (or sandpaper covered roller) which has driven rollers that feed the material into a nip point between the abrasive surface and bottom roller. This is the only effective method of removing .25mm to 2mm of foam from a sheet.

Foams of less than 60 kg/m3 or less than 5mm thick are difficult to buff. A buffed sheet of 3mm is typically produced by buffing both sides of a 6mm sheet and then splitting that sheet in half.

A buffed surface provides a good grip for use in marine situations or as a preparation for adhesives.

Embossing.

This involves the surface heating of foam followed by cooling under a patterned surface. The foam surface will mould to the pattern. The operation is performed using an embossing roller or compression moulding press.

The embossed surface is fused and no longer has a typical fine cell structure. The surface is more abrasion resistant and is easier to clean.

Laminating.

Laminating involves the flash heating of two layers of foam followed by cooling while in contact under pressure. The resulting fusion of the layers is an excellent bond that is water and chemical resistant. The flash heating of the foam is critical as the rest of the foam should not be exposed to excessive temperatures. Different densities of foam require different degrees of flash heating. The properties and tolerance of Ultralon foams are a special feature in the lamination of similar or different densities of foam.

Wedging.

This involves the deformation of the foam between two driven rollers and the forcing of the foam into a bandsaw blade. The shape of the foam once it returns to its undeformed state is determined by the deforming rollers. Two dimensional shapes can be produced by this method.

Scarfing.

This involves the passing of the foam through two driven rollers , forcing it into a chisel type blade. The angle of the blade can produce vertical to near horizontal cuts.

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Data Sheet 4. Adhesive Information.

Ultralon materials are bonded by a number of commercially available adhesives. E.V.A. foams produce a higher bond strength than P.E. foams. Ultralon foams can also be used with a number of double-sided tapes.

The following information has been supplied by adhesive manufacturers. Actual specifications should be sought from your local supplier.

No responsibility will be taken by Ultralon or the adhesive manufacturer for the information provided in this data sheet or action taken from using this data sheet. Always test the material on a small sample of the foam or any other material being used.

Bostik 1181 Trim and General Purpose Adhesive.

Bostik 1181 adhesive has been developed as a general purpose contact adhesive possessing long open tack time coupled with moderately high heat resistance and excellent bond strength. It will not stain light coloured cotton backed P.V.C. material under the influence of ultra-violet light.

Bostik 1181 exhibits excellent adhesive bonds between such diverse materials as rubber / metal, formica / chipboard, leather / leather, leather / rubber resin, soling compounds and particularly all types of cotton backed P.V.C..

Properties.

Type	Synthetic / rubber / resin
Solvent	Hydrocarbon / Ketone
Flash Point	Below 25°C
Colour	Amber
Viscosity	Thin / brushable
Temperature Range	Satisfactory between - 23°C and 90°C dependant on bond line stress.
Coverage	Approximately 4m2 of bonded area per litre, dependant upon the porosity of surface applied to.
Cleaner	Bostik No2 Solvent
Application	Brush or spray

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Bostik 1222 Adhesive.

A general purpose contact adhesive formulated to give a high bond strength and a high heat resistance. It is recommended for the bonding of plastic laminates and is an excellent choice for the adhering of roofing butyl membrane. In the flooring industry it can be used for the bonding of carpet, sheet vinyls, vinyl skirting and stair nosings.

In the footwear industry it is an excellent sole attaching cement and is recommended for use on leather, resin rubber and E.V.A. and can be used on crepe in conjunction with Bostik No10 Crepe Primer.

It is also available in a sprayable version.

Properties.

Water Resistance	Good
Oil Resistance	Moderate
Temperature Range	Satisfactory to 150°C (used on P.V.C. 40°C)
Opentime	Minimum 20 minutes
Thinners	Bostik No2 or No4
Cleaner	Bostik No3 or No1 (Vinyl)
Flash Point	-22°C highly inflammable
Coverage	4 - 9m2 per litre on one surface depending on the absorbancy of the surface and method of application.
Spray	4 - 6.5m2 per litre

Bostik Neogrip 888.

Neogrip 888 adhesive is a neoprene contact adhesive with moderately long open time formulated to resist plasticiser migration, having high heat resistance. The product has a moderately high viscosity so that it can be applied as a one coat adhesive on a wider variety of absorbent leather and fabric surfaces encountered in the shoe manufacturing industry or in other industrial applications than is possible with the normal Bostik 1181 and 1222 adhesives.

Neogrip 888 will bond any material normally bonded by 1181 and 1222 adhesives.

Properties.

Type	Synthetic Neoprene Rubber
Solvent	Hydrocarbon / Ketone mixture
Flash Point	Below 25°C (Class 3)
Colour	Pale yellow
Viscosity	Moderately high at 1500 - 2000 cps but can be applied by brush or roller.
Opentime	Normally 30-60 minutes at 15-25°C but could be 15-30 minutes at much cooler temperature.
Coverage	Approximately 5 - 10m2 per litre depending on porosity.
Shelf Life	Greater than 12 months under normal storage conditions.

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Danco Tesafix 970 Double-Sided Tape.

Special Features.

High initial adhesion to almost any material.
Light and age resistant.
High tear strength.
Especially suited for adhering to metal or lacquered surfaces.
Uniform thickness of adhesive.
No shrinkage.
Resists high shear stresses.

Danco 1205.

A general purpose double-sided tape with the release line printed "remove backing to expose adhesive". Long length rolls available on request.

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Data Sheet 5. Oil and Chemical Resistance.

Both Ultralon P.E. and E.V.A. foam offer good resistance to a broad range of chemical substances and oils.

P.E. foam is more resistant than E.V.A. and the resistance offered by both foams increases with density.

The resistance is sufficient to describe the foams as "splash resistant" to petrol, oils and a range of acids.

Particular care must be taken when specifying the foam in a submerged application such as gaskets. The foam will have a life that exceeds many other materials but it will be finite. Hence the need to test the application to specify the environment and substance conditions.

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Data Sheet 6. Health and Safety Information.

The following information must not be used to override or surpass any relevant safety regulation.

Ultralon Products (N.Z.) Ltd reserves the right to update this information at any time, without notice.

Identification.

This information sheet provides guidance on the storage, handling and processing of Ultralon foams.

Ultralon E.V.A. is a cross-linked, expanded foam based on ethylene vinyl acetate copolymer resin. Ultralon P.E. is a cross-linked, expanded foam based on polyethylene polymer resin. The two product ranges can be considered essentially the same when considering their respective hazards. All references to Ultralon foams contained in this information sheet apply equally to Ultralon E.V.A. and Ultralon P.E. foams unless specified otherwise.

Hazardous Ingredient Information.

Ultralon foams are manufactured using resins and pigments which are considered safe for items which may come into contact with food. Ultralon foams are usually considered to be chemically unreactive.

Health Information and Protection.

Nature of Hazard.

Eye contact	Particulates may scratch eye surfaces or cause mechanical irritation.
Skin contact	Negligible hazard at ambient (-10°C to +40°C) temperature. Exposure to hot material may cause thermal burns.
Inhalation	Negligible hazard at ambient (-10°C to +40°C) temperature. Foam dust resulting from cutting and sanding should be considered as nuisance particulates. Exposure should be limited to 15 grams/m3 total dust and 5 grams/m3 respirable dust. (O.S.H.A. regulation 29CFR1910.1000). The use of suitable dust extractors and collectors is recommended.
Ingestion	Ingestion of Ultralon foams should be avoided, although the products may be regarded as toxicologically harmless. Some non-standard grades (e.g. flame retardent) may contain additives which could be harmful if ingested.

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First Aid.

Eye contact	This product is an inert solid. If in the eye, remove as one would any foreign object.
Skin contact	For hot product, immediately immerse in, or flush, affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention. For hot product, no attempt should be made to remove material from the skin as the damaged flesh can easily be torn as a result of adhesion of hot product to the skin.
Inhalation	Ultralon foams do not release noxious fumes at ambient temperatures. Polyolefins undergo minor thermal degredation at temperatures approaching 200°C, releasing some quantities of organic volatiles. If Ultralon foams are exposed to very high temperatures (about 300°C) they will start to decompose. In case of adverse exposure to vapours and/or aerosols formed at elevated temperatures, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

Fire and Explosion Hazard.

General Hazard.

Ultralon foams may burn at or above the flashpoint which is estimated at 250°C. Airborne dust may explode if ignited. If thermally decomposed, flammable/toxic gases may be released. Toxic gases will form upon combustion. Static electricity may build up in Ultralon foams. Material can accumulate static charges which can cause an incendiary electrical discharge.

Fire Fighting.

Use water spray to cool the fire exposed surfaces and protect personnel. Isolate "fuel" supply from the fire. Extinguish the fire by cooling with water spray. Respiratory and eye protection is required for fighting personnel.

Decomposition Products under Fire Conditions.

Oxygen lean conditions may produce carbon monoxide and irritating smoke. Ultralon E.V.A. foams may also produce acetic acid (irritant).

Recommendations for Storage, Handling and Transportation.

Ultralon foams are normally supplied as sheets, profiled strips or finished / semi-finished products. Materials may be supplied loose or plastic-wrapped on pallets, and in cardboard wraps or cartons. The products are chemically stable at ambient temperatures. As no fumes are produced under these conditions no special precautions need to be taken. Material should be stored out of direct sunlight to prevent colour fade and distortion.

Static electric charges can generate when seperating sheets of Ultralon foams. These may discharge through operators causing minor discomfort.

Static discharges may cause ignition of flammable solvent vapours and/or damage to other electrically sensitive items. Such items should not be stored adjacent to Ultralon foams.

Ultralon foams are combustible and good housekeeping should be observed to minimise the possibility of accidental fires. Users who hold large inventories should ensure they comply with any legal and insurance requirements relating to the storage of combustible materials.

Processing Ultralon Foams.

Processes used by clients to convert Ultralon foams into finished products may have their own specific hazards. The following notes are offered as a guide to highlight sources of potential hazard.

Splitting.

The use of band knife splitters requires vigilance by the operator. These machines have feed rollers, a sharp blade and grinders for blade sharpening. These machines need to be kept clear of combustible dust which may be ignited by sparks from the grinders.These machines also tend to build up static electricity in the foam being processed.

Clicking (Press Cutting).

No special precautions are required. Observation of the correct machine operating procedure is urged.

Bandsaw Cutting.

No special precautions are required. Observation of the correct machine operating procedure is urged. Use care when operating a machine with an accessible cutting blade.

High Temperature Cutting, Laminating, Welding and Thermo-Forming.

Machines used for heat processing Ultralon foams should be fitted with interlocks which can isolate the heat source. These interlocks should activate when the set operating temperature is exceeded and/or material flow through the machine stops when the machine is operating. Any fumes or smoke produced by the heat process should be extracted to the outside of the building. Gloves should be used when handling hot foam.

Buffing, Sanding or Trimming.

These processes generate dust. The dust must be extracted away from the operator and the work area. A suitable dust collector is required. Static electricity caused by these processes can cause the dust to adhere to the metal framework of machines. The machines should be well earthed. Controlled humidity can also reduce the amount of static electricity and consequently make the dust easier to extract. Eye protection is recommended to prevent dust entering the operator's eyes.

Adhesives.

All solvent based adhesives should be used according to the manufacturer's recommendations. Contact your adhesive manufacturer for details. Properly designed adhesive application work areas will minimise the risk of accidental fire caused by static electrical discharge. Consult your local Health / Labour Authority for recommendations.

Waste Disposal.

All waste foam should be treated as combustible. Waste and off-cuts should be properly stored in non-combustible bins until disposal. Incineration of waste can be hazardous if not carried out in a properly designed burner. Consult an engineer qualified to recommend a procedure before using burning as a disposal method.

Use of Foam in Combination with Other Materials.

Clients should ensure they have all the necessary technical and other information relating to the safe processing of all materials supplied by third parties.

Technical Service.

Ultralon is committed to ensuring Ultralon foams are used safely by our customers. Any queries relating to your process(es) should be directed to the Marketing Department.

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