



YULEX Technology & Engineering Group		Date: November 2, 2022 Page 1 of 3
Document Title: Yulex® Y-Series Closed Cell Foams, Physical Properties		
Rev. 3.0	Technical Information Series	

Yulex Y-Series closed-cell foams are the world's first plant-based foam produced from high quality, certified sustainable Yulex Natural Rubber (FSC/PEFC). Yulex Y-Series closed cell foams are a direct, drop-in replacement for neoprene foams use in wetsuits, diving suits, swimwear apparel and fashion, action/health sports, backpacks, luggage and handbags, footwear, electronic devices and accessories, medical braces, pet accessories, automotive, furniture, and more.

Test Item	Test Standard	Yulex® Y85-550	Yulex® Y85-350	Yulex® Y85-250	Yulex® Y85-200
Polymer Type	Yulex	Yulex NR	Yulex NR	Yulex NR	Yulex NR
Color	Yulex	Black	Black	Black	Black
Elongation* (%)	ASTM D412 (Die A)	≥550%	≥350%	≥250%	≥200%
Tensile Strength* (kg/cm ²)	ASTM D412 (Die A)	≥5.0	≥5.0	≥5.5	≥5.0
Tear Strength* (kg/cm ²)	ASTM D624 (Die C)	≥2.5	≥2.5	≥2.0	≥2.0
Modulus* @60% (kg/cm ²)	ASTM D1056	0.6	0.7	1.4	1.7
Modulus* @100% (kg/cm ²)	ASTM D1056	1.0	1.2	2.3	3.1
Modulus* @200% (kg/cm ²)	ASTM D1056	1.4	2.8	4.8	4.8
Durometer* (Asker C)	ASTM D1817/D2240	3-5	3-5	6-9	12-15
Compression Set*/** (%)	ASTM D395	≤15%	≤15%	≤17%	≤17%
Shrinkage*/** (70°C/22Hrs)	JIS K-6767 ASTM D1056	<5%	<5%	<5%	<5%
Density* (g/cm ³)	ASTM D1817	0.16-0.20	0.16-0.20	0.16-0.20	0.18-0.20
Ozone Resistance*/** (25pphm 20/Hrs)	ASTM D1149	Pass	Pass	Pass	Pass
Produced with Yulex FSC/PEFC Certified Natural Rubber	Yulex	Yes	Yes	Yes	Yes
Sliced Sheet Tolerance >2.0mm/+0.4mm <2.0mm/+0.2mm	Yulex	•	•	•	•

* Measurements made without lamination or skin. Specifications subject to change without prior notice. Contact Yulex for the most up to date information. ** Typical results.

Symbol	Definition
≥	Greater Than or Equal To
≤	Less Than or Equal To
>	Greater Than
<	Less Than
=	Equal or Equivalent


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Testing Methods, Standards and Definitions.

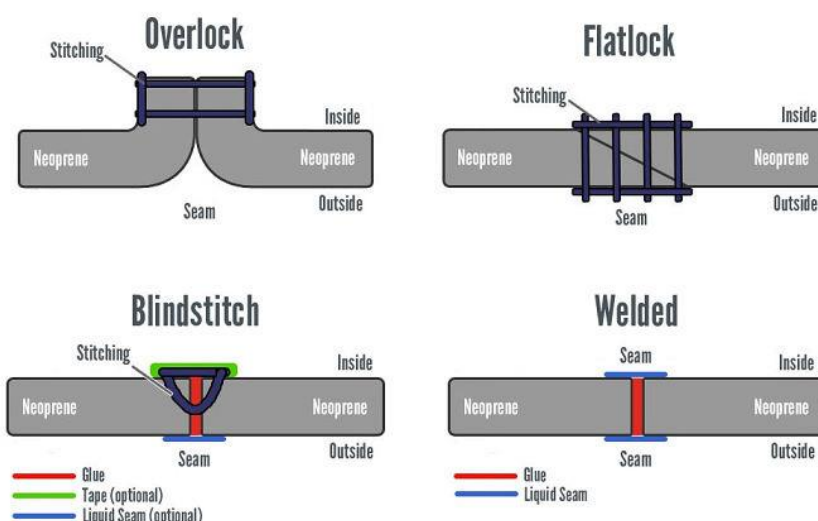
Test Standard	Test Name	Unit of Measure	Definition
ASTM D412 (Die A), ISO 37	Elongation	Percentage %, @Break or Rupture During Extension.	Determines the amount the foam can stretched (elongated) before it breaks or ruptures. Extension rate is 500/mm/Min.
ASTM D412 (Die A), ISO 37	Tensile	Kg/CM ²	Determines the force applied to the foam that causes it to break or rupture. Extension rate is 500/mm/Min.
ASTM D624 (Die C), ISO34	Tear Resistance	Kg/CM ²	Determines the force required to propagate and tear the foam as it is being pulled. Extension rate is 500/mm/Min.
ASTM D412, ISO 37	Modulus	Kg/CM ²	Determines the force required to stretch the foam during the elongation test. Extension rate is 500/mm/Min.
ASTM D1056/395 (Method B)	Compression Set	Percentage %, @25% Deformation	Determines the permanent amount of deformation as a percentage of the original dimension after the foam has been compressed 25% of its thickness.
ASTM D1817, ISO 2781	Density	G/CM ³	Determines the weight (mass) of a given volume of foam. The lower the number the lighter the foam. Density is Mass/Volume.
ASTM D1149	Ozone Resistance	Visual, @25/pphm/20/Hrs.	Determines how resistant the foam is to ozone exposure and is measured by ozone concentration for a given number of hours. Outcome is <i>Pass</i> or <i>Fail</i> based on Criteria.
JIS K6767	Shrinkage	Percentage %, @70°/22/Hrs. Dimensional Loss	Determines how much the foam shrinks as a percentage of the original dimension after being heated for a given number of hours.
ASTM D1817/D2240 (Asker C)	Durometer (Hardness or Softness)	Indentation of Force	Determines the relative firmness of the foam. Also expressed as softness. It is primarily used as a comparative measure between different foam materials.

Storage of Yulex Y-Series Closed Cell Foams.

All Y-Series foams should be kept in a cool (<70°F/<20°C), dark environment out of direct sunlight with low humidity (<40%RH). Laminated sheets should be stored flat (no wrinkles), with no edges folded over. Sliced sheets (unlaminated) should be stored flat with a layer of fabric or parchment paper in between each sheet to keep from sticking. Sheets with skin should never be stored skin to skin and ideally, stored with a layer of fabric or parchment paper in between each sheet to keep from sticking. Do not stack sheets more than 20-25 sheets thick depending on individual sheet thickness. Overall, not more than 12" (300mm) in total. This way the sheets are not compressed.. If sheets are rolled, they should be rolled around a hard cardboard tube or plastic pipe with a diameter of 6" (152mm) and stored on side in nested supports with appropriate radius to roll diameter. Do not stack rolled goods on top of each other. Do not place heavy items on top of stacked sheets or rolled goods. All stacks or rolls of Y-Series foam should be covered with a suitable tarp covering to keep clean and dust free. If sheets become lightly creased, lay flat on a table in a warm room (80f/26c) for several hours to relax any creasing.

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Methods and Techniques for assembling Yulex Y-Series foams.



Stitching

Stitching involves making holes in the foam to pass the thread through, hence it can result in water being let around the seams.

Overlock

The simplest way of stitching - like the seams on your jeans and t-shirts. The two edges of the panels are rolled inwards and then stitched together. Overlocked seams are much less flexible and result in a bulge on the inside.

Flatlock

In this kind of seams, the edge of one panel has been laid over the other and the stitching goes through both panels, creating a flexible and durable seam. The downside of this method is that it results in a lot of holes going through the foam, which can let water in.

Blindstitch

The best choice for cold water surfing. The panel edges are glued together, end to end, then stitched on the inside of the foam. However, the stitch only goes partially through the foam, and not as far as the outside of the panels, meaning you get a fully watertight, super flexible and strong seam. This kind of stitching is also called Glued Blind-Stitched, or GBS.

There are a number of ways to strengthen and waterproof seams.

Glued Seams: The panels are glued together prior to stitching, increasing the strength of the seam and creating a waterproof seal. **Spot Taped Seams:** Tape is glued to the inside of the seam in critical areas to add additional strength where needed. **Fully Taped Seams:** Tape is glued to the inside of every seam. Foam tape can be used to ensure there is no loss in flexibility. **Liquid Taped:** The ultimate seam seal. A special liquid rubber is applied to the inside seam which makes it 100% waterproof.