



REGISTERED TRADEMARK

TUBE FABRIC COMPARISON: HYPALON VS VALMEX

Introduction

There are many facts and myths about the durability of inflatable boat tubes. At Falcon, we have been conducting long-term research into this field since our inception in 1985. Boats have been tested in harsh environments including various climates, commercial use, and racing. Through this research, we have established that, although the quality of the fabric is important, the useable life of a tube is in most cases not determined by the fabric, but by the durability of the seams.

More modern fabrics and construction techniques have emerged over recent years, the most important one being the introduction of welding or thermo-bonding. Our Company is focussed on producing the best quality inflatables, not necessarily in the largest volumes, produced in a cost-effective manner, to provide many years of hassle-free boating. We have no interest in competing with low-cost manufacturers, or 'making a quick buck' - it is of utmost importance that our customers are satisfied in every way, and that those same customers return to do more business.

Facts about Hypalon

Hypalon was developed more than 40 years ago. It is seen as a superior fabric to most, mainly due to its durability when exposed to the elements. It is also more tolerant to under-inflated operation, and very good at resisting chemical attack. A downside is that Hypalon tubes are constructed using glued seams, the only option available. A not so commonly known fact is that deterioration of a Hypalon tube over time shows that glue will be the first point of failure, and not the fabric. General lifespan in an average climate is about 10-12 years, whilst harsh temperatures will shorten the glued seam life to about 5 years.

Facts about general PVC

A very wide array of PVC fabrics exist - some exceed the properties of Hypalon, and others fall far short. Unfortunately the majority of PVC manufacturers opt for the cheaper option, often sourced from the East at a fraction of the price of high-grade derivatives. To understand PVC, it is important to understand that it is a form of plastic, and not rubber like Hypalon. The quality and resulting lifespan is, amongst others, determined by the grade of plasticizer used (in order to make it pliable). A 'cheap' plasticizer will migrate to the surface, resulting it to go tacky and turn brown, followed by it becoming brittle, and failing altogether.

It is important to note that even the lowest grades, when using glued seam construction, still have its glue seams failing long before the actual fabric. The result of the plasticizer migration makes the tube boat appear old and weathered far sooner than a Hypalon tube. Test results have however shown that thermo-bonding a low-cost PVC dramatically increases its useable life to about 6-7 years in an average climate, and about 4-5 years in harsh conditions.



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Facts about Valmex PVC

Valmex, manufactured by Mehler Technologies in Fulda, Germany, is a blend of various high quality plastics (including some automotive-grade PVC) and the highest available grade of plasticizer. It costs about double the price of most low-cost PVCs, yet it's still about half the going rate of Hypalon. Its useable life span as a tube fabric is very similar to Hypalon, at a notably lower cost.

The core reasons why we opt for this fabric are (1) the fact that it can be successfully thermo-bonded and (2) Falcon has been using this fabric for over 16 years, supplying to recreational and commercial users in South and North Africa, but more predominantly Australia, Europe, some to the USA and quite a few to various harsh weather condition Islands like the Caribbean, Seychelles, Zanzibar, etc. - Not a single case of fabric failure has been recorded, but we have recorded the failure of glued seams.

Falcon introduced thermo-bonding in 2004, before then, with glued seams, the earliest reported local glue failure on a Falcon was at 8 years of age (and the fabric was still perfect). Valmex is lesser known because it is considered an 'expensive' fabric - we're expecting the thermo-bonded version of Valmex tubes to exceed 12 years under normal climatic conditions.

Facts about Glued seams

Our research indicates that the first point of failure of any inflatable, made from any derivative of fabric, is the glued seams, not the fabric itself. Hypalon seams cannot be welded, only glued. So what is the advantage of using a good quality fabric, but the glued seams will fail in any way before the fabric fails ?

Facts about Welded / thermo-bonded seams

This has truly revolutionized the inflatable boat industry. Seams are melted together using a combination of hot-air and high-frequency welding, resulting in a bond 4 times as strong as a glue seam. The result is a pressure tolerance of more than 10 times normal operational pressure, and a seam which simply cannot fail.

The procedure is so reliable that it has been adopted by every reputable manufacturer in the world. The only exceptions are Hypalon-only manufacturers - they are at the mercy of glue. A testimony to this fact is that since thermo-bonding took the market, every single Hypalon boat now produced are fitted standard with automatic pressure release valves in order to prevent overpressure and extend glued seam life. A thermo-bonded seam is so tolerant that you never need to inflate or deflate a boat to compensate for temperature variances.

Conclusion & recommendations

There are a number of modern plastics available, and we are constantly conducting tests to ensure maximum durability, especially in harsh climates and hard working conditions. We are of the opinion that for the said application, the quality, durability and strength of the tube seams is a limiting factor when using Hypalon. This argument is further supported by the fact that the inventors of Hypalon, Du Pont, have already started withdrawing it from the marketplace, as all of their key customers (including the US Coast Guard and Navy) have turned to modern plastics with thermo-bonding being the construction method of choice.