

TAKACAT

Generic Comparison of PVC, Hypalon, and TPU fabrics for Inflatable Boats

| Feature | PVC (Polyvinyl Chloride) | Hypalon (CSM - Chlorosulfonated Polyethylene) | TPU (Thermoplastic Polyurethane) |
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| Material Composition | Synthetic plastic polymer, often reinforced with polyester or nylon mesh. | Synthetic rubber with a neoprene base, coated with chlorosulfonated polyethylene. | Thermoplastic elastomer, combining flexibility and durability. |
| Durability | Good durability; resistant to abrasions and punctures but less robust than Hypalon. | Excellent durability; highly resistant to abrasions, punctures, and harsh conditions. | Very good durability; strong resistance to abrasions, punctures, and wear. |
| UV Resistance | Moderate; can degrade over time with prolonged sun exposure unless UV stabilizers or covers are used. | Exceptional; highly resistant to UV rays, maintaining integrity in intense sunlight. | Very good; better UV resistance than PVC, though slightly less than Hypalon. |
| Chemical Resistance | Good resistance to oils, fuels, and mild chemicals but can degrade with strong solvents. | Superior resistance to chemicals, oils, and fuels, ideal for harsh environments. | Good resistance to chemicals and oils, comparable to PVC but slightly better. |
| Weather Resistance | Performs well in moderate climates but may stiffen in cold temperatures. | Excellent; withstands extreme temperatures (hot and cold) without losing flexibility. | Very good; maintains flexibility across a wide temperature range. |
| Weight | Lightweight, making it easier to handle and transport. | Heavier than PVC, which can make boats less portable. | Lightweight, similar to PVC, enhancing portability. |
| Cost | Most affordable option, ideal for budget-conscious buyers. | More expensive due to superior durability and longevity. | Moderately priced; more expensive than PVC but often cheaper than Hypalon. |
| Repairability | Easy to repair with adhesive patches; widely available repair kits. | Repairable but requires specific adhesives and expertise; patches bond strongly. | Easy to repair with heat welding or adhesives; repair kits are becoming more common. |
| Flexibility | Good flexibility but can become brittle over time, especially in cold conditions. | Highly flexible, maintaining performance in extreme conditions. | Excellent flexibility, even in cold temperatures, with good elasticity. |

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| Environmental Impact | Less eco-friendly; production and disposal can release harmful chemicals. | Moderate; durable but non-recyclable, with complex manufacturing processes. | More eco-friendly; recyclable and often produced with fewer harmful chemicals. |
| Lifespan | 5-10+ years with proper care, depending on usage and storage conditions. | 10-20 years or more with proper maintenance; ideal for long-term use. | 7-15 years, depending on quality and maintenance; a good middle ground. |
| Best Use Cases | Recreational boating, calm waters, occasional use, budget-friendly applications. | Commercial, military, or heavy-duty use in extreme environments (e.g., tropics). | Versatile; suitable for recreational and semi-professional use, eco-conscious buyers. |

Key Benefits Summary

- **PVC:**
 - **Pros:** Cost-effective, lightweight, easy to repair, widely available, and suitable for casual or recreational use. Seams/Fabric can be thermally welded.
 - **Cons:** Limited UV and temperature resistance, shorter lifespan, less eco-friendly.
 - **Ideal For:** Budget-conscious users, inland or calm water boating, and those prioritizing portability.
- **Hypalon:**
 - **Pros:** Exceptional durability, UV and chemical resistance, long lifespan, and reliable in extreme conditions.
 - **Cons:** Higher cost, heavier, and repairs require specific expertise. Seams/Fabric must be glued.
 - **Ideal For:** Professional, commercial, or heavy-duty applications in harsh environments.
- **TPU:**
 - **Pros:** Lightweight, flexible, eco-friendly, good durability, and versatile across various conditions. Seams/ Fabric can be thermally welded.
 - **Cons:** Slightly less durable than Hypalon, less common, and moderately priced.
 - **Ideal For:** Environmentally conscious users, recreational to semi-professional boating, and varied climates.

Additional Notes

- **Maintenance:** All three materials require proper cleaning, storage away from direct sunlight, and regular inspections to maximize lifespan. Hypalon demands more careful maintenance due to its cost and longevity.
- **Customization:** PVC and TPU are easier to manufacture in various colours and designs, while Hypalon is typically limited to fewer colour options.
- **Availability:** PVC is the most widely used and available, followed by TPU, while Hypalon is less common due to its higher cost and specialized production.

Note:

Takacat “Sijiatex PVC” is manufactured with a UV resistant stabiliser and we have used the same supplier for 18 years. All Takacat Models can be manufactured in any of these fabrics.