UK BOATBUILDING: A SEARCH FOR PRODUCTIVITY AND QUALITY

Painting and finishing: how the latest tape products can help improve speed of production and the quality of finish

Boat builders around the UK have a worldwide reputation for design, quality and innovation, especially when it comes to the manufacture of leisure craft, superyachts and small commercial marine vessels. The sector is characterised by a large number of independent artisan boat builders, plus a smaller number of industrial-scale manufacturers, all of whom share a passion to create boats that excite, inspire and delight their customers.

Regardless of the size of each boatbuilding operation, every business – every naval architect, designer and engineer – recognises that passion has to be tempered by commercial realities and is searching for the perfect combination of productivity and quality at the best possible cost.

Painting and Finishing

Boatbuilders are, by their very nature, perfectionists. Although this is reflected in every stage of the design and construction process, it is perhaps the finish of the visible internal and external surfaces, from individual cabin trims to the hull surfaces – both above and below the water line – that is truly representative of this obsession.

> Masking tapes have been used for many years, for protecting and masking surfaces that are to remain free of paint, lacquer, adhesives or gel-coats.

Painting, spraying and finishing are key production operations. Although a number of factors can affect the final quality, the use of the correct materials is critical; even down to the type of masking tape used as this can have a significant impact on both quality and productivity.

Masking tapes have been used for many years, for protecting and masking surfaces that are to remain free of paint, lacquer, adhesives or gel-coats. There are, however, many different types of masking tape, and although they may look the same, which can complicate the process of product selection, they often have unique characteristics for specific applications.

Behind the mask: application

The quality of tape is one factor to consider and it is an important one. However, there are other considerations to take into account when it comes to applying masking tape:

1. The quality of the tape
2. The type, shape and quality of the surface
3. How well the tape is applied
4. The way the paint is applied
5. How and when the tape is removed

Quality of tape. One of the problems with poor quality tapes is the residue left behind once the tape has been removed. This is caused by the rubber-based adhesives used by most manufacturers; these adhesives slowly cure in-situ.

The type, shape and quality of the surface. A good paint surface is vital which means clean, dry and as dust free as possible. This will help avoid bleeding but be aware that, typically, it will not bond well to damp or textured surfaces.

How the tape is applied. The use of a good quality, medium tack tape is key to successful application. Boatbuilders will start by marking off at intervals of approximately 5-6cm then will pull the slack out of the tape between the marks - avoiding the use of pressure to stick the tape along the full length at this stage. This will only be done once satisfied it is in the correct position.

The way the paint is applied. It is vital that the instructions of any paint, solvent or compound are read thoroughly. Even with the experience of applying hundreds of different products, think again. What's more, never use paint directly from its original can. Pour out a small amount and stir thoroughly, then keep the lid on tight to keep out contamination from light and dust.

How and when tape is removed. Pull the tape off before the paint has set. The longer the tape is in place, especially if it is exposed to direct sunlight or humid conditions, the greater the risk of adhesive residue being left behind. Although residues can easily be removed the process requires additional time and normally involves the use of a solvent, effectively having an impact on productivity and production costs; there is also the risk that the use of solvents will dull the paint surface and may involve possible health and safety hazards.

Having a trusted supplier is crucial and it's important that they understand how tape is used for the many applications in boat building. From design painting and finish, mounting and insulation through to maintenance and repair, adhesive tapes play a crucial part.

> Boatbuilders will be familiar with the problems caused by masking tapes that are too thick, leading to an excess volume of paint and raised surfaces.

Quality adhesion

Unlike many tape manufacturers, tesa produces its own adhesives and has an extensive research and development department based in Germany. tesa is therefore in a unique position to develop specialised formulations to meet the needs of customers throughout the marine sector.

In particular, tesa develops masking tapes that ensure a quality finish such as tesa® 4338 which incorporates additives that pre-cure the rubber-based adhesives. This makes the tape simple to apply, reposition and remove, with a strong bond but without leaving any trace of residue, even after being in place for several days in direct sunlight or having gone through multiple paint or surface finish drying cycles. It has also been designed to be easy to unwind from each roll, to work with different surfaces and to make it simple to mask curved areas.

The adhesive formulation has a further advantage. Other bonding products tend to slide on vertical surfaces as the weight of paint or lacquer on the tape increases when multiple coats are applied. This tape has been developed to provide a high sheer resistance that won't slide even when heavily weighted by paint or lacquer.

Fine line masking

Similar challenges are often encountered with the use of fine line masking tapes, which are typically used for design details, hull stripes or keylines.

Boatbuilders will be familiar with the problems caused by masking tapes that are too thick, leading to an excess volume of paint and raised surfaces, or the risk of paint edges being damaged when tape is removed, requiring retouching.

The secret of success is to use a fine line tape, such as tesa Precision Mask 4342. This is extremely thin – less than half the thickness of conventional tapes – yet is easy to apply; because it is so thin, it's possible to see the surface beneath and identify areas where the tape may not have been fully pressed down, to ensure perfect adhesion and give a precise paint edge.

Despite its thinness, can withstand high temperatures of up to 150°C for up to 30 minutes yet is strong enough to pull-through multiple layers of paint without leaving any residue.

Bonding wood, plastic metals and glass

The productivity challenge is further compounded by the nature of the vessel and the differing materials that require bonding. Applications frequently require accurate, large-span connections between dissimilar materials and the reality is that there are limited options available to body builders. Applications might include wood strapping to the inside of aluminium or steel hulls where the exposure to extreme weather conditions can cause severe expansion and contraction.

Therefore, the solution must be flexible. Metal surfaces are prone to condensation, so bonding needs to be waterproof. When bonding foam insulation panels, for example, the application must be free of solvents as this can break down the foam.

Adhesive bonding has significant downsides, however, as liquid adhesives require time to cure, which can slow down production operations and increase the requirement for temporary fixtures to keep parts in place until the bond has formed.

Ensuring the performance of an adhesive bond may involve significant surface preparation work, and excess adhesive may need to be removed by hand if they are visible to the end customer.

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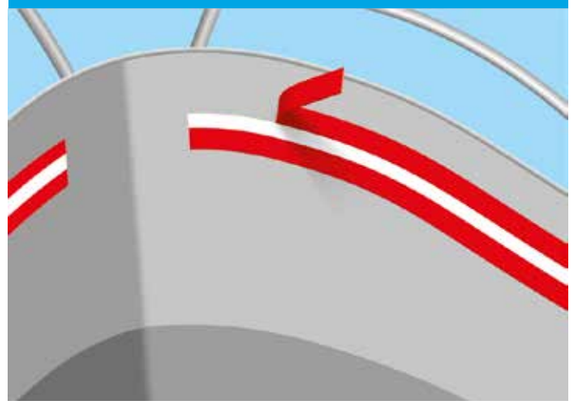
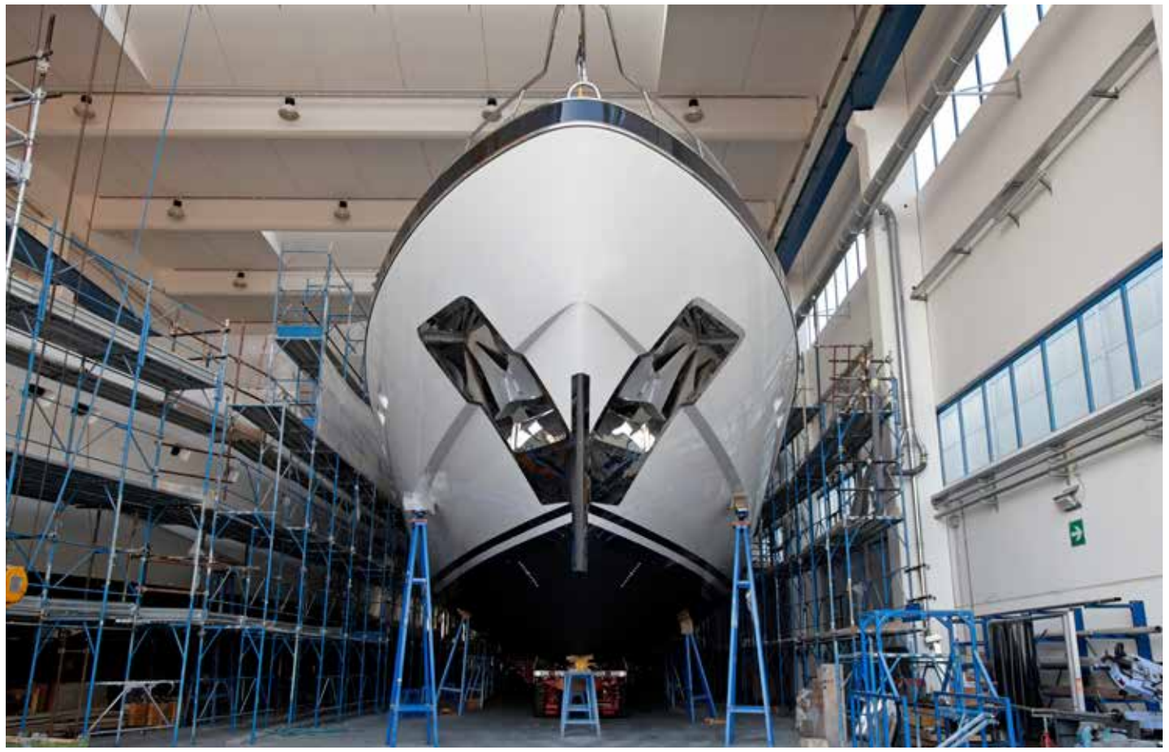




There is a better way

Boatbuilding is an age-old process, with many tried and tested production techniques that have, quite literally, evolved over centuries. In many respects, little has fundamentally changed since the early days of boatbuilding; but every once in a while, new products and technologies come along that can either transform the industry – the development of fibre resins and composites, for example – or bring about incremental changes that have a significant impact on the quality, efficiency or productivity of manufacturing operations.

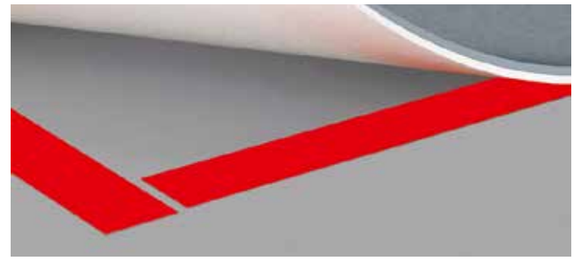
Unlike liquid adhesives, tapes provide almost immediate handling strength, reducing cycle times and simplifying manufacturing. Tapes can bond and seal in a single process, and they are invisible once installed, providing aesthetic benefits and smooth interior and exterior surfaces that are easy to clean. Modern industrial adhesive tapes provide high-performance, precision-engineered solutions to even the most demanding bonding challenges.

Great ideas can also be extremely simple. For example, tesa's range of masking tapes are available in different colours. This makes it easy to identify the current product for each application, helping you to minimise waste and reduce cost, while producing the best quality results time after time.

Or with Easy Cover Premium Paper, which combines a special masking paper and tape in one product, considerable time and effort can be saved especially when masking large areas such as decks or hulls; normally this is a two-person operation, often involving working at height and involving two or more different products. By comparison, Easy Cover can safely be applied by a single person, with full protection from over-spraying or paint splashes, while ensuring sharp and clean paint edges.

Productivity and quality

Set against the complexity and sophistication of boatbuilding operations, the topic of masking tape may appear relatively simple. Yet considerable skill and expertise, combined with highly advanced manufacturing technologies, goes into the development and production of each roll of tape. Ultimately, the goal is to create products that help boatbuilders improve quality and productivity still further, giving them the tools to continue the UK's reputation as a world leader in boat design, innovation and quality.



Application	Tape	Advantages
Design painting	tesa® 4338 tesa® 4342	120 °C temperature resistance Ensures crisp, clean and flat paint lines Outdoor use for up to 3 weeks
Heat insulation of pipes and heating elements	tesa® 60632	160 °C temperature resistance Flame retardant and resistant to oil and acids. MED Certified*
Mounting - flooring	tesa® 4964	High adhesion for a secure bond plus it's resistant to weather extremes
Mounting - mirrors, panels and trims	tesa® 4952, 4965 Original tesa® ACXplus 7062 High Adhesion	Long-lasting, secure bond and a quality alternative to mechanical fasteners and liquid adhesives

Visit www.tesa.com for a full list of all products and applications available through tesa for marine.
*MED certified products including tesa® 60632 are mainly used for sealing and splicing of insulation material inside cabin walls.

Our management system is certified according to the standards ISO 9001, IATF 16949, and ISO 14001.

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