

For most people, zips are simply for holding clothes or other materials together and are rarely spared a second thought. However, for many others, the use of a zip will represent the difference between dry and wet; comfortable and clammy; protected and damaged, and perhaps even between life and death.

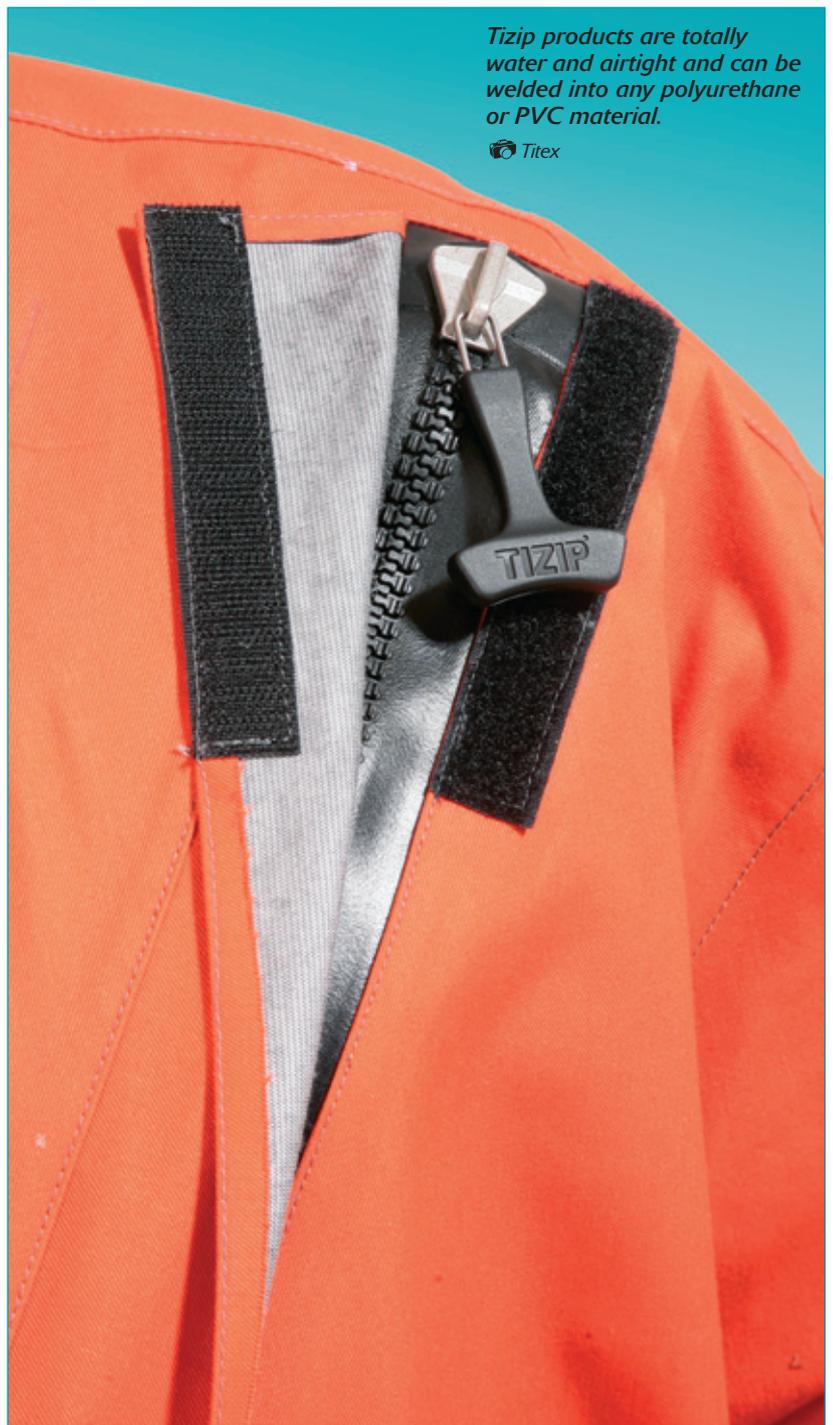
Tizip or not Tizip: that is the question

To offer a couple of simple examples, a zip in a dry or semi-dry diving suit could have a crucial impact on the performance of the suit as a whole, while a zip on a waterproof tent could mean the difference between a dry night's sleep and a bag of safely preserved belongings, and a soggy sleeper without a fresh change of clothes for the next day.

German zips manufacturer Titex Vertriebs GmbH, based in Heilsbronn, has been making waterproof zips under the TIZIP brand for nine years now with a variety of end-use applications in mind. According to one of the company's clients, Ballonfabrik Augsburg, most other zip-making firms are still using 40-year-old technology, while Titex is able to offer advanced zip fastenings that are constantly evolving. Its range includes zips for watersports and protective clothing, tents and backpacks and inflatable goods.

"Waterproof zips are a very specialist product made in medium and small quantities for specific applications worldwide, while regular zips are mass products which are sold in long rolls or big quantities mainly to the apparel industry," explains company spokesperson Bernd Huelsmann. While standard metal zip technology provides a layer of rubber coating on both sides of the tape, TIZIP zips are coated with polyurethane on the top surface, which allows them to be welded into any polyurethane or PVC material. Both sides of the zip can easily be glued to neoprene and the zip chain is protected by two lips which are sealed over the zip chain when it is closed.

"More than 90% of regular zippers are simply sewn in place; the others are glued with different technologies. However, sewing creates a line of holes, which have to be sealed again," points out Mr Huelsmann. TIZIP zips are less rigid than their predecessors and this added flexibility helps to broaden their usage capabilities. Furthermore, while an ordinary zip could



Tizip products are totally water and airtight and can be welded into any polyurethane or PVC material.

 Titex

become separated as a result of rough handling, Titex claims its zips are 'self-healing'. Therefore, when the slider is pulled down and up again, the zip remains firmly closed.

Integrated seal

The company offers different types of zip for a number of diverse industries, all of which require high-performance fasteners. For example, earlier this year it launched the MasterSeal 10, which is completely waterproof as well as being flexible and easy to pull. The MasterSeal is a bendable zip with an integrated seal that is held in place using a row of plastic teeth on the top and on the bottom of the sealing lip so that, when closed, it is totally water and airtight. According to Mr Huelsmann, it is "a stage on from other zips, including other TIZIP types" because of its "outstanding flexibility and ease of operation". It is suitable for a wide range of water sports and outdoor items and can be used with new technical lightweight and stretchable materials. This type of zip is especially useful for the watersports dry-suit business, says Mr Huelsmann, as "even in a sharp bend, the MasterSeal 10 would not leak. It is also better than any other waterproof zip at maintaining its function in permanent bending areas, offering new possibilities for drysuit designs." The zip can be welded, sewn, taped or glued on, depending on the product specification.

Ballonfabrik Augsburg uses TIZIP zips for many of its protective suits. Founded in 1897, the firm has developed from its origins as a hot-air balloon manufacturer to become a designer and maker of survival, safety and personal protection equipment including helicopter, jet and diving suits. Among its clientele it counts the German armed forces and the Dutch air force and, according to company spokesperson Sven Kirschning, zips play an incredibly important role in the overall quality of its finished products. The firm uses the MasterSeal for its helicopter and jet suits as Mr Kirschning believes the zip is "by far more flexible and easier to operate" than any equivalent on the market. He adds that the fastener also costs approximately 50% less than those offered by other zip manufacturers.

Ballonfabrik's helicopter suits are designed to protect military officers in the case of any accident or emergency that forces them to abandon the aircraft. The fabric used is both flame and waterproof, so the zip must also be up to the task. Any leakage would leave the wearer vulnerable, particularly if he or she were submerged in water for any length of time. "Imagine the North Sea with an average temperature of 7° C", explains Mr Huelsmann. "Hyperthermia kills people in minutes at 7° C water temperature if they are not protected." Therefore, if the zip lets in any water at all, the



Ballonfabrik claim that people wearing their helicopter passenger suit can maintain a core body temperature at or near 37 °C for more than two hours.

W.L. Gore

protective suit is rendered useless and could seriously endanger the lives of its wearers.

However, despite the high levels of functionality on offer, Ballonfabrik does not confine itself to using TIZIP zips. It also sources zips from industrial slide fasteners and multi-purpose zip provider Dynat, primarily for use in its high-quality diving suits. Dynat claims its zips "keep the elements at bay" for those taking part in water sports, diving and other outdoor activities and its zips can help protect wearers from fire, water, moisture, cold and dirt. According to Mr Kirschning, they are more watertight than the TIZIP products when used in diving suits for depths of up to 50 metres, and are also more durable.

So, while the new technology has some excellent properties, the more traditional zip technology may offer a more effective alternative in certain spheres. Moreover, Dynat managing director, Thomas Tieleboerger, would contest the claim that the competitors of Titex are using 40-year-old technology, or that using older technology is necessarily a disadvantage. "There is always development in technology, including in the watertight zipper business," he says. Despite this, Mr Kirschning describes the metal zips as "terrible for flexibility" and "bulky and stiff" compared to the bendy MasterSeal.

Other experts appear to agree with Mr Tieleboerger's view. Mike Smith, general manager of The New Zipper Company, which is a UK-based sister company of Dynat, does not dispute that the basic technology has been around for a long time, in fact, he says it's 52 years old. In spite of this, for him, some of the newer zips are perfectly suitable for use in low-

pressure situations, but when it comes to high pressure, “are simply not up to it”. His company continues to use traditional metal zips because it has come across nothing to surpass them as yet. He says: “It’s all about protecting lives and metal zippers are by far the best option available at the moment.”

Fastenings company YKK offers many types of zip including airtight, concealed, decorative, flame and chemical resistant, heavy duty, lightweight, reversible, stretchy, UV resistant and waterproof zips. And, like Titex, the industries it caters for are incredibly wide-ranging. The list includes general apparel, extreme sportswear and survival gear, industrial and workwear and marine activities clothing, among others. According to the company its “products can be found in space, under oceans, fastening astroturf and in many more surprising places”.

Moreover, YKK’s zips have a variety of basic functions. Among its range are: closed-ended zip halves which cannot be separated, for example on a pair of trousers; open-ended zip halves which can be completely separated; and zips with two sliders, which can be opened from each end. The company also caters for different end-uses using a variety of slider functions. These include auto lock, the type found on most pairs of trousers; twin tab lock, which are used outside and inside an opening, for example in a tent; and reversible lock for reversible clothing and outerwear.

Most vulnerable

The group’s zips are used by many technical outdoor performance gear manufacturers. Among these are US-based outdoor apparel and equipment company Innovative Designs, Inc. and alpine packs maker McHale. McHale uses the #10 coil YKK zip exclusively because it claims that any zip would be the most vulnerable part of its packs, and therefore the zips it uses must offer maximum strength and durability. “There are cheaper zippers around but we use these because we know we can count on them,” says company owner, Dan McHale. “Waterproofing vinyl tape adds durability as most of the stitching is on the inside and the little stitching on the outside is covered by the tape,” he adds. According to Mr McHale, the flexible coil zips help to keep the packs secure and to ensure their contents are protected. “Even if it costs a little more, it is important we have zippers we can rely on,” he says.

However, despite his praise of the YKK zips, Mr McHale admits they are not exactly new. “They’ve probably been around for about 40 years,” he conjectures, perhaps helping to substantiate Ballonfabrik’s claim that the TIZIP zips are the ones offering truly cutting-edge technology. Although a plethora of zip types appears to be available for any number of high-performance products, many companies appear to be sticking to technology that dates back almost half a century. But if the traditional zip is as reliable as Mr McHale claims, is there any real call for change? Perhaps Mr Huelsmann can offer a convincing response to this. “Waterproof zips can cost between 10 and 100 times as much as mass-produced, regular zips, so there needs to be a good reason for using the waterproof zip,” he explains. Clearly, it would not be viable to use this type of technical product for every garment or piece of equipment. Nevertheless, Mr Huelsmann points out that “protecting and saving life is one good reason”.

In fact, it’s the best reason of all. In critical situations, this everyday object could become a vital piece of equipment, one which decides whether or not the wearer survives 



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