

Compression bladders

For moulding
complex **composite** parts





Bicycle fork in composite material manufactured by moulding with a compression bladder

Unique performance

Piercan specialises in manufacturing high temperature natural rubber latex bladders used for moulding by compressing composite material items. These bladders are also used in the moulding process by infusing fabrics, by liquid resins.

Areas of application



CYCLING

Competition | Recreation | seats, forks, handlebars, wheels, frames, etc.



SPORTS

baseball, hockey, golf, tennis, biking, paddling, rowing, etc.



AUTOMOBILE

General public | F1 | spoilers, rear-view mirrors, air inlets, oil tanks, etc.



AVIATION

caissons, undercarriages, Boeing, propellers, etc.



OTHERS

violin bows, tubes and all types of hollow articles, etc.



Let your imagination run wild: moulding composites with bladder is adapted to prototypes, small and large series (within a short period of time and at competitive rates).

PRECISION IS YOUR PRIORITY

With Piercan, manufacture parts with complex shapes, whose internal volume will be perfectly controlled by you.

YOUR SEARCH FOR AN EFFECTIVE RATE ENDS HERE

Piercan helps you to optimise costs (adapting the shapes, large series).

OUR TRUSTED CLIENTS...

They use composite parts moulded with Piercan bladders

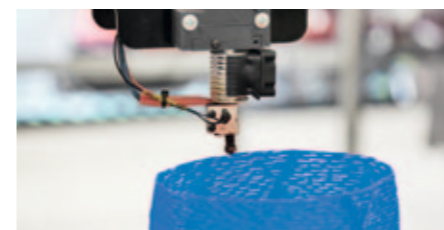


Bladder manufacturing

The bladders are manufactured by immersing a dip mould in a latex bath and then it is vulcanised.



DIP MOULD DESIGN



On the basis of a file, or a 3D scan (photogrammetry) of the male mould, or of the composite part, the mould is manufactured by 3D printing.

DIPPING TECHNIQUE



The mould is dipped in a coagulant bath, then in high temperature natural latex bath. The thickness of the layer depends on the dipping time. After vulcanisation, drying and curing, the bladder is removed from the dip mould.

Obtaining a composite part with bladder

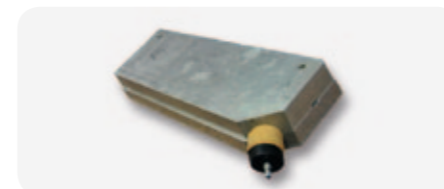
To mould a composite part, an inflatable device is used (bladder) in a female cavity (female mould) to ensure compression during the reticulation of the composite.



1 • Dipping: to the left, the aluminium male mandrel and to the right, high temperature natural rubber bladder manufactured by dipping.



2 • Drape forming: Carbon fabric layers (prepreg) are placed around the bladder, inside the aluminium female mould.



3 • Curing: after the mould is closed, the bladder is inflated to plate the prepreg in the mould (up to 6 or 8 bars), then we proceed to the curing.



4 • Removal from the mould: once the curing is over, the bladder is deflated and the mould is opened; the bladder removed and the part is sent for finishing.

PIERCAN'S STRENGTHS

- Innovative complex shapes
- Reduced manufacturing cost
- Reusable bladders
Even if their low cost makes them "disposable", the bladders are generally reused over multiple cycles (3 to 5), when the curing temperatures do not exceed 140°C approximately.
- Reduction in the finishing costs
- Perfect thickness control of the composite layer
- Precise control of the inner shape, smooth
Owing to high compression pressures (from 7 to 250 bars), the finished composite parts show no folds and a smooth interior finish.
- No welding seam mark
- Rapid implementation
The moulds can be pre-heated which allows them to be used in successive cycles.
- Optimised weight of the finished composite part
Bladder extracted after curing.

ADVANTAGES OF HIGH TEMPERATURE NATURAL RUBBER



- Cheapest amongst the usable elastomers
Natural rubber is clearly more cost effective than silicones.
- Easiest material to process
Good mechanical and elastic properties (elongation at break > 800%).
- Good resistance
Resistance to high temperatures (1H00 at 175 °C / 20H00 at 120 °C).
Resistance to pressure (up to 14 bars).
- Complex shapes

Piercan helps you in your projects

Piercan manufactures all types of elastomer parts. From designing to manufacturing, including the inspection of the parts or just technical advice, Piercan is capable of supporting you at every stage of your project, by mastering the certified processes.

MANUFACTURING AN **UNIQUE PART**

Piercan helps you throughout the entire process of development and manufacturing of bladders. Our design office is at your disposal for analysing and developing your projects.

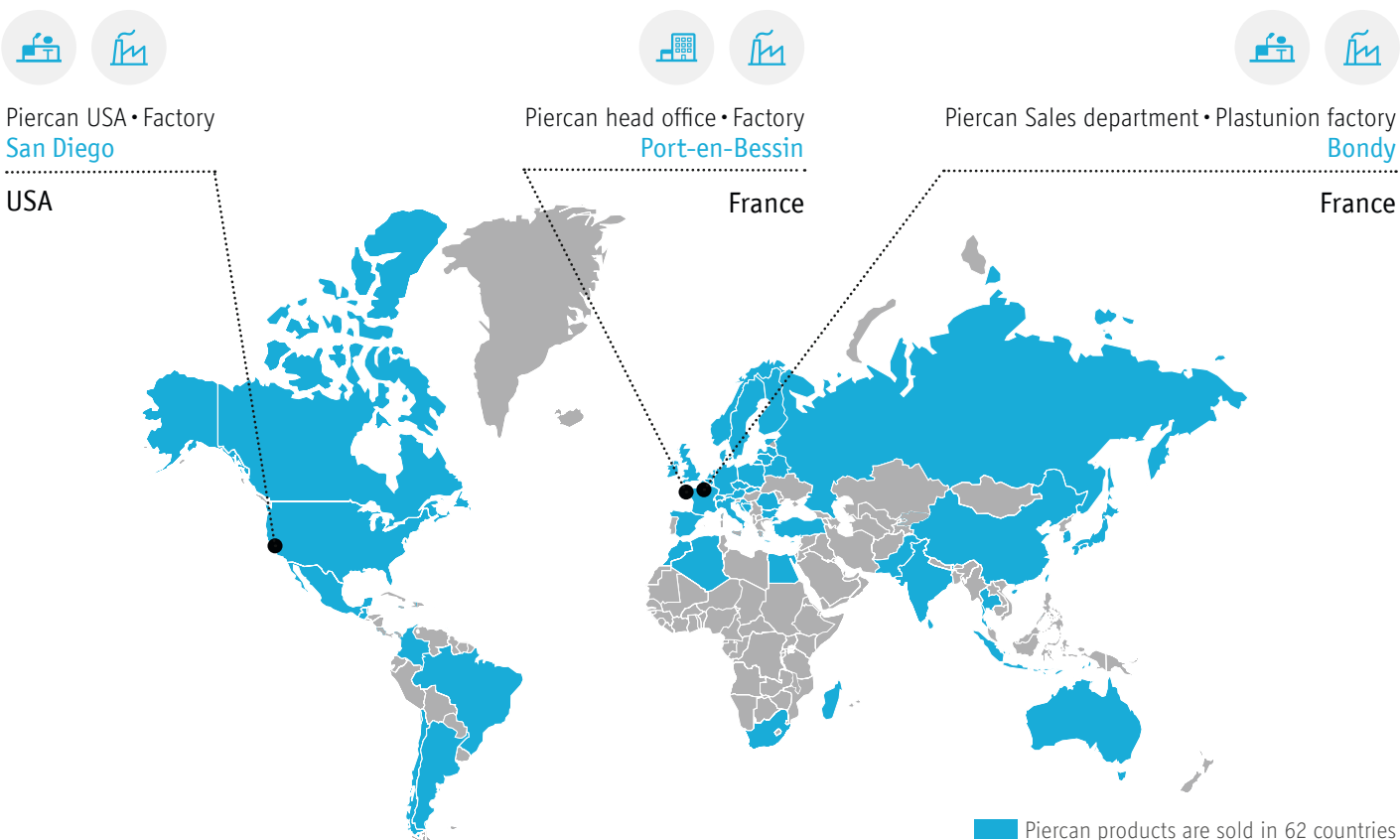
CONSULTING

Piercan can also assist you during audits or in the setting up of production lines integrating elastomeric transformation, or can advise you about the physicochemical properties of the materials.



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Piercan around the world



NEED MORE INFORMATION?

Do not hesitate to call us or to write us an e-mail. Piercan is always ready to help you accomplish your projects...
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