BioTitan Retention Device

360° of universal retention

Thermo Fisher Scientific has developed an innovative tubing retention solution for the concerns caused by traditional cable ties and other retention technologies across the bioproduction workflow. Thermo Scientific™ BioTitan™ Retention Device was designed to provide the best method for retaining flexible tubing on a barbed fitting. What makes the BioTitan Retention Device superior to other technologies is the superior performance combined with universal fit. Regardless of materials, the connection geometry of the BioTitan device is designed to provide confidence in your connection. The BioTitan device provides 360° compression in front of, behind, and on the barb face.

Key advantages

Replacing cable ties with the superior BioTitan Retention Device further enhances the overall reliability and integrity of the BioProcess Container (BPC). The BioTitan Retention Device is a universal tubing retention solution that helps eliminate the risk of leaks and failures of the tubing connection point. The BioTitan Retention Device spans tubing ranges from 1/8 inch ID to 1 inch ID.

Key benefits

- **Secure 360° seal around tubing—**greatly reduces chance of fluid leaks and connection failures
- **Robust compression system—**360° compression in front of, behind, and on the barb face
- **Higher reliability—**through consistent and repeatable assembly process that does not generate additional particulates
- **No sharp edges—**eliminates need for secondary processes such as bubble wrapping, and reduces risk of damage to the BPC caused by the retention device
- **Universal retention—**works on all tubing types and connectors regardless of material, shape, or configuration
- USP Class VI compliant

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Testing

The BioTitan Retention Device has been tested for a range of applications and environments.

Tests were conducted on the following conditions:

- Freezing (–80°C)
- Temperature cycling (–70°C to 60°C)
- Aging
- Pressure hold
- Autoclaving (121°C)
- Elevated working temperatures (up to 50°C)
- Nominal conditions

Current testing covers a broad range of tubing materials, tubing sizes, wall thicknesses, and barb geometries. With over 2,700 different connections, the BioTitan Retention Device has been tested to ensure BPC reliability and overall performance. During this application testing, connections were subjected to pressure testing up to 80 psi. Connections would pass the test if there was no leak in the connection at 80 psi.

For more information and to review the full application study, please refer to the corresponding application data.

Table 1. BioTitan Retention Devices.

Tubing type	ID (in.)	Wall thickness (in.)	Pressure test result
TPE	1/8	1/16	Pass
PVC	1/8	1/16	Pass
Silicone	1/8	1/16	Pass
Silicone	1/8	3/32	Pass
TPE	1/8	3/32	Pass
PVC	1/8	3/32	Pass
Silicone	3/16	1/16	Pass
TPE	3/16	1/16	Pass
TPE	3/16	3/32	Pass
Silicone	3/16	3/32	Pass
TPE	1/4	1/16	Pass
PVC	1/4	1/16	Pass
Silicone	1/4	1/16	Pass
PVC	1/4	3/32	Pass
Silicone	1/4	1/8	Pass
TPE	1/4	1/8	Pass
Braided	1/4	11/83	Pass
Silicone	5/16	1/16	Pass
TPE	5/16	1/16	Pass
Silicone	5/16	3/32	Pass
TPE	5/16	3/32	Pass
Silicone	5/16	1/8	Pass
PVC	3/8	1/16	Pass
Silicone	3/8	1/16	Pass
TPE	3/8	1/16	Pass
Braided	3/8	5/32	Pass
Silicone	3/8	3/32	Pass
PVC	3/8	1/8	Pass
TPE	3/8	1/8	Pass
Silicone	3/8	1/8	Pass

TPE: thermoplastic elastomer

PVC: polyvinyl chloride

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Table 1. BioTitan Retention Devices (continued).

Tubing type	ID (in.)	Wall thickness (in.)	Pressure test results
Silicone	1/2	1/16	Pass
PVC	1/2	1/16	Pass
TPE	1/2	1/16	Pass
Silicone	1/2	3/32	Pass
PVC	1/2	3/32	Pass
TPE	1/2	1/8	Pass
Silicone	1/2	1/8	Pass
Braided	1/2	17/98	Pass
Silicone	1/2	3/16	Pass
Silicone	5/8	1/8	Pass
TPE	5/8	1/8	Pass
Braided	5/8	11/62	Pass
Silicone	3/4	1/8	Pass
TPE	3/4	1/8	Pass
Silicone	3/4	3/16	Pass
TPE	3/4	3/16	Pass
Braided	3/4	1/5	Pass
TPE	3/4	1/4	Pass
Silicone	3/4	1/4	Pass
Silicone	7/8	1/8	Pass
Silicone	7/8	3/16	Pass
Silicone	7/8	3/16	Pass
TPE	1	1/8	Pass
Silicone	1	1/8	Pass
TPE	1	3/16	Pass
Silicone	1	3/16	Pass
TPE	1	1/4	Pass
Silicone	1	1/4	Pass
Braided	1	8/41	Pass

Conclusion

After conditioning, all samples were subjected to pressure testing—to failure or 80 psi. No connections failed.

As customer demand for innovative, high-performing products has increased, Thermo Fisher Scientific has developed the BioTitan Retention Device as a way to mitigate the risks associated with cable ties and other traditional retention solutions.

Find out more at **thermofisher.com/biotitan**

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