# Hemashield

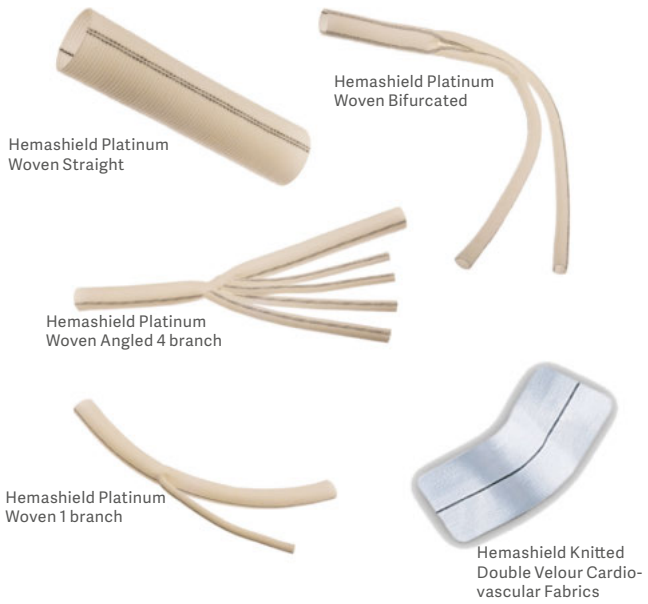
## Collagen coated vascular grafts and patches

HEMASHIELD grafts have been sold over 2 million times worldwide.[1] Constructed from fabric that is knitted or woven from polyethylene terephthalate yarn, the HEMASHIELD grafts and patches are impregnated with a highly purified bovine collagen which minimizes bleeding at implant and eliminates the operative preclotting step.[2, 3, 5] In addition, the collagen is gradually resorbed by the patient.[2, 3, 5] Research also demonstrates low immunogenic potential of the bovine collagen used in the HEMASHIELD prostheses, both short and long-term.[4, 5] The collagen coating improves the healing properties compared with other sealants. HEMASHIELD grafts show a thinnest inner capsule and tend to show more complete tissue ingrowth at 6 months as compared to competitive gelatin grafts in a porcine model.[3]

The velour design increases the availability of graft surface to promote tissue integration and the crimping on the grafts offer some flexibility in length for easier suturing at the time of implant.[7]

The HEMASHIELD products are magnetic resonance safe [8] and offer high patency rates.[6]

Illustration of some configurations of the HEMASHIELD familly of products *




*non-exhaustive and non-contractual illustrations

The HEMASHIELD Vascular Grafts are indicated for use in the treatment of aneurysmal or occlusive diseases. HEMASHIELD Woven/ Knitted Double Velour Cardiovascular Fabrics / HEMASHIELD PLATINUM FINESSE Ultra-Thin Knitted Cardiovascular Patches are indicated for closure of vessels in the treatment of atherosclerotic diseases including carotid artery stenosis.

GETINGE

**HEMASHIELD GOLD Knitted Microvel Double Velour Vascular Grafts**
Intended for use in the replacement or repair of the abdominal aorta and peripheral arteries, when open surgical operation is required.

The warp knitting technique used for the graft construction resists unraveling [9, 10]

- Straight
- Bifurcated
- Axillo-bifemoral

**HEMASHIELD PLATINUM Woven Double Velour Vascular Grafts**
Intended for use in the replacement or repair of the thoracic aorta, abdominal aorta and peripheral arteries, when open surgical operation is required.

- Straight
- Bifurcated
- 1 Branch
- 3 Branch
- 4 Branch - HEMASHIELD PLATINUM Woven with pre-sewn 4 branches designed for total aortic arch replacement allows short period of circulatory arrest of the brain.[11]
- Angled 4 Branch
- Thoracoabdominal

**HEMASHIELD Knitted Double Velour Cardiovascular Fabrics**
Intended for vascular patch angioplasty, including carotid endarterectomy, when open surgical operation is required.

**HEMASHIELD Woven Double Velour Cardiovascular Fabrics**
Intended for vascular patch angioplasty, including carotid endarterectomy, when open surgical operation is required.

**HEMASHIELD PLATINUM FINESSE Ultra-Thin Knitted Cardiovascular Patch**
Intended for vascular patch angioplasty, including carotid endarterectomy, when open surgical operation is required.

**References:**
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2. Freischlag, J.A. and W.S. Moore, Clinical experience with a collagen-impregnated knitted Dacron vascular graft. Ann Vasc Surg, 1990. 4(5): p. 449-54.
3. Hirt, S.W., et al., Comparative in vivo study on the healing qualities of four different presealed vascular prostheses. J Vasc Surg, 1993. 17(3): p. 538-45.
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7. Cronenwett, J.L. and K.W. Johnston, Rutherford's Vascular Surgery E-Book. 2014: Elsevier Health Sciences.
8. Safety and compatibility of collagen coated polyester vascular prostheses in the Magnetic Resonance Environment, Internal study, PQ R16/009.
9. Towne, J.B., and Larry H. Hollier, Complications in Vascular Surgery. 2nd ed. 2004: New York: Marcel Dekker (page 84-85, 92).
10. King, M.W., B.S. Gupta, and R. Guidoin, Biotextiles as Medical Implants. 2013: Elsevier Science. (Chapter 4 page 115).
11. Kouchoukos, N.T. and P. Masetti, Total aortic arch replacement with a branched graft and limited circulatory arrest of the brain. J Thoracic Cardiovasc Surg, 2004. 128(2): p. 233-7.

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# CARDIOROOT
# THE INNOVATIVE AORTIC ROOT GRAFT

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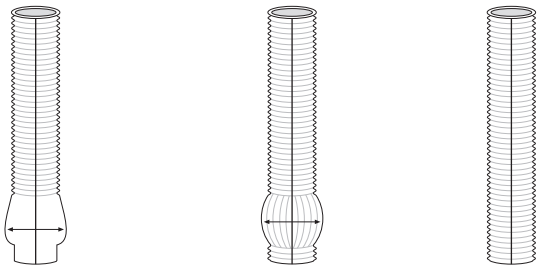
# CARDIOROOT
# THE INNOVATIVE AORTIC ROOT GRAFT

The innovative one piece-design collagen-coated CARDIOROOT graft delivers a new option for the repair or reconstruction of the ascending aorta. The unique design of CARDIOROOT mimics the anatomy and blood flow dynamics of the natural sinuses of Valsalva.

Expect the same high quality offered by MAQUET - Market leader in Thoracic grafts

- Anatomically correct shape
- Unique uncrimped section that does not stretch:
  - allows easy sewing of valve remnants, or prosthetic valve within the tube, avoiding potential bleeding and shortening the procedure
  - facilitates estimation of the length required for optimal placement of valve remnants or prosthetic valve to ensure optimal clinical outcomes
  - can be precisely trimmed and shaped in case of remodeling technique procedures.
- Outstanding handling and suturability
- 3 References lines acting as a guide for prosthetic valve or valve remnants anastomosis.

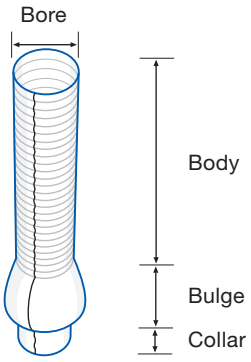



The proximal collar can be used for prosthetic valve sewing or trimmed/inverted for valve sparing procedures.

## PHYSICAL PROPERTIES*

| | Woven |
|---|---|
| **Coated polyester fabric** | Cross-linked Type I bovine collagen |
| **Construction** | Woven |
| **Water permeability** | ≤ 5ml • $cm^{-2}$ • $min^{-1}$@120 mmHg |

* *Testing performed per ANSI/AAMI ISO 7198:1998/2001.*




## PRODUCT INFORMATION

| Body Diameter | Body Length | Bulb Diameter | Bulb Length | Collar Length | References |
|---|---|---|---|---|---|
| 24 mm | 15 cm | 32 mm | 24 mm | 10 mm | HEWROOT0024 |
| 26 mm | 15 cm | 34 mm | 26 mm | 10 mm | HEWROOT0026 |
| 28 mm | 15 cm | 36 mm | 28 mm | 10 mm | HEWROOT0028 |
| 30 mm | 15 cm | 38 mm | 30 mm | 10 mm | HEWROOT0030 |
| 32 mm | 15 cm | 40 mm | 32 mm | 10 mm | HEWROOT0032 |
| 34 mm | 15 cm | 42 mm | 34 mm | 10 mm | HEWROOT0034 |