Materialise HeartPrint

3D Printing Services for Cardiovascular Anatomy
Select a category or browse the catalog to see the HeartPrint Research models

Cardiac Models  CHD Models  Valve Models  Vascular Models
Cardiac Models
CHD Models
Valve Models
Vascular Models
Cardiac Models
Hypertrophic Heart with Valve Calcifications

Application Examples
- R&D valve deployment testing
- Physician training demo model

Patient & Pathology
- 73 y, female
- Ventricular hypertrophy, heavily calcified aortic and mitral valve
- 0.3 mm slice increment CTA

3D-Printed Characteristics
- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid material
- Full heart cut in LA, RA/RV for visualization, cuts customizable
- Right heart side smoothed
- LV papillary muscles present, no chordae tendinae, no valve leaflets
- Size: 11 x 13 x 17 cm

Request a quote
Heart with Atrial Cut, Smooth Right Side

Application Examples
- R&D mitral or tricuspid valve device deployment testing
- Heart anatomy education
- Atrial appendage closure testing and training

Patient & Pathology
- 55y, male
- Calcified left and right coronaries
- IVC venous thrombosis
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- Materialise HeartPrint Flex
- Detailed left heart with main papillaries, muscle trabeculations and mitral valve orifice
- Right heart side smoothed out, tricuspid valve annulus present
- Atrial appendages present
- Images show cut through LA and RA, cut location customizable
- Coronaries present, not hollow
- Size: 11 x 11 x 11 cm

Request a quote
Heart with Detailed Chambers and Valve

Application Examples

- R&D valve deployment testing
- Physician training demo model

Patient & Pathology

- 73y, female
- Ventricular hypertrophy, heavily calcified aortic and mitral valve
- 0.3mm slice increment CTA

3D-Printed Characteristics

- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid material
- Full heart cut in LA, RA/RV for visualization, cuts customizable
- Right heart side smoothed
- LV papillary muscles present, no chordae tendinae, no valve leaflets
- Size: 11 x 13 x 17 cm
Full Transparent Heart with Muscle

Application Examples

- Marketing
- Gift model

Patient & Pathology

- 76y, male
- Coronary calcification
- 0.63 mm slice increment CTA

3D-Printed Characteristics

- PolyJet, tissue in transparent rigid material, blood in white rigid material
- Calcifications virtually removed
- LV trabeculations and papillary muscles
- Materialise logo, any logo possible
- Scaled to 70%, custom scaling possible
- Multiple patient data sets available
- Size: 15 x 13 x 9.5 cm
Heart Blood Volume Only

Application Examples
- Marketing
- Gift model
- Anatomical training

Patient & Pathology
- 76y, male
- Coronary calcification
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- PolyJet, blood in white rigid material
- Calcifications virtually removed
- LV trabeculations and papillary muscles
- Materialise logo, any logo possible
- Scaled to 70%, custom scaling possible
- Multiple patient data sets available
- Size: 13 x 13 x 9.5 cm

Request a quote
Application Examples

- Marketing
- Gift model
- Anatomical training

Patient & Pathology

- 76y, male
- Coronary calcification
- 0.63 mm slice increment CTA

3D-Printed Characteristics

- High-end transparent stereolithography
- Full heart model with hollow chambers
- Valve annuli present
- Calcifications virtually removed
- Materialise logo, any logo possible
- 70% scaled version available as well as custom scaled
- Multiple patient data sets available
- Size: 19 x 18 x 13 cm

Request a quote
Transparent Heart with Pedestal

Application Examples
- R&D catheter motion testing
- Septum crossing training
- Marketing/training kit

Patient & Pathology
- 76y, male
- Coronary calcifications
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- High-end transparent stereolithography
- Pedestal in selective laser sintering
- Full heart model with hollow chambers
- Valve annuli present
- Calcifications virtually removed
- Materialise logo, any logo possible
- Size: 36 x 19 x 12 cm

Request a quote
Left Coronary Model

Application Examples

• R&D stent deployment testing
• Guide wire physician training
• Device training/demo

Patient & Pathology

• 55y, male
• Calcified left and right coronaries
• IVC venous thrombosis with IVC filter
• 0.63 mm slice increment CTA

3D-Printed Characteristics

• Materialise HeartPrint Flex
• Patent coronary arteries
• Left main, LAD and main diagonal branches
• Transparent to visualize device deployment
• Multiple patient data sets available
• Size: 11 x 5 x 4.5 cm
Atrial Septal Defect

Application Examples
- ASD closure training
- Device deployment testing
- Closure device sales rep demo kit
- Patient communication

Patient & Pathology
- 15y, female
- Atrial septal defect
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- Materialise HeartPrint Flex
- ASD support ring for increased durability
- Visualization cuts through LV, RV and RA, cuts customizable
- Size: 10.5 x 9.3 x 11.3 cm

Request a quote
Application Examples
- PFO closure training
- Device deployment testing
- Closure device sales rep demo kit
- Ablation/LAA training
- Patient communication

Patient & Pathology
- 15y, female
- Patent foramen ovale
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- Materialise HeartPrint Flex
- PFO ring for increased durability
- Visualization cuts through LV, RV and RA, cuts customizable
- Size: 10.5 x 9.3 x 11.3 cm
Atrial Septal Crossing

Application Examples

• Atrial septal crossing training
• Device deployment testing
• Closure device sales rep demo kit
• Ablation/LAA training
• Patient communication

Patient & Pathology

• 15y, female
• Atrial fibrillation
• 0.625 mm slice increment CTA

3D-Printed Characteristics

• Materialise HeartPrint Flex
• Colored LAA
• Reinforced septal crossing location
• Size: 10.47 x 9.33 x 11.34 cm
• Visualization cuts through LV, RV and RA, cuts customizable

Request a quote
Heart with Coronaries

Application Examples
- Coronary stent training and marketing
- R&D catheter motion testing
- Heart anatomy education
- Physician training demo model

Patient & Pathology
- 79 y, female
- Coronary and aortic valve calcifications
- 0.3 mm slice increment CTA

3D-Printed Characteristics
- High-end transparent stereolithography
- Hollow, cosmetic transparent coronaries
- Right and left ventricle trabeculations and main papillary muscles
- Size: 7.4 x 6.2 x 9.3 cm
- Visualization cuts in the ventricles, cuts customizable

Request a quote
Heart Tumor

Application Examples

- Pathology training and education
- Patient communication

Patient & Pathology

- 16y, male
- Left Ventricular Outflow Tract Tumor
- 0.25 mm slice increment CTA

3D-Printed Characteristics

- Materialise HeartPrint Flex
- Rigid material for tumor
- Right and left ventricle trabeculations and main papillary muscles
- Scaled, Size: 10.4 x 7.9 x 10.2 cm
- Visualization cuts to create 4 chamber view, cuts customizable
CHD Models
Application Examples

- Pathology training
- Congenital heart defects education
- Patient communication

Patient & Pathology

- 34y, female
- Levo transposition of great arteries, sub pulmonary valve stenosis and ventricular septal defect
- 1.2 mm slice increment cardiac MRI

3D-Printed Characteristics

- Materialise HeartPrint Flex
- Full heart cut in 2 parts for visualization
- Pulmonary valve calcifications optional
- Custom cuts possible
- Size: 18 x 11 x 8.5 cm

Request a quote
Double Outlet Right Ventricle

Application Examples

- Pathology training
- Congenital heart defects education
- Patient communication

Patient & Pathology

- 1y, male
- Double outlet right ventricle with ventricular septal defect
- 0.3 mm slice increment CTA

3D-Printed Characteristics

- Materialise HeartPrint Flex
- Right and left ventricle trabeculations and main papillary muscles
- Visualization cuts through LV, RV and RA, cuts customizable LAA present
- Size: 8.8 x 5.4 x 8.9 cm

Request a quote
Application Examples

- Pathology training
- Congenital heart defects education
- Patient communication

Patient & Pathology

- 1y, female
- Double outlet right ventricle with ventricular and atrial septal defect
- 1.3 mm slice increment MRA

3D-Printed Characteristics

- Materialise HeartPrint Flex
- Right and left ventricle trabeculations and main papillary muscles
- Visualization cuts in the ventricles, cuts customizable
- Size: 7.5 x 6.2 x 9.3 cm

Request a quote
Double Outlet Right Ventricle

Application Examples

- Physician training demo model
- Congenital heart defects education
- Patient communication

Patient & Pathology

- 1d, male
- Interrupted arch with aortopulmonary window and duct
- CTA 0.4 mm slice increment

3D-Printed Characteristics

- PolyJet rigid color model
- Right and left heart in separate colors
- Blood volume of full heart
- Size: 6.6 x 5. x 6.1 cm
Tetralogy of Fallot

Application Examples
- Physician training demo model
- Congenital heart defects education
- Patient communication

Patient & Pathology
- 3 months old, male
- Tetralogy of Fallot with Blalock-Taussig Shunt
- 0.625 mm slice increment

3D-Printed Characteristics
- ColorJet Printing rigid model
- Cardiac structures in different colors
- Heart in Your Hand logo, any logo possible
- Size: 7 x 5 x 8 cm

Click here to learn more about CHD educational models

Request a quote
Application Examples

- Physician training demo model
- Congenital heart defects education
- Patient communication

Patient & Pathology

- 6 days old, female
- Dextro-transposition of the great arteries, atrial and ventricular septal defect
- 0.625 mm slice increment

3D-Printed Characteristics

- ColorJet Printing rigid model
- Cardiac structures in different colors
- Heart in Your Hand logo, any logo possible
- Size: 7 x 6 x 6 cm
Valve Models
Application Examples

- Physician training demo model
- R&D valve device deployment testing
- Calcification movement studies

Patient & Pathology

- 71y, male
- Aortic and mitral valve calcifications
- 0.63 mm slice increment

3D-Printed Characteristics

- Materialise HeartPrint Flex for the cardiac tissue
- Calcifications printed in rigid white material
- Aortic and mitral valve leaflets present
- Detailed left ventricle with main papillaries and muscle trabeculations
- Materialise logo, any logo possible
- Multiple patient data sets available
- Size: 11 x 12 x 12 cm
Calcified Aortic Valve incl. Mitral Valve Orifice

Application Examples

- TAVI R&D
- Anatomy education

Patient & Pathology

- 82y, female
- Severely calcified aortic valve
- 0.63 mm slice increment CTA

3D-Printed Characteristics

- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid white material
- Aortic valve, mitral valve orifice
- Materialise logo, any logo possible
- Main LV papillary muscles
- LV muscle smoothed
- Size: 9 x 8 x 6 cm

Request a quote
Calcified Aortic Valve

Application Examples

- Patient communication
- Marketing gift models
- Anatomy education

Patient & Pathology

- 82y, female
- Severely calcified aortic valve
- 0.63 mm slice increment CTA

3D-Printed Characteristics

- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid white material
- Aortic root and valve leaflets
- Materialise logo, any logo possible
- 3D printed fit container optional
- Multiple patient data sets available
- Size: 7 x 3.5 x 3 cm

Request a quote
Calcified Aortic Valve (with Deployed TAVI Device)

Application Examples
- TAVI R&D device deployment testing
- Calcification movement studies

Patient & Pathology
- 82y, female
- Severely calcified aortic valve
- 0.63 mm slice increment CTA

3D-Printed Characteristics
- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid white material
- Aortic root and valve leaflets
- Materialise logo, any logo possible
- Family of models available
- Valve stent frame not included
- Multiple patient data sets available
- Size: 7 x 4 x 4 cm

Request a quote
Bicuspid Calcified Aortic Valve

Application Examples
- Patient communication
- Physician training demo model
- R&D valve device deployment testing

Patient & Pathology
- 73y, female
- Severely calcified bicuspid aortic valve
- 0.5 mm slice increment

3D-Printed Characteristics
- Cardiovascular tissue printed in Materialise HeartPrint Flex
- Calcifications printed in rigid white material
- Aortic root and valve leaflets
- Materialise logo, any logo possible
- Size: 7 x 7 x 13 cm

Request a quote
Right Ventricular Outflow Tract

Application Examples
- R&D device deployment testing
- Pulmonary valve replacement training/demo
- Pathology training
- Patient communication

Patient & Pathology
- 31y, female
- Pulmonary insufficiency, pulmonary valvulostenosis
  - 0.63 mm slice increment CTA
  - 0.682 mm increment CTA

3D-Printed Characteristics
- High-end transparent stereolithography
- Model of RVOT and pulmonary artery
- Multiple patient data sets available
- Size: 7.1 x 9.8 x 7.1 cm

Request a quote
Percutaneous Pulmonary Valve Implantation

Application Examples
- R&D pulmonary valve device deployment
- Catheter motion testing and training
- PPVI education and training

Patient & Pathology
- 21y, female
- Complex congenital heart disease history
- Pulmonary valve degeneration, stents already in place
- 0.54 mm slice increment CTA

3D-Printed Characteristics
- Materialise HeartPrint Flex, chambers in pink and blue
- Semi-flexible coronary arteries in pink
- Rigid stents in blue
- Apex of the heart cut for visualization
- Size: 11.5 x 9.98 x 11.7 cm
Vascular Models
Application Examples

- R&D device deployment testing
- Pulsatile flow analysis
- Physician training demo model

Patient & Pathology

- 39y, female
- Left carotid bifurcation calcification
- 0.6 mm slice increment CT

3D-Printed Characteristics

- Vascular tissue printed in Materialise HeartPrint Flex
- Calcification printed in rigid white material
- Aortic arch, brachiocephalic, right and left common carotid
- Left carotid bifurcation calcification
- Patent right carotid
- Size: 22 x 7.5 x 6 cm

Request a quote
Application Examples

- Device bench top testing
- Fluid flow analysis

Patient & Pathology

- 65y, male
- Abdominal Aortic Aneurysm (AAA)
- 1.3 mm slice increment CTA

3D-Printed Characteristics

- High-end transparent stereolithography
- Supre-a-renal to femoral artery model
- Subrenal aorta-iliac abdominal aneurysm
- Flange CAD component for pump connection
- All visible vessels open
- Multiple patient data sets available
- Size: 28 x 18 x 12 cm

Request a quote
Application Examples

- Device bench top testing
- Fluid flow analysis

Patient & Pathology

- 65y, male
- Abdominal Aortic Aneurysm (AAA)
- 1.3 mm slice increment CTA

3D-Printed Characteristics

- High-end transparent stereolithography
- Suprarenal to femoral artery model
- Subrenal aorto-iliac abdominal aneurysm
- Flange CAD component for pump connection
- Base plate added for mounting in bench setup
- Scaled 90%, scaling optional
- All visible vessels open
- Multiple patient data sets available
- Size: 28 x 21 x 12 cm
Aortic Arch Aneurysm

Application Examples

- Physician training demo model
- Device bench top testing
- Catheter motion testing and training

Patient & Pathology

- 72y, male
- Aortic arch aneurysm
- 0.8 mm slice increment CTA

3D-Printed Characteristics

- High-end transparent stereolithography
- Aortic root to femoral artery model
- Base plate for bench setup (optional)
- All visible vessels open
- Size: 21 x 15.3 x 54.2 cm
Abdominal Aortic Aneurysm (AAA)

Application Examples
- Physician training demo model
- Device bench top testing
- Catheter motion testing and training

Patient & Pathology
- 65y, male
- Abdominal Aortic Aneurysm (AAA)
- 1.3 mm slice increment CTA

3D-Printed Characteristics
- High-end transparent stereolithography
- Aortic root to femoral artery model
- Subrenal aorta-iliac abdominal aneurysm
- Base plate for bench setup (optional)
- All visible vessels open
- Multiple patient data sets available
- Size: 20.3 x 11.2 x 55.4 cm

Request a quote
Thoracic-Abdominal Aortic Aneurysm

**Application Examples**
- Physician training demo model
- Device bench top testing
- Catheter motion testing and training

**Patient & Pathology**
- 55y, female
- Thoracic-Abdominal Aortic Aneurysm
- 1.25 mm slice increment CTA

**3D-Printed Characteristics**
- High-end transparent stereolithography
- Aortic root to femoral artery model
- Base plate for bench setup (optional)
- All visible vessels open
- Size: 17.4 x 15 x 61.3 cm

Request a quote
Application Examples

- Physician training demo model
- Device benchtop testing
- Catheter motion testing and training

Patient & Pathology

- 37y, male
- Healthy
- 0.625 mm slice increment CTA

3D-Printed Characteristics

- High-end transparent stereolithography
- Aortic root to femoral artery model
- Base plate with CT image
- Femoral artery endings open
- Size: 20.4 x 16.6 x 61.9 cm
Application Examples
- Groin puncture training
- Closure device demonstration and training

Patient & Pathology
- 80y, female
- Calcified vessels
- 3 mm slice increment CTA

3D-Printed Characteristics
- High-end transparent stereolithography groin model
- Suction cups for stable positioning
- Flexible replaceable puncture piece
- Realistic touch developed with experienced vascular surgeon
- Rigid calcification (optional)
- Size: 12 x 10.8 x 18 cm
- Any logo possible

in cooperation with ID-3 Medical

Request a quote
Circle of Willis

Application Examples

- R&D catheter motion testing
- Physician training demo model
- Anatomical training

Patient & Pathology

- 80y, female
- Cerebral aneurysm (outside model region)
- 0.312 mm slice increment

3D-Printed Characteristics

- Transparent stereolithography
- Neck vessels and circle of Willis
- Size: 6.5 x 7.1 x 6.3 cm

Request a quote
Aorta and heart – modular model

Application Examples
- Device bench top testing
- Catheter motion testing and training
- Physician training demo model

Patient & Pathology
- 37y, male
- Healthy
- 0.625 mm slice increment CTA

3D-Printed Characteristics
- High-end transparent Stereolithography
- Flexible valves in HeartPrint® flex
- Heart to femoral artery model
- Modular model with valve annuli, valves and viewing windows
- Size: 18.8 x 14 x 53.4 cm

Request a quote
Endovascular Simulator Model

Application Examples

- Physician training model
- Catheter motion testing and training
- Device benchtop testing

Patient & Pathology

- 37 y, male
- Healthy
- 0.625 mm slice increment CTA

3D-Printed Characteristics

- Femoral artery model to aortic root
- Transparent Stereolithography
- Watertight
- Designed to use with standard 6Fr sheath
- Plexiglas baseplate with coronal CT image
- 50 x 16 x 70 cm

Request a quote
Educational & Training Boxes
Customized Training Kit

Realistic training is important for product managers, technical sales teams, interventionists and medical students alike. Materialise has the capability to 3D print accurate, anatomical models that can be used to showcase devices or practice procedures.

Our engineering services team is available to work with you to create the ideal custom simulation box for your needs. The boxes are constructed with holes in the side panels that access the anatomy in the most optimal way for your application.

Your box can contain one or multiple 3D-printed models and be branded to promote your product or company. We can even print your company logo or other text directly on the models. This kit shows examples for pacemaker lead placement, coronary stenting, atrial fibrillation ablation with LAA occlusion and transapical TAVI.

Whether your kit is intended for internal training or on-site demonstrations with physicians, the HeartPrint® Research boxes ensure the most realistic, professional and mobile training experience.

Request a quote
Materialise partnered with Heart in Your Hand to provide replicas of congenital heart defects (CHD) and other morphological cardiovascular malformations. These models are based on CT data that has been segmented and color coded so that the pathologies are easily identifiable. The CHD models and corresponding datasheets currently available include:

- **HYH-001A**: Tetralogy of Fallot
- **HYH-003A**: Double Outlet Right Ventricle (DORV)
- **HYH-004A**: Tetralogy of Fallot
- **HYH-006A**: Dextro-Transposition of the Great Arteries
- **HYH-007A**: Hypoplastic Left Ventricle
- **HYH-008A**: DORV with Ventricular Septal Defect
- **HYH-010A**: Coarctation with Patent Ductus Arteriosus
- **HYH-012A**: Levo-transposition of the Great Arteries
- **HYH-014A**: Hypoplastic Right Ventricle
- **HYH-015A**: Transitional AV Canal
- **HYH-023A**: Normal Pediatric Heart

The models are offered as a complete entire set or individually, though ordering several models together reduces the unit cost. All models can be 3D-printed in other materials, including our proprietary Materialise HeartPrint Flex material, if that’s of interest to you.

If you can’t find the model you’re looking for or would like to receive more information, please contact us at heartprint@materialise.com.

* Each model has been approved by Dr. Randy Richardson (St. Joseph’s Hospital and Medical Center, Phoenix, Arizona, USA).
Materialise HeartPrint

What is HeartPrint?
HeartPrint is Materialise’s service for providing 3D-printed cardiovascular models from medical image data for research or clinical applications. Our HeartPrint models are listed as a medical device in the USA and the EU.

How are HeartPrint models used?
Our “HeartPrint Research” models are not intended for clinical use but are ideal for benchtop models, training, education and marketing.

Our “HeartPrint” models are used to assist cardiovascular professionals to provide additional information on patient treatment.

What material options are available?
Materialise offers a large variety of the latest 3D printing technologies to meet your requirements. Our 3D-printed cardiovascular models come in (multi-)colors and (multi-) materials, ranging from rigid to flexible. Your model can be fully customized, here are a few examples:

• color distinctions between chambers and vessels; tissue and blood
• colored rings to indicate valve annuli, ASD and VSD
• flexible models with calcifications and/or tumors printed in rigid material
• custom cuts for optimal visualization
• any logo or reference code

We even have a proprietary 3D printing process called Materialise HeartPrint Flex that results in realistic, highly flexible models.

How does the HeartPrint service work?
It’s easy! The models in our catalog can be ordered directly, adapted to your needs or based on your own data set. To order a model, please click on the ‘Request a quote’ button and provide us with the following information:

Standard models: Indicate the model reference code.
Standard models with custom features: Indicate the model reference code and the adaptations you require*.
Patient-specific models: Upload the CT or MRI DICOM files via the link you will receive by email. Our engineering services team will follow up to discuss your requirements.
Additional models: Request a consultation. We have an extensive medical image database we can access to find an ideal dataset for your needs.

* Typical adaptations include: additional cuts, adding CAD components or flanges, branding models with a company logo, adding a septum hole and much more.
HeartPrint Workflow

Are you curious to know how a heart model is 3D printed? 
Watch our movie to see all the steps involved.
Materialise HeartPrint Flex
The Materialise HeartPrint Flex process combines flexible and rigid materials in one high-resolution, durable print. These realistic and accurate models distinguish between calcifications and surrounding cardiovascular anatomy. The process is available for research and clinical applications. Click here to read the white paper on the material characteristics of Materialise HeartPrint Flex.

Stereolithography
Stereolithography machines use a liquid resin which is selectively cured by a computer controlled UV laser for highly accurate and transparent models. Our team ensures that your models are cleaned and post-processed expertly to provide the most transparent models available.

PolyJet
PolyJet machines combine a range of rigid, UV-curable materials for beautiful and accurate models that are ideal for training and marketing.

ColorJet Printing
ColorJet Printing machines use an inkjet process to deposit a liquid binder which joins thin layers of powder to produce high-definition, full-color models. The colors are ideal for visualizing cardiovascular structures.
If a picture is worth a thousand words, a 3D-printed model is worth a thousand pictures!
Materialise is a global 3D printing software and services company whose medical division is dedicated to enabling researchers, engineers and clinicians to revolutionize patient-specific treatment that improves and saves lives. Our open and flexible platform, Materialise Mimics, forms the foundation of certified Medical 3D Printing and incorporates a comprehensive range of software solutions and 3D printing services. With over 25 years of excellence, we work alongside our customers in healthcare, automotive, aerospace, consumer goods, art and design, to build groundbreaking 3D printing applications that make the world a better and healthier place.

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Regulatory Information
The Medical edition of the Materialise Mimics Innovation Suite currently consists of the following software components: Mimics Medical version 19.0 and 3-matic Medical version 11.0 (released 2016). Mimics Medical is intended for use as a software interface and image segmentation system for the transfer of imaging information from a medical scanner such as a CT scanner or a Magnetic Resonance Imaging scanner. It is also used as pre-operative software for simulating/evaluating surgical treatment options. 3-matic Medical is intended for use as software for computer assisted design and manufacturing of medical exo- and endo-prostheses, patient-specific medical and dental/orthodontic accessories and dental restorations.

The Research edition of the Materialise Mimics Innovation Suite currently consists of the following software components: Mimics Research version 19.0 and 3-matic Research version 11.0 (released 2016). Mimics Research is intended only for research purposes. It is intended as a software interface and image segmentation system for the transfer of imaging information from a variety of imaging sources to an output file. It is also used as software for simulating, measuring and modeling in the field of biomedical research. “Mimics Research” must not be used, and is not intended to be used, for any medical purpose whatsoever. 3-matic Research is intended for use as software for computer assisted design and engineering in the field of biomedical research. “3-matic Research” must not be used, and is not intended to be used, for the design or manufacturing of medical devices of any kind.

Materialise HeartPrint medical models are registered as medical devices in the USA and in the EU market. HeartPrint medical models are intended to assist cardiovascular professionals in selecting appropriate tools and/or deciding on the optimal insertion of medical devices (such as stents), for cardiovascular surgical interventions.

HeartPrint Research models are not intended for medical use. Cleaning and sterilization can alter the material properties of HeartPrint medical and HeartPrint Research models and is not recommended.

Materialise Belgium – Technologielaan 15 – 3001 Leuven – Belgium

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Tetralogy of Fallot (TOF)  
Blalock–Taussig (BT) Shunt

3 Month Old Male  
Reconstruction from CT Angio

Defects:
- Tetralogy of Fallot
- Blalock-Taussig Shunt
- Complete pulmonary atresia
- Multiple aortopulmonary collateral arteries
- Focal stenosis of the left main pulmonary artery

Segmentation performed and approved by Dr. Randy Richardson

Regulatory Information:
The Research edition of the Materialise Mimics® Innovation Suite currently consists of the following software components: Mimics® Research version 19.0 and 3-matic® Research version 11.0 (released 2016). Mimics® Research is intended only for research purposes. It is intended as a software interface and image segmentation system for the transfer of imaging information from a variety of imaging sources to an output file. It is also used as software for simulating, measuring and modeling in the field of biomedical research. *Mimics® Research* must not be used, and is not intended to be used, for any medical purpose whatsoever. 3-matic® Research is intended for use as a software for computer assisted design and engineering in the field of biomedical research. *3-matic® Research* must not be used, and is not intended to be used, for the design or manufacturing of medical devices of any kind.
HeartPrint® Research models are not intended to be used as a medical device. Models cannot be sterilized and therefore cannot be taken into the surgical theatre.
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For more information, please visit heartprint.materialise.com
or contact us at: heartprint@materialise.com
Double Outlet Right Ventricle (DORV)

2 Days Old Male
Reconstruction from CT Angio

Defects:
- Double outlet right ventricle
- Total anomalous pulmonary venous return
- Bilateral right sidedness heterotaxy with asplenia
- Tricuspid atresia
- Multiple aortopulmonary collateral arteries
- Large ventricular septal defect
- Atrial septal defect
- Single coronary artery arising from the posterior right coronary sinus
- Moderate stenosis of the right main pulmonary artery

Segmentation performed and approved by Dr. Randy Richardson

Regulatory Information:
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Slice Thickness 625 μm / Pixel Size 240.23 μm
Tetralogy of Fallot
MAPCAs

1 Day Old Male
Reconstruction from CT Angio

Defects:
- Tetralogy of Fallot
- Pulmonary atresia
- Multiple aortopulmonary collateral arteries

Segmentation performed and approved by Dr. Randy Richardson

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Slice Thickness 625 μm / Pixel Size 279.30 μm
Dextro-transposition of the great arteries

6 Day Old Female
Reconstruction from CT Angio

Defects:
- Dextro-transposition of the great arteries
- Ventricular septal defect
- Atrial septal defect
- Patent ductus arteriosus
- Right ventricular hypertrophy
- Interatrial course of the right coronary artery

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Hypoplastic Left Ventricle

3 Day Old Male
Reconstruction from CT Angio

Defects:

- Hypoplastic left heart syndrome
- Shone's complex
- Mitral stenosis
- Aortic stenosis
- Coarctation of the aorta
- Large patent ductus arteriosus
- Very small left ventricular cavity
- Atrial septal defect
- Hypertrophied right ventricle

Slice Thickness 625 μm / Pixel Size 312.50 μm

Segmentation performed and approved by Dr. Randy Richardson

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in collaboration with Materialise
Double Outlet Right Ventricle
Ventricular Septal Defect

8 Month Old Male
Reconstruction from CT Angio

Defects:
- Double outlet right ventricle
- D-type transposition of the great vessels
- Single, common origin of the coronary arteries
- Small, patent ductus arteriosus
- Right ventricular hypertrophy
- Aberrant right subclavian artery
- Membranous ventricular septal defect
- Slight narrowing of the left mainstem bronchus

Segmentation performed and approved by Dr. Randy Richardson

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5 Month Old Male
Reconstruction from CT Angio

Defects:
- Coarctation
- Transverse aortic arch hypoplasia
- Mitral stenosis
- Shone's complex
- Ventricular septal defect
- Patent ductus arteriosus (restrictive at aortic end)
- Atrial septal defect with closure device in place

Segmentation performed and approved by Dr. Randy Richardson

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Levo-transposition of the great arteries

2 Day Old Female
Reconstruction from CT Angio

Defects:
- L-type transposition of the great arteries
- Hypoplastic ascending aorta
- Large patent ductus arteriosus
- Coarctation of the aorta with arch hypoplasia
- Ebstein’s anomaly with the abnormal tricuspid valve
- Switched morphologic coronaries;
- Large atrial septal defect with marked enlargement of the right atrium

Segmentation performed and approved by Dr. Randy Richardson

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Hypoplastic Right Ventricle

2 Day Old Female
Reconstruction from CT Angio

Defects:

- Pulmonic atresia
- Large atrial septal defect
- Large patent ductus arteriosus
- Hypoplastic right ventricle with intact ventricular septum
- Possible fistulous communication of the proximal right
- Coronary artery with the right atrial appendage;

Segmentation performed and approved by Dr. Randy Richardson

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HYH0015A

Transitional AV Canal

DATASHEET

4 Month Old Male Reconstruction from CT Angio

Defects:
- Transitional AV Canal
- Small ventricular septal defect
- Small atrial septal defect
- Small patent ductus arteriosus
- 4 vessel left aortic arch
- Moderate cardiomegaly
- Right ventricular hypertrophy

Segmentation performed and approved by Dr. Randy Richardson

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Slice Thickness 625 μm / Pixel Size 390.63 μm