# Healthfil

## ORTHOPEDICS FILAMENTS

- Fortis LL
- Structura MA
- Verum T
- Elasto A
- Pure FT

corset
tutors
support
flooded knee
structural articulation
dynamic elements
flexible seal
hygienic insole

# TO MAKE YOUR PERSONAL ORTHOPEDICS FACTORY

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BY TREED

# Healthfil

Additive printing is the new technological frontier for the orthopedic sector.
It enables us to overcome the geometric limits of conventional machining, making possible what once was not: the creation of orthopedic supports which are truly customized for each individual patient.

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Healthfil is a range of filaments specifically developed for applications that implement the support offered by fused filament extrusion based additive printing technologies. Throught partnership with some of the leading industry professionals, we have studied a range of materials to meet the most stringent requirements for rigidity, flexibility, durability, post treatment.

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**All this without neglecting safety: our filaments meet all the requirements of the UNI EN 10993-5 European standard and are therefore certified for skin contact.**
**As filament producers, we guarantee quality and consistency over time**

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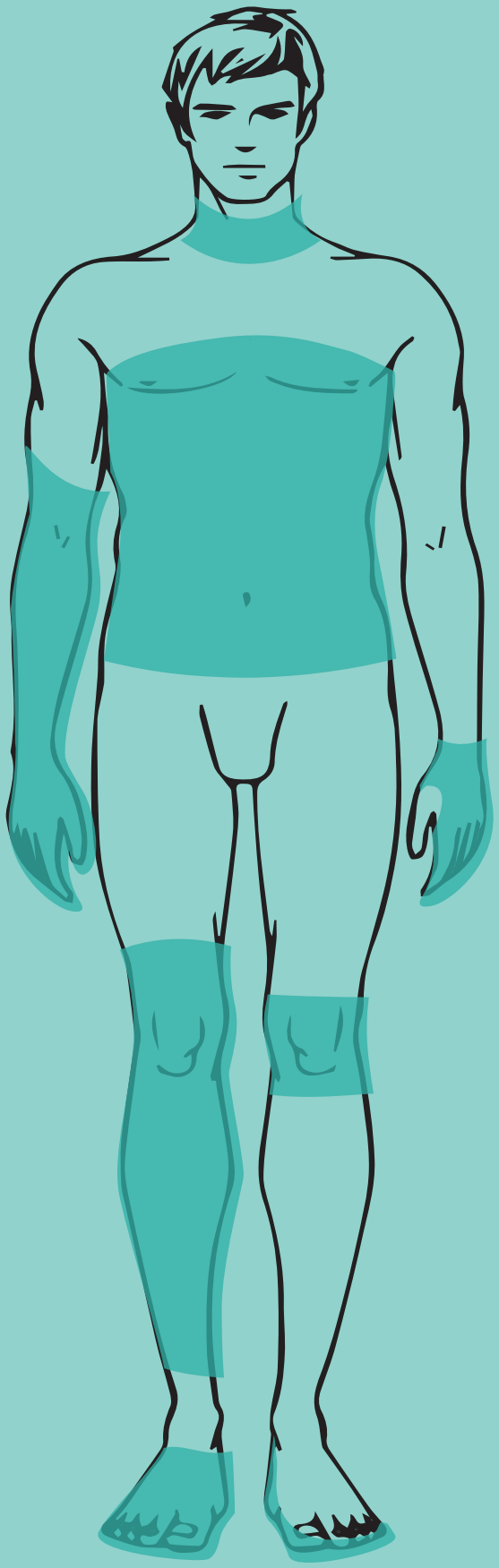

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# Fortis LL

- This Filament on a polyolefin matrix allows for combining relative elasticity, elastic memory and enervation resistance with high wear and laceration resistance
- Another key strength are its exceptional lightweight properties
- Fortis LL is ideal for:
  busts
  corrective corsets
  upper leg tutors

| SAMPLE DESCRIPTION | % Vitality at higher dose | IC50 VALUE | Predicted Classification |
|---|---|---|---|
| FORTIS LL | 86.5% | NOT COMPUTABLE* | NON CITOTOXIC |
| Positive Control SDS | 0 | 7.75 µg/ml | CITOTOXIC |

* *It was not possible to calculate the IC50 value because none of the doses analyzed has caused the death of 50% of the cells*

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# Structura MA

- Polyamide carbon fiber composite
- Structura MA was created to combine lightweight properties with high mechanical strength
- The addition of carbon fibers makes it possible to produce structural supports with more advanced geometries and by overcoming more constructive challenges than ever before
- Structura MA is ideal for:
  Upper and lower limb prosthetics
  Mobility supports
  Structural support elements
  Exoskeletal elements

| SAMPLE DESCRIPTION | % Vitality at higher dose | IC50 VALUE | Predicted Classification |
|---|---|---|---|
| STRUCTURA MA | 79.2% | NOT COMPUTABLE* | NON CITOTOXIC |
| Positive Control SDS | 0% | 7.33 µg/ml | CITOTOXIC |

* *It was not possible to calculate the IC50 value because none of the doses analyzed has caused the death of 50% of the cells*

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# Verum T

- Filament based on a polyester matrix
- Verum T offers the ability to produce rigid elements with high tenacity properties
- The pieces can be sterilized in autoclave at 125° C
- Verum T is ideal for:
  New corset lines
  Lower leg guards and tutors

| SAMPLE DESCRIPTION | % Vitality at higher dose | IC50 VALUE | Predicted Classification |
|---|---|---|---|
| VERUM T | 95.8% | NOT COMPUTABLE* | NON CITOTOXIC |
| Positive Control SDS | 0 | 73.37 µg/ml | CITOTOXIC |

* *It was not possible to calculate the IC50 value because none of the doses analyzed has caused the death of 50% of the cells*

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# Elasto A

- Polyester elastomer
- Elastomer A is an elastomeric, flexible material with a 92 shore A hardness
- Reliable over time and resistant to aggressive skin fats, it also offers excellent elasticity and high abrasion resistance
- Elasto A is ideal for:
  Sealed gaskets for prosthetic vases
  lastic joint elements

| SAMPLE DESCRIPTION | % Vitality at higher dose | IC50 VALUE | Predicted Classification |
|---|---|---|---|
| ELAST0 A | 95.9% | NOT COMPUTABLE* | NON CITOTOXIC |
| Positive Control SDS | 0 | 7.9 µg/ml | CITOTOXIC |

* *It was not possible to calculate the IC50 value because none of the doses analyzed has caused the death of 50% of the cells*

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# Pure FT

- Modified polyester elastomer
- Pure FT is a flexible material with a 93 shore A hardness
- The polymer composition was enriched with a new generation antimicrobial material, boasting an 99.9% efficiency
- Tested in a laboratory according to international standards and tests.
- Pure FT is ideal for:
  Production of orthopedic insoles

**a. Antibacterial performance (*E. coli*)**

| Sample ID | Bacterial count (CFU/cm²) | | Log reduction* | % reduction* |
|---|---|---|---|---|
| | t = 0h | t = 24h | | |
| Sample 1 | 1.6E+04 | 2.5E+03 | 0.81 | 84.36 |
| Sample 2 | 1.6E+04 | <1.00 | ≥3.39 | ≥99.96 |

* Reduction calculated versus sample 1 at t=24h

**b. Antibacterial performance (*S. aureus*)**

| Sample ID | Bacterial count (CFU/cm²) | | Log reduction* | % reduction* |
|---|---|---|---|---|
| | t = 0h | t = 24h | | |
| Sample 1 | 1.6E+04 | 2.6E+02 | 1.79 | 98.40 |
| Sample 2 | 1.6E+04 | <1.00 | ≥2.42 | ≥99.62 |

* Reduction calculated versus sample 1 at t=24h

**c. Antifungal performance (*A. niger*)**

| Sample ID | Fungal count (CFU/cm²) | | % reduction |
|---|---|---|---|
| | t = 0h | t = 96h | |
| Sample 1 | 5.95E+03 | 6.23E+03 | 0.0 |
| Sample 2 | 5.95E+03 | 0.00E+00 | 100.0 |

* Reduction calculated versus sample 1 at t=96h

- low cytotoxicity

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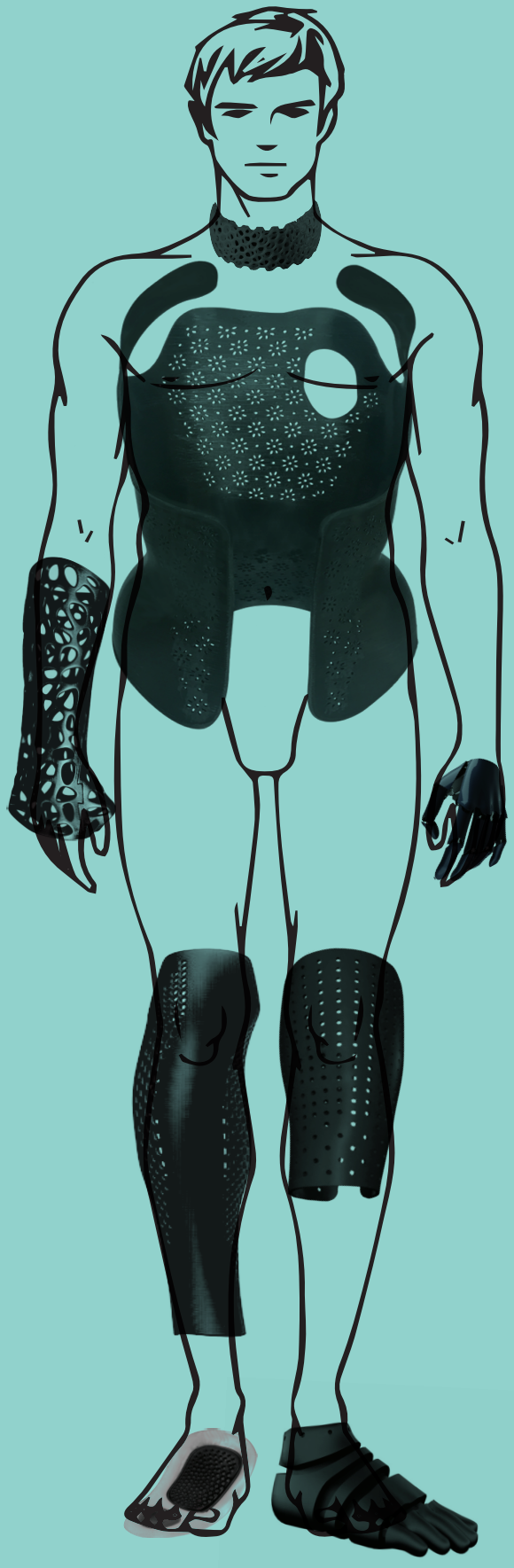

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# CREDITS

Fortis LL , Dottor Lelio Leoncini

Structura MA , Ing. Marco Avaro

Fortis T , P.I.  A. Colombo Coral 3D

Elasto A , Ing. Marco Avaro

Pure FT , Sig. G. Romeo - Vepram
Sig. P. Aldrighetti - Vepram

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Labs having made tests are european certified

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Communication and development by Treed - Simone Bagnasco