



**BASF**  
We create chemistry

**FORWARD AM**  
Innovating Additive Manufacturing

**AES-Metal Systems**  
**Ultrafuse 17-4 PH Launch Pack**  
**Date: 30.11.2020**

# Commercial Information Ultrafuse 17-4 PH

| Ultrafuse® 17-4 PH      | 1.75mm  |   | 2.85mm  |  |
|-------------------------|---|---|---|--|
|                         |   |   |   |  |
| Article Code            | UMF-5033a300                                    | UMF-5033a100                                    | UMF-5033b300                                    | UMF-5033b100                                     |
| Article Description     | Ultrafuse 17-4 PH Metal Filament - 1.75mm - 3kg | Ultrafuse 17-4 PH Metal Filament - 1.75mm - 1kg | Ultrafuse 17-4 PH Metal Filament - 2.85mm - 3kg | Ultrafuse 17-4 PH Metal Filament - 2.855mm - 1kg |
| EAN Code                | 8718969926331                                   | 8718969921091                                   | 8718969926348                                   | 8718969921374                                    |
| Spool Weight            | 3kg   | 1kg   | 3kg   | 1kg  |
| Distributor Pricing     | Please refer to price list                      |   | Please refer to price list                      |  |
| Reseller Pricing        |   |   |   |  |
| Standard Pricing        |   |   |   |  |
| Recommended Sales Price |   |   |   |  |
| MOQ                     |   |   |   |  |
| Release Date            | 02.12.2020                                      | 02.12.2020                                      | 02.12.2020                                      | 02.12.2020                                       |

# Material Properties Comparison

|                     | Ultrafuse 316L (XY) | Ultrafuse 17-4 PH* (XY) As sintered | Ultrafuse 17-4 PH** Hardened H900 |
|---------------------|---------------------|-------------------------------------|-----------------------------------|
| Tensile strength    | 561 MPa             | 880 MPa                             | TBA                               |
| Yield strength      | 251 MPa             | 680 MPa                             | TBA                               |
| Elongation at break | 53%                 | 5,8%                                | TBA                               |
| Hardness HV10       | 128                 | 257                                 | TBA                               |

*\*Ultrafuse 17-4 PH has a preliminary TDS based on printed test specimen. Full TDS is under preparation.*

- 17-4 PH and 316L are among the most used stainless-steel grades.
  - With Ultrafuse 316L you can target;
    - Non-magnetizable parts with high corrosion resistance, toughness, polishability.
    - ie decorative parts, medical equipment, parts for food and chemical industry.
  - With Ultrafuse 17-4 PH your can target;
    - Components that require high strength for applications in corrosive environments.
    - ie. Mechanical engineering, automotive industry, aviation, marine.
    - Tools, jigs and fixtures that are under higher loads.

# Printing Parameters

■ **17-4PH Printing:**

- ▶ Printed on Ultimaker, BCN3D, Prusa, Makerbot, Raise3D
- ▶ Minimal difference in printing parameters for ease of use
  - Flow calibration suggested as each machine has slight differences

■ **Available Beta Printing Profiles**

- ▶ Ultimaker Cura (2.85mm)
- ▶ Simplify 3D (1.75 & 2.85)
- ▶ Raise 3D (1.75mm)

| Cura 2.85mm Parameters    | 17-4PH | 316L | Unit |
|---------------------------|--------|------|------|
| Nozzle Temperature        | 240    | 235  | C°   |
| Build plate Temperature   | 90     | 90   | C°   |
| Layer height              | 0.15   | 0.15 | mm   |
| Print Speed               | 30     | 35   | mm/s |
| Retraction Speed          | 40     | 40   | mm/s |
| Retraction Distance       | 4.0    | 4.5  | mm   |
| Line width                | 0.6    | 0.6  | mm   |
| Infill Overlap percentage | 35     | 35   | %    |

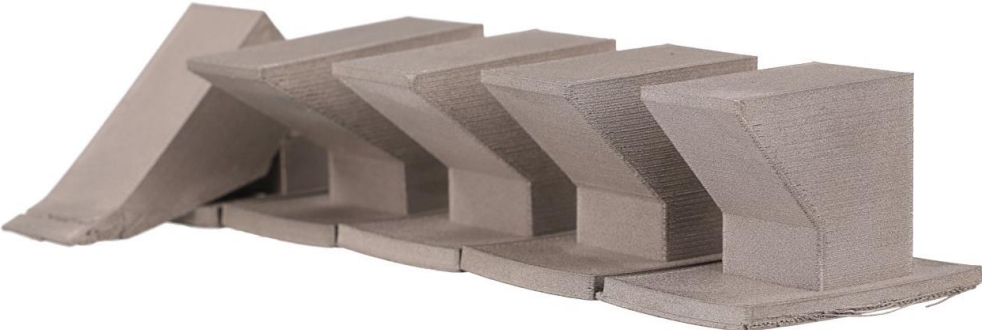
# Scaling & Stability

- **Green Part Scaling:**

- ▶ To enable the highest ease of use across both filaments, 17-4PH scaling and shrinkage are very similar to UF316

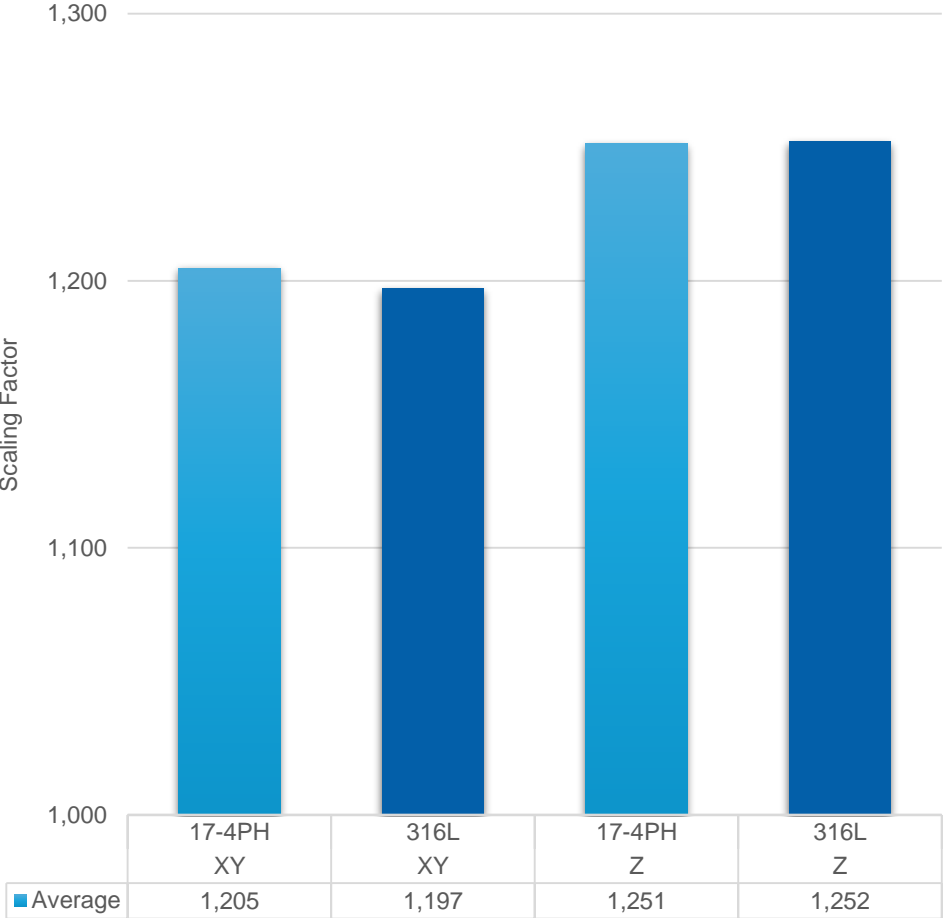
- **Better Brown Part Stability:**

- ▶ 17-4PH has been proven to possess greater stability during debinding and sintering
  - Some 17-4PH test parts see twice the stability compared to 316L



D&S Overhang Stability Experimental Parts

Average Scaling Factors Compared



Parts Measured:  
 17-4PH = 190  
 316L = 633

 **BASF**

We create chemistry



**FORWARD AM**

Innovating Additive Manufacturing