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Kadam® Datasheet for MIM 17-4 PHB

Product Descriptions

Ready-to-mold granules for the production of sintered components called stainless steel 17-4PH using water atomized powder based on catalytic debinding process.

Product Standards

DIN 1.4542, X 5 CrNiCuNb 17 4, AISI/UNS S17400, SAE J 467 (17-4PH)

Product Specifications

Items	Unit	SPC.	Measuring method
MFI	g/10min	800±400	ISO1133(21.6Kg,190°C)
Green Part Density	g/cm ³	5.4±0.03	ISO3369(Standard Part)
Sintering Density	g/cm ³	>7.6	ISO3369

Typical composition after Sintering

C %	Cr %	Ni %	Cu %	Nb %	Mn %	Si %	Fe %
≤0.07	15~17.5	3~5	3~5	0.15~0.45	≤ 1	≤ 1	Balance

Processing

Processing on standard injection molding machines for thermoplastic polymers, using catalytic debinding process.

Characteristic Properties of Sintered Parts

Tension strength	≥ 900 MPa
Sintering hardness	HV 260~340
Hardness after heat treatment	HV 370
Oversizing factor *	1.160±0.005 (Sintering density 7.6 g/cm ³ @1280°C)

The hardness after heat treatment and oversizing factor are only for reference as the difference of the parameters used.

Typical Microstructure

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Injection Molding

Barrel temperature	Zone 1	Zone 2	Zone 3	Nozzle
	180°C	185°C	190°C	195°C
Mold temperature	90~120			
Screw speed	50min ⁻¹			
Injection speed	10 cm ³ /s			
Molding pressure	900 bar			
Holding pressure	900 bar			
Holding time	0.1~3s			

* The conditions above are only for reference as the differences of the mold or injection molding machine. Make sure the barrel temperature is lower than 200 °C. Too high temperature would destroy the material and shorten the recycle life.

Debinding

Debinding according to catalytic debinding process at 110~145°C using HNO₃ > 98%. The debinding process is finished when a minimal debinding loss of 7.2 % is reached.

Sintering

A typical sintering cycle is: room temperature - 5K/min - 600°C, hold 1h, 600°C - 5 K/min - 1280°C, hold 3 h furnace cooling

Attentions

The data in this publication are based on our current knowledge and experience. All rights are reserved for adjusting the material parameters as we keep improving our products. Parameters vary according to different products, the users should try the feasibility before mass production.