

TruPrint 3000 Nickel



TRUMPF



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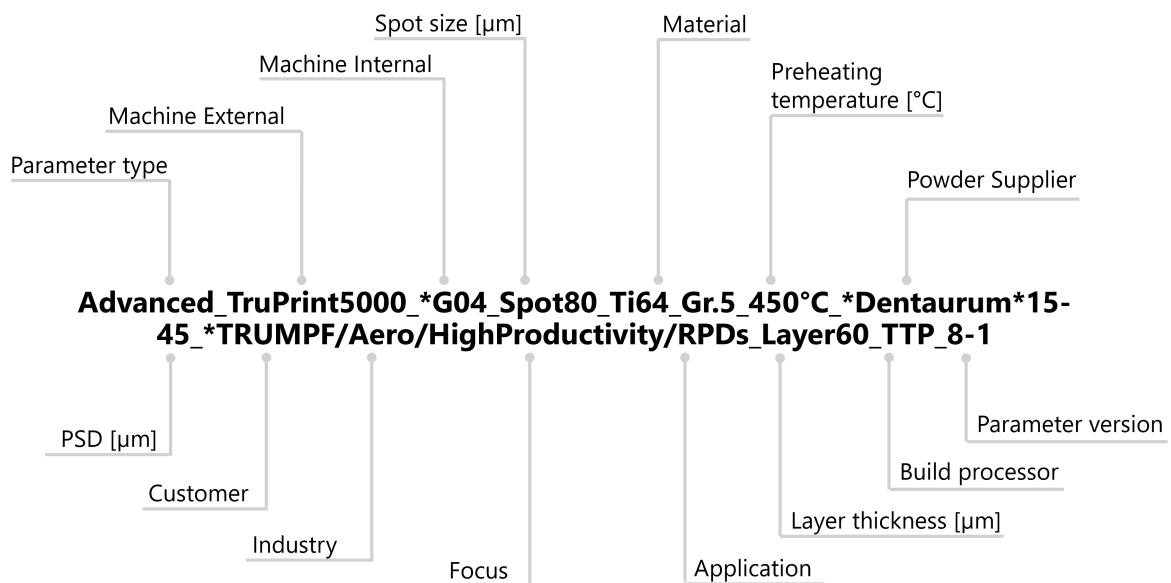
1. Introduction to parameters at TRUMPF AM

This document details the parameter set for processing Nickel using the TruPrint 3000. The set encompasses all materials within this material group, various layer thicknesses, and types of data preparation software. TRUMPF recommends using TruTops Print for data preparation. Each set may include basic and advanced parameters. Basic parameters are intended as a starting point for development. They are suitable for test geometries, but are generally not recommended for direct part production. Advanced parameters are refined settings suitable for actual component production.

Additionally, the document provides detailed information about the powders used to develop these parameters. Other powders, similar to those mentioned, are also suitable for production on our systems.

We are happy to assist you further in parameter development and optimization to meet your part requirements. Please reach out to us for support.

How do parameter names work at TRUMPF Additive Manufacturing?



*optional possibilities to differ the parameter portfolio

2. Available Parameters

Material	Machine	Parameter type ¹	Spot [μm]	Preheating temperature ² [°C]	Layer thickness [mm]	Build processor ³	Build rate ⁴ [cm ³ /h]
HastX	G02	Advanced	100	200	0.03	TTP Mat	11.9
HastX	G02	Advanced	100	200	0.06	TTP Mat	27.0
In625	G02	Advanced	100	200	0.03	TTP Mat	16.2
In625	G08	Basic	80	200	0.12	Mat	108.5
In625	G08	Basic	80	200	0.04	TTP	34.6
In625	G08	Basic	80	200	0.06	TTP Mat	60.5
In625	G08	Basic	80	200	0.06	TTP	43.2
In625	G08	Basic	80	200	0.06	TTP	89.9
In625	G08	Basic	80	200	0.06	TTP	108.9
In718	G08	Advanced	80	200	0.04	TTP	34.6
In718	G08	Advanced	80	200	0.06	TTP	60.5
In718	G02	Advanced	100	200	0.03	TTP Mat	23.8
In718	G02	Advanced	100	200	0.06	TTP Mat	19.7
In718	G08	Basic	80	200	0.04	Mat	32.5
In718	G08	Basic	80	200	0.06	TTP	43.2
In718	G08	Basic	80	200	0.06	TTP	89.9
In718	G08	Basic	80	200	0.06	TTP	108.9

3. Powder Information

Please contact additive.manufacturing@de.trumpf.com for direct contact to powder manufacturers.

Material	Supplier	Powder name	PSD [μm]	Supplier ID
HastX	Oerlikon Metco	MetcoAdd HX-D	15-45	1301896.0
In625	Oerlikon Metco	MetcoAdd 625A	15-45	1093343.0
In718	Oerlikon Metco	MetcoAdd 718C	15-45	1096973.0
In718	Praxair	TruForm 718 Ni-202-35	15-45	915-036325-10KG
In718	VDM	VDM Powder 718	15-53	24668P0001

4. Parameter details

4.1. Advanced_TruPrint3000_Spot100_HastX_Layer30

Powder information		Material properties	
Material	HastX	Build rate⁴ [cm³/h]	11.9
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd HX-D	Average roughness⁶ R_a [μm]	9.5
Supplier ID	1301896.0	Average roughness⁶ R_z [μm]	57.0

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties ⁹ machined				
	0°	90°	Average ¹²	
Yield strength [MPa]	631.0 – 649.0	508.0 – 550.0	—	Samples —
Tensile strength [MPa]	827.0 – 839.0	676.0 – 694.0	—	Build jobs —
Elong. at break [%]	29.0 – 35.0	42.0 – 48.0	—	Machines —

Hardness ¹³	
Vickers [HV]	229.0 – 283.0

Physical properties	
Electrical conductivity [%IACS]	0.8 – 1.4
Thermal conductivity¹⁴ [W/mK]	5.0

4.2. Advanced_TruPrint3000_Spot100_HastX_Layer60

Powder information		Material properties	
Material	HastX	Build rate⁴ [cm³/h]	27.0
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd HX-D	Average roughness⁶ R_a [μm]	11.0
Supplier ID	1301896.0	Average roughness⁶ R_z [μm]	—

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties ⁹ machined				
	0°	90°	Average ¹²	
Yield strength [MPa]	586.0 – 673.0	479.5 – 548.5	—	Samples —
Tensile strength [MPa]	804.5 – 885.5	630.5 – 699.5	—	Build jobs —
Elong. at break [%]	29.0 – 41.0	42.5 – 51.5	—	Machines —

Hardness ¹³	
Vickers [HV]	224.5 – 269.5

Physical properties	
Electrical conductivity [%IACS]	0.8 – 1.4
Thermal conductivity¹⁴ [W/mK]	5.0

4.3. Advanced_TruPrint3000_Spot100_In625_Layer30

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	16.2
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	6.7
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	42.8



Figure 1: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties ⁹ machined				
	0°	90°	Average ¹²	
Yield strength [MPa]	591.0 – 891.0	483.0 – 783.0	—	Samples —
Tensile strength [MPa]	875.0 – 1175.0	775.0 – 1075.0	—	Build jobs —
Elong. at break [%]	30.0 – 48.0	32.0 – 50.0	—	Machines —

Hardness ¹³	
Rockwell [HRC]	20.0 – 44.0

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

In625: AM_S

Process description⁷: 870°C/1h, Ar

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Hardness¹³	
Rockwell [HRC]	17.0 – 41.0

4.4. Basic_TruPrint3000_G08_Spot80_In625_Layer120

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	108.5
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 2: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

4.5. Basic_TruPrint3000_G08_Spot80_In625_Layer40

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	34.6
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 3: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

4.6. Basic_TruPrint3000_G08_Spot80_In625_Layer60

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	60.5
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 4: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

Exemplary Application parts

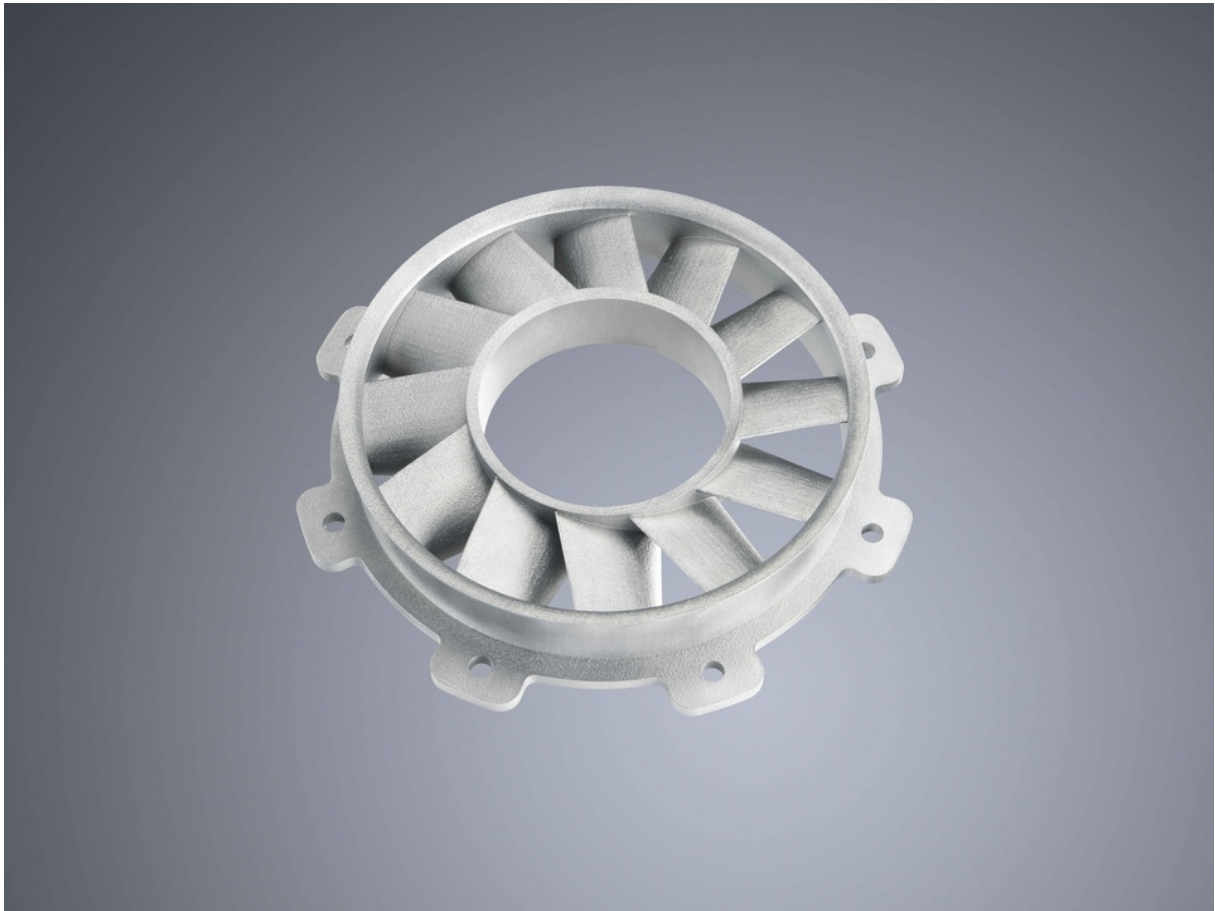


Figure 5: Rotor

4.7. Basic_TruPrint3000_G08_Spot80_In625_high_density_Layer60

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	43.2
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 6: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

4.8. Basic_TruPrint3000_G08_Spot80_In625_high_melting_rate_500W_Layer60

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	89.9
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 7: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

4.9. Basic_TruPrint3000_G08_Spot80_In625_high_melting_rate_700W_Layer60

Powder information		Material properties	
Material	In625	Build rate⁴ [cm³/h]	108.9
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 625A	Average roughness⁶ R_a [μm]	—
Supplier ID	1093343.0	Average roughness⁶ R_z [μm]	—



Figure 8: In625 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.5 – 1.1
Thermal conductivity¹⁴ [W/mK]	3.6

4.10. Advanced_TruPrint3000_G08_Spot80_In718_Layer40

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	34.6
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	5.7
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	33.7

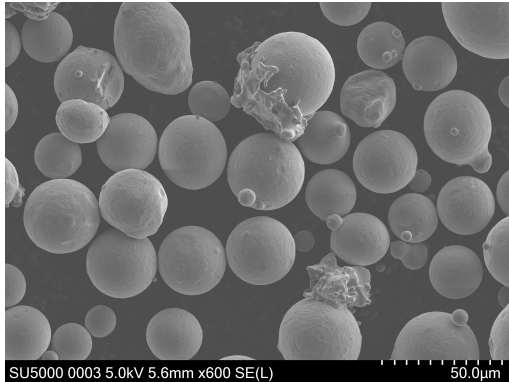


Figure 9: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

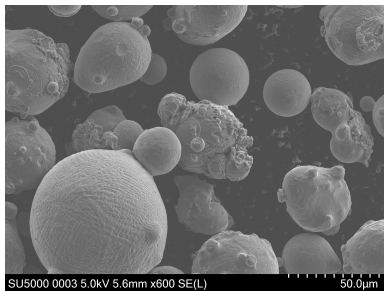


Figure 10: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	754.0 – 772.0	608.0 – 650.0	—	Samples —
Tensile strength [MPa]	1078.0 – 1084.0	1001.0 – 1013.0	—	Build jobs —
Elong. at break [%]	24.0 – 27.0	31.5 – 33.3	—	Machines —

Hardness¹³	
Vickers [HV]	285.0 – 309.0

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity¹⁴ [W/mK]	2.9

In718: AMS5662

Process description⁷: 950°C/1h,Air;718°C/8h,Air;621°C/8h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	1178.0 – 1250.0	1056.0 – 1194.0	—	Samples —
Tensile strength [MPa]	1442.0 – 1502.0	1391.0 – 1409.0	—	Build jobs —
Elong. at break [%]	10.0 – 22.0	15.0 – 21.0	—	Machines —

Hardness¹³	
Vickers [HV]	432.0 – 456.0

4.11. Advanced_TruPrint3000_G08_Spot80_In718_Layer60

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	60.5
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	6.4
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	37.2

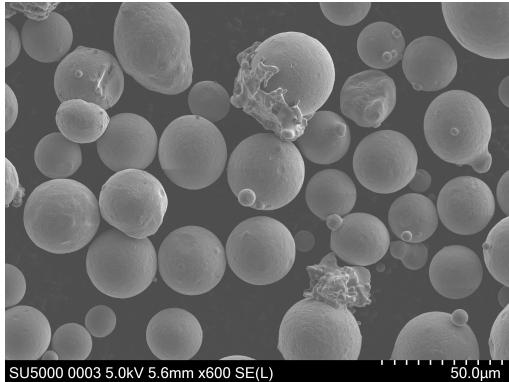


Figure 11: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

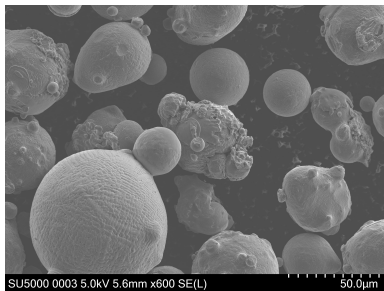


Figure 12: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	743.0 – 761.0	600.0 – 654.0	—	Samples —
Tensile strength [MPa]	1075.0 – 1081.0	1000.0 – 1024.0	—	Build jobs —
Elong. at break [%]	23.5 – 26.5	31.7 – 32.9	—	Machines —

Hardness¹³	
Vickers [HV]	290.0 – 302.0

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity¹⁴ [W/mK]	2.9

In718: AMS5662

Process description⁷: 950°C/1h,Air;718°C/8h,Air;621°C/8h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	1202.0 – 1226.0	1099.0 – 1237.0	—	Samples —
Tensile strength [MPa]	1480.0 – 1498.0	1419.0 – 1437.0	—	Build jobs —
Elong. at break [%]	11.0 – 17.0	13.0 – 19.0	—	Machines —

Hardness¹³	
Vickers [HV]	436.0 – 454.0

Exemplary Application parts



Figure 13: Combi burner



Figure 14: Turbine rotor



Figure 15: Vane supports electro polishing

4.12. Advanced_TruPrint3000_Spot100_In718_Layer30

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	23.8
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	7.9
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	41.0

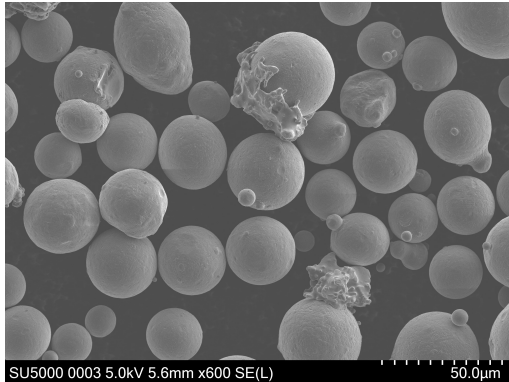


Figure 16: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

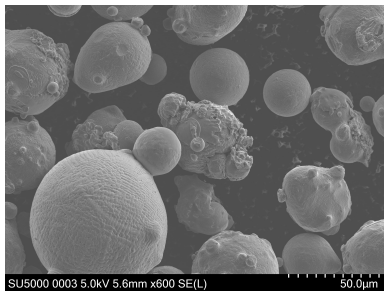


Figure 17: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	766.0	650.0	—	Samples —
Tensile strength [MPa]	1066.0	967.0	—	Build jobs —
Elong. at break [%]	30.0	31.0	—	Machines —

Hardness¹³	
Vickers [HV]	370.0
Rockwell [HRC]	17.0 – 47.0

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity¹⁴ [W/mK]	2.9

In718: AMS5664

Process description⁷: 1050°C/1h,Air;760°C/10h,Air;649°C/10h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	1231.0	1151.0	—	Samples —
Tensile strength [MPa]	1452.0	1392.0	—	Build jobs —
Elong. at break [%]	13.0	16.0	—	Machines —

Hardness¹³	
Vickers [HV]	510.0
Rockwell [HRC]	33.0 – 63.0

In718: AMS5664

Process description⁷: 1050°C/1h,Air;760°C/10h,Air;649°C/10h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Hardness¹³	
Rockwell [HRC]	30.0 – 60.0

4.13. Advanced_TruPrint3000_Spot100_In718_Layer60

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	19.7
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	8.7
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	49.5

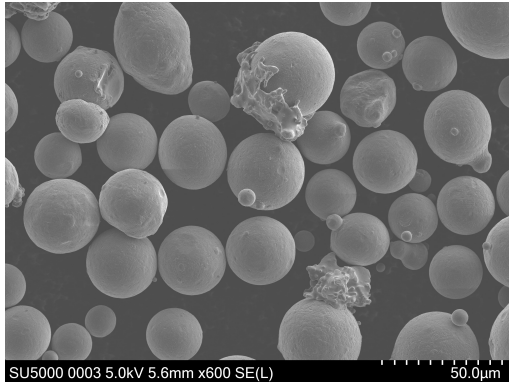


Figure 18: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

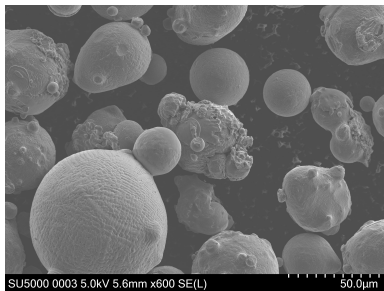


Figure 19: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	696.0 – 774.0	525.0 – 645.0	—	Samples —
Tensile strength [MPa]	945.0 – 1155.0	902.5 – 977.5	—	Build jobs —
Elong. at break [%]	10.5 – 37.5	23.5 – 38.5	—	Machines —

Hardness¹³	
Vickers [HV]	288.2 – 315.8
Rockwell [HRC]	17.0 – 47.0

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity¹⁴ [W/mK]	2.9

In718: AMS5662

Process description⁷: 950°C/1h,Air;718°C/8h,Air;621°C/8h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	1232.5 – 1337.5	775.0 – 1375.0	—	Samples —
Tensile strength [MPa]	1400.0 – 1550.0	1343.5 – 1412.5	—	Build jobs —
Elong. at break [%]	11.5 – 13.5	5.0 – 11.0	—	Machines —

Hardness¹³	
Rockwell [HRC]	33.0 – 63.0

In718: AMS5664

Process description⁷: 1050°C/1h,Air;760°C/10h,Air;649°C/10h,Air

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Mechanical properties⁹ machined				
	0°	90°	Average¹²	
Yield strength [MPa]	1000.0 – 1240.0	1035.0 – 1155.0	—	Samples —
Tensile strength [MPa]	1050.0 – 1770.0	1110.0 – 1500.0	—	Build jobs —
Elong. at break [%]	8.0 – 26.0	4.0 – 22.0	—	Machines —
Hardness¹³				
Rockwell [HRC]	30.0 – 60.0			

4.14. Basic_TruPrint3000_G08_Spot80_In718_Layer40

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	32.5
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	—
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	—

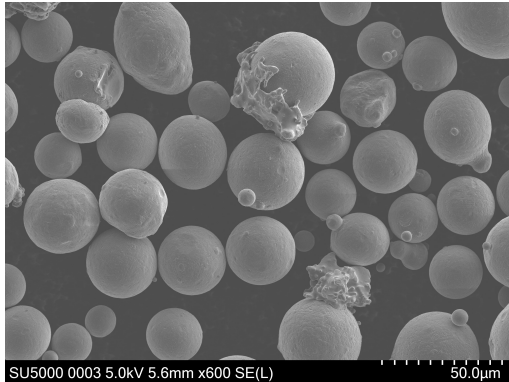


Figure 20: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

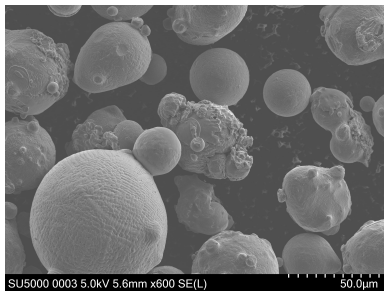


Figure 21: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity ¹⁴ [W/mK]	2.9

4.15. Basic_TruPrint3000_G08_Spot80_In718_high_density_Layer60

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	43.2
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.9
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	—
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	—

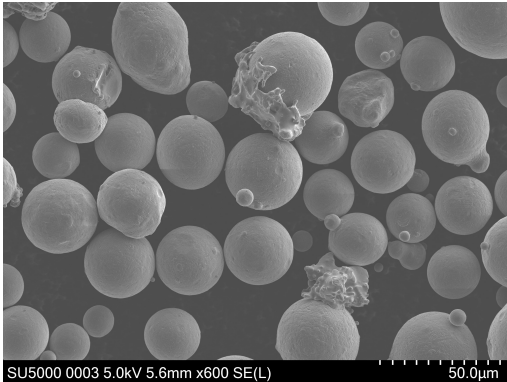


Figure 22: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

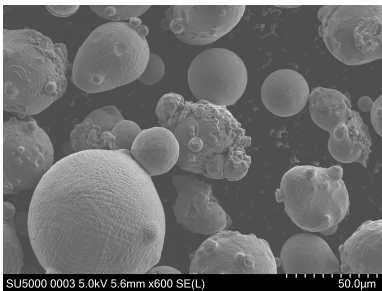


Figure 23: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity ¹⁴ [W/mK]	2.9

4.16. Basic_TruPrint3000_G08_Spot80_In718_high_melting_rate_500W_Layer60

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	89.9
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	—
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	—

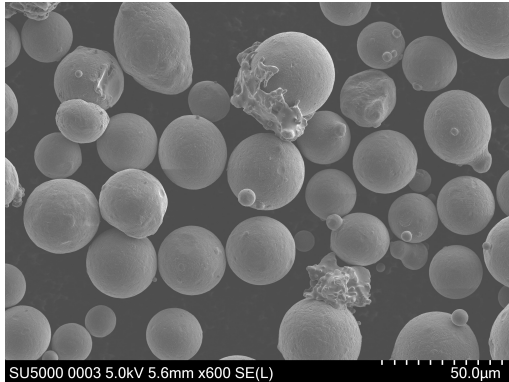


Figure 24: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

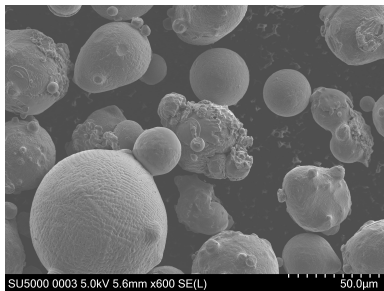


Figure 25: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity ¹⁴ [W/mK]	2.9

4.17. Basic_TruPrint3000_G08_Spot80_In718_high_melting_rate_700W_Layer60

Powder information		Material properties	
Material	In718	Build rate⁴ [cm³/h]	108.9
Supplier	Oerlikon Metco	Relative density⁵ [%]	99.7
Powder name	MetcoAdd 718C	Average roughness⁶ R_a [μm]	—
Supplier ID	1096973.0	Average roughness⁶ R_z [μm]	—

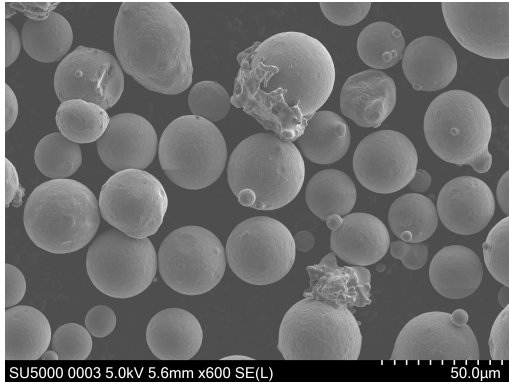


Figure 26: In718 powder by Oerlikon Metco. PSD: 15-45 μm. SEM magnification: 600x.

Other suitable In718 powders

For details see powder information page.

Supplier	Powder Name
Praxair	TruForm 718 Ni-202-35
VDM	VDM Powder 718

SEM images of other suitable In718 powders

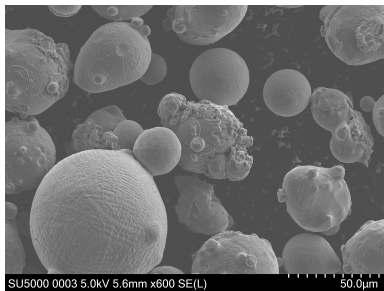


Figure 27: In718 powder by Praxair. PSD: 15-45 μm. SEM magnification: 600x.

No Heat Treatment

All properties are reported using 3σ -intervals⁸. The values for 0° and 90° are derived from qualification reports, while the average values are calculated from additional measurements.

Physical properties	
Electrical conductivity [%IACS]	0.4 – 1.0
Thermal conductivity ¹⁴ [W/mK]	2.9

- ¹ Basic parameters: starting point for development, generally not recommended for direct part production.
Advanced parameters: refined settings, suitable for actual component production.
- ² Describes the preheating temperature of the build plate. A generic value of 23°C is stated, if no active preheating was used. The actual value depends on the climatic conditions of the surrounding.
- ³ TTP: TruTops Print, Mat: Materialise, Cam: Cambridge, Oqt: Oqton
- ⁴ Calculated melting rate with maximum amount of lasers; effective melting rate may differ depending on the application.
- ⁵ ASTM E 1245:2003. Measurement of the relative density was performed for specimens with cubic geometries. Values can differ for other geometries and sizes.
- ⁶ According to DIN EN ISO 21920-2-01:2022 with used measurement length of 4,8 mm
- ⁷ The process description is read as follows: Example: 650°C/10min,850°C/10min,1010°C/30min,Air; 590°C/2h,Air; 590°C/2h,Air: 1. Heat treatment cycle: (1. temperature/1. holding time at temperature, 2. temperature/2. holding time, quenching medium); 2. heat treatment cycle (temperature/holding time, quenching medium); 3. heat treatment cycle (temperature/holding time, quenching medium). We recommend that titanium is heat treated under vacuum.
- ⁸ Values are stated as intervals from 3σ to the left of the mean to 3σ to the right of the mean. This ensures that, statistically, 99.73% of the process output meets customer requirements. For sufficiently many data points, a full process capability analysis was performed and intervals are stated such that a CPK of 1.33 was achieved.
- ⁹ DIN EN ISO 6892-1:2017, DIN 50125:2016
- ¹⁰ DIN EN ISO 22674
- ¹¹ ASTM E8
- ¹² The average values could include a combination of different build jobs on the same machine type, different powder manufacturers and different inspection orientations.
- ¹³ DIN EN ISO 6506-1:2015
- ¹⁴ Calculated from electrical conductivity using Wiedemann Franz Law: $\kappa/\sigma = LT$, with thermal conductivity κ [W/mK], electrical conductivity σ [S/m], Lorenz number $L = 2.44 \cdot 10^{-8} \text{ W}\Omega/\text{K}^2$, temperature T [K].

Further test procedure details are available on request.

The component properties obtained were exclusively derived from the combination of suitable powder, the TRUMPF TruPrint and the parameter sets, while observing the current operator's manual.

The data in this technical data sheet and other information are up to date. They alone do not provide a sufficient basis for designing components. The suitability of a component for a particular application cannot be guaranteed by this information. The details in this data sheet are intended exclusively for information purposes and do not constitute an agreement on certain qualities. The TRUMPF warranty only covers agreements specified in the delivery contracts.

The manufacturer of a component is responsible for determining the properties and suitability for any use of the component. They are also responsible for respecting any potential property rights and current legislation and regulations.

As a result of continuous improvement processes in place at TRUMPF, the information in this data sheet is subject to change without prior notice. Errors are excepted.