

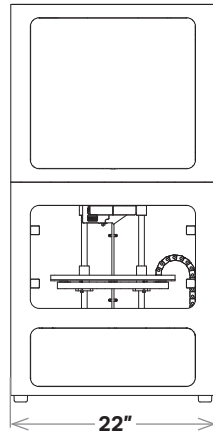


Metal X

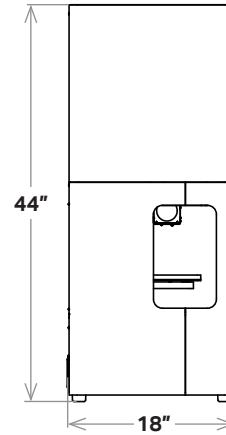
The Metal X is a revolutionary 3D printer that prints metal powder bound in a plastic matrix to eliminate safety risks associated with traditional metal 3D printing methods while enabling new features like close-cell infill for reduced part weight and cost. It's up to 10x less expensive than alternative metal additive manufacturing technologies — and up to 100x less than traditional fabrication technologies like machining or casting. Affordable, reliable, and easy to use, the Metal X print system gives you everything you need to go from design to fully functional metal parts faster than ever before.

| | | |
|---------------------------|---------------------------|---|
| Printer Properties | Process | Atomic Diffusion Additive Manufacturing (ADAM) |
| | Build Volume | 300 x 220 x 180 mm (11.8 x 8.7 x 7.1 in) |
| | Machine Size | 575 x 467 x 1,120 mm (22.7 x 18.4 x 44.1 in), 75 kg (160 lbs) |
| | Print Chamber | Heated |
| | Print Bed | Heated, vacuum-sealed print sheet, auto bed leveling |
| | Print System | Two nozzles — Metal material and release material |
| | Power Requirements | 100–240 VAC, 2,400 W (20 A peak), IEC 60320 type C20 |
| Materials | Metal Material | Stainless steel (17-4 PH, 316L*), Tool steel (H13, A2, D2), Inconel 625, Copper, Titanium-6Al-4V* |
| | Release Material | Ceramic (consumed at 1:10 ratio to metal spools, on average) |
| | Media (Spools) | Filament fed, bound powder |
| Part Properties | Max Part Size | 250 x 183 x 150 mm (9.8 x 7.2 x 5.9 in), 10kg |
| | Supports | Metal material with ceramic release layer |
| | Layer Height | 50µm and 125µm post-sinter |
| Software | Supplied Software | Eiger Cloud (Other options available at cost) |
| | Security | Two-factor authentication, org admin access, single sign-on |

FRONT VIEW



SIDE VIEW



* Materials currently under development. **Note:** All specifications are approximate and subject to change without notice.



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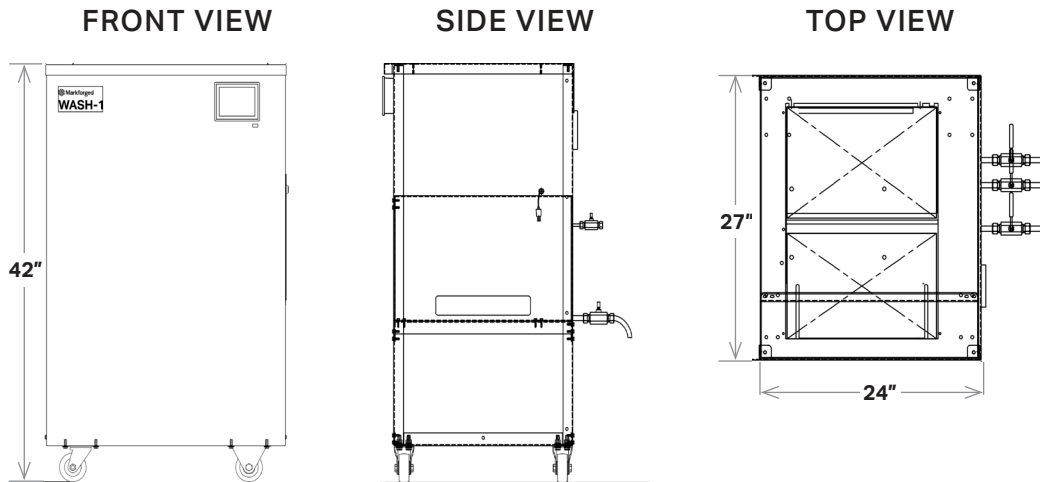
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Wash-1

The first step in transforming a printed “green” part into fully dense metal is debinding. The Wash-1 immerses the green part in a specialized fluid which dissolves the primary binding material, leaving the part semi-porous so the remaining binder can easily burn off during sintering. This debinding step purifies the final metal part and helps keep your sintering furnace clean.

| | | |
|----------------------------------|----------------------------|--|
| Debinder Properties | Materials Supported | All metals |
| | Fluid (Solvent) | Opteon SF79, Opteon SF80, or Tergo Metal Cleaning Fluid |
| | Controller | Integrated control system |
| | Workholding | Stainless steel basket |
| | Washing Size | 356 x 254 x 203 mm (14 x 10 x 8 in) |
| | Washing Volume | 18,356 cm ³ (1,120 in ³) |
| Safety & Installation | Environmental Req. | External exhaust |
| | Safety Control | Low fluid shutoff control High vapor pressure shutoff control |
| | Regulatory | Refer to MSDS |
| | Emissions | Low emission design to conserve solvent |
| | Power | 110-120 VAC single phase, 11A / 1,320W peak draw |
| | Physical Dimensions | External Dimensions |
| Weight | | 136 kg (300 lbs) |



Note: All specifications are approximate and subject to change without notice.



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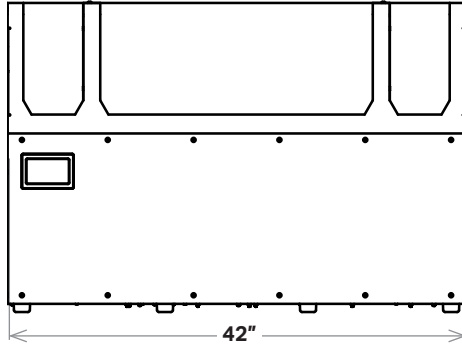


Sinter-1

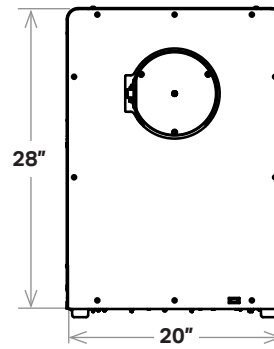
The Markforged Sinter-1 is a high-performing, high-value furnace that is ideal for small batch production. Built on 30 years of Metal Injection Molding (MIM) technology, it's affordable and reliable. Featuring 4,760 cm³ of active hot zone, the Sinter-1 effortlessly converts washed parts into their high-quality dense final metallic form in as few as 26 hours.

| | | |
|----------------------------------|--------------------------------|---|
| Furnace Properties | Materials Supported | Chemically debound Metal X-printed parts |
| | Heating Element | Kanthal |
| | Controller | Pre-programmed automatic cycling |
| | Sinter Run Time | 26 hours* |
| | Peak Internal Temp. | 1,300° C / 2,372° F |
| | Sintering Capacity | Rectangle w/radius top — 141 mm ID x 305 mm L (5.55 in ID x 12 in L) |
| | Sintering Workload | 3,020 cm ³ (184 in ³) |
| | Sinter Surface Area | 348 cm ² (53.9 in ²) for single ceramic setter plate |
| | Setter Plate Dimensions | 11.4cm W x 30.4cm D, (4.5in W x 12.0in D) |
| | Gas Types | Argon, argon / hydrogen mix |
| | Retort | High purity refractory retort (carbon-free) |
| Safety & Installation | Environmental Req. | External exhaust (100–150 CFM) |
| | Power | 200–240 V single phase 36A, recommend wiring 50A |
| Physical Dimensions | External Dimensions | 1,067 x 505 x 720 mm (42 x 20 x 28 in) |
| | Weight | 136 kg (300 lbs) |

FRONT VIEW



SIDE VIEW



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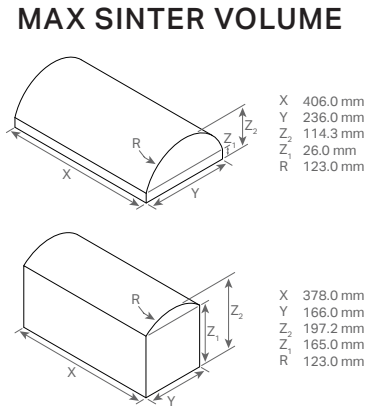
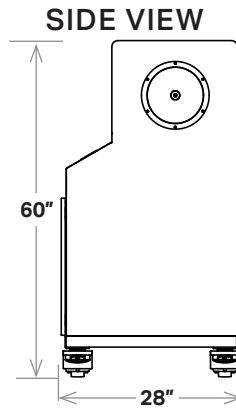
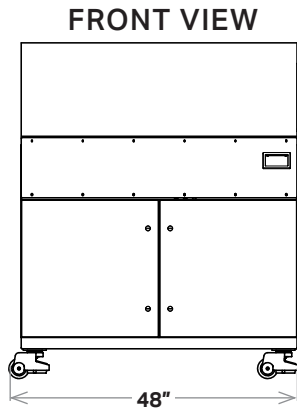
Sinter-2

With an expansive active hot zone (19,644 cm³ / 1,199 in³), the Sinter-2 is the perfect solution for mid-volume batch production and for larger parts. Create high-purity metal parts by using sintering technology built with a carbon-free retort. This workhorse furnace is enabled with rapid cooling technology and can process the full range of commercial-grade metals from their washed state into dense metal parts in as few as 30 hours.

| | | |
|----------------------------------|--------------------------------|---|
| Furnace Properties | Materials Supported | Chemically debound Metal X-printed parts |
| | Heating Element | Kanthal |
| | Controller | Pre-programmed automatic cycling |
| | Sinter Run Time | 30 hours,* 17 hours (Small Parts Express Run)** |
| | Peak Internal Temp. | 1,300° C / 2,372° F |
| | Sintering Capacity | Rectangle w/radius top — 248 mm ID x 406 mm L (9.8 in ID x 16 in L) |
| | Sintering Workload | 12,135 cm ³ (741 in ³) |
| | Sintering Surface Area | 1,644 cm ² (254.8 in ²) for stackable ceramic setter plate |
| | Setter Plate Dimensions | Top plate: 24.0cm W x 41.0cm D, (9.4in W x 16.1in D) Bottom plate: 17.0cm W x 41.0cm D, (6.7in W x 16.1in D) |
| | Gas Types | Argon, argon / hydrogen mix |
| | Retort | High purity refractory retort (carbon-free) |
| Safety & Installation | Environmental Req. | External exhaust (100–150 CFM) |
| | Power | 200–240 V, 3 phase (3 wire), 30 A 346–416 V, 3 phase (4 wire), 30 A |

Physical Dimensions

| | |
|----------------------------|--|
| External Dimensions | 1,370 x 810 x 1,520 mm (54 x 32 x 60 in) |
| Weight | 350 kg (772 lbs) |



* May vary by material, operating environment, run mass, electrical frequency, etc. **Note:** All specifications are approximate and subject to change without notice.
 ** Express Run enabled for 17-4 PH parts where brown (washed and dried) mass totals 250 grams or less



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