

ULTRA DRYERS



PRODUCT GUIDE













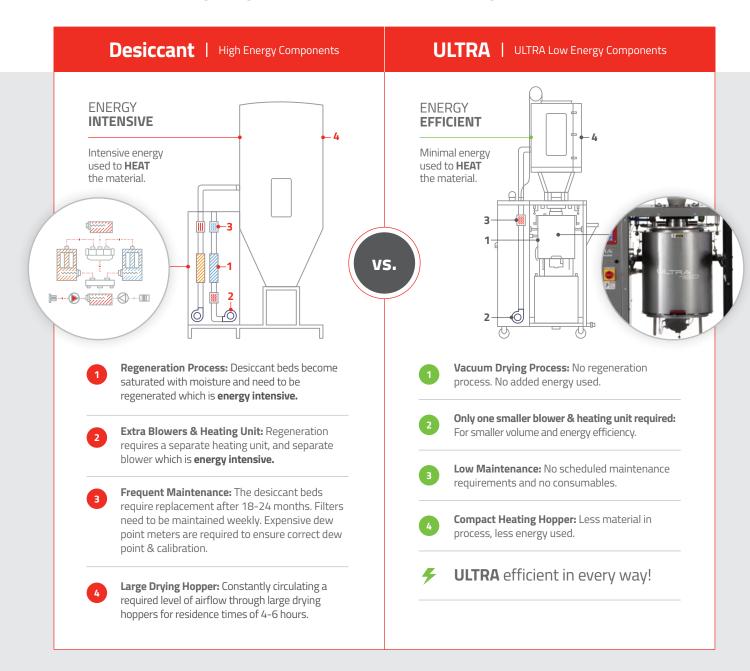


The first ULTRA low energy dryer for all plastic raw materials.

The First ULTRA Low Energy Dryer

Energy efficiency is the number one criteria for selecting dryers or replacing existing dryers! See below the desiccant high energy components, versus the ULTRA low energy components.





ULTRA also offers significant benefits over desiccant in all of these criteria



Return on Investment

What is the initial purchase cost of the dryer?



Material Changeover

How quick can you change material?



Time

How long does it take to dry raw materials?



Cost of **Ownership**

What is the real cost of the dryer?



Maintenance

How much maintenance & servicing?



Scrap Rate

Drying control & sufficient dry time?

The First ULTRA Low Energy Dryer

DRYER ENERGY COSTS YOU CAN NOW CONTROL

The difference in energy used to dry material, after it's brought up to temperature is huge:

A Desiccant Dryer Uses:

45

100

Watts/lb/hr

Watts/kg/hr

VS.

Our ULTRA Dryers Use:

4

8

Watts/lb/hr

Watts/kg/hr

Switching from Desiccant to ULTRA

Saves You:

41

92

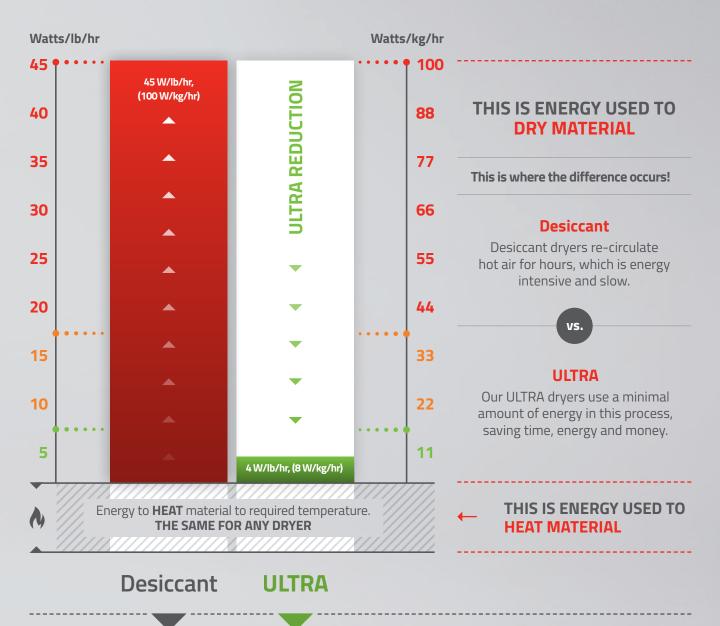
Watts/lb/hr

Watts/kg/hr



Key Benefit: Energy Savings

The ULTRA low energy dryer is the most efficient dryer available in the market today.



\$7,128* \$634*

ANNUAL COST TO DRY MATERIAL*

*Based on 220 pounds per hour, 6000 hours per year, kW cost at national average of \$0.12per kW, measured at 80% of rated max throughput. This chart shows the EXCESS ENERGY required to DRY the material.

Savings Year on Year

With a kW difference of 41 Watts/lb/hr, 92 Watts/kg/hr using an ULTRA dryer, you can save **\$6,494** annually doing the exact same job. Savings year on year:

After 5 Year Period	\$32,470
After 10 Year Period	\$64,940
After 15 Year Period	\$97,410

ULTRA Efficient Drying Process

What makes the ULTRA low energy dryer the most efficient drying system on the market?

ULTRA Low Maintenance

- Touchscreen identifies problems by highlighting area in red service box.
 - For example: Low air pressure
- System will not RUN if the process requirements are not met:
- 1 No vacuum / no heat
- System logs alarms

✓ ULTIMATE PROCESS EFFICIENCY

By design the ULTRA low energy dryer has no scheduled maintenance requirements:

- No desiccant beds to replace
- No process filters to clean and change
- No regeneration cycles
- No cooling requirements
- No chilled water connections

ULTRA Energy Saver

Temperature Sense: Temperature is controlled efficiently with energy saver modes built in as standard.

ENERGY EFFICIENT DRYING





ULTRA Green

ULTRA dryers provide further savings from reduced CO₂e - Global Warming Potential (GWP). Running 220.2 lb/hr (100 kg/hr) provides a saving of 54,120 kW a year

This equates to saving:

38.6 tons CO₂e/year

*US Government source

ULTRA Smart Drying

- Onboard Flexbus Lite offers a full feature control to load/offload material from the ULTRA dryer
- Smart feeding of material to process
- Load cells monitor process demand by live lb/hr (kg/hr) consumption
- Automatic adjustment of amount of material under vacuum and in retention hopper feeding the process
- ULTRA signals when to release the next fresh batch
- Retention Insulation: The retention hopper is heavily insulated and enclosed to minimize heat loss and moisture reabsorption

✓ ULTIMATE PROCESS EFFICIENCY





ULTRA Quick Drying

MAGUIRE

ULTRA dryers use vacuum as the main method to dry versus air dew point. Drying by vacuum drops the boiling temperature of water to 133°F / 56°C. This creates a temperature and pressure differential that means moisture is **rapidly** released from the material.

- Typically, **1/6th** of the drying time of conventional desiccant dryers.
- This dramatically reduces the energy required to DRY material.

- **MORE PRODUCTION TIME**
- **FASTER MATERIAL CHANGES**
- **MORE MACHINE UPTIME**

Example:

Using the ULTRA, Polycarbonate can be dried from cold start-up in 30-40 minutes compared to **3 hours** in a desiccant dryer.

Dryer Range: Wide Range of Models Available

Maguire offers 4x ULTRA models and 3x LPD models to cater to small and large lb/hr (kg/hr) throughputs.

ULTRA RANGE









ULTRA



LPD RANGE

The LPD 30 as the standard solution for small lb/hr and kg/hr technical drying requirements.





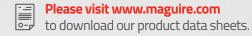


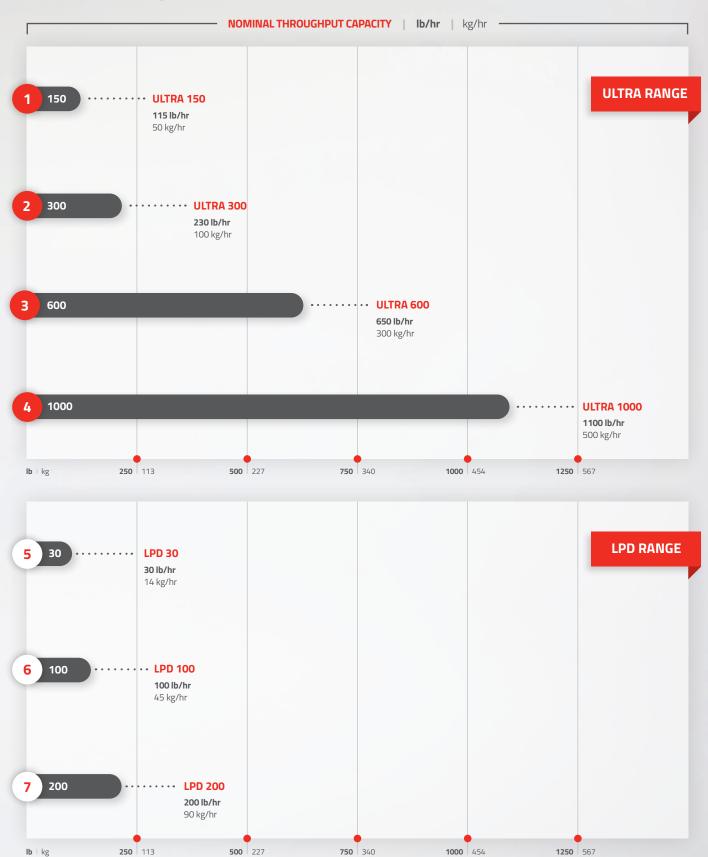




LPD 30 LPD 100 **LPD 200**

Throughput Ranges - the ULTRA dryers drying output are determined by the combination of the preheat time and vacuum drying time. Throughputs illustrate typical averages but please refer to expected drying times for specific materials for more accurate information.





ULTRA Smart Controls and Features

The addition of the touchscreen has allowed us to show the drying process graphically and simply.

ULTRA Smart Controls



Simple Export Function & Program Updates

- Constant development of software features and functions
- Automatic program updates
- USB port provided
- Program updates via flash memory using a standard USB memory device



Monitoring of Numerous Alarm Conditions

- Maintain consistent vacuum level, temperature & cycle time
- Problem indication on display and via alarm light & horn



Easy Retrofittable

- Easy removal for service or replacement
- Multilingual support



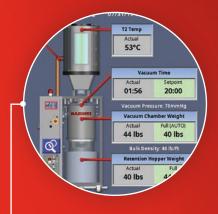
Access to all Production Parameters in one Screen

- lb/kg in vacuum chamber
- lb/kg in retention hopper
- Live current lb/h (kg/h)
- Total lb/kg used in a process or batch



FlexBus Lite Materials **Conveying Control**

- Control up to 10 material receivers & 1 vacuum pump
- Full features like line cleaning
- Visual and easy to see conveying status to and from **ULTRA** dryer
- Works with Maguire & third-party loading equipment







Our touchscreen automates many routine functions



ULTRA Unique Features



Auto Start

Scheduled and automatic start-ups controlled by time.



Auto Stop

Use of load cell data to automatically finish a drying run of a batch of material.

Result: Leaving all hoppers empty & ready for faster / more efficient material changes, simpler production stop.



Dynamic Drying

Use of load cell data to automatically adjust drying rate to process rate.



Energy Saver Mode

Energy saver mode is a standard feature for ULTRA. The heater and blower are automatically regulated to ensure that only the required amount of heat and air flow are used to bring material up to temperature.





ULTRA Standard Controller



ULTRA Touchscreen Controller



ULTRA Options

Maguire offers a range of options for the ULTRA dryer to meet production and installation requirements.



FlexBus Lite Materials Conveying Control

• Materials conveying to dryer & machine or small

• Integrated full feature conveying control for up to 10 material receivers & 1 vacuum pump

• Visual and easy to see conveying status to and from

• Works with Maguire & third-party loading equipment

group of machines made easy

ULTRA dryer

 Lateral convey to more than one receiver

Material Savings Focus

Costs So Low, It's Almost Free!

ULTRA dryers use energy to dry all type of resin at a drastically lower rate than a comparable new desiccant dryer. Savings with the ULTRA dryer are even greater in comparison with a low-efficiency old dryer.





Save thousands every year with **ULTRA drying!**

How does Desiccant compare to **ULTRA?**

Savings

The savings provided by the ULTRA translate to fast return on investment, without considering other benefits of faster drying, heating & start-up times, significantly lower maintenance, and intelligent operation.



	<u>^</u>	1	+
10 Year ULTRA Drying Saving**	Heating Time Savings	Overall Drying Time <mark>Savings</mark>	Material in Process <mark>Savings</mark>
×	180 Mins	Drying Time: 180 Mins Start-up Time: 180 Mins	760 lb 360 kg
→ \$64,940.00 ◀	15-30 Mins	Drying Time: 20 Mins Start-up Time: 55 Mins	233 lb 105 kg
×	180 Mins	Drying Time: 180 Mins Start-up Time: 180 Mins	750 lb 350 kg
→ \$85,530.00 ←	15-30 Mins	Drying Time: 20 Mins Start-up Time: 55 Mins	270 lb 125 kg
×	300 Mins	Drying Time: 300 Mins Start-up Time: 300 Mins	1,100 lb 500 kg
		During Time 20 Mine	
→ \$125,140.00 ∢	40-60 Mins	Drying Time: 30 Mins Start-up Time: 70 Mins	250 lb 115 kg
ULTRA RETURN ON INVESTMENT	process to DRY the rav	v material. HEATING a lb and kg data is the same for ALL types 100 kg/hr, bas	gy costs & savings calculated on Example based on 220 lb/hr or sed on 6000 production hours per ergy kW cost of \$0.12.

these examples.

ULTRA Dryer Case Study

ULTRA dryers increased drying efficiency at Greiner Packaging, Austria.

Greiner Packaging, a major manufacturer of packaging for food and non-food applications pursues a clear sustainability strategy.

From recyclable products with a high recyclate percentage through to an energy efficient production process with reduced CO₂ emissions.

For their raw material drying process in injection stretch blow molding, the company has tested the ULTRA low energy dryer as a replacement for conventional desiccant dryers.



Main Benefit: Energy Savings

Side by side energy trials at Greiner's production facilities have shown a clear reduction in energy consumption compared to conventional desiccant dryers.

ENERGY TO DRY

ULTRA requires:

7 Watts/lb/hr 15 Watts/kg/hr

to DRY PET at 180°C / 350°F



THIS IS:

79 Watts/lb/hr 175 Watts/kg/hr

LESS than an average desiccant dryer

> > > > THAT'S A SAVING OF <u>90% ENERGY</u> VERSUS A DESICCANT DRYER ◆ ◆ ◆ ◆

Additional Benefit: Reduced Drying Time

Drying time has been drastically reduced after switching from conventional desiccant dryers to Maguire ULTRA dryers!

Quick material changeovers within **40 mins** compared to **3 hours** with a desiccant dryer.

 Additional Benefit: Reduced Footprint

By choosing the ULTRA dryer, Greiner have considerably reduced their footprint thanks to ULTRA's vertical, slim and compact design.

Additional Benefit: Quick Material Changeovers

Result

More material trials achieved with the UTLRA. 8 material trials per day with the ULTRA, compared to 2 using a desiccant dryer.



2

ULTRA dryers require **50% less space** than Greiner's conventional dryers where the hopper has to be placed separately.

50%

Material Drying Table

ULTRA versus desiccant drying by material type.

Material	Generic Name	Target Moisture Content	Drying Temp °C	Drying Temp °F	Bulk Density kg/liter	Bulk Density Ib/ft ³	Desiccant Drying Time Hrs	Vacuum Drying Time Mins
ABS	Acrylonitrile Butadiene Styrene	<0.04	80	176	0,6	37.5	2 to 3	15 - 30
ASA	Acrylonitrile Styrene Acrylate	-	80	176	0,65	40.6	2 to 4	20 - 30
ASA+PC	Acrylonitrile Styrene Acrylate & PolyCarbonate Blend	<0.10	100-110	212 - 230	0,65	40.6	2 to 4	20 - 30
CA*	Cellulose Acetate	<0.15	60-65	140-150	0,5	31.2	2 to 3	N/A
LCP	Liquid Crystal Polymer	<0.02	150-160	302-320	0,6	37.5	4	20 - 30
PA 6	Polyamide 6	<0.04	80	176	0,65	40.6	3 to 5	30 - 40
PA 6.6 / 6.10	Polyamide 6.6 / 6.10	<0.04	80	176	0,65	40.6	3 to 5	30 - 40
PA 11 / 12	Polyamide 11 / 12	<0.04	80	176	0,65	40.6	4 to 6	30 - 40
PAA	Polyarylamide 30GF	<0.10	80	176	0,65	40.6	4	30 - 40
PAEK	Polyaryletherketone	<0.05	150	302	0,65	40.6	4	20 - 30
PAEK-HT	Polyaryletherketone HT	<0.05	180	356	0,65	40.6	4	20 - 30
PAI	Polyamide-imide	<0.05 - 0.01	180	356	0,65	40.6	4	30 - 40
PAR	Polyarylate	<0.02	150	302	0,65	40.6	4	20 - 30
PAS	Polyarylsulfone	<0.05	135	275	0,65	40.6	4 to 5	20 - 30
PBT	Polybutylene Terephthalate	<0.03	120	248	0,7	43.7	2 to 3	20 - 30
PC	PolyCarbonate	<0.02	120	248	0,7	43.7	2 to 3	15 - 30
PC+ABS	PolyCarbonate & Acrylonitrile Butadiene Styrene Blend	<0.04	100-110	212 - 230	0,7	43.7	2 to 3	20 - 30
PC+PBT	PolyCarbonate & Polybutylene Terephthalate Blend	<0.02	105-115	221 - 239	0,7	43.7	2 to 4	20 - 30
PC+PET	PolyCarbonate & Polyethylene Terephthalate Blend	<0.02	105-115	221 - 239	0,75	46.8	2 to 4	20 - 30
PE	Polyethylene	-	90	194	0.6	37.5	1 to 2	20 - 30
PE, Black	Polyethylene, Black Compound	-	90	194	0.6	37.5	1 to 2	15 - 30
PEC PEC	Polyethylene Carbonate	<0.02	130	266	0,7	43.7	4 to 6	20 - 30
PEEK	Polyetheretherketone	<0.05	150	302	0,6	37.5	2 to 3	20 - 30
PEI	Polyetherimide	<0.01	150	302	0,6	37.5	3 to 4	20 - 30
PEK	Polyetherketone	<0.05	160	320	0,6	37.5	4	20 - 30
PESU	Polyarylsulfone	<0.05	120	248	0,7	43.7	3 to 4	20 - 30
PET-a	Polyethylene Terephthalate - Amorphous	<0.03	120	248	0,85	53.1	3	40 - 60
PET-c	Polyethylene Terephthalate - Crystaline	<0.02	170	338	0,85	53.1	6	40 - 60
PETG*	Polyethylene Terephthalate Glycol	<0.05	60	140	0,6	37.5	3 to 4	N/A
PETP	Polyethylene Terephthalate	<0.03	120	248	0,85	53.1	3	40 - 60
PEIP	Polyimide	<0.02	120	248	0,6	37.5	2 to 3	20 - 30
	Polymethyl Methacrylate	<0.04	80-100	176-212	0,65	40.6	2 to 3	20 - 30
PMMA		<0.10	100	212	0,6	37.5	2 to 3	20 - 30
POM PP	Polyoxymethylene	<0.10	90	194	0,6	37.5	1 to 2	15 - 30
PP Talc	Polypropylene Polypropylene, Talc Filled 10%	<0.03	100	212	0,0	43.7	3	20 - 30
		<0.03	105	212	0,7	43.7	3 to 4	20 - 30
PP, Black	Polypropylene, Black Compound Polyphthalamide	<0.15	80	176	0,7	40.6	6	20 - 30
PPA	n n							
PPE (CD	Polyphenylene Ether	<0.03	110-120	230-248	0,65	40.6	3 to 4	20 - 30
PPE/SB	Polyphenylene Ether & Styrene Butadiene Blend	-0.02	110	220	0,65	40.6		20 - 30
PPO	Polyphenylene Oxide	<0.02	110	230	0,5	31.2	2	20 - 30
PPS	Polyphenylene Sulfide	<0.03	150	302	0,6	37.5	3 to 4	20 - 30
PPSU	Polyphenylsulfone	<0.10	150	302	0,65	40.6	2 to 3	20 - 30
PS	Polystyrene	<0.05	80	176	0,5	31.2	1 to 2	20 - 30
PSU	Polysulfone	<0.04	120-135	248-275	0,65	40.6	2 to 3	20 - 30
PUR	Polyurethane	<0.02	90-100	194-212	0,7	43.7	2 to 3	20 - 30
PVC*	Polyvinyl Chloride	<0.20	70	158	0,5	31.2	1	-
SAN	Styrene Acrylonitrile	<0.10	80	176	0,6	37.5	2 to 3	20 - 30
SB	Styrene-butadiene	<0.05	80	176	0,6	37.5	1 to 2	20 - 30
TPE	Thermoplastic Elastomer	<0.03	110	230	0,65	40.6	2 to 3	20 - 30
TPU	Thermoplastic Polyurethane	<0.03	100-110	212 - 230	0,65	40.6	1 to 2	20 - 30

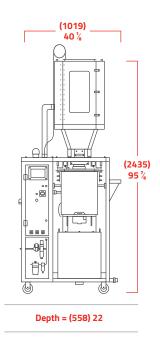
All materials listed are detailed as per general typical requirements regarding typical drying temperature, time and density. Users should always refer to the specific material technical data sheet to confirm specific details for a specific grade of material.

^{* =} Low drying temperatures are not recommended applications for vacuum drying due to proximity of boiling temperature under vacuum being close to 56°C/133°F.

ULTRA Specifications

ULTRA low energy dryers are available for throughputs of 115, 230, 650, and 1100 lb/hr (50, 100, 300, and 500 kg/hr). Like all Maguire products, they are protected by our 5 Year Warranty.

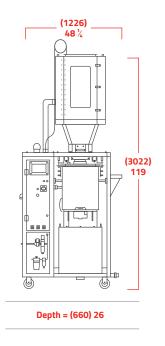




	US	Metric	
Practical Heating Hopper Volume	2.5 cu. ft.	70 L	
Vacuum Chamber Volume	1 cu. ft.	28 L	
Retention Hopper Volume	1.3 cu. ft.	37 L	
Max. Temperature	350°F	176°C	
Power Requirements	240V, 480V, 575V / 3Ph / 60Hz, 16A, 8A, 7A	400V / 3Ph / 50Hz 10A	
Process Heater	10 kW		
Blower	1.1 HP, 105 scfm	0.75 kW, 2973 L/min	
Compressed Air Pressure	85 psi	5.86 bar	
Compressed Air Usage	5.2 scfm	2.4 N m³/hr	
Product Weight	501 lb	228 kg	

For more information, download the ULTRA 150 data sheet at: www.maguire.com





	US	Metric	
Practical Heating Hopper Volume	4.25 cu. ft.	120 L	
Vacuum Chamber Volume	2 cu. ft. 57 L		
Retention Hopper Volume	2.25 cu. ft.	64 L	
Max. Temperature	350°F	180°C	
Power Requirements	240V, 480V, 575V / 3Ph / 60Hz 52A, 27A, 22A	400V / 3Ph / 50Hz 33A	
Process Heater	15 kW		
Blower	3.5HP	2.2kW	
Compressed Air Pressure	85 psi	5.86 bar	
Compressed Air Usage	3.6 scfm	5.6 N m³/hr	
Product Weight	918 lb	416 kg	

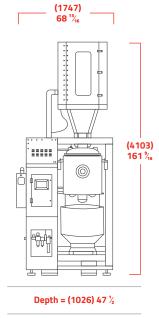
For more information, download the ULTRA 300 data sheet at: www.maguire.com





For LPD specifications, please visit www.maguire.com to download our product data sheets.

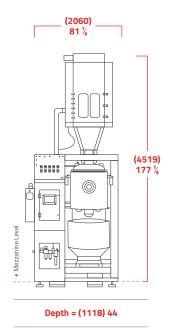
ULTRA° 600



	US	Metric	
Practical Heating Hopper Volume	12 cu. ft. 340 L		
Vacuum Chamber Volume	5.5 cu. ft.	156 L	
Retention Hopper Volume	6.1 cu. ft.	173 L	
Max. Temperature	350°F	176°C	
Power Requirements	480V, 575V / 3Ph / 60Hz 49A, 22A	400V / 3Ph / 50Hz 54A	
Process Heater	20 kW		
Blower	8.5 HP, 400 scfm	5.5 kW, 5380 L/min	
Compressed Air Pressure	85 psi	5.86 bar	
Compressed Air Usage	11.2 scfm	17.4 N m³/hr	
Product Weight	1824 lb	827 kg	

For more information, download the ULTRA 600 data sheet at: www.maguire.com

ULTRA° 1000



	US	Metric	
Practical Heating Hopper Volume	26 cu. ft.	739 L	
Vacuum Chamber Volume	10 cu. ft.	283 L	
Retention Hopper Volume	11 cu. ft.	311 L	
Max. Temperature	350°F	180°C	
Power Requirements	480V, 575V / 3Ph / 60Hz 67A, 37A	400V / 3Ph / 50Hz 75A	
Process Heater	25 kW		
Blower	10 HP, 600 scfm	7.5 kW, 16990 L/min	
Compressed Air Pressure	85 psi	5.86 bar	
Compressed Air Usage	18.9 scfm	29.4 N m³/hr	
Product Weight	2950 lb	1338 kg	

For more information, download the ULTRA 1000 data sheet at: www.maguire.com

Where To Find Us

Our aim is to support our customers locally, with our extensive global network of agents and distributors.





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Innovations For Raw Material Handling For Over 40 Years - Blending, Drying, Feeding & Conveying.

DRYING COSTS SO LOW, IT'S ALMOST FREE.

STEVE MAGUIRE, FOUNDER AND PRESIDENT MAGUIRE PRODUCTS INC.





