

# Nozzle Heaters



Nozzle Heaters	Sheath Materials	Max. Operating Temperatures		Typical Max. Watt Densities		Page
		°F	°C	W/in <sup>2</sup>	W/cm <sup>2</sup>	
<b>Mineral Insulated (MI)</b>	Stainless steel	1400	760	230	35.6	<b>497</b>



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## Mineral Insulated (MI) Nozzle Heaters

The mineral insulated (MI) nozzle heater is a high-performance heater that incorporates Watlow's exclusive mineral insulation technology. This material offers much higher thermal conductivity than mica and hard ceramic insulators used in conventional heaters.

A thin layer of the high thermal conductive MI material electrically insulates the element wire from the inside diameter of the heater sheath. A thicker, low thermal conductivity layer backs up the element wire, directing the heat inward toward the heated part. The result is more efficient heat transfer—a performance solution that lowers element wire temperatures and increases heater life.

### Performance Capabilities

- Heater operating temperatures up to 1400°F (760°C)
- Watt densities up to 230 W/in<sup>2</sup> (35.6 W/cm<sup>2</sup>) are available on small diameter nozzle
- Maximum voltage up to 240V

### Features and Benefits

#### Operating temperatures up to 1400°F (760°C)

- Melts resins such as PEEK®, Teflon®, Ultem® and Zytel® safely

#### Higher watt densities

- Contributes to faster heat-up and throughput for increased productivity

#### High thermal conductivity of MI and low mass construction

- Provides an almost instant response to temperature control
- Eliminates thermal lag and temperature overshoot

#### Stainless steel cover and side fold design

- Resists contamination by overflow of plastic or other free-flowing materials

#### Permanently attached clamp bars

- Eliminates cumbersome clamping straps to ease installation



### Typical Applications

- Extruders
- Blown film dies
- Injection molding machines
- Other cylinder heating applications

**For MI nozzle heater part numbers see next page.  
For detailed product and technical data,  
see the full MI Band Heater product  
section located on pages 483 through 493.**

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## Mineral Insulated (MI) Nozzle Heaters

### Heater Part Numbers

I.D. in. (mm)	Width		Construction	Volts	Watts	Watt Density		Termination	Approx. Net Wt.		Part Number
	in. (mm)	(mm)				W/in <sup>2</sup>	(W/cm <sup>2</sup> )		lbs.	(kg)	
1 (25)	1 (25)	(25)	1 pc	120	150	92	(14)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1AN1</b>
	1 (25)	(25)	1 pc	120	100	61	(9)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1AN2</b>
	1 (25)	(25)	1 pc	120	200	122	(19)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1AN3</b>
	1 (25)	(25)	1 pc	240	200	122	(19)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1AN4</b>
	1 1/2 (38)	(38)	1 pc	240	300	106	(16)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1JN1</b>
	1 1/2 (38)	(38)	1 pc	120	300	106	(16)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1JN2</b>
	1 1/2 (38)	(38)	1 pc	240	200	70	(11)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1JN3</b>
	1 1/2 (38)	(38)	1 pc	120	200	70	(11)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1A1JN4</b>
1 1/4 (32)	1 (25)	(25)	1 pc	240	250	104	(16)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1E1AN1</b>
	1 (25)	(25)	1 pc	120	250	104	(16)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1E1AN2</b>
	1 (25)	(25)	1 pc	240	300	124	(19)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1E1AN3</b>
	1 1/2 (38)	(38)	1 pc	240	350	87	(13)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1E1JN1</b>
	1 1/2 (38)	(38)	1 pc	120	350	87	(13)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1E1JN2</b>
	1 1/2 (38)	(38)	1 pc	240	450	112	(17)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1E1JN3</b>
1 1/2 (38)	1 (25)	(25)	1 pc	240	300	93	(14)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1J1AN1</b>
	1 (25)	(25)	1 pc	120	300	93	(14)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1J1AN2</b>
	1 (25)	(25)	1 pc	240	200	62	(10)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1J1AN3</b>
	1 (25)	(25)	1 pc	120	200	62	(10)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1J1AN4</b>
	1 (25)	(25)	1 pc	240	400	125	(19)	Type B, C, E, F or H	0.1	(0.05)	<b>MB1J1AN5</b>
	1 1/2 (38)	(38)	1 pc	120	300	58	(9)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1J1JN1</b>
	1 1/2 (38)	(38)	1 pc	240	450	87	(14)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1J1JN2</b>
	1 1/2 (38)	(38)	1 pc	240	300	58	(9.0)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1J1JN3</b>
	1 1/2 (38)	(38)	1 pc	240	600	116	(18)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1J1JN4</b>
	1 1/2 (38)	(38)	1 pc	240	300	64	(10)	Post	0.2	(0.09)	<b>MB1J1JP4</b>
	1 1/2 (38)	(38)	1 pc	240	450	96	(15)	Post	0.2	(0.09)	<b>MB1J1JP6</b>
	2 (51)	(51)	1 pc	240	450	57	(9)	Type B, C, E, F or H	0.3	(0.14)	<b>MB1J2AN1</b>
	2 (51)	(51)	1 pc	240	300	42	(7)	Type B, C, E, F or H	0.3	(0.14)	<b>MB1J2AN2</b>
	2 (51)	(51)	1 pc	240	900	125	(19)	Type B, C, E, F or H	0.3	(0.14)	<b>MB1J2AN3</b>
	3 (76)	(76)	1 pc	240	500	45	(7)	Type B, C, E, F or H	0.4	(0.18)	<b>MB1J3AN1</b>
	3 (76)	(76)	1 pc	240	350	31	(5)	Type B, C, E, F or H	0.4	(0.18)	<b>MB1J3AN2</b>
3 (76)	(76)	1 pc	240	1000	104	(16)	Type B, C, E, F or H	0.4	(0.18)	<b>MB1J3AN3</b>	
1 3/4 (45)	1 3/8 (35)	(35)	1 pc	240	450	83	(13)	36 in. 90° Type B braid w/HD strain relief	0.2	(0.09)	<b>MB1N1GX3A</b>
	1 1/2 (38)	(38)	1 pc	240	300	47	(7)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1N1JN1</b>
	1 1/2 (38)	(38)	1 pc	120	300	50	(8)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1N1JN2</b>
	1 1/2 (38)	(38)	1 pc	240	700	110	(17)	Type B, C, E, F or H	0.2	(0.09)	<b>MB1N1JN3</b>
	2 (51)	(51)	1 pc	240	750	86	(13)	Type B, C, E, F or H	0.3	(0.14)	<b>MB1N2AN1</b>
2 (51)	1 (25)	(25)	1 pc	240	350	73	(11)	Type B, C, E, F or H	0.2	(0.09)	<b>MB2A1AN1</b>
	1 (25)	(25)	1 pc	120	350	73	(11)	Type B, C, E, F or H	0.2	(0.09)	<b>MB2A1AN2</b>
	1 (25)	(25)	1 pc	240	450	94	(15)	Type B, C, E, F or H	0.2	(0.09)	<b>MB2A1AN3</b>
	1 (25)	(25)	1 pc	240	350	79	(12)	36 in. 90° Type B braid w/HD strain relief	0.2	(0.09)	<b>MB2A1AX6B</b>
	1 1/2 (38)	(38)	1 pc	240	400	53	(8)	Type B, C, E, F or H	0.3	(0.14)	<b>MB2A1JN1</b>
	1 1/2 (38)	(38)	1 pc	240	1000	132	(21)	Type B, C, E, F or H	0.3	(0.14)	<b>MB2A1JN2</b>
	2 (51)	(51)	1 pc	240	750	73	(11)	Type B, C, E, F or H	0.4	(0.18)	<b>MB2A2AN1</b>
	2 (51)	(51)	1 pc	240	1200	125	(19)	Type B, C, E, F or H	0.4	(0.18)	<b>MB2A2AN2</b>
2 1/4 (57)	2 (51)	(51)	1 pc	240	750	75	(12)	36 in. 90° Type B braid w/HD strain relief	0.2	(0.09)	<b>MB2A2AX2A</b>
	2 (51)	(51)	1 pc	240	750	63	(10)	120 in. 180° Type B braid w/HD strain relief	0.2	(0.09)	<b>MB2E2AX7</b>
2 1/2 (64)	2 1/2 (64)	(64)	1 pc	240	1000	72	(11)	Type B, C, E, F or H	0.5	(0.23)	<b>MB2E2JN1</b>
	1 (25)	(25)	1 pc	240	400	63	(10)	Type B, C, E, F or H	0.2	(0.09)	<b>MB2J1AN1</b>
1 1/2 (38)	(38)	1 pc	240	500	50	(8)	Type B, C, E, F or H	0.4	(0.18)	<b>MB2J1JN1</b>	