# Naturacell<sup>TM</sup> Molding Conditions

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#### **Barrel Temp Starting Profile** MSS MS М MH Н H2 H3 H4 H5 Flow % PZ 30 28 27 24 21 19 18 17 360º- 380ºF 400°- 420°F 430º- 450ºF 300º- 320ºF 320º- 340ºF 380º- 400ºF 420º- 440ºF 280º- 310ºF 340º- 360ºF Rear Center 280º- 310ºF 300º- 320ºF 320º- 340ºF 340º- 360ºF 360º- 380ºF 380°- 400°F 400°- 420°F 420°- 440°F 430º- 450ºF 440º- 460ºF Front 300°- 320°F 310°- 330°F 330°- 350°F 350°- 370°F 370°- 390°F 390º- 410ºF 410°- 430°F 430º- 450ºF 450°- 470°F Nozzle(1) 310º- 330ºF 330º- 350ºF 350°- 370°F 370º- 390ºF 390º- 410ºF 410º- 430ºF 430º- 450ºF 460º- 480ºF

Extrusion(4) 340°- 360°F 350°- 370°F 360°- 380°F 370º- 390ºF 380º- 410ºF 390°- 420°F 400°- 420°F 410°- 430°F 420°- 440°F

## Pressures

Flow	MSS	MS	М	МН	н	H2	H3	H3	H3
Moveable	1500 / 600	1700 / 600	1800 / 600	1900 / 600	2000 / 600	2100 / 600	2200 / 600		
Half	PSIG	2400 / 600 PSIG	2600 / 600 PSIG						
Back Pressure	0-65 PSI	0-65 PSI							

Mold Temperatures (2)	SOFT FLOWS BELOW MS -	100ºF - 140ºF						
	HARDER FLOWS -	100ºF - 180ºF						
Cycle Times	INJECTION (3)	2 - 12 sec.						
	BOOSTER	6 - 12 sec.						
	CURE	10 - 70 sec.						
Drying Conditions:	It is preferred to use desiccant dryers between 150°F and 160°F for 2 to 3 hours with a dew point between -20°F and -40°F. Too low a temperature or time will not sufficiently dry the material. In the absence of a desiccant dryer, the injection molding machine hopper may be used. Tray dryers may also be used.							
Tooling:	The mold vent for the tool should be 0.002" to 0.003". If this is not the case, mold temperatures could be elevated to help drive off the volatiles thereby reducing surface blushing. ( $180^{\circ}F - 220^{\circ}F$ )							
Mold Temp. Regulation:	Most molding thermolators use hot water as their	medium. In the case of						
	elevated mold temeratures as shown above, oil thermolators should be used as							
	they can achieve high temperatures of 220°F and h							
(4)	<b>a</b>							
(1) Use straight at end of mo		reverse nozzle. Nozzle orifice should be 1/16" smaller than sprue orifice						
(2) Do not excee	xceed 160ºF without oil medium. Higher mold temps may be used to burn off surface							
	plasticizer. Use thermolator to heat mold or clean water (just cracked). Never use a chiller.							
•		s on the part thickness, part size, and number of cavities.						
	I temperatures for a single-screw 32:1 compounding extruder.							

(4) Typical initial temperatures for a single-screw 32:1 compounding extruder.

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### Barrel Temp Starting Profile

Flow	MSS	MS	М	MH	н	H2	H3	H4	H5
% PZ	30	28		27	24	21	19	18	17
Rear	138º- 154ºC	149º- 160ºC	160º- 171ºC	171º- 182ºC	182º- 193ºC	193º- 204ºC	204º- 216ºC	216º- 227ºC	221º- 232ºC
Center	138º- 154ºC	149º- 160ºC	160º- 171ºC	171º- 182ºC	182º- 193ºC	193º- 204ºC	204º- 216ºC	216º- 227ºC	221º- 232ºC
Front	149º- 160ºC	154º- 166ºC	166º- 177ºC	177º- 188ºC	188º- 199ºC	199º- 210ºC	210º- 221ºC	221º- 232ºC	227º- 238ºC
Nozzle(1)	154º- 166ºC	166º- 177ºC	177º- 188ºC	188º- 199ºC	199º- 210ºC	210º- 221ºC	221º- 232ºC	232º- 243ºC	238º- 249ºC

Extrusion(4) 171°- 182°C 177°- 188°C 182°- 193°C 188°- 199°C 193°- 210°C 199°- 216°C 204°- 216°C 210º- 221ºC 216º- 227ºC

### Pressures

Flow	MSS	MS	М	МН	Н	H2	H3	H3	H3
Moveable	103 / 41.4	117 / 41.4	124 / 41.4		138 / 41.4				
Half	BAR	BAR	BAR	131 / 41.4 BAR	BAR	145 / 41.4 BAR	152 / 41.4 BAR	165 / 41.4 BAR	179 / 41.4 BAR
Back Pressure	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR	0-4.5 BAR

Mold Tempe	ratures (2)	SOFT FLOWS BELOW MS -	38ºC - 60ºC				
		HARDER FLOWS -	38ºF - 82ºC				
Cycle Times		INJECTION (3)	2 - 12 sec.				
		BOOSTER	6 - 12 sec.				
		CURE	10 - 70 sec.				
Drying Conditions:		It is preferred to use desiccant dryers between 66°C and 71°C for 2 to 3 hours with a dew point between -29°C and -40°C. Too low a temperature or time will not sufficiently dry the material. In the absence of a desiccant dryer, the injection					
		molding machine hopper may be used. Tray dryers	may also be used.				
Tooling:		The mold vent for the tool should be 0.051mm to 0.076mm. If this is not the case, mold temperatures could be elevated to help drive off the volatiles thereby reducing surface blushing. (82°C - 104°C)					
Mold Temp. Regulation:		Most molding thermolators use hot water as their medium. In the case of elevated mold temeratures as shown above, oil thermolators should be used as they can achieve high temperatures of 104°C and higher without turning to steam.					
(1)	Use straight flow through or reverse nozzle. Nozzle orifice should be 1.6mm smaller than sprue at end of mold.						
(2)		<b>c</b> , , ,	hout oil medium. Higher mold temps may be used to burn off surface				
	•	Jse thermolator to heat mold or clean water (just cracked). Never use a chiller.					
(3)	Injection tim	e may be increased; it depends on the part thickness, part size, and number of cavities.					
(4)	Typical initia	I temperatures for a single-screw 32:1 compounding a	vtruder				

Typical initial temperatures for a single-screw 32:1 compounding extruder. (4)