

Food Safety - Process Lethality Report

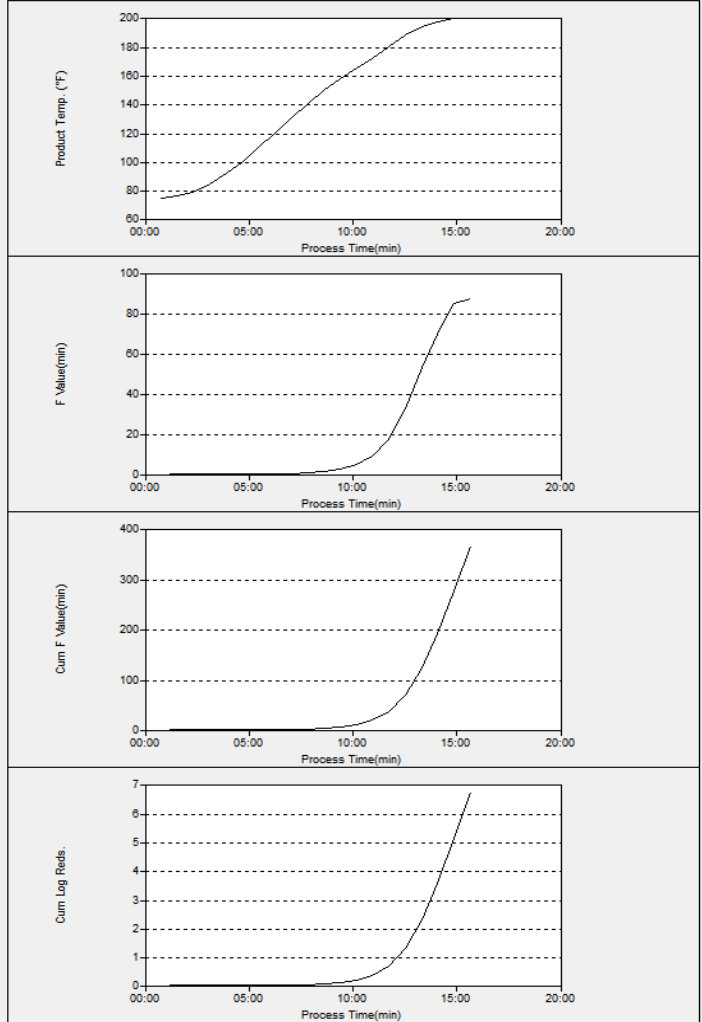
Process Configuration:		
Company Name:	AIB International	
Process Name:	Reel Oven + Soft Choc Chip	
Process Address:	Manhattan, KS	
Product Name:	Wire Cut Chocolate Chip Cookie	
Process Notes:	Alu Steel Pan	
Manufacturer:	M&M	
Model/Serial#:		
Equip. Type:	Reel Oven	
Profile File Name:	Choc Chip Cookie (Tch).sv8	
User:	R. J. Starke	
Start Time:	June 07, 2016 15:43	
# of Samples:	956	Scan Rate: 1.0
Duration of Proc:	15m 56.0	
Channel:	Ch 07 - Core	

Microorganism:					
Zone Name	Microorganism	Tref(°F)	D(min)	z(°F)	a _w
All Data	Salmonella spp.	141.8	54.12	28.37	
Soft Cookies - Channaiah et al. 2015					

Process Lethality:	
Cum. Log Reductions:	7.1[All 956 Data Points]
Cum. Log Reductions:	6.7[20 Blocks of Data Points - Average - from 940 sample points]

Process Data: [20 Blocks of Data Points - Averaged]				
Time (min)	Core Temp (°F)	F Value (min)	Log Reduction	Cum. Log Reductions
0.77	74.29	0.00	0.00	0.00
1.55	75.69	0.00	0.00	0.00
2.33	78.88	0.00	0.00	0.00
3.12	84.26	0.01	0.00	0.00
3.90	91.60	0.01	0.00	0.00
4.68	100.15	0.03	0.00	0.00
5.47	109.48	0.06	0.00	0.00
6.25	119.75	0.13	0.00	0.00
7.03	130.06	0.30	0.01	0.01
7.82	140.12	0.68	0.01	0.02
8.60	149.33	1.44	0.03	0.05
9.38	157.61	2.83	0.05	0.10
10.17	165.08	5.18	0.10	0.20
10.95	171.97	9.06	0.17	0.36
11.73	179.83	17.15	0.32	0.68
12.52	187.82	32.83	0.61	1.29
13.30	193.83	53.43	0.99	2.28
14.08	197.06	69.47	1.28	3.56
14.87	199.54	84.96	1.57	5.13
15.65	199.87	87.29	1.61	6.74
	SUM:	364.9	6.7	

Graphs: [20 Blocks of Data Points - Averaged]



Profile Notes/Justification
 Ch 1, 3, 7, 9 Std PP's in PP Fixture on Alu Steel Pan.
 Ch 5, 6 Pluggable Type B sensor.

Definitions
T ref:The reference temperature used when establishing the D and z values.
D-value:The time, in minutes, at an associated T ref to kill 90% of a selected microorganism; a one log reduction.
z-value:The temperature increase required to change the D-value by a factor of ten.
F-value:The process lethality. The equivalent time, in minutes, of heating at a reference temperature (T ref).

Equations Used:

$$F\text{-value} = 10^{\frac{(T_{\text{core}} - T_{\text{ref}})}{z}} \star \Delta t$$

$$\text{Log Reduction} = \frac{F\text{-value}}{D}$$

$$\text{Process Lethality (D-Reductions)} = \frac{\sum F\text{-Value}}{D}$$

Calculations for lethality based on the General Method