

# TempTAB™

( Patent Pending )



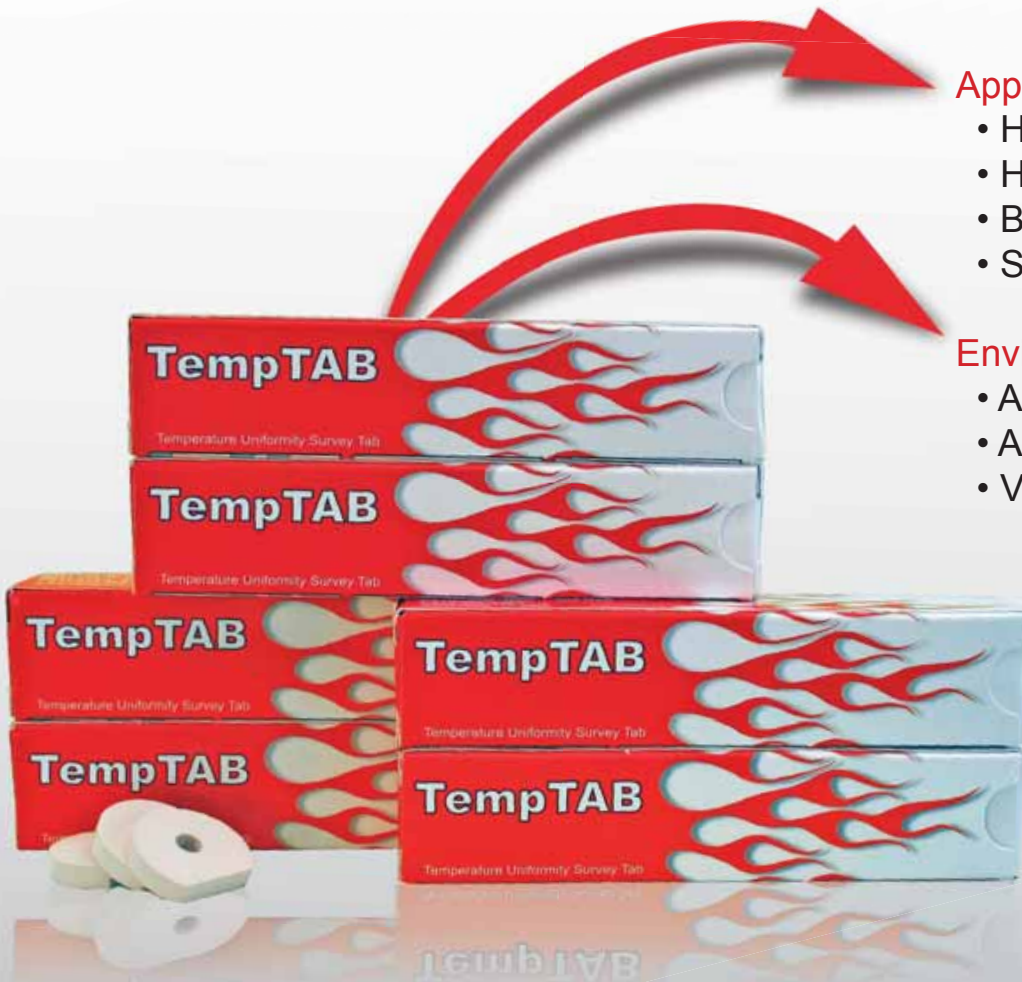
An easy, cost effective method to determine temperature uniformity in furnaces without the use of wires or electronics.

## Applications:

- Heat Treating
- Hardening (Neutral & Case)
- Brazing
- Sintering

## Environments:

- Air
- Atmospheres
- Vacuum



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## What will TempTabs do for my business?

TempTabs are an easy, cost effective method to monitor process temperatures and temperature uniformity in furnaces without the use of wires or electronics.

## How do they work?

TempTabs are made from materials that exhibit controlled shrinkage over time. They measure the effect of temperature and the effect of time at temperature.

## Which TempTab is right for me?

TempTabs are currently available in two different temperature ranges. TempTab 300 can be used in the temperature range of 800-1150C (1460-2100F). TempTab 600 can be used in the temperature range of 1100-1300C (2010-2370F).



## Will TempTabs contaminate the load in my furnace?

No. As part of the manufacturing process, TempTabs are pre-treated to remove any organics or other volatile by-products.

## Where should I place my TempTabs?

TempTabs can be placed anywhere within the load, preferably in the same locations as where temperature uniformity is being verified. Regular use will allow you to verify your process and allow you to see trends that may develop over time.

## Why do TempTabs have a hole in the middle?

TempTabs are designed to be used in a variety of conditions. In applications where they need to be suspended or where they are exposed to high velocity air movement, it is recommended that the TempTabs be secured with a wire threaded through the center hole.

## Can I check the uniformity of my furnace without wires, bulky thermal protection packages or electronics?

Yes. TempTabs allow you to easily verify the temperature uniformity inside your furnace as often as you like.

## My Process Runs in an Atmosphere that contains Nitrogen and/or Hydrogen. Will TempTabs work for me?

Yes. TempTabs will work in either air or reducing atmospheres.

## My process is done in a vacuum. Will they work for me?

Yes, They are designed to survive typical vacuum furnaces. TempTabs have been used successfully in vacuum furnaces operating down to 10<sup>-6</sup> torr.



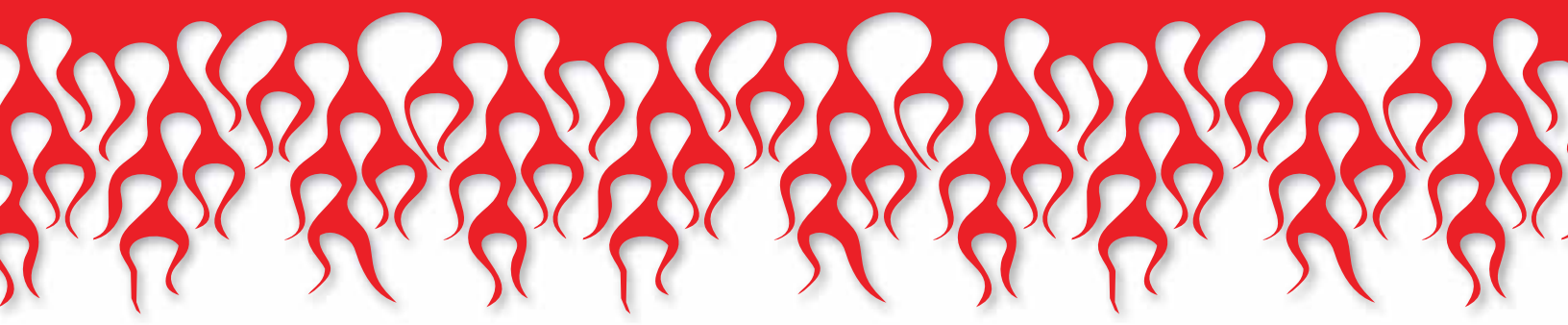
## Instructions for Use

- Determine the locations you want to survey.
- Place the TempTabs in the locations to be profiled.
- Retrieve the TempTabs after they have gone through the furnace.
- Measure the TempTabs using the Orton measuring indicator.
- Use the lookup table to determine the relative temperatures achieved.

By comparing the results you can determine the overall uniformity of your furnace. You can easily verify the effect of any changes made to improve the uniformity.

## How do I use the lookup table?

TempTabs can be used in a variety of furnaces and conditions. Each batch comes with its own calibrated batch sheet. TempTabs are calibrated for processes with the time in the furnace heating chamber at 10 minute, 30 minute and 60 minute cycles. Once you have the final dimension of the TempTab, you look for the corresponding temperature in the column that best matches your process. By plotting the relative temperatures of all the TempTabs collected, you can determine the relative temperature uniformity inside the furnace.



### TempTab 300 Equivalent Temperature Table Degrees F Batch XYZ-1

10 min cycle		30 min cycle		60 min cycle	
Temp	mm	Temp	mm	Temp	mm
2102	25.45	2102	25.25	2102	25.21
2093	25.55	2093	25.28	2093	25.25
2084	25.60	2084	25.31	2084	25.28
2075	25.66	2075	25.34	2075	25.31
2066	25.72	2066	25.37	2066	25.35
2057	25.78	2057	25.43	2057	25.40
2048	25.85	2048	25.49	2048	25.45
2039	25.92	2039	25.53	2039	25.50
2030	26.00	2030	25.57	2030	25.54
2021	26.03	2021	25.61	2021	25.58
2012	26.06	2012	25.66	2012	25.63
2003	26.10	2003	25.72	2003	25.70
1994	26.13	1994	25.80	1994	25.77
1985	26.16	1985	25.86	1985	25.80
1976	26.20	1976	25.92	1976	25.86
1967	26.25	1967	26.00	1967	25.93
1958	26.30	1958	26.04	1958	25.99
1949	26.32	1949	26.09	1949	26.06
1940	26.35	1940	26.13	1940	26.08
1931	26.38	1931	26.17	1931	26.11
1922	26.40	1922	26.21	1922	26.13
1913	26.42	1913	26.26	1913	26.15
1904	26.44	1904	26.28	1904	26.17
1895	26.46	1895	26.29	1895	26.2
1886	26.48	1886	26.31	1886	26.23
1877	26.50	1877	26.33	1877	26.25
1868	26.52	1868	26.35	1868	26.28
1859	26.54	1859	26.37	1859	26.30
1850	26.56	1850	26.39	1850	26.33
1841	26.59	1841	26.41	1841	26.36
1832	26.61	1832	26.43	1832	26.38
1823	26.64	1823	26.45	1823	26.41
1814	26.66	1814	26.47	1814	26.43
1805	26.68	1805	26.49	1805	26.45
1796	26.70	1796	26.52	1796	26.47
1787	26.72	1787	26.54	1787	26.50

10 min cycle		30 min cycle		60 min cycle	
Temp	mm	Temp	mm	Temp	mm
1778	26.74	1778	26.57	1778	26.52
1769	26.76	1769	26.60	1769	26.54
1760	26.79	1760	26.64	1760	26.57
1751	26.82	1751	26.66	1751	26.60
1742	26.84	1742	26.69	1742	26.62
1733	26.87	1733	26.72	1733	26.65
1724	26.90	1724	26.74	1724	26.67
1715	26.92	1715	26.77	1715	26.70
1706	26.95	1706	26.81	1706	26.75
1697	27.00	1697	26.84	1697	26.80
1688	27.05	1688	26.87	1688	26.84
1679	27.11	1679	26.91	1679	26.89
1670	27.16	1670	26.95	1670	26.94
1661	27.21	1661	26.98	1661	26.97
1652	27.26	1652	27.06	1652	27.04
1643	27.32	1643	27.15	1643	27.13
1634	27.37	1634	27.19	1634	27.17
1625	27.38	1625	27.23	1625	27.22
1616	27.39	1616	27.28	1616	27.26
1607	27.40	1607	27.31	1607	27.30
1598	27.41	1598	27.34	1598	27.32
1589	27.42	1589	27.37	1589	27.36
1580	27.43	1580	27.41	1580	27.39
1571	27.45	1571	27.44	1571	27.43
1562	27.46	1562	27.45	1562	27.44
1553	27.47	1553	27.46	1553	27.45
1544	27.48	1544	27.47	1544	27.46
1535	27.49	1535	27.48	1535	27.47
1526	27.51	1526	27.49	1526	27.48
1517	27.52	1517	27.50	1517	27.49
1508	27.53	1508	27.52	1508	27.51
1499	27.54	1499	27.53	1499	27.53
1490	27.55	1490	27.54	1490	27.54
1481	27.56	1481	27.55	1481	27.55
1472	27.57	1472	27.56	1472	27.56
1463	27.58	1463	27.57	1463	27.57

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## Measuring Indicator

Orton offers a measuring fixture designed specifically for TempTabs and includes an ISO certified calibration block. The fixture is designed to provide reproducible measurements and minimize operator error. Optional download cable is also available for input of data directly into your computer from the measuring device.



## How are they packaged?

TempTabs are packaged 25 pieces to a sleeve and 10 sleeves to a box (250 pieces per box).



## To order TempTabs:

Inside the US:

Order online at <http://temptab.com>

Outside the US:

Send requests to [info@temptab.com](mailto:info@temptab.com)

Or call +1-614-818-1318

Fax +1-614-895-5610

[www.temptab.com](http://www.temptab.com)