

TF4/TF2

Tube Furnaces

The LECO Cornerstone® TF Tube Furnaces are versatile, energy-efficient resistance furnaces designed for baking crucibles to reduce contaminants that would interfere with analytical results. Table 1 illustrates the impact of preheating 528-018 Crucibles on carbon and sulfur results of a high purity iron reference material certified at 5 ppm carbon and 2 ppm sulfur (1250 °C for 15 min).

The TF4 and TF2 Tube Furnaces use long-life molybdenum disilicide heating elements and have an operating temperature range of 800 °C to 1350 °C. An integrated digital furnace controller is easy to use, clearly displays set point or actual temperature, and provides overtemperature protection. The TF4's quad tube furnace system with six heating elements allows the operator to burn off crucibles in four combustion tubes for demanding, high-volume installations supplying two to four units. The TF2 dual tube design with four heating elements is intended to efficiently supply lower volume installations of one to two systems.

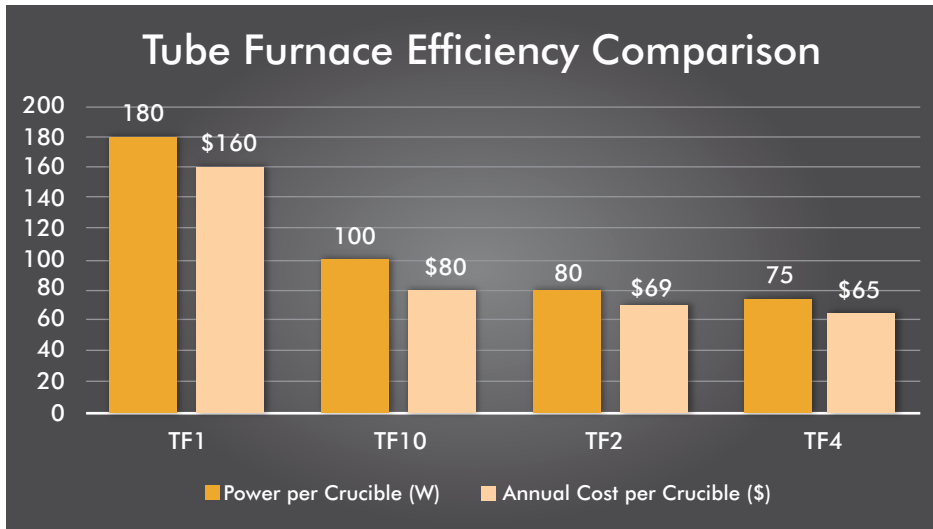
The new furnace design and increased crucible capacity use 60% less energy than the previous models for significant savings in operating costs. Chart 1 exhibits the differences in operating costs while operating the various systems at 1350 °C considering continuous operation with a full load of crucibles.

Table 1: Crucible Blank Level Comparison

Analysis #	Baked		Not Baked Not Touched		Not Baked Touched	
	C ppm	S ppm	C ppm	S ppm	C ppm	S ppm
1	4.6	2.5	13.5	3.1	40.1	3.9
2	4.6	2.0	12.3	3.8	24.4	3.7
3	4.8	1.8	11.5	3.2	24.6	3.5
4	4.9	1.5	12.5	3.2	22.9	3.8
5	5.8	2.7	12.8	3.8	34.4	3.3
6	4.8	2.5	12.6	3.8	22.8	4.4
7	4.5	2.2	11.6	4.1	41.5	3.8
8	3.6	1.5	18.5	2.3	21.6	3.7
9	6.0	2.0	12.0	3.9	32.5	4.2
10	6.0	1.6	16.0	4.2	31.4	4.3
Average (ppm)	5.0	2.0	13.3	3.5	29.6	3.9
Std Dev	0.75	0.45	2.20	0.59	7.40	0.34



Chart 1: Tube Furnace Efficiency Comparison



*\$0.10 / kW-Hr

Specifications

	TF4 Tube Furnace	TF2 Tube Furnace
Capacity*	24 (6 per tube)	12 (6 per tube)
Temperature Range	800 °C to 1350 °C (1472 °F to 2462 °F)	800 °C to 1350 °C (1472 °F to 2462 °F)
Temperature Set Point (Accuracy)	±10 °C (50 °F)	±10 °C (50 °F)
Element Type	Molybdenum Disilicide	Molybdenum Disilicide
Number of Heating Elements	6	4
Electrical Power Requirements	230 V~, 50/60 Hz, single phase, 16 A, 7500 Btu/h @ 1350 °C	230 V~, 50/60 Hz, single phase, 16 A, 7000 Btu/h @ 1350 °C
Weight	117 lb (53 kg)	112 lb (51 kg)
Dimensions	27.3 in H x 14 in W x 28.4 in D (69 cm x 36 cm x 72 cm)	27.3 in H x 14 in W x 28.4 in D (69 cm x 36 cm x 72 cm)
Operating Temperature	15 °C to 35 °C (59 °F to 95 °F)	15 °C to 35 °C (59 °F to 95 °F)
Storage Temperature	0 °C to 50 °C (32 °F to 122 °F)	0 °C to 50 °C (32 °F to 122 °F)
Operating Relative Humidity	20% to 80% (non-condensing)	20% to 80% (non-condensing)
Sound Pressure Level	57 dBa (max reading at operator's level per IEC/EN 61010-1)	57 dBa (max reading at operator's level per IEC/EN 61010-1)

Part Number

TF4	TF4 Package
TF2	TF2 Package

*LECO 528-018 Crucibles.

Specifications and part numbers may change.
Consult LECO for latest information.

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