

# Limit-Heat

## 5 GALLON PAIL HEATER FOR HIGH DENSITY POLYETHYLENE PLASTIC PAILS



### GENERAL CONSIDERATIONS

Wrap-It-Heat, Model LIM-05 Pail Heater is specifically designed to assist the flow of viscous, **Non-Flammable, Non-Hazardous** materials contained in 5 gallon, high density, polyethylene plastic pails. Model, LIM-05 will fit standard 5 gallon plastic pails with a diameter of 11-1/4 inches.

Model, LIM-05 is designed for 120 volt AC, single phase operation. LIM-05 is manufactured using rugged aluminized steel. The heat delivered to the plastic pail after the initial thermostat stabilization period does not exceed 165°F as recommended by plastic pail manufacturers. The foregoing, is accomplished with a preset, bimetal thermostat that is mounted directly upon the heater band. LIM-05 is activated with an easily accessible ON/OFF switch.

LIM-05 comes equipped with a strike and catch clamp to be adjusted for a snug fit to the pail, a six foot power cord and three pin plug for electrically grounded operation. **THESE HEATERS ARE NOT WATERPROOF. DO NOT LET THEM GET WET.**

### SET UP INSTRUCTIONS

After reviewing the **Warning Sheet** included with the operating instruction and the enclosed brochure sheet, place the LIM-05 over the pail rim. Mount the LIM-05 near the pail base. Tighten the clamp spring to ensure you have a snug fit between the pail heater and the plastic pail. **CAUTION:** Failure to secure an absolute tight fit between the pail heater and the pail may result in heater failure. If two LIM-05's are placed upon the same pail, be sure that the power cord of the uppermost pail heater falls upon an unheated section (clamping area) of the lower pail heater.

Before energizing your pail heater, make sure that the content level in the pail you are heating is **above** the top edge of the heater band. Should the material fall below the band, the heater may not cycle, eventually decreasing heater service life. Model LIM-05 is equipped with two pilot lights; one green and the other red. The **green** pilot light will glow continuously as long as the heater is plugged into an active electrical outlet. The **red** pilot light will glow until the heater reaches the thermostat set temperature and then will go on and off as the preset bi-metal thermostat cycles.

When you are heating **non-flammable, non-hazardous**, material for the first time using your new model LIM-05, the material temperature should be monitored with a thermometer. Record the thermostat setting position for future reference.

The thermostat setting you have determined for one material and set of environmental conditions, may not be accurate for a different material. Please repeat the entire set-up procedure with the new material to ensure the best results with your new Wrap-It-Heat, Model LIM-05.

### OPERATING INSTRUCTIONS

All material being heated with Model LIM-05 should be mixed during the heating process to secure an accurate temperature reading. The material near the outside of the pail and adjacent to the heater will heat faster than the material near the center of the pail.

For optimum results, monitor the material temperature with a thermometer while heating it. The temperature of the material in the pail depends upon pail placement (drafts, etc), heater placement on the pail (snug fit) and the heat receptive properties of the particular material being heated. The pail seam or any other defects in the pail should be spanned by the gap in the heater band (clamp area).

Expo's 120 volt/100 watt pail heater is equipped with an electrically grounded, three pin plug. **Under no circumstances should the plug be altered or removed; your warranty will automatically be voided.**

# Limit-Heat Model LIM-05

CAPACITY (GAL.)		55	30	16	5
VOLTS		120V	120V	120V	120V
WATTS		800W	335W	145W	100W
TEMPERATURE CHANGE IN DEGREES FAHRENHEIT					
		<b>TIME IN HOURS FOR TEMPERATURE CHANGE</b>			
10		2.12	2.76	3.40	1.54
20		4.23	5.51	6.79	3.08
30		6.35	8.27	10.19	4.62
40		8.46	11.02	13.58	6.15
50		10.58	13.78	16.98	7.69
60		12.69	16.53	20.37	9.23
70		14.81	19.29	23.77	10.77
80		16.92	22.04	27.16	12.31
90		19.04	24.80	30.56	13.85
100		21.15	27.55	33.95	15.38
110		23.27	30.31	37.35	16.92
120		25.38	33.07	40.74	18.46
130		27.50	35.82	44.14	20.00
140		29.62	38.58	47.53	21.54

LIM-05 is used for, but not limited to, the following heating applications.

- Increase flow rate of viscous materials.
- Raise temperature of non-flammable, non-hazardous chemicals
- Heat detergents and surfactants
- Keep water from freezing/maintain set temperature
- Heat butterfat and tallow (white grease)
- Heat corn & soy bean oil
- Warm milk for calves

**NOTES:**

THESE TIMES ARE FOR WATER. FOR OTHER MATERIALS, MULTIPLY THE ABOVE TIMES BY THE SPECIFIC HEAT.

THESE **MINIMUM** TIMES ASSUME THAT ALL THE BAND HEAT ENTERS THE DRUM AND THAT NO HEAT IS LOSS.

THE IDEAL CONDITIONS CAN BE APPROACHED BY:

- 1) COVERING THE TOP
- 2) INSULATING THE SIDES, TOP AND BOTTOM
- 3) INSULATING THE HEATER BAND. DO NOT COVER THE CONTROL BOX.
- 4) KEEPING THE DRUM OUT OF THE WIND
- 5) STIRRING THE DRUM CONTENTS OCCASSIONALLY
- 6) THE SURROUNDING ENVIRONMENT IS AT LEAST AT THE SAME TEMPERATURE AS THE DRUMS CONTENTS.

**NOTE:** The chart to the left shows temperature change vs time in hours on water.

## LIM-05 SPECIFICATIONS

DIAMETER.....11-1/4"  
 SHIP WEIGHT.....8 LBS  
 OPERATING VOLTS.....120V AC ONLY  
 POWER OUTPUT.....100W @ 120V AC  
 AMPERAGE DRAW.....0.877 AMPERES @ 120V

In addition to Model LIM-05 for 5 gallon pails, the following sizes are also available in the LIM Series: LIM-55 E/W for 55 gallon drums, LIM-30 for 30 gallon drums and LIM-16 for 16 gallon drums.

**Expo Engineered Wrap-It-Heat LIM Series Drum and Pail Heaters are U.L. Listed and C.S.A. Certified.**

**NOTE: Do no leave heater on unless the unit is attended to by you or your personnel. Do not leave heater on overnight or over the weekend unattended.**

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# WARNING

## READ THIS WARNING BEFORE OPERATING THE PAIL HEATER FOR PLASTIC DRUMS AND PAILS!

**THE FOLLOWING PRECAUTIONS MUST BE OBSERVED TO AVOID POSSIBLE INJURY OR PROPERTY DAMAGE!!**

THE DRUM OR PAIL HEATER **MUST NOT** BE USED IN AREA WHERE **FLAMMABLE VAPORS** MAY, **AT ANY TIME**, BE PRESENT. FAILURE TO OBSERVE THIS CAUTION CAN RESULT IN FIRE OR EXPLOSION.

### **MONITOR THE TEMPERATURE WHILE HEATING YOUR MATERIAL!**

DO NOT USE DRUM OR PAIL HEATER TO HEAT **FLAMMABLE MATERIALS**. EXPLOSION OR FIRE COULD RESULT. THE DRUM OR PAIL HEATER SURFACE IS **HOT** DURING OPERATION. DO NOT USE DRUM OR PAIL HEATER ON OR NEAR WHERE COMBUSTIBLE SUBSTANCES CAN BE IGNITED, RESULTING IN A FIRE.

### **NEVER USE THE DRUM HEATER TO HEAT FLAMMABLE MATERIALS OR USE IN A HAZARDOUS AREA!**

TO AVOID HEATER FAILURE, DO NOT ALLOW THE HEATER AND/OR CONTROLS TO BECOME WET OR SPILL UPON THEM.

THE DRUM OR PAIL HEATER MUST BE **ELECTRICALLY GROUNDED** TO AVOID THE POSSIBILITY OF ELECTRICAL SHOCK TO THE OPERATOR. NEVER ALTER OR REMOVE THE SPECIAL HIGH AMPERE, THREE PIN, ELECTRICALLY GROUNDED PLUG SUPPLIED AS AN INTEGRAL PART OF THE HEATER.

THE **USER** MUST DETERMINE THE SUITABILITY OF THE DRUM OR PAIL HEATER FOR THE INTENDED HEATING APPLICATION. **DO NOT LEAVE** THE DRUM OR PAIL HEATER **UNATTENDED** DURING THE HEATING CYCLE. DISCONNECT THE HEATER FROM THE WALL RECEPTACLE WHEN IT IS **NOT** IN USE.

THE DRUM OR PAIL HEATER IS FOR **INDOOR USE ONLY**.

THE LEVEL OF THE MATERIAL BEING HEATED MUST BE ABOVE THE TOP EDGE OF THE DRUM AND PAIL HEATER TO ENSURE THE BEST TEMPERATURE SENSING AND INSURE LONG HEATER LIFE.

### **VENT CONTAINER WHILE HEATING OR IT MAY EXPLODE (OPEN VENT PLUG).**

**DO NOT** USE DRAIN SPOUTS OR VALVES ON DRUMS OR PAILS THAT CAN FAIL AT ELEVATED TEMPERATURES, CAUSING LEAKS, LOSS OF MATERIAL AND/OR POSSIBLE PERSONAL INJURY TO THE OPERATOR.

### **MAKE ABSOLUTELY SURE THAT THE DRUM OR PAIL HEATER IS TIGHTLY CLAMPED UPON THE CONTAINER!**

**NEVER** USE A DRUM OR PAIL HEATER INSIDE OR ADJACENT TO **HEAVY AIRBORNE DUST LOCATIONS** SUCH AS GRAIN ELEVATORS, GRAIN SILOS, HAY STORAGE AREAS, ETC....

KNOW HOW APPLIED HEAT WILL AFFECT YOUR MATERIAL BEFORE USING THE DRUM OR PAIL HEATER. IF YOU ARE NOT SURE HOW TO HEAT YOUR MATERIAL, DO NOT USE THE DRUM OR PAIL HEATER UNTIL YOU ARE INFORMED AS TO HOW THE APPLICATION OF HEAT WILL AFFECT YOUR MATERIAL – CONTACT YOUR MATERIAL SUPPLIER.

# EXPO ENGINEERED PRODUCT WARRANTY

YOUR EXPO ENGINEERED PRODUCT IS GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR **ONE YEAR** FROM THE DATE OF ORIGINAL PURCHASE. THIS GUARANTEE **DOES NOT** COVER FAILURE DUE TO WATER SOAKING, SPILLAGE, ABUSE, ALTERATION TO PRODUCT OR MISAPPLICATION.

IN CASE OF FAILURE, CONTACT EXPO ENGINEERED INCORPORATED. DETERMINATION OF THE SUITABILITY OF THE GOODS DESCRIBED ON THE FACE, HEREOF, FOR THE USE CONTEMPLATED BY BUYER OR BUYER'S CUSTOMERS FOR SUCH GOODS IS THE SOLE RESPONSIBILITY OF BUYER OR BUYER'S CUSTOMERS, WHICHEVER THE CASE MAY BE. EXPO ENGINEERED SHALL HAVE NO RESPONSIBILITY IN CONNECTION, THEREWITH.

BUYER ASSUMES ALL RISK AND LIABILITY FOR LOSS, DAMAGE OR INJURY TO PROPERTY OF BUYER OR OTHER, ARISING OUT OF THE USE OR POSSESSION OF THE GOODS FURNISHED, HEREUNDER.

EXPO ENGINEERED INCORPORATED WARRANTS ONLY THAT THE GOODS SUPPLIED, HEREUNDER, SHALL MEET THE DESCRIPTION OR SPECIFICATIONS STATED, HEREIN. BUYER'S EXCLUSIVE REMEDY AND EXPO ENGINEERED'S SOLE LIABILITY, HEREUNDER, SHALL BE LIMITED TO REFUND OF THE PURCHASE PRICE OF, OR REPLACEMENT OF, ALL GOODS SHOWN TO BE OTHERWISE THAN AS WARRANTED.

EXPO ENGINEERED INCORPORATED SHALL IN NO CASE BE LIABLE OTHERWISE, OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, PROVIDED THAT NOTHING CONTAINED, HEREIN, SHALL LIMIT BUYER'S RIGHT TO RECOVER CONSEQUENTIAL DAMAGES FOR INJURY TO HIS PERSON WHEN THE GOODS PURCHASED ARE CONSUMER GOODS.

REFUND OR REPLACEMENT IS CONDITIONAL UPON GIVING EXPO ENGINEERED INCORPORATED NOTICE WITHIN **ONE YEAR** FROM DATE OF SHIPMENT BY EXPO ENGINEERED INCORPORATED THAT SAID GOODS ARE OTHERWISE THAN AS WARRANTED. FAILURE BY BUYER TO GIVE SAID NOTICE WITHIN SAID **ONE YEAR** PERIOD SHALL CONSTITUTE WAIVER BY BUYER OF ALL CLAIMS, HEREUNDER, WITH RESPECT TO SAID GOODS.

IF REQUESTED BY EXPO ENGINEERED INCORPORATED, BUYER SHALL PROMPTLY RETURN TO EXPO ENGINEERED'S PLANT ALL UNCONSUMED GOODS ALLEGED BY BUYER TO BE OTHERWISE THAN AS WARRANTED AND EXPO ENGINEERED INCORPORATED WILL PAY FREIGHT THEREON.

**THE WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR UNWRITTEN EXPRESS OR IMPLIED WARRANTIES AND EXPO ENGINEERED HEREBY EXPRESSLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY AGAINST INFRINGEMENT OF MERCHANTABILITY OR FITNESS FOR PURPOSE OF THE GOODS SUPPLIED, HEREUNDER, ALL SAID GOODS BEING SUPPLIED "AS IS".**

IN THE UNLIKELY EVENT THAT A PROBLEM SHOULD ARISE THROUGH THE USE OF YOUR EXPO ENGINEERED HEAT PRODUCT, PLEASE CONTACT THE CUSTOMER SERVICE DEPARTMENT AT EXPO ENGINEERED INCORPORATED BY DIALING 708-780-7155 OR FAX 708-780-7125.

PLEASE REFER TO THE **WARNINGS** AND THE **OPERATING INSTRUCTIONS** ACCOMPANYING THIS WARRANTY BEFORE OPERATING YOUR NEW EXPO ENGINEERED PRODUCT.