TABLE 1. TEMPERATURES AND HUMIDITIES APPLICABLE TO INDUSTRIAL AIR CONDITIONING—(Continued)

PROCESS	TEMP.* F	
FOUNDRIES		
Core making	60 to 70	
Mold making:		
Bench work	60 to 70	
Floor work	55 to 65	
Pouring	40	
Shakeout	40 to 50	
Cleaning Room	55 to 65	

* Winter design temp.

The charging room is usually unheated.

In core making fume exhaust hoods are required for oven and for cooling areas adjacent to ovens.

In mold making provide hoods at transfer points with wet collector dust removal system. Use 600 to 800 cfm per hood.

Pouring rooms require two-speed powered roof ventilators. Design for minimum of two cfm per sq ft floor area at low speed. Shielding is required to control radiation from hot surfaces. Proper introduction of air will minimize preheat requirements.

In shakeout room provide hoods with wet collector dust removal system. Exhaust 400 to 500 cfm per sq ft grate area. Roof ventilators are generally not effective.

In cleaning room provide hoods for grinders and cleaning equipment with dry cyclones or bag type collectors.

Winter ventilation (preheated) is required to the extent of replacing exhausted air. Summer ventilation is usually supplemented by use of pedestal fans.

Spot coolers are sometimes used in larger installations.

PROCESS	TEMP. F	R.H. %
FUR		
Drying	110	....
Shock treatment	18 to 20	....
Storage	40 to 50	55 to 65

Shock treatment, for eradication of any insect infestations, requires the lowering of the temperature to 18–20 F for 3 to 4 days, then raising it to 60–70 F for 2 days, then lowering it once again to 18–20 degrees for 2 days and raising it to the storage temperature.

Furs remain pliable, oxidation is reduced and color and luster are preserved when stored at 40 to 50 F.

Mold growth is prevalent with humidities above 80 percent, while hair splitting is common where humidity is lower than 55 percent.

PROCESS	TEMP. F	R.H. %
LEATHER		
Drying:		
Vegetable tanned	70	75
Chrome tanned	120	45
Storage	50–60	40–60

After leather is moistened in preparation for rolling and stretching, it is placed in an atmosphere held at room temperature with a relative humidity of 95 percent.

Leather is usually stored in warehouses without temperature and humidity control. However, it is necessary to keep humidity below 85 percent to avoid mildew.

Air filtration is recommended for toggle machines.

PROCESS	TEMP. F	R.H. %
LENSES (OPTICAL)		
Fusing	75	45
Grinding	80	80

The air must be free of dust and temperature held constant.

To acquire desired cleanliness of air a combination of impingement and electrostatic filters are used. Dust collectors are required for grinding operations.

TABLE 1. TEMPERATURES AND HUMIDITIES APPLICABLE TO INDUSTRIAL AIR CONDITIONING—(Continued)

ROOMS	TEMP. F	R.H. %
LIBRARIES AND MUSEUMS		
Museum	70–80	40–50
Book storage	70–80	40–50

Spray type dehumidifiers used to eliminate SO_2. Water treatment is essential to maintain between 8.5 and 9.0 pH.

Reheat is usually needed for refrigeration cycle due to the low sensible heat load.

In extremely cold weather a lower relative humidity is required to prevent condensation on walls.

Positive high and low limit relative humidity controls are used. Do not locate water or steam piping where leakage can cause damage.

Check Figures for Cooling Estimates:

	LOW	MEDIUM	HIGH
Square feet floor area per person	40	60	80
Watts per sq ft of floor area	1	1	2
Room sensible heat, Btu per (hr)(sq ft)	20	35	45
Grand total heat, Btu per (hr)(sq ft)	30	51	75
Sensible heat factor	0.73	0.83	0.90
Cooling load per person, tons	0.12	0.23	0.40
cfm per sq ft of floor area	0.92	1.60	2.10

MALTING (BREWING)

Steeped 24 to 72 hr in 45 to 65 F water.

Germinated six days at 55 to 75 F.

Kilned at temperatures of 120 to 175 F.

MALTING (DISTILLING)

Germinated twenty days at 63 F.

Germination produces total heat of 16,000 Btu/bushel at varying rate depending upon grain and process.

PROCESS	TEMP. F	R.H. %
MATCHES		
Manufacture	72 to 74	50
Drying	70 to 75	40
Storage	60 to 62	50

Water evaporated is 18 to 20 lb per million matches simultaneously with the setting of the glue.

The match machine will turn out about 750,000 matches per hour.

PROCESS	TEMP. F	R.H. %
MUSHROOMS		
Sweating-out period	120 to 140	
Spawn added	60 to 75	nearly sat.
Growing period	48 to 60	moderate
Storage	32 to 35	80 to 85

As spawn starts to grow, it is necessary to abruptly cool the mushroom house by 15 deg in a 12 hr period (approx.). Usually, this is the controlling factor in selection of refrigeration equipment, unless there is portable equipment available for such a purpose.

Ductwork is usually of wood, due to the deterioration of ferrous metals during sweating-out period.

Air filtration is essential in spawn rooms. Viscous filters are preferred, as mold spores are trapped in the viscous film. Odorless oil should be used.

Heat of emission is 4 Btu per (hr)(sq ft of growing surface).