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

CANDY (HARD) (Continued)

Hot rooms used in the drying of jellies and gums are maintained at 120 to 150 F. A purge system using 100 percent outside air, bypassing the heating coil, is incorporated to produce rapid cooling of both the product and the room.

Cold rooms for cooling marshmallows and cast creams are maintained at 75 to 80 F with a relative humidity of 45 to 50 percent. Uniform air distribution is essential.

Standard starch drying equipment is employed.

Filtration of air is required.

Process	Temp. F	R.H. %
CHEWING GUM		
Manufacturing	77	33
Rolling	68	63
Striping	72	53
Breaking	74	47
Wrapping	74	58

Process	Temp. F	R.H.
CERAMICS		
Refractory	110 to 150	50 to 90
Molding room	80	60 to 70
Clay storage	60 to 80	35 to 65
Decalcomania production	75 to 80	48
Decorating room	75 to 80	48

Relative humidity has no effect on the manufacture of the products.

Temperature and humidity must be controlled in the decorating shop in the whiteware plants, and the decalcomania production room.

Dust control is essential, and the dust count must be held down to four million particles per cubic foot due to the danger of silicosis.

Process	Temp. F	R.H. %
CEREAL		
Packaging	*75–80*	*45–50*

Process	Temp. F	R.H. %
CITRUS FRUIT		
Lemons (storage)*	58	84 to 88
Grapefruit (storage)*	60	86 to 88
* Prior to transcontinental shipment		

Careful consideration must be given to air volumes, air temperatures, humidity, ventilation and distribution.

In regions where end rot is prevalent, it may be necessary to store grapefruit at temperatures of 32 to 34 F for a period not exceeding six weeks.

Lemon and grapefruit storage requires an air conditioning system to (1) maintain a constant temperature, (2) maintain a high relative humidity, (3) ventilate to maintain 0.1% CO_2 content, (4) obtain uniform air distribution, and (5) provide air washing or air filtration.

Load calculations include (1) transmission losses, (2) internal load-fruit cooling and respiration, cooling fruit boxes, electric load, and people, and (3) outside air load—72 cfm per carlot.

Specific heat—Btu per (lb) (F deg):
Lemons 0.94, Grapefruit 0.87, Boxes 0.40

HEAT OF EVOLUTION IN BTU PER (TON) (24 HR)

Temp.	Lemons	Grapefruit
32	580	460
40	810	1070
60	2070	2770
80	6200	4180

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

CITRUS FRUIT (Continued)

Approximately 10 percent of the cooling load is considered as latent heat load.

In a conventional system the air required is one cfm per storage box or 650 cfm per carload, resulting in a small temperature rise in the supply air making possible the required high humidities.

In a combination system the air required is one cfm per sq ft of floor area or 300 cfm per carlot with the addition of auxiliary humidifying nozzles to maintain the required high humidities.

Installation of metal ducts is required. Ductwork made of insulation board is sometimes preferred.

Process	Temp. F	R.H. %
DISTILLING		
Storage:		
Grain	60	35 to 40
Liquid Yeast	32 to 34	
General Manufacturing	60 to 75	45 to 60
Aging	65 to 72	50 to 60

Mashing done at 150 to 155 F, then cooled to 64 to 68 F.

Yeast culture fermented at 170 F, then cooled to 70 to 72 F.

Yeast propagated at 150 to 154 F.

Mash heated to 165 F and then cooled to 80 F, then pitched with yeast and fermented at maximum temperature of 85 F.

Cooling for various distilling processes normally accomplished by use of river or well water depending on temperatures and availability.

Low humidity and dust control important where grains are ground.

Viscous filters preferred as mold spores and bacteria are trapped in the viscous film, preventing propagation.

Process	Temp. F	R.H. %
ELECTRICAL PRODUCTS		
Electronics and X-Ray:		
Coil & transformer winding	72	15
Tube assembly	68	40
Electrical Instruments:		
Manufacture and Laboratory	70	50 to 55
Thermostat assembly & calibration	76	50 to 55
Humidistat assembly & calibration	76	50 to 55
Small Mechanisms:		
Close tolerance assembly	72	40 to 45
Meter assembly and test	74 to 76	60 to 63
Switchgear:		
Fuse and cutout assembly	73	50
Capacitor winding	73	50
Paper storage	73	50
Conductor wrapping with yarn	75	65 to 70
Lightning arrestor assembly	68	20 to 40
Thermal circuit breakers assembly and test	76	30 to 60
Water wheel generators:		
Thrust runner lapping	70	30 to 50
Rectifiers:		
Processing selenium and copper oxide plates	74	30 to 40
Dust control is essential in these processes		

Process	Temp. F	R.H. %
FLOOR COVERING		
Linoleum:		
Mechanical oxidizing of linseed oil	*90 to 100*	20 to 28
Printing	80	30 to 50
Stoving process	160 to 250	60 gr*
* grains per pound abs. hum.		

Some operations are stabilized against possibility of mold growth.

Precise control of temperature and humidity is required for mechanical oxidizing of linseed oil. The rate of flow and the temperature of cooling water in the jacket surrounding the tank must be controlled.

Air filtration is recommended for the stoving process.