

TABLE II

Materials For Use in the Construction
of the Equipment

Number Required	Unit	Name	Description
<u>Distillation Column</u>			
5	each	Column Section	Flanged pyrex glass pipe, 6" dia. x 12"
1	each	Column Top	Glass tee, 6" x 2" x 1"
1	each	Column Bottom	Glass tee, 6" x 1" x 2"
7	each	Feed Plate Section	Glass tee, 6" x 6" x 1"
12	each	Bubble Cap Plate	Sampler type bubble cap plate, 6" dia.
11	each	Plain Downcomer	Downcomer, plain, 14" long.
2	each	Bottom Plate Downcomer	Downcomer, bottom plate.
24	each	Spigot	Spigot plug, 12 mm.
20	each	Flange	Flange, Corning, Al, conical, with insert, for 6" pipe.
24	each	Gasket	Gasket, interface, 6", neoprene.
11	each	Gasket	Gasket, downcomer, teflon.
2	each	Gasket	Gasket, bottom plate downcomer, teflon.
100	each	Bolt	Bolt, 3/8" - 16 x 5", Standard thread, HRS.
3	each	Bolt	Bolt, 3/8" - 16 x 6", Standard thread, HRS.
20	each	Bolt	Bolt, support, floating, 3/8" - 16 x 7", Special thread, 3-3/4", HRS.
115	each	Nut	Nut, hex, 3/8" - 16, HRS.
8	each	Column Spring	Column spring, Corning, Code: 729710.
20	each	Support Clamp	Support clamp, Corning, Code: 729680.
4	each	Support Base	Support base, Corning, Code: 729890.
2	each	Pipe supports	Pipe, steel, 2" dia., 16' long.
10	each	Flange Set	Flange set, glass pipe to metal tube, 1" to 1".
4	each	Flange Set	Flange set, glass pipe to metal tube, 2" to 2".
<u>Tanks</u>			
8	each	Tank	55 gallon ICC Spec. 5 black steel tight head drum.
2	each	Tank	30 gallon ICC Spec. 5 black steel tight head drum.
12	each	Ferrule Connector	"Swagelok" butt weld connector, 5/8" O.D.
9	each	Check Valve	Valve, check, swing type, brass solder-joint, 1/2".
10	set	Gauge Glass Cock	Gauge glass cocks; brass, low pressure, set includes top and bottom cocks.
8	each	Gauge Glass	Gauge glass, 5/8" O.D., 18" long, red line type.
2	each	Gauge Glass	Gauge glass, 5/8" O.D., 14" long, red line type.
<u>Condenser</u>			
2	each	Tube	Tube, copper, 2" nom. dia., 7' 3" long.
1	each	Tube	Tube, copper, 2" nom. dia., 10" long.
2	each	Tube	Tube, copper, 1" nom. dia., 8' 4" long.
1	each	Tube	Tube, copper, 1" nom. dia., 1' 6" long.
3	each	Tee	Tee, copper solder-joint, 2" x 1" x 2".
1	each	Tee	Tee, copper solder-joint, 2" x 1" x 1".
1	each	Union	Union, copper solder-joint, 2".
5	each	Union	Union, copper solder-joint, 1".
<u>Feed Heater</u>			
2	each	Adapter	Adapter, copper pipe to NPT, 1".
2	each	Tee	Tee, copper solder-joint, 2" x 1" x 1".
1	each	Tube	Tube, copper, 2" nom. dia., 4' 4" long.
1	each	Tube	Tube, copper, 1" nom. dia., 6' 6" long.
<u>Reboiler</u>			
1	each	Tank	30 gallon ICC Spec. 5 black steel tight head drum.
4	each	Ferrule Connector	"Swagelok" butt weld connector, 5/8" O.D.
10	each	Tube	Tube, copper, 1" nom. dia., 2' long.
9	each	Return Bend	Return bend, copper solder-joint, 1".
1	each	Coupling	Coupling, copper solder-joint, 2".
1	each	Angle	Angle, steel, 3" x 3" x 1/4", 9' 8" long.
1	each	Steel Plate	Plate, steel, 1/8" thick, 18" x 9".
1	each	Block	Block, wood, 2" x 4" x 16".
1	each	Bar	Bar, wood, 1" x 1" x 14".
2	each	Coupling	Coupling, copper solder-joint, 1".
<u>Pump Rack</u>			
2	each	Angle	Angle, steel, 3" x 3", 13' long.
1	each	Strap	Strap, steel, 3" x 1/4", 9' long.
<u>Tank Rack</u>			
2	each	Angle	Angle, steel, 3" x 3" x 1/4", 16' long.
2	each	Angle	Angle, steel, 3" x 3" x 1/4", 13' 6" long.
10	each	Angle	Angle, steel, 3" x 3" x 1/4", 2' 3" long.
10	each	"I" beam	"I" beam, steel, 3", 5.7 lb., 7' long.
2	each	Strap	Strap, steel, 3" x 1/4", 2' 3" long.
4	each	Plate	Plate, steel, 4" x 4" x 1/4".
<u>Instrument Panel</u>			
3	each	Angle	Angle, steel, 3" x 3" x 1/4", 20' long.
1	each	Angle	Angle, steel, 3" x 3" x 3/8", 16' long.
1	each	Plate	Plate, steel, 1/16", 9' 6" x 4".
1	each	Plate	Plate, steel, 1/16", 2' x 6".
1	each	Plate	Plate, steel, 1/16", 2' x 11' 6".
1	each	Plate	Plate, steel, 1/16", 2' x 9' 6".
2	each	Plate	Plate, steel, 1/4", 6" x 6".
<u>Instrument Panel</u>			
3	each	Angle	Angle, steel, 3" x 3" x 1/4", 20' long.
1	each	Angle	Angle, steel, 3" x 3" x 3/8", 16' long.
1	each	Plate	Plate, steel, 1/16", 9' 6" x 4".
1	each	Plate	Plate, steel, 1/16", 2' x 6".
1	each	Plate	Plate, steel, 1/16", 2' x 11' 6".
1	each	Plate	Plate, steel, 1/16", 2' x 9' 6".
2	each	Plate	Plate, steel, 1/4", 6" x 6".
<u>Pipe and Fittings</u>			
500	foot	Tube	Tube, copper, 1/2" nom. dia., type K.
200	foot	Tube	Tube, copper, 1" nom. dia., type K.
60	foot	Tube	Tube, copper, 2" nom. dia., type K.
70	each	Valve	Valve, globe, brass solder-joint, 1/2"
16	each	Valve	Valve, globe, brass solder-joint, 1"
150	each	Tee	Tee, copper solder-joint, 1/2"
16	each	Tee	Tee, copper solder-joint, 1"
80	each	Plug	Plug, copper solder-joint, 1/2"
4	each	Plug	Plug, copper solder-joint, 1"
2	each	Plug	Plug, copper solder-joint, 2"
20	each	Coupling	Coupling, copper-solder-joint, 1/2"
2	each	Coupling	Coupling, copper solder-joint, 2"
40	each	Elbow	Elbow, 90°, copper solder-joint, 1/2"
30	each	Elbow	Elbow, 90°, copper solder-joint, 1"
4	each	Elbow	Elbow, 90°, copper solder-joint, 2"
30	each	Elbow adapter	Elbow, 90°, 1/2" copper solder-joint to 1" NPTE
4	each	Elbow adapter	Elbow, 90°, 1/2" copper solder-joint to 1/2" NPTE
160	each	Union	Union, copper solder-joint, 1/2"
25	each	Union	Union, copper solder-joint, 1"
2	each	Union	Union, copper solder-joint, 2"
20	each	Adapter	Fitting adapter, copper solder-joint fitting to NPTE, 1/2"
2	each	Adapter	Fitting adapter, copper solder-joint fitting to NPTE, 1/2"
12	each	Adapter	Fitting adapter, copper solder-joint fitting to NPTE, 1/4"
13	each	Adapter	Adapter, copper solder-joint to NPTE, 1/4"
4	each	Adapter	Adapter, 1" copper to 1/2" NPTE
2	each	Steam trap	Steam trap, inverted float type, 75 psig.
25	lb	Solder	Solder, wire, ASTM No. 60A.
1	lb	Solder	Solder, wire, ASTM No. 01.
5	each	Flux	Oil type flux, 1 lb. bottles.
150	lb	Insulating Cement	Mineral wool insulating cement
30	feet	Pipe Insulation	Prefabricated pipe insulation for 1" pipe. 3-cell asbestocel.
<u>Instrument Fittings</u>			
115	each	Tube connectors	"Swagelok" male connectors, 1/4"
15	each	Tee	"Swagelok" all tube tees, 1/4"
1000	feet	Tube	Polyethylene tube, 1/4"
18	each	Regulator	Combination air pressure regulator and air filter with indicating gauge.
400	feet	Thermocouple Wire	Thermocouple wire, 20 gauge, iron-constantan, color coded, insulated
<u>Electrical Accessories</u>			
6	each	Outlet box	Rectangular two-gang outlet box, bakelite
2	each	Switch	Switch, enclosed, type D, front operated
6	each	Connector	Connector for 1/2" thinwall conduit
10	each	Adapter	Adapter, split steel, thinwall conduit to threaded conduit, 1"
7	each	Coupling	Coupling for connecting flexible conduit and rigid conduit, 1/2"
7	each	Connectors	90° squeeze connections, flexible steel conduit, 1/2"
7	each	Reducer	Female conduit reducer, 3/4" to 1/2"
10	each	Coupling	Coupling, thinwall conduit, 1"
10	each	Coupling	Coupling, thinwall conduit, 1/2"
6	each	Switch	Switch, 10 amp, 125 volt
6	each	Pilot light	Pilot light, flush type, 75 watt
6	each	Plate, Face	2 gang face plate, bakelite
40	feet	Conduit	Thinwall conduit, 1/2"
60	feet	Conduit	Thinwall conduit, 1"
30	feet	Conduit	Flexible steel conduit, 1/2"
300	feet	Wire	Machine tool wire, A.W.G. 10, insulated
1000	feet	Wire	Machine tool wire, A.W.G. 18, insulated
1	each	Clock	Clock, electric, 12 1/2" dial
The following are condulets for thin wall conduit			
3	each	Elbow	Type LB, 1"
3	each	Elbow	Type LR, 1"
18	each	End	Type C, 1"
5	each	Tee	Type LBD, 1"
1	each	Tee	Type TB, 1/2"
8	each	Elbow	Type L, 1/2"
9	each	Cover, plain	Cover, plain sheet metal, 1/2"
24	each	Cover	Cover with 1/2" male nipple, 1"