

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

No. 4 TRAIN REACTING:

E-4101 Butane Vaporizer/Superheater

INCLUDES VAPORIZER "U" TUBE BUNDLE & SUPERHEATER

Manufacturer – Hoffman Serial No. 289-18

MAWP: Shell 50 psi, Tubes 220 psi.

Max Temp: Shell 290 F, Tubes 460 F

Year: 1989

Design Code: ASME SEC VIII DIV 1

Material: Carbon Steel

C-4101 Compressor

4 Train Air Compressor

Manufacturer - ALLIS CHALMERS

Model No. - v-903

Serial No. - 1650-03088

Driver: General Electric 3500 BHP

Discharge: 25,540 SCFM @ 39.0 PSIA

B-4101 Air Heater

Manufacturer – John Zink

Direct Fire Startup Air Heater

Serial No. 079169

Year Built: 1976

Outer Vessel: 4'-0" x 10'-2" straight shell, horizontal, dished HD.

Material: SA-285 GR. C

Design Press. 30 psig, Test pressure 75 psig

Design Temp. 850 F

Inner Vessel: 3'-6" O.D. x 5'x8" straight shell, flat plate one end, conical skirt other end.

Material: Type 304 stainless steel

6" thick Refractory Lining inside

Design Pressure: 30 psig, Test pressure: 75 psig

Design Temp. 850 F

D-4201 Reactor

Manufacturer – Nooter

Type: Vert Heat Exchanger

Vessel No. N1882

Built: 1976

Shell Material: SA616-70, Nominal Thickness 3/4in, Length 12 ft

Working pressure: 50 psi, Maximum Temp: 800 F

Tube Sheets:

Material: SA516-70, Diameter 189.5 inches, Thickness 5.75 inches.

Tubes:

Material: SA214, O.D = 1 inch, Thickness #14 Gauge, Number of Tubes: 14,870, Type: Straight

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Heads:

Material: SA516-70, Thickness 0.57 inches

E-4205

Salt Cooler / Steam Drum

Type: Shell & Tube

Manufacturer: CONRADER

Material: SA-516

Size: 22'9" X 5'4.5" D.

Capacity: 3,900 GAL

Design Pressure: 305/75 PSI

Design Temp: 465/800 F

Design Code: ASME SEC VIII DIV 1

F-4201

Salt Sump

Horizontal Tank

Year Built: 1975

Manufacturer: MISSOURI BOILER & TANK CO.

Shell:

Material: SA-516-70, Thickness ½ inch, Diameter 8' 11", Length 32 feet.

Heads:

Material: SA-516-70, Thickness Ends 0.687", Bottom Thickness .50"

Max Working Pressure: 50 psi

Max Temp. 850 F

Coil:

Material: SA-106-B, Thickness .3", Diameter 3.5 inch, Length 26' 2"

F-4202

Steam Pot

Manufacturer: YOUNGSTOWN STEEL TANK

Material: SA-285

Size: 10'6" X 2'6" D.

Capacity: 400 GAL

Design Pressure: 377 PSI

Design Temp.: 650 F

Year: 1977

Shell & Wall Thickness: 5/8"

Design Code: ASME SEC VIII DIV 1

E-4201

Gas Cooler

Manufacturer: EXELL, INC

Serial No. 13345

Material: CARBON STEEL

Design Pressure: 316/75 PSI:

Design Temp.: 470/900 F

Year: 1998

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Design Code: ASME SEC VIII DIV 1

Tube Sheet:

Material: SA249-304, O.D. 1 inch, Thickness 16 BWG gauge, 739 tubes, Type: Straight.

Note: NEW GAS COOLER, RECEIVED 7/98, LYING ON SIDE IN SOUTHEASTERN CORNER OF WAREHOUSE

E-4301

After Cooler

Manufacturer: WESTERN SUPPLY

Type: SHELL/TUBE

Material: SA-515

Size: 19'11.38" X 4'4.25" D

Capacity: 2,050 GAL

Design Press: 75/75 PSI

Design Temp: 200/330 F

Tubes:

Material: SA249-304, O.D.=1 inch, Thickness = 16 BWG gauge, No. Tubes = 1,361, Type = Straight.

F-4301

Separator

Manufacturer: PIERSOL PINE MFG. CO.

Material: SA-240-TP 304

Size: 8' O.D. x 14' 8"

Built: 1976

Vessel No. 9342-A

Max Working Pressure: 30 psi

E-4302

Tempered Water Cooler

Manufacturer: Western Supply

Type: Shell/Tube

Year Built: 1976

Shell Material: SA-515-70, Thickness 3/8 inch.

Tubes:

Material: SB-111, O.D. 1 inch, 16 BWG gauge, 276 Tubes, Type: Straight.

Max Working Pressure: 75 psi @ 200 F

F-4302

Tempered Water Expansion Tank

Manufacturer: Youngstown Steel Tank Co.

Type: Vertical

Vessel No. 2754-1

Material: SA285C PVQ

Diameter: 3' 6"

Length: 6'

Area: 21 sq. ft.

Built: 1975

Max working press: 15 psi @ 200 F

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

- D-4301 Acid Hold Tank**
Manufacturer: Allied Industries
Type: Vertical
Built: 1974
Shell Material: SA-240-T304, ¼" thickness
Diameter: 15' 10"
Length: 65 feet, 6 inches.
- D-4301 Scrubber**
Manufacturer: Piersol Pine Mfg. Co.
Year Built: 1976
Shell Material: SA-250-TP 304, Thickness = .25 inch
Diameter: 8 feet
Length: 11 feet 9 inches
Max working pressure: 30 psi
- No. 3 TRAIN REACTING**
- F-0102 Butane Vaporizer**
Manufacturer: STAINLESS STEEL PROCESS EQUIPMENT
Built: 1960
Design Press: 45 PSI
Design Temp.: 290 F
Material: SA285 Gr C
Tubes: O.D. ¾ inch, 14 Gauge, No. Tubes 88
- C-1101 Compressor**
3 Train Compressor
Manufacturer – Elliot
Model No. 18S602
Speed: 4650 RPM
Rated HP: 2170
Inlet Capacity: 22,850 SCFM
Discharge Pressure: 37.5 PSIA
Max Allowable Pressure: 48 PSIA
Max Allowable Temp: 450F
- B-1101 Air Heater**
Direct Fire Startup Air Heater
Manufacturer: Thermol Transfer Corporation
Burner: Series 4795 Magna-Flame Burner
Type: Horizontal
Vessel No. 88-166
Built: 1968
Shell Material 304 SS

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Working Pressure: 40 psi
Max. Temp.: 850

D-1201

3 Train Reactor

Manufacturer – Struthers Wells Corporation

Type: Vertical Heat Exchanger

Vessel No. 2-68-4-1255

Built: 1969

Shell:

Material: Fbx SA-515-70, Nominal Thickness $\frac{3}{4}$ ", Diameter 12 ft,
Length 11 ft 2 inches

Tube Sheets:

Material: Fbx SA-515-70, Diameter 154 inches, Thickness $5\frac{1}{4}$
inch.

Tubes:

Material: SA-214, O.D. 1 inch, 14 BWG Gauge, No. Tubes =
11,756, Type = Straight.

Heads:

Material: Fbx SA-515

E-1205

Salt Cooler

Manufacturer- SUPERIOR HARD SURFACING CO., INC.

Type: Vertical Heat Exchanger

Serial No. 97-22080

Length: 16' – 4 $\frac{15}{16}$ "

Built: 1997

Shell Material: SA-516Gr.70N

MAWP: 321 psi

Max Temp: 465 F

Tube Sheet

Material: SA-516Gr.70N, Diameter 40 $\frac{1}{4}$ ", Nominal Thickness 5"

Tubes:

Material: SA-179, O.D = 1", Number of tubes = 295, Type = U

F-1203

Steam Drum

Manufacturer - SUPERIOR IRON WORKS

Size: 10' X 6' D.

Capacity: 2,120 GAL

Material: SA-285

Design Pressure: 315 PSI

Design Temp: 500 F

Shell & Wall Thickness: 1 $\frac{1}{16}$ "

Design Code: ASME SEC VIII DIV 1

F-1201

Salt Sump

Manufacturer - SUPERIOR IRON WORKS

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

DECERTIFIED AS PRESSURE VESSEL 1988 <15 PSI

Material: SA-515

Size: 2' X 9' D.

Capacity: 1,000 GAL

Design Pressure: 25 PSI

Design Temp: 850 F

Shell & Wall Thickness: 3/8"

Design Code: ASME SEC VIII DIV 1

E-1201

Gas Cooler

Manufacturer - DOYLE & ROTH CO.

Material - SA-516

Size: 9'11.88" X 3'2" D.

Capacity: 600 GAL

Design Pressure: 305 psi

Design Temperature: 465 F

Year: 1986

Design Code: ASME SEC VIII DIV 1

Tube Sheet:

Material: SA-516 70, Diameter 43.5 inches, Thickness 2-5/16 inches.

Tubes:

Material: SA-214 CS, O.D. 1 inch, Thickness 14 gauge, Tubes 649, Type: Straight.

NOTE: SPARE, LYING ON SIDE IN NORTHEASTERN CORNER OR WAREHOUSE

E-1301

After Cooler

Manufacturer - ATLAS INDUSTRIAL MFG. CO.

Shell Material : SA-516-70

Size: 15'11.38" X 3'10" D

Capacity: 1,400 GAL

Design Pressure: 75/75 PSI

Design Temp.: 200/200 F

Built: 1987

Design Code: ASME SEC VIII DIV 1

Tube Sheet:

Material: SA-240, T304; Diameter 46 3/4", Thickness 2 1/8"

Tubes:

Material: SA-249, T304, O.D. 1 inch, 16 Gauge, No. Tubes = 1,038, Type = Straight.

F-1301

Separator

Manufacturer - STAINLESS STEEL PROCESS EQ

Material: SS-304

Size: 8' X 6'8.25" D.

Capacity: 2,125 GAL

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Design Pressure: 25 PSI
Design Temp: 260 F
Design Code: ASME SEC VIII DIV 1

- E-0303-B Tempered Water Cooler**
Manufacturer - OLD DOMINION IRON & STEEL CO.
Material: SA-515
Size: 21'11.88" X 2'11.75"
Capacity: 1,150 GAL
Design Pressure: 75/100 PSI
Design Temp.: 200/160 F
Design Code: ASME SEC VIII DIV 1
Number of Tubes: 282, Straight, 16 Gauge, ¾ O.D. inches, Material: SB111-Adm.
- F-0303 Tempered Water Tank**
Material: SA-283
Size: 12' X 12'3" D.
Capacity: 10,600 GAL
Design Press: ATMOSPHERIC
Design Temp: 200F
Design Code: API-12-C
Shell & Wall Thickness: 1/4 inch.
- F-1304 Acid Hold Tank**
Manufacturer: WYATT INDUSTRIES
Type: Vertical
Built: 1968
Material: T-304 SS
Size: 12' 6" x 25' high
- D-1301 Scrubber**
Manufacturer: WYATT INDUSTRIES
Built: 1968
Material: T-304 SS
Diameter: 9 feet
Height: 22 feet
Tray No. : 10
- REFINERY**
- D-502 Still Pot**
Manufacturer: NOOTER CORP.
Serial No. S 6570
Built: 1960
Material: 304 SS

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Diameter: 12 feet
Length: 16 feet
Max Pressure: 40 psi
Max Temp. 440 F

- D-501 Column**
Manufacturer: Colonial Iron
Year Built: 1960
MAWP: 25 psi
Design Temp. 400F
Shell Material: A240-316L
Length: 36' 6"
Diameter: 10'
20 V Grid Trays, 14 gauge, 316L SS, .250 opening (392 per tray)
- E-4503A Refinery Condenser**
Material: SA-240
Size: 15'11.88" X 7'1" D.
Type: Shell & Tube
Capacity: 4,750 GAL
Design Press: 75/40 PSI
Design Temp: 200/325 F
Year: 1995
Design Code: ASME SEC VIII DIV 1
- F-505B Decanter**
Manufacturer: George Marker & Sons Inc.
Built: 1991
Material: SA240 316L
Diameter: 4' 6"
Length: 9'
Thickness: 0.1875 inches
MAWP 25 psi
Max. Temp. 350 F
- F-504 Reflux Drum**
Manufacturer: STAINLESS PRODUCTS
Built: 1960
Material: SA-240 T-316-L
Diameter: 2' 6"
Length: 4' 6"
Max Pressure: 25 psi & full Vacuum
Max Temp. 350F
- E-504 Vent Condenser**
Manufacturer: STRUTHERS-WELLS
Type: Shell & Tube

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Shell Material: SA-285-C FBX. STL
Tube Material: 304 SS SA-249
486 tubes, 1" O.D., Straight
Diameter: 2' 7"
Length: 15' 9"
Shell W. P: 75 psi @ 150F
Tubes W.P.: 40 psi & full vacuum (325F)

E-503A

Jet Condenser

Manufacturer: Perry Products Corporation

Built: 1986

Shell Material: SA312-T304

Shell Thickness: 0.156 inches

Diameter: 1/ 3/4"

Length: 13' 8"

MAWP: 75 psi

Max Temp: 220 F

Tubes:

Material SA268-XM27, 3/4inch O.D., 16 gauge, 126 Tubes,
Straight.

F-4305

Process Water Tank

Manufacturer: NOOTER

Built: 1976

Size: 13.9' wide X 10' high

Capacity: 11,000 Gal

Material: SS per A-240 TP-316

Design Temp; 200F

Design Pressure: 6 inches H2O.

Major Storage Tanks and Process Vessels

F-304

Maleic Acid Tank

Manufacturer: NOOTER CORP.

Material: SA-240

Size: 14'6" X 12'2.5" D.

Capacity: 12,700 GAL

Design Press: ATMOS.

Design Temp. 250 F

F-101

Xylene Storage Tank

Manufacturer: HAMILTON TANKS

Built: 1998

Material: 316L SS

Size: 12' X 20'

Capacity: 16,900 GAL

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Design Pressure: 2.5 PSI

Design Temp. 250 F

- F-507 Xylene / Process Water Tank**
Manufacturer: NOOTER CORP.
Built: 1975
Material: 316 SS
Size: 8' 3" X 13' 4"
Capacity: 5,000 gallons
Design Pressure: Atmospheric
Design Temp. 250 F
- F-0501-A Crude Maleic Anhydride**
Manufacturer: SHARPSVILLE STEEL
Built: 1976
Material: 304 SS
Size: 11' X 14'
Capacity: 9500 GAL
Design Pressure:
- F-1303 Crude Maleic Anhydride Tank**
Manufacturer: PITTSBURGH DES MOINES STEE
Built 1968
Material 304 SS
Size: 14' diameter x 14' high
Capacity 16,000 GAL
Design Pressure: Atmospheric
- F-1304 Maleic Acid Tank**
Manufacturer: WYATT INDUSTRIES
Built: 1961
Material: 304 SS
Size: 12' 3" OD x 14' 6"
Design Pressure: Atmospheric
Design Temp. 250 F
- F-1518 Residue Tank**
Manufacturer: MINNOTTE MFG.
Material: SA-240
Size: 15' X 12' D.
Capacity: 13,000 GAL
Design Pressure: Atmospheric
Design Temp. 350 F
- F-4303 Crude Maliec Anhydride Tank**
Manufacturer: PIERSOL PINE MFG. CO.
Material: SA-240

Ashland Neville Island, PA. Maleic Anhydride Plant Descriptions of Major Equipment Components

Built: 1976
Size: 27' X 12' D.
Capacity: 23,000 GAL
Design Pressure: 6 oz/in²
Design Temp. 250 F

F-4304 **Crude Maleic Anhydride Tank**
Manufacturer: BUFFALO TANK
Material: 304 SS
Built: 1974
Size: 14' X 9' D.
Capacity: 6000 GAL

F-1506 **Maleic Anhydride Day Tank**
Manufacturer: HAMILTON TANKS
Built: 1997
Capacity 13,000 GAL
Size: 16' X 12' D.
Material: 316 SS
Design Pressure: 2 psi
Design Temp: 250 F

F-4518 **Maleic Residue Tank**
Manufacturer: PIERSOL PINE MFG. CO.
Capacity 18'10" X 12' D.
Size 16,000 gallons
Material SA-240
Design Pressure Atmospheric
Design Temp 350 F

F-2102-A **Butane Storage**
Manufacturer: TRINITY MFG. CO
Material: SA 612-B
Built: 1973
Size: 9' x 66'
Capacity: 30,000 gallons
Design Pressure: 250 psi
Design Temp 125 F

F-2102-A **Butane Storage**
Manufacturer: TRINITY MFG. CO
Material: SA 612-B
Built: 1973
Size: 9' x 66'
Capacity: 30,000 gallons
Design Pressure: 250 psi
Design Temp 125 F

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Briquetting Equipment

- B-0099-A** **Outside Scrubber Blower**
Manufacturer: Clariage Fan Company
7300 CFM
Type XL
1764 RPM
- F-0601** **MA Flaker Feed Tank**
304 SS
10' x 4' Diameter, 1,000 Gallons
- F-0603** **MA Vent Scrubber Tank**
304 SS
8' x 4' Diameter
800 gallons
- G-0601** **MA Flaker Feed Pump**
Manufacturer: Lawrence Pump
- G-0604** **MA Vent Scrubber Pump**
Manufacturer: Wifley Pump
- M-0005** **Flaker Briquetter Bag Printer**
Manufacturer: Marconi Data Systems
Model 16861
- M-0517** **MA Flaker Drum**
Manufacturer: Goslin Birmingham
7' x 5' Diameter
- M-0801** **MA-MH Vertical Bag Transfer Conveyor**
Manufacturer: Thomson Equipment Co.
- M-0803** **MA-MH Bag Settling Conveyor, CVC Job No. 4629**
Manufacturer: Cleveland Vibrator Co.
Model BT-2484-8254-2
- M-0804** **MA-MH Bag Included Conveyor Series Z**
Manufacturer: Thomson Equipment Co.
- M-0852** **MA Bag Sealer, Pinch Bottom Closer**
Manufacturer: St. Regis
Model 1100

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P-0602-A **MA Briquetter & Screw Feeder**
Manufacturer: Komarek Greaves Co.

S-0024 **Scale**
Manufacturer: Toledo Scale
Model 1800FD
SN#: 1709
Capacity: 500 #