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VIVIAN CRAWFORD - EXHIBIT

ETHYL CORPORATION

STANDARD SPECIFICATION SP-60-1

HEAT INSULATION

GENERAL

1. Scope

This specification covers the requirements for material and application of thermal insulation to surfaces of piping, pressure vessels, heat exchangers and similar equipment.

2. Work Included

The Contractor shall furnish, deliver, and apply all material and provide all labor, transportation, apparatus and tools required for the proper execution of the work described in this specification. The Contractor shall unload and place all materials in storage and shall assume full responsibility for damage due to improper handling and damage by the elements.

Contractor shall furnish a competent and experienced superintendent who shall oversee the work and see that materials are available as required to meet the schedule as designated by the Purchaser.

Scaffolding and storage space, adequately weatherproofed, shall be provided by the Contractor in a location agreed upon with the Purchaser's Field Superintendent.

The Contractor shall keep the plot-area free from debris, scrap, and unused material. Keep the adjacent equipment and structures free from splattered material.

If the plant is in operation before the insulation work is completed, remove all unused material and loose scaffolding from the operating areas before leaving the site for the day.

Do not apply insulation over pipe welds until the lines have been pressure-tested. Vessel-welds may be insulated if the vessel was hydrostatically shop-tested.

3. Work Not Included

Chromox prime coating, insulation supports, and tie-studs to be attached to insulated surfaces where required shall not be included as part of the Insulation Contractors work.

4. Insulated Items

The apparatus schedule, the pipe line designation table, or the piping drawings lists the items to be insulated according to Insulation Thickness Schedule.

a. Apparatus: Insulate all vessel surfaces except nameplates, manholes, handholes and their covers.

Insulate exchanger-bodies, and shell-covers. Insulate channels and covers, but leave flanges bare for disassembly.

b. Piping: Insulate piping and non-flanged fittings in steam and defined process systems.

5. Personnel Protection

All equipment operating at temperatures above 150°F requires protective insulation for personnel protection. Insulate piping and equipment to a height of 7-feet above the operating-level or passageway, and within a radius of 3-feet of operator's position. The apparatus schedule and pipe line designation table indicate the items and thickness of insulation for protection.

MATERIALS

6. Insulation Materials

The following is a list of materials used for insulating apparatus and pipe. Materials are called for by manufacturer's names, but materials of equal durability and insulation properties may be substituted on approval by Ethyl Corporation.

a. Apparatus: Sectional or segmental pipe-covering, Calcium Silicate (Thermobestos or Cal Temp), for vessels 23-inch diameter and under.

Flat-block, Calcium Silicate 6-inch by 36-inch, is used on equipment and vessels larger than 24-inch diameter.

Flat-block, Calcium Silicate 12-inch by 36-inch for all flat surfaces.

Finish-cement, Eagle-Picher "43".

Insulating-cement, Eagle-Picher Super "66".

b. Piping: Sectional or segmental pipe-covering, Calcium Silicate (Thermobestos or Cal Temp).

Finish-cement, Eagle-Picher "43".

Insulating-cement, Eagle-Picher Super "66"

Stalastic Plastic-type, Eagle-Picher.

7. Accessories

a. Apparatus: Bands, Gerrard, 3/4-inch by .020 HY-COR-X (Type 304SS), Cat. No. 302SS, with stainless No. 1524-SS Gerrard seals.

Bands, Gerrard, 1/2-inch by .020 HY-COR-X (Type 304SS), Cat. No. 302SS, with stainless No. 1522-SS Gerrard seals.

Banding wire, 12 gage, type 304, soft-annealed stainless steel.

Wire Staples, copperized steel, 3/4-inch by 1-inch insulation type.

b. Piping: Banding wire, 12 gage, type 304, soft-annealed stainless steel.

Bands, Gerrard, 3/8-inch by .020 HY-COR-X (Type 304SS) Cat. No. 302SS, with stainless No. 1521-SS Gerrard seals.

8. Weatherproofing and Protective Coating Materials

Following list of materials shall be used for weatherproofing and protecting apparatus and piping.

a. Apparatus: 10 x 10 count, asphalt coated glass fabric. Perma Glas-Mesh Corporation, Type 201, or

10 x 10 count, white resin coated (Fire Resistive) glass fabric. Perma Glas-Mesh Corporation, Type 205 or Benjamin Foster Sealfas.

Insulseal, Eagle-Picher or Anderson-Prichard Micro-Seal 3A.

b. Piping: 55-pound Firetard, Johns-Manville

10 x 10 count, asphalt coated glass fabric. Perma Glas-Mesh Corporation, Type 201, or

10 x 10 count, white resin coated (Fire Resistive) glass fabric. Perma Glas-Mesh Corporation, Type 205 or Benjamin Foster Sealfas.

Fire retardant plasticized adhesive-Arabol or Eagle-Picher Stalastic.

APPLICATION ON APPARATUS

9. Priming

All insulated vessels and equipment, that operate below 250°F, are primed with one coat of Chromox Primer, Socony 13-R-50 or an approved equal, by others than the Insulation Contractor.

10. Insulation Thickness

The Insulation Thickness Schedule of this specification shows the required thickness for the operating temperatures.

11. Joints

Lay insulation with staggered circumferential joints. Butt the joints tightly together. Do no use joint sealer.

12. Insulation Securement

Hold the blocks or pipe covering in place with banding wire, four (4) loops per 36-inch section on approximately 9-inch centers. Bands on approximately 9-inch centers may be used in lieu of the banding wire.

13. Pointing

Fill the cracks and bruises with insulating cement. Abrade insulation slightly at joints, if necessary, to achieve rounded contours.

14. Cement

Cover the outside surface with two 1/4-inch coats of insulating cement. Leave 1/4-inch joint at support rings.

15. Reinforcement

While the second coat of insulating cement is still wet, apply a layer of glass fabric. Stretch fabric tight into insulating cement and allow to dry. Lap glass fabric three inches at support rings.

16. Weatherproofing

Apply a 1/4-inch thick weatherproof filler-coat of Insulseal (two parts No. 20 dry-washed sand to four parts of Insulseal, by weight) over the cement and glass fabric. Wet-brush the surface just before the filler-coat sets with a weatherproof finish-coat of Insulseal (no sand added). If practical, apply the weatherproofing when the vessel is hot.

17. Support-Rings

Vertical vessels shall have horizontal rings to support the insulation. The vertical expansion of the vessel wall at operating temperatures, determines the ring-spacing. The spacing of these rings shall not be more than 12 feet and 1/2-inch top-to-top. The support rings are to be 1/4-inch thick, with a width approximately 1/2-inch less than the thickness of the vessel insulation.

APPLICATION ON PIPING

18. Pipe Covering

Use sectional pipe covering for lines ten (10) inches and smaller, segmental pipe covering for lines twelve (12)-inch to twenty-four (24)-inch, and flat insulating blocks for lines larger than twenty-four (24) inches. The Insulation Schedule of this specification shows the required thickness for the operating temperatures and pipe-sizes.

19. Joints

Stagger the joints of the sections and segments. Butt the joints tightly. Place the longitudinal joints on the top and bottom of horizontal lines.

20. Securement

Secure the insulation to the pipe with stainless steel banding wire, four loops per 36-inch section.

21. Pointing

Fill the cracks, the bruises, and point the butted joints with insulating cement.

22. Steam-Tracer Lines

Insulate steam-traced lines size 4-inch and larger with regular pipe-size insulation. Fill the seams between the pipe covering joints with insulating cement. Lines 3-inch and smaller are insulated with insulation 1/2-inch larger in nominal pipe-size than that of the steam-traced line.

23. Flanges

Taper off insulation at flanges to allow for the removal of flange bolts. Insulate the flanges on steam and steam-traced lines with pipe covering of the same thickness as the pipes and diameter of the flange.

24. Fittings

Cover screwed-fittings and welding-fittings 3 inches and smaller with insulating cement applied in 3/4-inch layers. Insulate fittings 4 inches and larger with pipe insulation of a thickness equal to adjacent straight pipe-insulation. Secure with banding wire, each segment of mitered pipe insulation on the fittings. Use glass fabric in lieu of banding wire where it provides easier and better installation.

Finish the fitting insulation surface with finish cement. Trowel the cement to a smooth layer not more than 3/8-inch thick. Point all joints and smooth the surface on mitered pipe insulation with finish cement.

25. Pipe Insulation Weatherproofing

Protect all outdoor pipe insulation with Firetard. Place the longitudinal seams 45 degrees below the horizontal centerline of the insulated pipe. Lap all joints 3 inches. Seal the joints with fire retardant plasticized adhesive (Stalastic). Hold the Firetard jacket in place with 3/8-inch stainless steel bands on 9-inch centers. Seal the bands with Gerrard No. 1521-SS seals. Seal at all pipe hangers with a fillet of cement. Apply the Firetard with white side out.

26. Pipe Insulation-Indoors

Cover the pipe insulation with glass fabric that has been dipped in Arabol fire retardant plasticized adhesive. Cut the glass fabric into strips, wide and long enough to make a 2-inch lap with each adjoining section. Stretch the glass fabric tight and smooth out all wrinkles. Apply a brush coat of Arabol over the glass fabric to make a smooth, even finish.

27. Mechanical Protection

Insulated piping in trenches, exposed to abrasion, foot traffic, water streams, or subjected to high external temperatures, shall be weather-proofed with 26-gage galvanized sheetmetal, lapped to shed water, and secured with sheet metal screws.

28. Insulation Supports

Provide metal supports for vertical piping insulation. Provide metal bands at pipe hangers.

APPLICATION ON EQUIPMENT

29. Reciprocating-Pumps

Use pipe insulation to insulate reciprocating pumps. The thickness of insulation is the same as the insulation for piping shown on the Insulation

Thickness Schedule of this specification. Use the insulation pipe size corresponding to the cylinder diameter. Secure the insulation with 12-gage stainless steel banding wire. Point, cement, and weatherproof the insulation as described in paragraph 13, 14 and 16.

30. Turbines

Insulate the turbines in steam service with Eagle-Picher Super "66" insulating cement. The thickness of the coat is the same as the insulation for apparatus shown on the Insulation Thickness Schedule of the specification. Apply the cement in layers of 1-1/2-inch thickness over glass fabric. Apply additional courses of glass fabric for each additional 1-1/2-inch layer of insulation until the required insulation thickness is obtained. Apply two coats of weatherproofing. Each is 1/4-inch thick when wet. The method of application is the same as described under Apparatus, Paragraph 16.

31. Inspection

The Inspector shall have the right to inspect all work and material at the factory or the site, and any work or material found to be defective, or which does not meet the requirements of the specification, shall be replaced by the Contractor at his own expense. Such inspection, however, shall not relieve the Contractor from full responsibility for the quality and correctness of his materials and work.

32. Local Requirements

The Contractor shall comply with all laws, codes or regulations of the locality where the work is to be done insofar as such laws and codes apply to his work.

33. Guarantee

The Contractor shall guarantee the workmanship. He shall further guarantee that insulating materials shall not deteriorate in effectiveness due to any temperature within the limits set forth in this specification to which they may be subjected. The determination of deterioration shall be evidenced by sweating, dripping, cracking, crumbling, shrinking unduly or otherwise failing mechanically.

The guarantee shall extend for one (1) year.

The Contractor shall agree to replace at his own expense, any portion of the materials or work proving defective in any of the respects listed above, within one (1) year after completion of work, which replacement shall constitute complete performance of all obligations hereunder in connection with such defective work or materials.

INSULATION THICKNESS SCHEDULE

TEMPERATURE RANGE F	150 299	300 399	400 489	490 579	580 679	680 799	800 899	900 999	1000 1099
***APPARATUS (1)**									
SERVICE									
TEMPERATURE CONTROL AND HEAT CONSERVATION	1 1/2	2	2 1/2	3	3 1/2	3 1/2	4	4	4
PROTECTIVE	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2
***PIPING (2)**									
LINE-SIZE									
1 1/2-INCH AND SMALLER	1	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
2-INCH	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2	2 1/2
3-INCH	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2	2 1/2
4-INCH	1	1 1/2	1 1/2	1 1/2	1 1/2	3	3	3	3
6-INCH	1 1/2	1 1/2	1 1/2	2	2	3	3	3	3
8-INCH	1 1/2	1 1/2	1 1/2	2	2	3	3	3	3 1/2
10-INCH	1 1/2	1 1/2	1 1/2	2	2 1/2	3	3	3	3 1/2
12-INCH	1 1/2	1 1/2	2	2 1/2	2 1/2	3	3	3	3 1/2
14-INCH thru 20-INCH	1 1/2	1 1/2	2 1/2	2 1/2	2 1/2	3	3 1/2	3 1/2	4

*APPARATUS-INDUCTION HEATED - Use 2 inches of Calcium Silicate and 2 inches of 85-percent Magnesia.

*PIPING-INDUCTION HEATED - Sodium Lines - Use 1 1/2 inches of Calcium Silicate
- Alloy & Lead Lines - Use 1 1/2 inches of Calcium Silicate and 1 1/2 inches of 85-percent Magnesia.

(1) Use two (2) layer application for thicknesses over 3-inch on Apparatus.

(2) Use two (2) layer application for thicknesses 3-inches and greater above 600°F on piping.