

WES  
Ethyl Corporation  
Houston  
TexasHOUSTON  
MANUFACTURING PLANT

Rating H-3890

June 4, 1951

## SUMMARY

## SCOPE

This Proposal covers the design, the construction, and the erection of a plant for the manufacture of tetraethyl lead, ethyl-chloride, and ethylene-dichloride. The plant is located at Pasadena, Texas. It includes process-units, utility-units, tank-farm, and general-facilities, all as described below. The Proposal includes two TEL Manufacturing Units, TEL-7 and TEL-8, each with 16 Autoclaves.

## TEL PROCESS

**RECEIVING AND STORAGE** The flow of the raw materials and the final products, is shown on Braun Flowdiagram H-3890-KE-4. Storage facilities are included for Sodium, Ethyl-Chloride, Ethylene-Dibromide, Ethylene-Dichloride, Kerosene, Acetone, Lead, and Tetraethyl Lead. All are stored in tanks. One exception - the lead is stored as pigs on a platform. Receiving facilities include car-spots, track-scales, pumps and drivers. In addition, heating facilities are included for the sodium and for the ethylene-dibromide.

**ALLOY** This section produces a lead-sodium alloy for the TEL reaction. The flow shows on Braun Flowdiagram H-3890-KE-2. Molten-lead and molten-sodium are mixed in an agitated vessel. The alloy is solidified on drum-casters and loaded into charging-hoppers. Equipment is included where necessary, for Dowtherm-cooling and for induction-heating.

**TEL MANUFACTURE** This section includes manufacture, washing and blending. The flow is shown on Braun Flowdiagrams H-3890-KE-1 and H-3890-KE-6. Alloy from the Alloy-Section, and ethyl-chloride from the Ethyl-Chloride Plant, are charged into autoclaves to produce TEL. The TEL is purified by steam-distillation, washing, and aeration. The purified TEL is blended with ethylene-dichloride, ethylene-dibromide, kerosene, and dyes, to produce the finished Ethyl fluid.

**TEL PROCESS AUXILIARIES** This section includes ethyl-chloride recovery, sludge-recovery and lead-melt. The flow shows on Braun Flowdiagram H-3890-KE-2. During the TEL manufacturing process, excess ethyl-chloride is vented. This excess is collected in refrigerated equipment, purified by fractionation, and stored. Sludge from the stills goes to a settling-pit, to a steam-heated drier, and finally to a reverberatory furnace. Here metallic lead is melted out and returned to the lead melt-pot to be mixed with the pig-lead for alloy manufacture. Equipment is included for the recovery of TEL from the sludge, and for the removal of lead-oxide from the stack-gases.

PLAINTIFF'S EXHIBIT

ETCO-592

HMMa

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Texas

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SUMMARY

WORK BY OWNER Ethyl Corporation will perform the following work

Provide a site free of all piping, foundations, wiring and similar  
obstructions  
Water-Wells and Pumps for Plant Water  
Water-Wells for Construction  
All permits for Ship-Channel work  
Texas State Boiler Inspection  
All easements and clearance with neighboring property-owners  
All Building Permits and State Permits

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Ethyl Corporation  
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## HEAT-INSULATION

November 9, 1950

1 This specification covers the heat-insulation requirements for the Houston Manufacturing Plant located at Houston, Texas. It shows (1) the scope of the work. (2) The acceptable materials. And (3) the application procedure.

## I SCOPE

2 INSULATION Insulation is for three purposes. (1) Heat-conservation. (2) Temperature-control. (3) Personnel-protection. Braun apparatus drawings, piping-drawings, and piping-schedules show the extent, type, and thickness of the insulation.

3 DO NOT INSULATE (1) Manholes, (2) handholes, (3) nameplates, (4) flanges on apparatus or machinery.

4 PROTECTIVE INSULATION The insulation summary sheets indicate which lines are insulated for protection. Where guards are not provided, the temperature justifying protection is 140 F. Insulate these lines to elevation 7 feet above grade or operating platforms, and within 3 feet of passage-ways.

5 FIREPROOFING Support-skirts on vertical vessels that contain hydrocarbons are fireproofed with 3 inches of Superex.

6 CLEANUP AND STORAGE Keep the plot-areas free from debris, scrap, and unused materials. Keep the adjacent equipment free from spattered material. Protect the insulation against the elements and from the work of other crafts, during all stages of application. Store all materials and tools in a location agreed upon with the Field Superintendent. If the plant is in operation before the work is completed, remove all unused material and loose scaffolding from the operating-areas before leaving the site for the day.

## II MATERIALS

7 TRADE-NAMES Manufacturers' type-numbers shown in this specification are for identification only. Equals in composition, quality, and insulation-properties may be substituted at our option.

8 APPARATUS Use Kaylo insulating-blocks. For surfaces with radii 36 inches and less use segmental blocks. For surfaces with radii greater than 36 inches, use flat blocks 6 inches by 36 inches. For flat surfaces use flat blocks 12 inches by 36 inches. For all protective insulation 1-inch thick, use flat blocks 6 inches by 36 inches.

9 PIPING Use Kaylo insulation for lines that are not induction heated. The type of pipe covering is shown in the schedule on F [REDACTED]

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many  
pages*

## PROPOSAL

## MASTER SCHEDULE

SQD

ETHYL CORPORATION  
HOUSTON  
TEXAS

HOUSTON  
MANUFACTURING PLANT

**RATING H-3890**

**JUNE 4, 1951**

