

FMLX 14000 sheet



# TANK CAR DETAIL SPECIFICATION

LOT. NO. 18-12404  
AAR APPL. NO. 951007

ESTIMATE NO. 94-OEO-193, Rev. A

| STATUS       |   | DATE         |
|--------------|---|--------------|
| ESTIMATE:    |   | DATE         |
| PRELIMINARY: |   | DATE         |
| FINAL:       | X | DATE 5/11/95 |

INQUIRY NO.: 94-NE-68-LP  
CUSTOMER: FMC Corporation  
NUMBER & TYPE OF CAR: 70-100 Ton, 13,170 Gal. Shell Full, \*DOT 114S340W, Exterior Coiled & Insulated, Stub Sill Slope Bottom Tank Car.  
GENERAL ARRGT. DWG.: 5-U-7865-A MANWAY & FITTINGS ARRGT. DWG.: 5-U-7790-A  
DATE OF ORDER: 11/20/94  
PROJECT ENGINEER: T. B. Baker

## GENERAL INFORMATION

COMMODITY: Phosphorus at 14.38 lbs/gal HAZARD CLASS: Flammable solid & poison.  
NON-REGULATORY: REGULATORY: X MAX. WEIGHT: 14.38 LBS/GAL  
COMMODITY STENCIL: PHOSPHORUS (4" letters)  
INSPECTION: ACF & customer.  
HEATER SYSTEM: 12-lines C.S. exterior 8" half oval coil simplex system, between bolsters. 1 Inlet at top of car and 1 outlet at bottom of car without relief valves.  
DWG.: 5-U-7680-A  
INSULATION: 4" - 1# dens. fiberglass, ACF standard application, except top fittings protection to be non-jacketed and voids are to be filled with fiberfrax insulation.  
JACKET: 11 ga. carb. stl., 2-pc. shell with 1/2" full jacket head.  
END DWG.: 5-U-7761-00 & 01-A  
CENTER DWG.: 5-U-7777-A  
HEAT TREATMENT: 1100 deg. F at least one hour.  
X-RAY: In accordance with AAR Appendix W.  
TANK LINING: None  
CLEANING TANK INTERIOR: Light gritblast - sweep clean & brushoff.  
PAINT PREPARATION: Gritblast completed car exterior - Commercial.  
PAINTING & LETTERING: ACF Light Grey Epoxy with AAR and DOT stenciling. No principal lettering. Reporting marks and car no's stenciled on top of car at "B" end, 9" letters and no's. Apply Chemtrec decals.  
DWG.: 5-U-7897-A  
REPORTING MARKS & CAR NOS.: FMQX 14001 thru 14071  
APPLICATION DWG: Card Holders DWG.: 5-U-7664-A  
AAR CLEARANCE DIAGRAM: Plate "B"  
OVER-ALL CAR HEIGHT: 14' - 3 1/2" Approx. TANK MOUNTING HT.: None EXTREME WD.: 10'-6 1/2"  
CENTER OF GRAVITY: 81" LIGHT WEIGHT: ESTIMATED: 77,200 lbs. ACTUAL:  
REMARKS: Apply shear off protection for top fittings. Riveted or bolted connections to have faying surfaces painted prior to assembly.  
Tank Capacity: 98% with 1 1/2" water capacity (120 gal. of water & 12,787 gal. of phosphorus). Provide A.E.I. tags.

## TANK

CLASSIFICATION: DOT 114A340W TANK DWG.: 5-U-7353-C  
SHELL FULL CAPACITY: EST.: 13,170 gal. ACTUAL:  
TEST PRESSURE: 340 psi COIL TEST PRESSURE: 200 psi  
TANK PLATE MATERIAL: AAR TC-128 Gr. B normalized. Heads normalized during hot forming process. Head blank material is not purchased normalized. Tank weld procedures will be qualified to 15 ft.-lbs. @ -30 deg. F. No impact test on production tanks.  
INSIDE DIAMETER: 95" (1/4"/ft. slope to center of car).  
\* PENDING DOT EXEMPTION



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LENGTH OVER HEADS: 37'-7 1/8"  
 C. TO C. HEAD WELDS: 32' -10" top/33' -2" bottom  
 NOZZLE I.D.: 22" NOZZLE HEIGHTS: Low Profile  
 PENDING DOT EXEMPTION  
 SHELL DESIGN: 4 course, 9/16" thick.  
 HEAD DESIGN: 2:1 ELLIPSOIDAL, 9/16" thick DIE ASSY. DWG.:  
 NOZZLE REINFORCEMENT: CALC. DWG.: 5-U-7835-A  
 WELD ATTACHMENTS: Continuous full width cradle pad. DWG.: 5-U-7728-A  
 TANK FIT ARRGT.: DWG.:  
 BRACKET ARRGT.: DWG.: 4-U-7771-B  
 REMARKS: Estimated lading capacity is 12,907 gal.  
 Estimated shell full capacity, including 2% outage of 263 gal. is 13,170 gal. Gauge table  
 required - outage and innage.

## FITTINGS

MANWAY ARRGT. DWG.: 5-U-7654-A OUTLET ARRGT. DWG.: None  
 MANWAY RING: 30" diam. studding flange with 22" dia. hole. DWG.: 4-U-7544-A  
 MANWAY COVER: 30" dia. CS with 10" dia. hole closed with 10" 300# blind flange (ASTM  
 A105). Apply lifting lug to flange. DWG.: 4-U-7603-A  
 \* SAFETY VALVE: 255 lbs. Midland 17255-P flat face with surge protection. DWG.: 3-U-7584-A  
 BOTTOM OUTLET VALVE: None  
 CHAMBER: None DWG.:  
 SUMP: Low profile machined. DWG.: 3-U-4746  
 WATER OUTLET: (2) 2" Tuflin 0367-FSTS-WCB/316-WO, CS body, SS plug, fire safe, flanged  
 plug valves. Valves closed with a screwed flange and 2" plug, chain and bar swivel.  
DWG.: 5-U-7612-A  
 TELLTALE DEVICE: None  
 END WASHOUT: Car equipped w/two 10" I.D. 300# rated, CS, studding flanges closed with  
 blind flanges. Apply lifting lugs to flanges. DWG.: 4-U-7556-A  
 SIPHON: 3" Sch. 80 CS pipe & flange with 3" Tuflin 0367-FSTS-WCB/316-WO, CS body, SS  
 plug, fire safe flanged plug valve. The siphon pipe and siphon valve are not to be  
 mounted by the same studs. Valve closed with a screwed flange and 3" plug, chain and bar  
 swivel. DWG.: 5-U-7629-A  
 AIR INLET: None DWG.:  
 VACUUM RELIEF VALVE: None DWG.:  
 GAUGING DEVICE: 3" Sch. 80 CS flanged pipe extending thru a 3 3/4" dia. hole in the  
 studding flange to 2% outage closed with a 3" Tuflin 0367-FSTS-WCB/316-WO, CS body, SS  
 plug, fire safe flanged plug valve closed with a screwed flange and a 3" plug, chain and  
 bar swivel. DWG.: 5-U-7629-A  
 THERMOMETER WELL: None DWG.:  
 REMARKS: All gaskets JM 986 (EPDM). Provide surge protection under safety valve. A  
 siphon cluster to consist of the siphon and gauging device mounted on a 30" dia. CS  
 studding flg. A water cluster to consist of (2) water outlets and a 3" dia. inspection  
 port hole closed with a 3" 300# CS blind flg., all mounted on a 25" dia. CS studding flg.  
 Protective housings for "siphon cluster" and "water cluster" are to be hinged on both  
 sides and allow for transverse opening to either side.

## MOUNTINGS

TANK CRADLE PADS: None  
 TANK BANDS OR HOLDDOWN RODS: None

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**SAFETY PLATFORM:** ACF 2-level with two full length side walkways, outside handrails and end ladders. End ladders to be straight not contoured to head. DWG.: 5-U-7812-A  
**DRIP LEDGE:** To be applied around fittings area with 2" Sch 40 C.S. discharge pipe at centerline of car. Flatten pipe ends fat bottom.  
**REMARKS:** Anti skid coating applied to jacket surface within platform area.  
**HANDRAIL APPLN.:** DWG.: 5-U-7796-A

## UNDERFRAME

**TYPE:** ACF Special Stub Sill (3'-0" longer inboard, 5'-5 1/8" overhang. DWG.: 5-U-7209-03-A  
**LENGTH OVER STRIKERS:** 41'-5" **WIDTH OVER END BDS.:** 10'-0"  
**TRUCK CENTERS:** 30'-6 3/4" **COUPLER HEIGHTS:** 2'-10 1/2"  
**CENTER PLATE ASSY.:** DWG.: 3-U-3150-B  
**CENTER SILL:** 12 15/16" @ 41.2#/ft CZ-13 sections, ASTM A572, Gr. 50, Ty. 2 modified to 70,000 PSI minimum tensile.  
**ANCHORAGE CALCULATION:** DWG.: 5-U-7741-A  
**STRIKER:** Fabricated DWG.:  
**DRAFT GEAR:** AAR M-901-E CW Mark H-60 **DFT. GEAR ARRGT.** DWG.: 5-U-3140-A  
**COUPLER:** AAR SE60DE  
**COUPLER YOKE:** AAR SY40AE  
**UNCOUPLING DEVICE:** ACF DWG.: 3-U-0792-A  
**AIR BRAKE:** ABDX 8 1/2" x 12" ABU body mounted system. **END DWG.:** 5-U-7547-A  
**CTR DWG.:** 5-U-7792-A  
**BRAKE REGULATOR:** AAR Group E  
**BODY BRAKE LEVERS:** ACF  
**HAND BRAKE:** AAR 1993 vertical wheel with No. 66 bellcrank DWG.: 4-U-3146-B  
**BODY BOLSTER:** 140° single 5/8" thk web with 7/8" thk bottom cover weldment.  
**END ARRGT.:** "A" End DWG.: 5-U-4354-00-01-B  
**END ARRGT.:** "B" End DWG.: 5-U-7625-A  
**END RUNNING BOARDS:** Galvanized DWG.: 5-U-7624-A  
**BODY CENTER PLATE:** 16" dia. low profile. DWG.: 3-U-0791-00 & 01-C  
**REMARKS:** Lifting provisions at bolsters.

## TRUCKS

**TYPE:** 100-Ton Ride Control with 5'-10" wheel base & 3 11/16" spring travel. DWG.: 5-U-3259-B  
**WHEEL TYPE:** 36" dia. 1-wear cast steel CH-36 or H-36 Class C.  
**AXLE:** 6 1/2" x 12" **SPECS.:** AAR M101 **TYPE:** Class F  
**JOURNAL BEARINGS:** Roller type.  
**SIDE FRAMES:** Cast steel Gr. B, narrow jaw pedestal.  
**BOLSTERS:** Cast steel Gr. B  
**SIDE BEARINGS:** Friction type.  
**SPRING GROUPING:** 9 outer and 6 inner D-5 coils per nest.  
**BRAKE BEAM:** AAR No. 18  
**BRAKE SHOE:** AAR H4 **KEY:** Lockey DWG.:  
**TRUCK LEVERS:** Schaefer **DEAD LEVER DWG.:** 1234  
**LIVE LEVER DWG.:** 3667-A  
**DWG.:** 1202-DB-8200  
**BOTTOM CONNECTION:** Schaefer, thru bolster.  
**REMARKS:**  
**MINIMUM CURVE CHARACTERISTICS:**  
A) ON CURVE & UNCOUPLED: (9° TRUCK SWING) 98 FT.  
B) COUPLED TO LIKE CAR - ONE ON CURVE & ONE ON TANGENT: 150 FT.  
C) COUPLED TO AAR 40' BASE CAR W/TANK CAR ON CURVE & BASE CAR ON TANGENT: 150 FT.