



ENGINEERING SPECIFICATIONS
TEXAS DIVISION

PLAINTIFF'S EXHIBIT

DOW-2390

PIPING SPEC 46-781
(R) DATE 8-15-81
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NITROGEN
150 PSIG MAX @ 100F

ITEM	SIZE	DESCRIPTION
N-213		1 PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ENGR SPEC 47-110
N-1		2 ALL 1/2 NPT NIPPLES USED FOR INSTRUMENT AND TEST CONNECTIONS SHALL BE HEAVY HEX CAP STOCK WITH A MINIMUM WALL THICKNESS OF 0.188 INCH, (0.400 I D)
N-13		3 ALL CARBON STEEL NIPPLES USED FOR DRAINS AND VENTS SHALL BE MINIMUM SCH 20.
N-4		4 ALL EXTERIOR SURFACES OF FIELD WELDS AND ALL EXPOSED THREADS SHALL BE COATED WITH ZRC, SEALUBE COMPANY OR GALVANEX TYPE 1, SUEDEX, INC. APPLICATION SHALL BE MADE AS SPECIFIED BY THE MANUFACTURER
NOTE		5 ALL GASEOUS NITROGEN TIE-INS TO THE DISTRIBUTION SYSTEM SHALL BE IN ACCORDANCE WITH DOW SAFETY STANDARD NO. 3
NOTE	(R)	6 WHEN BENT PIPE IS SPECIFIED, IT SHALL BE BENT IN ACCORDANCE WITH TEXAS DIVISION ENGINEERING SPECIFICATION 43-320
NOTE	(R)	7 WHEN A FLARED LAP, FOR LAP JOINT FLANGES IS SPECIFIED, IT SHALL BE FLARED IN ACCORDANCE WITH TEXAS DIVISION ENGINEERING SPECIFICATION 43-325
PIPE		
P-405	1/2 THRU 2	ASTM A-120, STD WEIGHT FURNACE BUTT WELD GALV STEEL PIPE
P-7	2 THRU 4	ASTM A-53 OR API-5L, SCH 40 CONTINUOUS FURNACE BUTT WELD STEEL PIPE.
P-65	2 THRU 4	ASTM A-587, SCH 40 ERW STEEL PIPE ALUMINUM KILLED, FLANGING AND BENDING QUALITY JRL FLAREWELD SPEC UL-PP, REPUBLIC SPEC ST-302, OHIO ERW OR BOW FLARE BEND
P-33W	6	ASTM A-53 OR API-5L OR 3, STD WEIGHT

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ITEM	SIZE	DESCRIPTION
		SEAMLESS OR ELECT WELD STEEL PIPE
P-43	8 THRU 12	ASTM A-53 OR API-5L GR B, 10.750 WALL SEAMLESS OR ELECT WELD STEEL PIPE
FITTINGS		
ELTX-20	1/2 THRU 2	150-LB THREADED GALV MALLEABLE IRON FITTINGS, ASTM A-197, ANSI B16.3
R-22	1/2 THRU 2	EX STRONG STEEL SWAGED NIPPLE, ASTM A-105 OR A-53 GR B, OR ASTM A-696 GR B OR C BARSTOCK, THREADED, BEVELED, PLAIN, OR ANY COMBINATION OF ENDS.
C-3	1/2 THRU 2	3000-LB THREADED FORGED STEEL COUPLING, ANSI B16.11, OR 3000-LB THREDOLET, ASTM A-105, FOR WELDING IN.
C-54	1/2 THRU 2	3000-LB THREADED FORGED STEEL NIPPLET, ASTM A-105, 3 1/2" LONG
C-55	1/2 THRU 2	150-LB THREADED GALV MALLEABLE IRON LINE COUPLING, ASTM A-197, ANSI B16.3
PC-220	1/2 THRU 2	150-LB THREADED GALV MALLEABLE IRON CAP, ASTM A-197, ANSI B16.3
PC-2	1/2 THRU 2	THREADED SOLID STEEL HEX HEAD PLUG, ASTM A-105, ANSI B16.11
U-80	1/2 THRU 2	150-LB THREADED GALV MALLEABLE IRON UNION ASTM A-197, BRASS SEAT
ELTR-152	2 THRU 12	STD WEIGHT SEAMLESS STEEL WELDING FITTINGS, ASTM A-234 GR WPB, ANSI B16.9
PC-512	2 THRU 12	STD WEIGHT SEAMLESS STEEL WELDING CAP, ASTM A-234 GR WPB, ANSI B16.9
E-18A	3 THRU 12	90 DEG TWO WELD MITER ELBOW, RADIUS TO BE 1 1/2 NOM PIPE DIA
L-122	3 THRU 12	45 DEG SINGLE WELD MITER ELBOW
N-52A		REDUCING FLANGES SHALL BE SLIP-ON TYPE
N-52C		REDUCING FLANGES SHALL BE THREADED TYPE

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ITEM	SIZE	DESCRIPTION
FLANGES		
F-19G-RF	1/2 THRU 2	150-LB GALV RAISED FACE THREADED FLANGE, ASTM A-105, ANSI B16.5
F-2	2 THRU 4	150-LB LAP JOINT FLANGE, ASTM A-105, ANSI B16.5.
F-1-RF	2 THRU 12	150-LB RAISED FACE SLIP-ON FLANGE, ASTM A-105, ANSI B16.5.
F-24-RF	2 THRU 12	150-LB RAISED FACE WELDING NECK FLANGE, ASTM A-105, ANSI B16.5, SORE TO MATCH WELDING FITTINGS.
F-3-RF	1/2 THRU 12	150-LB RAISED FACE BLIND FLANGE, ASTM A-105, ANSI B16.5.
BRANCH CONNECTIONS		
BC-2S		FOR THREADED PIPING, USE STRAIGHT SIZE OR REDUCING TEE. WHEN BRANCH IS SMALLER THAN HEADER, A NIPPLE AND REDUCING COUPLING OR SWAGED NIPPLE MAY BE USED.
BC-16W		FOR WELDED PIPING, BRANCH LINES SHALL BE WELDED IN WITHOUT REINFORCEMENT REGARDLESS OF SIZE COMBINATION. FOR THREADED BRANCH CONNECTION, USE 3000-LB FULL COUPLING, THREDOLET, OR NIPOLET WELDED TO HEADER.
GASKETS		
G-9		STD FLAT RING GASKET, 1/16 INCH THICK ASBESTOS WITH SILICON RELEASING AGENT, JM-60, GARLOCK 7021 OR NIDOLET 225 OR 245
G-2A		STD FLAT RING GASKET, 1/8 INCH THICK ASBESTOS WITH SILICON RELEASING AGENT, JM-60, GARLOCK 7021 OR NIDOLET 225 OR 245
N-206		USE 1/8 INCH GASKET WHERE POSSIBLE.
JOINT COMPOUND		
JO-15		TEFLON TAPE 1/2 INCH BY 3 MIL THICKNESS.
JO-19		LIQUID-O-RING LUBON 404 OR SLICK SEAL NO. 2 THREAD SEAL.

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TERRAS DIVISION

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ITEM	SIDE	DESCRIPTION
FL-21		FEL PRO 05-A
FL-22		JET-LUBE 99-30 COPPER ANTI-SEIZE COMPOUND
FLANGE BOLTS		
SH-30720		ASTM A-307 GR. B HEAVY HEX OR SQUARE HEAD GALV MACHINE BOLTS WITH HEAVY HEX GALV W/LS
W-231		APPLY BOLT LUBRICANT TO THE FULL LENGTH OF THREADS.
BOLT LUBRICANT		
BL-2		FEL PRO 05-A
BL-5		JET-LUBE 99-30 COPPER ANTI-SEIZE COMPOUND
VALVES		
V-713	1/2 THRU 2	500-LB SCREWED BRONZE BALL VALVE, SUNA-N SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR
V-665	1/2 THRU 2	500-LB SCREWED CARBON STEEL BALL VALVE TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR
V-657	2 THRU 6	150-LB FLANGED DUCTILE IRON BALL VALVE TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR
V-737	2 THRU 6	150-LB FLANGED STEEL BALL VALVE, TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR
V-740	4 THRU 6	150-LB TAPPED LUG TYPE BUTTERFLY VALVE DUCTILE IRON BODY, STAINLESS STEEL STEM ALUM. BRONZE DISC SUNA-N SEAT, THROTTLING LEVER HANDLE.

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TEXAS DIVISION

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ITEM	SIZE	DESCRIPTION
V-740G	8 THRU 12	150-LB TAPPED LUG TYPE BUTTERFLY VALVE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUM. BRONZE DISC BUNA-N SEAT, WEATHERPROOF GEAR OPERATOR.
V-836	1/2 THRU 2	1500-LB SOREWED IN-LINE CHECK VALVE, BRASS BODY AND PISTON, BUNA-N SEAL AND SEAT RING, 302 STAINLESS STEEL SPRING, FEMALE ENDS
V-409E	1/2 THRU 2	1000-LB SOREWED IN-LINE CHECK VALVE, BRASS BODY AND PISTON, 316 STAINLESS STEEL SPRING, BUNA-N SEAT.
V-646	2 THRU 12	150-LB FLANGED HORIZONTAL SWING CHECK VALVE, DUCTILE IRON BODY, 13 CHROME ALLOY STEEL TRIM
V-671	2 THRU 4	150-LB FLANGED PLUG VALVE, DUCTILE IRON BODY AND PLUG, TEFLON SLEEVE, WRENCH OPERATED
V-671A	6 THRU 12	150-LB FLANGED PLUG VALVE, DUCTILE IRON BODY AND PLUG, TEFLON SLEEVE, WEATHERPROOF GEAR OPERATES

ST0404980



DOW CHEMICAL U.S.A.

TEXAS DIVISION
FREEPORT, TEXAS 77541

DATE: 6-26-81

TO: B. H. Howard

BLDG. B-2401

Attached is a copy of Engineering Specification, 46-731

which is in form for issuing.

If this specification meets your approval, please sign below and return.

In order to meet our projected issue deadline this copy MUST be returned
by July 1, 1981, to Lana Hendershott at B-2401.

APPROVED: B. H. H. DATE: 6-29-81

APPROVED AS MARKED: _____ DATE: _____

Lana

Lana Hendershott
Engineering Specifications
B-2401
Phone: 1641

JCS ?

ST0404975

AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



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