

NATIONAL DISTILLERS
POLYETHYLENE PROCESS

EXCHANGER SPECIFICATIONS

PAGE 5
DATE Oct. 1972

C-1 6/14/73

GENERAL

DESCRIPTION	Secondary Compressor Intercooler	ITEM NO	E-207
SERVICE	Continuous	TYPE	Double Pipe
SURFACE PER SHELL	23.038 sq ft	No. of SHELLS	42 (3)
		TOTAL SURFACE	930 sq ft (3)

PERFORMANCE OF TOTAL SURFACE

	SHELL SIDE		TUBE SIDE	
FLUID CIRCULATED	Cooling Water		Ethylene	
TOTAL FLUID ENTERING	264,707	LB/HR	88,900	LB/HR
VAPOR		LB/HR		LB/HR
LIQUID	264,707	LB/HR	88,900	LB/HR
NON-CONDENSABLES		LB/HR		LB/HR
FLUID VAPORIZED OR CONDENSED		LB/HR		LB/HR
DENSITY ENTERING	62.2	LB/CU FT	31.8	LB/CU FT
DENSITY LEAVING	62.0	LB/CU FT		LB/CU FT
SPECIFIC HEAT		BTU/LB X °F	.592	BTU/LB X °F
VISCOSITY LIQUID	0.76	C.P	.140	C.P
TEMPERATURE ENTERING	83	°F	196	°F
TEMPERATURE LEAVING	102.09	°F	100	°F
OPERATING PRESSURE	50	PSIG	16,266	PSIG
NUMBER OF PASSES	3 parallel x 7+7 series		3 parallel x 14 series (3)	
VELOCITY	8.36	FT/SEC	21.09	FT/SEC
PRESSURE DROP	10.0	PSIG	180.22	PSIG
FOULING RESISTANCE (1)	0.002		0.0010 (I.D. Basis)	
HEAT EXCHANGED	5,053,263	BTU/HR	MTD CORRECTED 45	°F
TRANSFER COEFFICIENT	SERVICE 120	BTU/HR/°F/SQ FT	CALCULATED 130	BTU/HR/°F/SQ FT

CONSTRUCTION

DESIGN PRESSURE	100	PSIG	25,000	PSIG
TEST PRESSURE	150	PSIG	37,500	PSIG
DESIGN TEMPERATURE	500	°F	400	°F
CORROSION ALLOWANCE	0.05"		0.05"	
TUBES, MATERIAL	AISI 4340	NUMBER 42	LENGTH 34'-0" U Bend	
	OD 2-5/8" x 1.50" I.D.	WALL .5625" wall	PITCH	
SHELL, O.D.	4.500" x 4.026" I.D.	THICKNESS 0.237"	MATERIAL Carbon Steel	
SEAMS		EXP JOINT	IMPINGEMENT BAFFLE	
BASE TYPE	Tube Jacket	NUMBER	SPACING	
MATERIAL	Copper	THICKNESS .0625"	OPENING	
TUBE SHEETS, MATERIAL		THICKNESS	HOLE GROOVING	
CHANNELS, MATERIAL		THICKNESS	JOINT	
COVERS, MATERIAL		THICKNESS	JOINT	
GASKET MATERIAL		ESTIMATED WEIGHT EMPTY		

	SHELL SIDE	TUBE SIDE
CONNECTIONS		
INLET	3" - 150# ASA, RF	Cone Ring
OUTLET	3" - 150# ASA, RF	Cone Ring
VENT		
DRAIN		
THERMOMETER		
PRESSURE		

REMARKS: MANUFACTURER SHALL GUARANTEE THAT SURFACE OFFERED WILL MEET OPERATING CONDITIONS SHOWN
(1) Backed out total outside fouling resistance is .00833 based on O.D. of clad tube.

(3) Note 3 parallel x 14 series (gas) is satisfactory based on
USI Europe summer experience with U_o service = 130 BTU/HR/°F/sq ft

THE USE HEREIN OF WORDS OR IN PART OF ANY INFORMATION CONTAINED HEREIN IS STRICTLY LIMITED TO THE ISSUES AND PROVISIONS OF THE LICENSE AGREEMENT WITH NATIONAL DISTILLERS AND CHEMICAL CORPORATION IN NEW YORK, NEW YORK, N.Y., U.S.A. WITHOUT PROVIDING REASONING DETAIL AND CONFIDENTIALITY TREATMENT AND OTHER TERMS.
THE INCLUSION OF INFORMATION HEREIN DOES NOT NECESSARILY REPRESENT OR IMPLY THE ENDORSEMENT OR RECOMMENDATION OF NATIONAL DISTILLERS AND CHEMICAL CORPORATION IN THE UNITED STATES