



ICIC

شرکت سرمایه‌گذاری صنایع شیمیایی ایران
IRAN CHEMICAL INDUSTRIES INVESTMENT CO

Completing the Remaining Documents of
Design and Engineering Services for LAB2 Unit

**PROCESS CONTROL BUILDING NO.03 HVAC
MATERIAL TAKE OFF**



شرکت طرح نواندیشان

Contract No.: 6258

LRP

TNA

HV

19

MTO

0002

03

OLD Doc No.: ---

Doc No. :

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TAKE OFF**

03	23-JAN-2024	Issued for Information	H.R	H.R	AR. AHOOEI
02	18-NOV-2023	Issued for Information	H.R	H.R	AR. AHOOEI
01	29-JUL-2023	Issued for Information	H.R	H.R	AR. AHOOEI
00	12-May-2023	Issued for Information	H.R	H.R	AR. AHOOEI
REV	DATE	POI	Prepared By	Checked By	Approved By

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1 INTRODUCTION

Iran Chemical Industries Investment Company (ICIIC) was established in 1984. The executive operation in the area of 3,420,000 square meters in the northwest industrial region of Isfahan began in 1990 to create a Linear Alkyl Benzene (LAB) Complex with 50,000 tons of LAB and 46,000 tons of normal paraffin capacity.

With the increase in domestic consumption and also the improvement of the consumer market in the region, the implementation of the company's development plan for the annual production of 75,000 tons of linear alkyl benzene and 140,000 tons of normal paraffin was strengthened. Utilizing the existing knowledge and applying the scientific and experimental skills of the specialized forces, this company succeeded in successfully completing its development plan in 2003. Iran Chemical Industries Investment Company to reduce the production of Heavy Alkylate By-product (HAB) and also to improve the quality and increase the production of alkyl benzene line (LAB) in cooperation with Sinopec company to successfully operate the selective Hydrogenation of Dyalphins (DSH) in 2008.

2 PURPOSE

The purpose of this document is to list all materials of the heating, ventilation and air conditioning and plumbing system, to serve PROCESS CONTROL BUILDING NO.03 OF "LAB2 UNIT" in SHAHIN-SHAHR , ISFAHAN , IRAN:

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3 BULK MATERIAL TAKE OFF

NO	DESCRIPTION	UNIT	Q'TY	REMARK
1	DUCT WORK			
1.1	SHEET METAL			
	GALVANIZED STEEL SHEET METAL, ASTM A653M, COATING ZZ75, ASTM A924M THICKNESS = 0.6 MM	m ²	350	
	GALVANIZED STEEL SHEET METAL, ASTM A653M, COATING ZZ75, ASTM A924M THICKNESS = 0.75 MM	m ²	220	
1.2	INSULATION			
	Glass wool with aluminum foil covering for supply & return indoor duct insulation ,with 25 mm thickness , glass wool with 24 kg/m ³ density minimum having thermal conductivity of 0.036 w/mk or less at mean temperature of 24°c with aluminum foil reinforced craft facing.	m ²	470	
1.3	WEATHER PROTECTION			
	ALUMINIUM SHEET FOR WEATHER PROTECTION OF OUTDOOR INSULATION, 0.4 MM. THICKNESS.	m ²	50	
1.4	FLEX CONNECTION			
	PVC FABRIC ON CANVAS FOR ROOF TOP PACKAGED UNIT'S DUCTS CONNECTIONS	m ²	30	
1.5	AIR DEVICE			
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 750MM X 600 MM	QTY	4	
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 300 MM X 150 MM	QTY	1	
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 600 MM X 450 MMM	QTY	1	
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 450 MM X 450 MM	QTY	1	
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 300 MM X 300 MM	QTY	6	
	4WAY ALUMINIUM SQUARE DIFFUSER WITH DAMPER 375 MM X 375 MM	QTY	2	

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NO	DESCRIPTION	UNIT	Q'TY	REMARK
	ALUMINIUM EXHAUST GRILLE 450 MM X 300 MM	QTY	4	
	ALUMINIUM EXHAUST GRILLE 300 MM X 300 MM	QTY	1	
	ALUMINIUM EXHAUST GRILLE 300 MM X 150 MM	QTY	9	
	ALUMINIUM RETURN GRILLE 900 MM X 450 MM	QTY	4	
	ALUMINIUM RETURN GRILLE 450 MM X 300 MM	QTY	1	
1.6	DOOR GRILLE			
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINUM, WITH FIXED BAR 750 MM X 400 MM	QTY	1	
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINUM, WITH FIXED BAR 450 MM X 200 MM	QTY	4	
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINIUM, WITH FIXED BAR 450MM X 250 MM	QTY	1	
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINIUM, WITH FIXED BAR 300 MM X 150 MM	QTY	1	
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINIUM, WITH FIXED BAR 750 MM X 500 MM	QTY	2	
	DOOR GRILLE, FABRICATED OF EXTRUDED ALUMINIUM, WITH FIXED BAR 600 MM X 400 MM	QTY	2	
1.7	SAND TRAP			
	ALUMINIUM SAND TRAP LOUVER 1.5 mm thickness 1500 MM X 1500 MM	QTY	1	
	ALUMINIUM SAND TRAP LOUVER 1.5 mm thickness 750 MM X 450 MM	QTY	1	
1.8	VOLUME DAMPER			
	VOLUME DAMPER, OPPOSED BLADE, DAMPER CASING & BLADE FABRICATED OF 1.6MM STEEL 400 MM X 200 MM	QTY	1	
	VOLUME DAMPER, OPPOSED BLADE, DAMPER CASING & BLADE FABRICATED OF 1.6MM STEEL 1000 MM X 650 MM	QTY	1	

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NO	DESCRIPTION	UNIT	Q'TY	REMARK
	VOLUME DAMPER, OPPOSED BLADE, DAMPER CASING & BLADE FABRICATED OF 1.6MM STEEL 600 MM X 350 MM	QTY	1	
1.9	MOTORIZED DAMPER			
	MOTORIZED DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION (DIMENSIONS SHALL BE SUPPLY BY VENDOR)	QTY	5	
1.10	MOTORIZED FIRE DAMPER			
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION) 1000 MM X 650 MM	QTY	1	
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION) 600 MM X 350 MM	QTY	1	
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION) 1000 MM X 600 MM	QTY	1	
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT	QTY	1	

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NO	DESCRIPTION	UNIT	Q'TY	REMARK
	SPECIFICATION) 650 MM X 500 MM			
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION) 450 MM X 375 MM	QTY	2	
	MOTORIZED FIRE DAMPER, FRAMES AND BLADES FABRICATED OF HOT DIPPED GALVANIZED, ACTUATED WITH FUSIBLE LINK WHICH SHALL BE SET FOR 70 DEG C AND LEAKAGE RATE SHALL NOT EXCEED 0.03 M3/S.M2 AREA OF DAMPER AT 2000 Pa DIFFERENTIAL PRESSURE. (ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION) 700 MM X 500 MM	QTY	1	
1.11	BLAST DAMPER			
	BLAST DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION 1500 MM X 1500 MM	QTY	1	
	BLAST DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION 750 MM X 450 MM	QTY	1	
	BLAST DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION 650 MM X 500 MM	QTY	1	
	BLAST DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION 450 MM X 375 MM	QTY	2	
	BLAST DAMPER, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION 700 MM X 500MM	QTY	1	
1.12	DUCT SUPPORT			
	DUCT SUPPORT	KG	1600	
2	PLUMBING			
2.1	PIPE			
	PEX-AL-PEX, ANSI/ASTM F1281/F2262 20 mm	m	100	

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	PEX-AL-PEX, ANSI/ASTM F1281/F2262 25 mm	m	40	
	PEX-AL-PEX, ANSI/ASTM F1281/F2262 32 mm	m	45	
	PEX-AL-PEX, ANSI/ASTM F1281/F2262 40 mm	m	25	
	HOT-DIPPED GALVANIZED ACCORDING TO STANDARD ASTM/ANSI A-53-3/4"	m	10	
	HOT-DIPPED GALVANIZED ACCORDING TO STANDARD ASTM/ANSI A-53-1"	m	5	
	HOT-DIPPED GALVANIZED ACCORDING TO STANDARD ASTM/ANSI A-53-1,1/4"	m	35	
	HOT-DIPPED GALVANIZED ACCORDING TO STANDARD ASTM/ANSI A-53-1,1/2"	m	20	
2.2	PIPE INSULATION			
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 20mm PIPE	m	48	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 25mm PIPE	m	10	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 32mm PIPE	m	7	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 3/4" PIPE	m	10	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 1" PIPE	m	5	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 1,1/4" PIPE	m	15	
2.3	PLUMBING APPURTENANCES			
	CHROMIUM ISOLATION VALVE,3/8" DIAMETER	QTY	17	
	FLOOR DRAIN, PVC, SQUARE SHAPE, WITH SIPHON 10x10 CM, WITH PVC PLATE AND SIPHON, 3" DIA. DISCHARGE	QTY	8	
	FLOOR DRAIN, PVC, SQUARE SHAPE, WITH SIPHON 15x15 CM, WITH PVC PLATE AND SIPHON, 4" DIA. DISCHARGE	QTY	1	
	RAIN DRAIN, CAST IRON, SQUARE SHAPE, WITH SIPHON 15x15 CM, WITH PVC PLATE AND SIPHON, 4" DIA. DISCHARGE	QTY	4	
	LAVATORY WITH 1/2" CHROMIUM MIXING VALVE BOWL MOUNTED, 3/8" CHROMIUM	QTY	2	

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	ISOLATION VALVES, SIPHON AND OTHER ACCESSORIES			
	EASTERN WATER CLOSET WITH PVC FLUSH TANK, 1/2" CHROMIUM MIXING VALVE WALL MOUNTED WITH HOSE, 3/8" CHROMIUM ISOLATION VALVES AND OTHER ACCESSORIES	QTY	4	
	WESTERN WATER CLOSET WITH 1/2" CHROMIUM MIXING VALVE WALL MOUNTED WITH HOSE, 3/8" CHROMIUM ISOLATION VALVES AND OTHER ACCESSORIES	QTY	1	
	PANTRY SINK FABRICATED OF STAINLESS-STEEL SHEET DOUBLE BOWL WITH 1/2" CHROMIUM MIXING VALVE 3/8" CHROMIUM ISOLATION VALVES SIPHON AND OTHER ACCESSORIES	QTY	1	
	SHOWER WITH 1/2" FLEXIBLE HOSE.	QTY	2	
	JANITOR CLOSET PVC TYPE WITH 1/2" WALL MOUNTED MIXING VALVE, SIPHON AND OTHER ACCESSORIES	QTY	1	
	FLOOR CLEAN OUT 4"	QTY	2	
2.4	PIPE SUPPORT			
	PIPE SUPPORT	KG	250	
3	HVAC PIPING			
3.1	PIPE			
	BLACK STEEL PIPE, ASTM A53 ,1"	m	30	
	BLACK STEEL PIPE, ASTM A53 ,1-1/4"	m	5	
	BLACK STEEL PIPE, ASTM A53 ,1-1/2"	m	150	
	BLACK STEEL PIPE, ASTM A53 , 2"	m	10	
	BLACK STEEL PIPE, ASTM A53 ,2-1/2"	m	10	
	BLACK STEEL PIPE, ASTM A53 3"	m	10	
3.5	3WAY MOTORIZED VALVE			
	3WAY MOTORIZED VALVE, ACCORDING TO THE HVAC EQUIPMENT SPECIFICATION (DIMENSIONS SHALL BE SUPPLY BY VENDOR)	QTY	3	
3.6	PIPE INSULATION			

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NO	DESCRIPTION	UNIT	Q'TY	REMARK
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 1" PIPE	m	30	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 1-1/2" PIPE	m	5	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 1-1/2" PIPE	m	150	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 2" PIPE	m	10	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 2-1/2" PIPE	m	10	
	25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING. 3" PIPE	m	10	
3.7	PIPE SUPPORT			
	PIPE SUPPORT	KG	200	
4	SEWAGE			
4.1	PIPE			
	UPVC pipes Schedule 80, ASTM D1785 or PE (polyethylene) O.D.=63 mm	m	85	
	UPVC pipes Schedule 80, ASTM D1785 or PE (polyethylene) O.D.=90 mm	m	75	
	UPVC pipes Schedule 80, ASTM D1785 or PE (polyethylene) O.D.=110 mm	m	80	
4.2	PIPE SUPPORT			
	PIPE SUPPORT	KG	60	
5	VALVES			
5.1	GATE VALVE			
	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1/2"	QTY	3	
	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 3/4"	QTY	6	
	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1"	QTY	11	

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	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1,1/4"	QTY	2	
	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1,1/2"	QTY	13	
	GATE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 2,1/2"	QTY	4	
5.2	CHECK VALVE			
	CHECK VALVE, BRONZE BODY, THREADED END, CLASS 150LB 3/4"	QTY	4	
	CHECK VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1"	QTY	2	
	CHECK VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1,1/4"	QTY	1	
	CHECK VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1,1/2"	QTY	4	
	CHECK VALVE, BRONZE BODY, THREADED END, CLASS 150LB 2,1/2"	QTY	2	
5.3	GLOBEVALVE			
	GLOBE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1/2"	QTY	4	
	GLOBE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 3/4"	QTY	4	
	GLOBE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1"	QTY	6	
	GLOBE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1,1/2"	QTY	8	
	GLOBE VALVE, BRONZE BODY, THREADED END, CLASS 150LB 2,1/2"	QTY	2	
5.4	BALL VALVE			
	BALL VALVE, BRONZE BODY, THREADED END, CLASS 150LB 1/2"	QTY	22	