



APCO

2008



ARKAN PARS
HASHTROOD CO.

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Arkan Pars refinery, the first private refinery with a capacity of 15000 BPD in Iran, was founded in 2008. This refinery is capable of manufacturing several types of oil products under API American standards. This company won the civil tenders in the construction of units of refinery among other companies in the same field. It provides A to Z services for projects in the different oil fields such as refinery, chemical etc. in nations like Afghanistan, Pakistan, and Turkey and so on.

About Company

APCO can accomplish different projects in various fields of refinery industries by utilizing its management capabilities and engineer's technical experience. APCO has pursued some unique processes in exploiting the refinery.

1

Background

APCO established by using the same modern processes. This company exports its products with higher quality and reasonable price to Middle East. Arkan Pars Co. will expand the number of phases of refinery and develop the production process soon.

Company Vision

PIC

OF THE REFINERY

2



Arkan Pars Hashtrood refinery with a capacity of 15000 BPD

Products

Heavy & Light
Hydrocarbon

Solvent 402

Solvent 404

Thinner

Solvent 406

Industrial
Lubricant

Jet Fuel

3

White spirit solvents are hydrocarbon compounds that are produced from cutting kerosene. These materials have aromatic and linear hydrocarbon compounds. These compounds cause to have special fragrant and properties. Based on the percent of aromatic compounds, these materials split into two categories of high & low aromatic. White spirit is colorless and a mixture of 7 to 12 aliphatic and cyclic aliphatic hydrocarbons with a very low solubility in water and an odor threshold between 0.5 to 5 mg/m³. White spirits are mainly used as extraction solvents, diluents, detergents, carriers of additives and raw materials in many industries such as paint-resin, varnish, adhesive, thinner, wire, waxes and polishes. This material due to its special properties is used for cleaning oils from the surface of metals, greases, carbon etc.

Row	Properties	Unit	Limit	Test Method
1	Appearance	-	homogenous	-
2	Density @ 15 °C	kg/m ³	785	ASTM D 1298
3	Distillation:			ASTM D 86
4	I.B.P	°C	152	ASTM D 86
5	10% Evaporated @	°C	160.5	ASTM D 86
6	20% Evaporated @	°C	161.5	ASTM D 86
7	30% Evaporated @	°C	162.5	ASTM D 86
8	40% Evaporated @	°C	164.5	ASTM D 86
9	50% Evaporated @	°C	166.5	ASTM D 86
10	60% Evaporated @	°C	169	ASTM D 86
11	70% Evaporated @	°C	173	ASTM D 86
12	80% Evaporated @	°C	180	ASTM D 86
13	90% Evaporated @	°C	201	ASTM D 86
14	95% Evaporated @	°C	230	ASTM D 86
15	F.B.P	°C	252	ASTM D 86
16	Recovery	ml	99	ASTM D 86
17	Residue	ml	0.7	ASTM D 86
18	Loss	ml	0.3	-
19	Color	-	<0.5	ASTM D 155
20	Flash Point	°C	42	ASTM D 56
21	Corrosion-3hrs @ 100 °C	-	1a	ASTM D 130
22	Sulphur Total	wt%	0.108	ASTM D 1265
23	Mercaptan	p.p.m	60.8	-



Solvent 404

Solvent 404 is divided into two categories such as Aliphatic, and Aromatic (Benzene, toluene, xylene, etc.). In general, these solvents are extracted from crude oil. These solvents can be used in different fields. For instance, linear paraffin has a low viscosity, while branched paraffin has high viscosity and good low-temperature properties. The combination of these solvents with normal viscosity and low temperature provides us normal temperature.

The uses of solvent 406

1. Producing paints and polishes 2. Cleaning the grease from the surface of metals 3. Producing wood antibacterial material 4. Used in preparing bitumen and production of car tires 5. Cleaning solution for industrial equipment and machines.

Row	Properties	Unit	Limit	Test Method
1	Density @ 15 °C	kg/m ³	Report	ASTM D 1298
2	Distillation:			ASTM D 86
3	I.B.P	°C	60 min	ASTM D 86
4	50% Recovered @	°C	82-108	ASTM D 86
5	90% Recovered @	°C	101-119	ASTM D 86
6	Dry Point	°C	143 max	ASTM D 86
7	Recovery	-	98 min	ASTM D 1500
8	Loss	°C	1 max	ASTM D 93
9	Color Saybolt	-	25 min	ASTM D 156
10	Odour	-	Merchantable	-
11	Corrosion-3hrs @ 50 °C	-	1a	ASTM D 130
12	Sulphur Total	wt%	0.05 max	ASTM D 1266
13	Doctor Test	-	Negative	ASTM D 4952
14	Aromatic Content	Vol%	report	ASTM D 1319

Row	Properties	Unit	Limit	Test Method
1	Density @ 15 °C	kg/m ³	Report	ASTM D 1298
2	Distillation:			ASTM D 86
3	I.B.P	°C	62 min	ASTM D 86
4	50% Recovered @	°C	63-71	ASTM D 86
5	90% Recovered @	°C	64-74	ASTM D 86
6	Dry Point	°C	80 max	ASTM D 86
7	Recovery	-	98 min	ASTM D 86
8	Loss	°C	1 max	ASTM D 86
9	Color Saybolt	wt%	25 min	ASTM D 156
10	Odour	-	Merchantable	-
11	Corrosion-3hrs @ 50 °C	°C	1a	ASTM D 130
12	Sulphur Total	wt%	0.05 max	ASTM D 1266
13	Doctor Test	-	Negative	ASTM D 4952
14	Aromatic Content	vol%	7 max	ASTM D 1319

Solvent 406

These materials are fall into two categories as Aliphatic, and Aromatic (Benzene, toluene, xylene, etc.).

The uses of solvent 406 are as same as solvent 404

A collection of open paint cans in various colors (purple, yellow, red, green, orange, blue) with a paintbrush resting in the red can. The word "Thinner" is written in a bold, black, serif font in the upper center of the image.

Thinner

Thinner

Thinners are volatile chemical liquids which are used in diluting paints. This liquid can improve color properties. These materials have a crucial role in color properties, and the time of drying. A right selection of thinner impacts viscosity, cutting properties, separability, drying time, and other properties.

Thinners can be used in cleaning tools and equipment. In order to decrease the viscosity of thinners, these materials are combined with paints to use in paint applicators. Another use of thinner is that it prevents paints from drying after their door is opened.

Row	Properties	Unit	Limit	Test Method
1	Density @ 15 °C	kg/m ³	Report	ASTM D 1298
2	Distillation:			ASTM D 86
3	10% Evaporated @	°C	65 max	ASTM D 86
4	50% Evaporated @	°C	115 max	ASTM D 86
5	90% Evaporated @	°C	180 max	ASTM D 86
6	F.B.P	°C	205 max	ASTM D 86
7	Residue	vol%	2 max	ASTM D 86
8	Loss	vol%	Report	ASTM D 156
9	Sulphur Total	wt%	0.1 max	ASTM D 1266
10	Corrosion 3hrs @ 50 °C	-	1a	ASTM D 130
11	Vapor Pressure, Reid@ 37.8 °C	kpa	-	ASTM D 323
12	Gum Content (AIR JET)	mg/100ml	4 max	ASTM D 381
13	Induction Period@ 100 °C	mins	480 min	ASTM D 525
14	Color (Lovi Bond)	-	Red (1.0 kg/1000m ³)	IP 17
15	Metallic Lead	g/lit	0.013 max	ASTM D 3341
16	Octane Number (Research)	-	87 min	ASTM D 2699
17	Mercaptan Content	ppm	5 max	ASTM D 3227
18	MTBE	% m/m	report	-
19	Oxygen	wt%	2.7 max	-

Industrial Lubricant

Lubricants are kinds of materials which are used for reducing friction and exhaustion of dynamic metal parts in contact with one another. Accordingly, a subtle layer of lubricant which is called the viscosity of the lubricant is generated between the parts of machines. Each lubricant consists of a basic substance to which several additives are added. This substance can be mineral (with petroleum source) or synthetic (such as polyolefin, polyesters, and polyethylene glycols). Mineral bases are usually vacuuming distillation products and asphalt residues that have been subjected to solvent extraction, waxing, and refining.

The benefits of lubricants

These materials are useful to make sure of correct movement of parts of a machine. The primary role of these industrial substances is to reduce The friction of surfaces of machines, and durability and enhance their longevity. Since, we know that friction produces heat, lubricants cause to transfer heat from the surface from the surface of machines and also helps in cooling process. Due to this, this group of substances is also called heat transfer fluids.



Industrial Lubricant

Row	Properties	Unit	Result	Test Method		
1	Appearance	-	Homogeneous	-		
2	Density @ 15.6 °C	gr/cm ³	0.8389(+/- 5%)	ISIRI 197	ASTM D1298	
3	Flash Point	°C	49 (+/-5%)	ISIRI 19695	ASTM D93	
4	Colour	-	2<3	ISIRI 203	ASTM D1500	
5	Viscosity Kin 40 °C	mm ² /s	5.069(+/-5%)	ISIRI 340	ASTM D445	
6	Sulfur Total	WT%	0.4091>0.0300	ISIRI 8402	ASTM D4294	
7	Pour Point	°C	-12(+/-5%)	ISIRI 201	ASTM D97	
8	Corrosion 3h@100 °C	-	1a	ISIRI 336	ASTM D130	
9	Distillation	I.B.P	°C	152 (+/-5%)	ISIRI 6261	ASTM D86
		5%	°C	161(+/-5%)		
		10%	°C	164(+/-5%)		
		20%	°C	170(+/-5%)		
		30%	°C	176(+/-5%)		
		40%	°C	195(+/-5%)		
		50%	°C	374(+/-5%)		
		60%	°C	>390(+/-5%)		
		70%	°C	-		
		80%	°C	-		
		90%	°C	-		
		95%	°C	-		
		Dry Point	°C	-		
		Recovery	vol%	56(+/-5%)		
		Residue	vol%	44(+/-5%)		
Loss	vol%	0				

The conversion of heavy hydrocarbons to the light hydrocarbons is so important due to the less economical value of heavy hydrocarbon. In addition to, there are some problems in their transformation. One of the reasons of less economical value of heavy hydrocarbons is the difficulty of manufacturing and using in energy production process. These products which are often used in less valuable fields such as bitumen and wax, they can be converted into lighter products with higher value by processing and breaking large hydrocarbon chains. A large number of production methods of light hydrocarbons from heavy petroleum compounds are based on chemical procedures using catalysts and upper temperature that cause to increase the final prices of manufacturing of lighter products. Hence development of alternative methods in these processes to reduce the energy consumption, can pave the way for the development of the production process of lighter petroleum compounds than heavy petroleum compounds with higher economical value. In this regard, cold plasma can effectively play a role in breaking down heavy petroleum compounds and converting them into valuable light hydrocarbons. Cold plasma can be a correct option for using in chemical process because of its innate nature (an ionized medium with high energy level). Providing an ionized environment with energetic ions that can be a starter of many chemical reactions, including cracking, which can be used as another choice in common methods of refining process. These are so useful in many refineries in the whole world.



Heavy Hydrocarbon

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Row	Properties	Unit	Limit	Test Method
1	Appearance	-	Homogenous	-
2	Density @ 15 °C	Kg/m ³	819 (-+5)	ASTM D 1298
3	Color	-	<0.5	-
4	Distillation:	-	-	ASTM D 86
5	I.B.P	°C	178	ASTM D 86
6	10% Evaporated @	°C	194	ASTM D 86
7	20% Evaporated @	°C	202	ASTM D 86
8	30% Evaporated @	°C	210	ASTM D 86
9	40% Evaporated @	°C	218.5	ASTM D 86
10	50% Evaporated @	°C	226.5	ASTM D 86
11	60% Evaporated @	°C	234.5	ASTM D 86
12	70% Evaporated @	°C	242	ASTM D 86
13	80% Evaporated @	°C	249	ASTM D 86
14	90% Evaporated @	°C	256	ASTM D 86
15	95% Evaporated @	°C	260	ASTM D 86
16	F.B.P	°C	295 (-+5)	ASTM D 86
17	Recovery	ml	98.5	ASTM D 86
18	Residue	ml	1.4	ASTM D 86
19	Loss	ml	0.1	ASTM D 86
20	Flash Point	°C	60	ASTM D 56
21	Corrosion	-	1a	-
22	Total sulphur	Wt%	0.281	ASTM D1265
23	Mercaptan	ppm	17.1	-

Light Hydrocarbon

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Row	Properties	Unit	Limit	Test Method
1	Appearance	-	homogenous	-
2	Density @ 15 °C	kg/m ³	785	ASTM D 1298
3	Distillation:			ASTM D 86
4	I.B.P	°C	152	ASTM D 86
5	10% Evaporated @	°C	160.5	ASTM D 86
6	20% Evaporated @	°C	161.5	ASTM D 86
7	30% Evaporated @	°C	162.5	ASTM D 86
8	40% Evaporated @	°C	164.5	ASTM D 86
9	50% Evaporated @	°C	166.5	ASTM D 86
10	60% Evaporated @	°C	169	ASTM D 86
11	70% Evaporated @	°C	173	ASTM D 86
12	80% Evaporated @	°C	180	ASTM D 86
13	90% Evaporated @	°C	201	ASTM D 86
14	95% Evaporated @	°C	230	ASTM D 86
15	F.B.P	°C	252	ASTM D 86
16	Recovery	ml	99	ASTM D 86
17	Residue	ml	0.7	ASTM D 86
18	Loss	ml	0.3	ASTM D 86
19	Color	-	<0.5	ASTM D 155
20	Flash Point	°C	42	D 56
21	Corrosion-3hrs @ 100 °C	-	1a	ASTM D 130
22	Sulphur Total	wt%	0.108	ASTM D 1265
23	Mercaptan	p.p.m	60.8	-

White Spirit

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Row	Properties	Unit	Limit	Test Method
1	Appearance	-	homogenous	-
2	Density @ 15 °C	Kg/m ³	788	ASTM D 1298
3	Distillation:			ASTM D 86
4	I.B.P	°C	159.5	ASTM D 86
5	10% Evaporated @	°C	166	ASTM D 86
6	20% Evaporated @	°C	169	ASTM D 86
7	30% Evaporated @	°C	171	ASTM D 86
8	40% Evaporated @	°C	173	ASTM D 86
9	50% Evaporated @	°C	176	ASTM D 86
10	60% Evaporated @	°C	179	ASTM D 86
11	70% Evaporated @	°C	184	ASTM D 86
12	80% Evaporated @	°C	192	ASTM D 86
13	90% Evaporated @	°C	206	ASTM D 86
14	95% Evaporated @	°C	217.5	ASTM D 86
15	F.B.P	°C	230	ASTM D 86
16	Recovery	ml	98	ASTM D 86
17	Residue	ml	1.8	ASTM D 86
18	Loss	ml	0.2	ASTM D 86
19	Color	-	<0.5	ASTM D 155
20	Flash Point	°C	47	D 56
21	Corrosion-3hrs @ 100 °C	-	1a	ASTM D 130
22	Sulphur Total	wt%	652 ppm	ASTM D 1265
23	Mercaptan	p.p.m	77.1	-

Jet Fuel



Jet Fuel

Row	Properties	Unit	Min	Max	Result	Test Method
1	Appearance	-	Clear bright	Clear bright	-	Visual
2	Density @ 15 °C	kg/m ³	775	840	778	ASTM D1298
3	Distillation:	-	-	-	-	ASTM D86
4	I.B.P	°C	Report	Report	157	ASTM D86
5	10% Evaporated @	°C	-	205	165	ASTM D86
6	50% Evaporated @	°C	Report	Report	169	ASTM D86
7	90% Evaporated @	°C	Report	Report	177	ASTM D86
8	End Point	°C	-	300	-	ASTM D86
9	Residue	Vol %	-	1.5	1	ASTM D86
10	Loss	Vol %	-	1.5	0	ASTM D86
11	Flash Point	°C	38	-	38	ASTM D93
12	Viscosity Kinematic @15 °C	mm ² /s	-	8	-	ASTM D7042
13	Freezing Point	°C	-	-47	-72	ASTM D1177
14	Smoke Point	mm	25	-	35	ASTM D1322
15	Sulfur Total	mass %	-	0.30	0.093	ASTM D4294
16	Mercaptan Sulphur	mass %	-	0.003	0.001	ASTM D3227
17	Aromatics	Vol %	-	25	15.6	ASTM D1319
18	Naphthalene	Vol %	-	3	0.3	ASTM D1840
19	Net heat of combustion	MJ/kg	43	-	44.88	ASTM D240
20	Metal Deactivator	mg/L	-	5.7	-	-
21	Antioxidant	mg/L	-	24	-	-
22	Static Dissipator	mg/L	-	1	-	-



Erbil, Iraq

- Crude Oil Refinery, capacity of 5000 BPD.
- Gasoil treatment & Heavy solvent, capacity of 6000 BPD.
- Scope of work: EPC Turn Key

