

BALKANTRIB'05
5th INTERNATIONAL CONFERENCE ON TRIBOLOGY
JUNE.15-18. 2005
Kragujevac, Serbia and Montenegro

**MINERAL OIL PRODUCTION AND CONSUMPTION IN
TURKEY**

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Abstract

The paper ensures the mineral oil production and marketing in Turkey between 1990-1999. It can be observed that many kinds of oil for different useage are produced and consumed. Some additives for oil production are imported and 4286 tones mineral oil are exported in 1999. However, the oil production is decreased gradually from 1990 to 1999. This situation said that Turkish economy would go to deep crises and it was in 2001.

Keyword: *Oil production, consumption in Turkey*

1-INTRODUCTION

Many industrial sectors need to use mineral oil for producing their products. Also, many mechanical systems use the suitable oil for their engines. This type of systems need to change the oil periodically to work efficiently and to long the life of the system. Thus, the oil is consumed. All frictional parts should be protected from wear and corrosion. It is really well known that all frictional systems on a machine need any kind of oil for easy friction with each other. However, these systems' elements are worn and their lives are finished if their dimensions' altering caused by wear, friction and corrosion have important role on their life.

Many kinds of mineral oil are used also for metal working system such as forging, drawing etc. Therefore oil companies produce many kind of oil for many kind of mechanical systems. The purpose of the paper is to give acknowledgement about production and consumption of mineral oil in Turkey between 1997-1999.

**2-OIL PRODUCTION AND
CONSUMPTION IN TURKEY**

The companies processing mineral oil in Turkey are POAŞ, SHELL, MOBIL, BP, CASTROL, ELF and OPET. Nearly all of these companies installed around Istanbul, Izmit and Izmir in Turkey. The biggest of them is Turkish Petroleum Company (POAŞ). The company produces mineral oil of 100.000 tones/year in Izmit, 60.000 tones/year in Izmir and grease of 10.000 tones/year in Izmit.

The kinds, amounts and marketing rate of oil produced by above companies in Turkey are given below. These productions and marketing rates are valid for between 1990-1999 years and last three years (1997-1999).

4286 tones of mineral oil was exported by POAŞ in 1999 and 3000 tones of some material was imported in the same year. The company in Turkey sold the imported processing material of 2900 tones.

On the other hand, the various oil produced and marketed by some small companies in Turkey are ambiguous at standardization and

production conditions point of view. This situation causes the illegal competition.

Mineral oil kinds produced by some companies in Turkey are listed below:

❖ Automotive Oils

- Otto and Diesel motors oil such as:

SAE 5W/40, 10W/40, 20W/50, 10W, 20W/20, 30, 40, 50, 10W,

15W/40, 20W/40

- 2 cycles Plus motor oil such as:

Outboard motor oil

- Transmission oils

SAE 80, 90, 140, 80W/90, 85W/140

- Automatic Transmission Fluids

Torque fluid 32, transmission fluid type C

- Sea motors oil

1000 SAE 30, 40, 2000 SAE 30, 40, Super DCL Medium, Super DCL

Heavy, Super DCL Special, Marine System Oil SAE 30, Marine

Engine Oil Special, Telemotor Oil

- Super antifreeze, special antifreeze, hydraulic brake oil, upper cylinder lubricant

❖ Industrial Oils

- Turbine and bearing oils

Compressor oil 68, 100, regal marine 500

- Hydraulic system oils

Super hydro oils, hydro tech oils

- General purpose oil

SAE 10, 20W/20, 20/30, 30, 40, 50, 60, 70

- Textile oils
- Guide oils
- Protective oils

Metal protective oil, rust preventive oil

- Cylinder and valve oils

Mineral cylinder oil, super heat valve oil, pinnacle cylinder oil, T

Cylinder oil

- Metal cutting and machining oils

Boron oil, honing oils, cleanser oils

- Gear oils

- Wire rope oils

- Die oils (for concrete, ceramic and metals)

- Rock drill lubricant

- Paper machine oils

- Heat treatment oils

- Heat transfer oils

- Isolation oils

❖ Greases

- Sodium soapy greases (for ball bearing)

- Calcium soapy greases

- Lithium soapy greases

- Molybdenum soapy greases

It can be seen from the above list, there are many kind of oil produced for many purpose. These kinds of oil are not only for Turkish industries but also they are exported. It is

estimated easily that some additive materials using for the oil production mentioned above should be imported. Production and selling amounts of mineral oil can be seen in table 1 for between 1990-1999. It is surprising that both production and selling amount of oil are decreased from 1990 to 1999, with some little changing. It can be guess that the changings are caused by additional production in the year

before decreasing in the year. This situation goes on repeatly to 1999. However, in 1999, the production is the least amount among the others. This may be announced that Turkish economy would be live a crises soon. However, the Turkish economy had been entered a big shaking in 2001. This is interesting sign that it should be considered by the government.

Table 1- Production and selling amounts of mineral oil by POAŞ between 1990-1999

(Thousand tones)

Years	Production	Marketing			Changing ratio (%)			
		Mineral oil	Co-product	Total	Production	Oil	Co-product	Total
1990	114,4	115,7	45,6	161,3				
1991	115,0	122,1	28,0	150,1	0,5	5,5	-38,6	-6,9
1992	115,7	117,1	34,2	151,3	0,6	-4,1	22,1	0,8
1993	117,0	125,0	31,4	156,4	1,1	6,7	-8,2	3,4
1994	111,2	120,8	20,2	141,0	-5,0	-3,4	-35,7	-9,8
1995	116,2	122,9	30,8	153,7	4,5	1,7	52,5	9,0
1996	116,1	114,2	27,3	141,5	-0,1	-7,1	-11,4	-7,9
1997	121,6	125,7	20,8	146,5	4,7	10,1	-23,8	3,5
1998	116,4	116,6	25,2	141,8				
1999	96,8	97,6	30,8	128,4	-16,8	-16,3	22,2	-9,4

It is obvious that production is decreased in last three years and drop to the minimum level in 1999. The selling is also decreased in the period parallel to the production amount (Fig 1). The marketing ratios of the oil companies in Turkey for last three years are given in table 2. This table covers the marketing ratios of the companies according to the same kinds of production as amounts and percentages. It is observed that the Turkish company (POAŞ) has larger marketing ratio(as 32.6% totally) than those of the others.

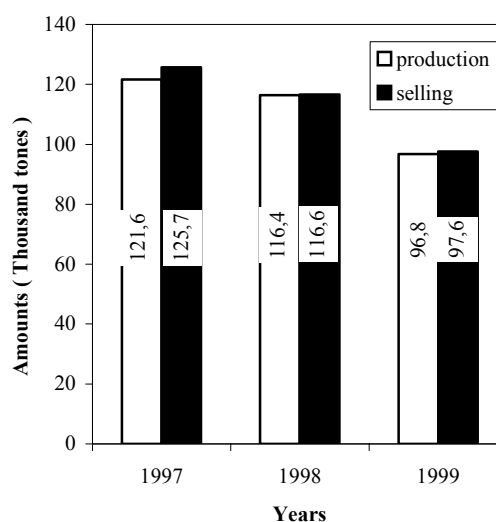


Figure.1: Oil production and selling variation between 1997-1999

Table 2- Marketing ratios of oil companies in years 1997, 1998 and 1999 years (tones)

Company		1997	%	1998	%	1999	%
POAŞ	Automotive	97,423	37,5	89,695	35,7	75,214	33,6
	Industrial	18,144	24,3	17,166	24,2	14,580	24,4
	Grease	4,32	100	4,628	100	3,574	100
	Special	5,798	38,7	5,086	34,4	4,184	34,3
	Total	125,685	35,5	116,575	34,1	97,552	32,6
SHELL	Automotive	25,51	9,8	24,985	9,9	23,405	10,5
	Industrial	25,15	33,7	26,305	37,1	20,005	33,5
	Grease	0	0	0	0	0	0
	Special	4,595	30,6	4,975	33,6	3,865	31,7
	Total	55,255	15,6	56,265	16,5	47,275	15,8
MOBIL	Automotive	47,266	18,2	48,525	19,3	42,063	18,8
	Industrial	14,534	19,5	14,143	20	10,769	18
	Grease	0	0	0	0	0	0
	Special	1,416	9,4	1,625	11	1,248	10,2
	Total	63,216	17,9	64,293	18,8	54,080	18
B.P	Automotive	33,146	12,8	32,732	13	28,193	12,6
	Industrial	9,484	12,7	6,646	9,4	6,649	11,1
	Grease	0	0	0	0	0	0
	Special	1,418	9,5	1,296	8,8	1,302	10,7
	Total	44,048	12,5	40,674	11,9	36,144	12,1
CASTROL	Automotive	34,854	13,4	33,987	13,5	30,640	13,7
	Industrial	2,536	3,4	2,545	3,6	2,463	4,1
	Grease	0	0	0	0	0	0
	Special	646	4,3	628	4,2	571	4,7
	Total	38,036	10,8	37,16	10,9	33,674	11,3
TOTAL	Automotive	6,212	2,4	6,099	2,4	7,653	3,4
	Industrial	2,439	3,3	2,133	3	2,118	3,5
	Grease	0	0	0	0	0	0
	Special	242	1,6	251	1,7	293	2,4
	Total	8,893	2,5	8,483	2,5	10,064	3,4
OPET	Automotive	7,081	2,7	7,449	3	6,736	3
	Industrial	1,614	2,2	1,154	1,6	2,489	4,2
	Grease	0	0	0	0	0	0
	Special	635	4,2	721	4,9	555	4,5
	Total	9,330	2,6	9,324	2,7	9,780	3,3
ELF	Automotive	8,357	3,2	7,991	3,2	9,629	4,3
	Industrial	729	1	721	1	705	1,2
	Grease	0	0	0	0	0	0
	Special	243	1,6	222	1,5	181	1,5
	Total	9,329	2,6	8,934	2,6	10,515	3,5
TOTAL	Automotive	259,849	100	251,463	100	223,533	100
	Industrial	74,63	100	70,813	100	59,778	100
	Grease	4,32	100	4,628	100	3,574	100
	Special	14,993	100	14,804	100	12,199	100
	Total	353,792	100	341,708	100	299,084	100

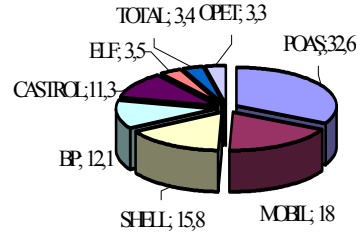


Figure.2: Marketing ratios of mineral oil companies in Turkey (% , 1999)

The second big company is mobil with marketing ratio of %18. The marketing ratios of 15.8%, %12.1 and %11.3 are belong to Shell, BP and Castrol respectively. Other companies such as Total, Opet and Elf have the total ratio of 10.2% as nearly equal ratios to each other.

The mineral marketing ratios of the Turkish oil companies can be seen in Figure 2. This figure shows that the biggest ratio is belong to POAŞ. All ratios covering the all companies can be seen in details in table 2. It is obvious that the first five companies in the table 2 have big activities in Turkey production and marketing point of view.

Table 3- Mineral oil marketing by oil sector and POAŞ (Thousand Tones)

Years	Selling		Selling ratio of POAŞ %	Changing rate, %		
	Sector's total	POAŞ		Sector's total	POAŞ	Ratio
1989	273,1	104,0	38,4			
1990	281,9	115,7	41,0	3,2	10,4	7,0
1991	300,3	122,1	40,7	6,5	5,5	-0,9
1992	300,9	117,1	38,9	0,2	-4,1	-4,3
1993	325,1	125,0	38,4	8,0	6,7	-1,2
1994	287,0	120,8	42,1	-11,7	-3,4	9,5
1995	318,9	122,9	38,5	11,1	1,7	-8,4
1996	317,0	114,2	36,0	-0,6	-7,1	-6,5
1997	353,8	125,7	35,5	11,7	10,1	-1,5
1998	341,7	116,6	34,1	-3,4	-7,2	-4,0
1999	299,1	97,6	32,6	-12,5	-16,3	-4,4

Table 3 shows the mineral oil marketing by the Turkish company (POAŞ) and the others. It is interesting that POAŞ has a big selling ratio among the other companies. The biggest selling are realized in 1997 for POAŞ and the others (i.e. 125.7 and 353.8 thousand tones respectively), although the biggest selling ratio of POAŞ is 42.1 % in 1994 It can be determined

that the marketing amounts of the companies are decreased while their productions are also decreased. As it is mentioned above, while the mineral oil production between 1997-1999 is decreased, co-production is increased lightly. This shows that mineral oil consumption is decreased at those years in Turkish industry. Therefore oil production is decreased too. It can

be understood from this situation, POAŞ could not enlarged its exporting market and had have a

tendency to co-product.

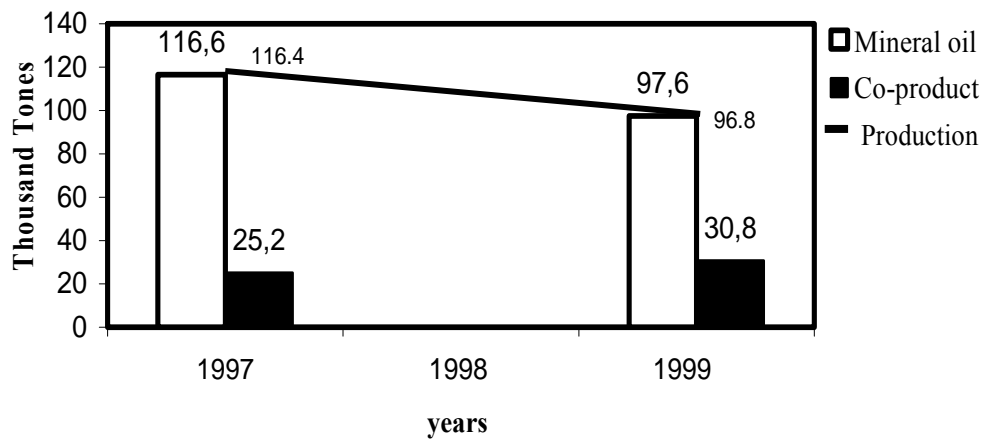


Figure.3: POAŞ Mineral Oil/ Co-Product Selling and Production (1997-1999 January-December)

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3. CONCLUSIONS

The mineral oil is mainly necessary to all manufacturing industries. It is however used for engine, hydraulic system and for many mechanical and dynamical systems to decrease the frictional effects between moving parts. Therefore the mineral oil has many kinds for supplying good performance where it is used. On the other hand, the changing of mineral oil amount of production depends on economical and technological activities carried out in the country. If the industrial activities are decreased by economical crisis, the mineral oil consumption is also decreased and the companies producing oil decreases the production kind and amount due to the restriction of marketing. Both the mineral oil production and consumption decreased from 1977 to 1999. This is not a general tendency for behaviour of Turkish company, but the decreasing is caused from economical crises progressing step by step in Turkey in those years. However Turkish oil companies produced

and imported some oil together with marketing program in Turkey.

Acknowledgement

The author thanks to management of POAŞ for their helping to collection data.

4. REFERENCES

- [1] Data from POAŞ, Marketing Office, 2000
- [2] Data from POAŞ, Technology and Planning Office, 2000
- [3] İ.Hani, Editor, Mineral oil and Products of the POAŞ, 1999