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**LEATHER  
RESEARCH  
AND TRAINING  
INSTITUTE,  
PENDIK/ISTANBUL  
(PHASE II)**

**DU/TUR/74/007**

**TURKEY**

**Technical report:  
ASSISTANCE IN THE DESIGN AND MANUFACTURE  
OF LEATHER GARMENTS AND FUR GARMENTS**

**Prepared for the Government of Turkey by the  
United Nations Industrial Development Organization,  
executing agency for the  
United Nations Development Programme**



**United Nations Industrial Development Organization**

United Nations Development Programme

LEATHER RESEARCH AND TRAINING INSTITUTE, PENDIK/ISTANBUL (PHASE II)  
DU/TUR/74/OC7

TURKEY

Technical report: Assistance in the design and  
manufacture of leather garments and fur garments

Prepared for the Government of Turkey  
by the United Nations Industrial Development Organization,  
executing agency for the United Nations Development Programme

Based on the work of Carlo Palissotto, expert in the design and  
manufacture of leather garments and fur garments

United Nations Industrial Development Organization  
Vienna, 1977

Explanatory notes

References to dollars (\$) are to United States dollars.

LRTI refers to the Leather Research and Training Institute at Pendik/  
Istanbul, Turkey.

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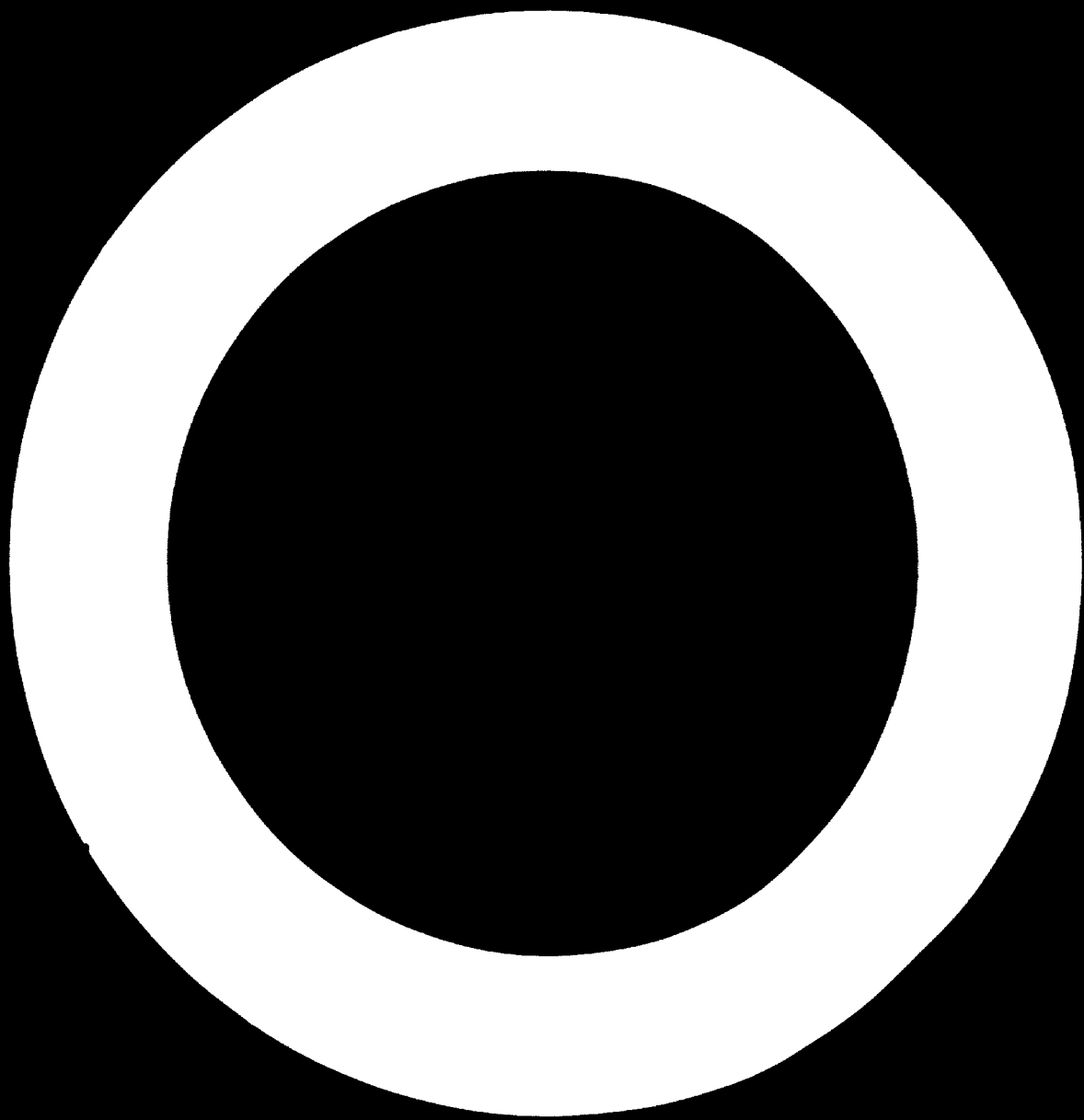
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#### ABSTRACT

This report is about a two-month mission undertaken in connection with the large-scale project "Leather Research and Training Institute" (DU/TUR/74/007), for which the Food and Agriculture Organization of the United Nations (FAO) is the executing agency. The United Nations Industrial Development Organization (UNIDO) is associated with the implementation of the project.

A UNIDO expert in the design and manufacture of leather garments and fur garments was assigned to the project from 28 March to 27 May 1977. He worked at the Leather Research and Training Institute (LRTI), giving technical lectures and courses and visiting garment-making facilities at Istanbul and Izmir. His duties were to survey the existing production techniques employed in the industry; prepare a programme for extension services and training intended to improve the quality of leather garments and fur garments; and advise the industry on technical improvements in manufacturing and plant development. He was also to identify the equipment requirements of the confection department at LRTI.

At the end of his mission the expert made several recommendations on ways of improving manufacturing methods and the quality of products so as to increase the country's exports.



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## INTRODUCTION

The United Nations Development Programme (UNDP) set up the project "Leather Research and Training Institute" (DU/TUR/74/007) to promote the further development of the leather and leather products industries in Turkey. The executing agency for the project is the Food and Agriculture Organization of the United Nations (FAO), with the United Nations Industrial Development Organization (UNIDO) as associated agency. The project is being carried out mainly at the Leather Research and Training Institute (LRTI) located at Pendik, about 30 km out of Istanbul. LRTI is engaged in assisting the leather and leather products industries of the country.

The leather and allied industries are an important part of the Turkish economy, particularly in exporting, where a significant rate of growth has occurred over the past few years. In 1972 the country earned \$24 million from the export of leather and skins, \$15 million from the indirect export of tourist goods and \$40 million from leather garments export. The figures for leather garments showed a 50% increase in 1973.

No other manufacturing industry in Turkey has such a high export potential. Further development depends on improving the quality and increasing the quantity of leather garments and fur garments through better manufacturing-process technology, management, marketing techniques etc.

The leather garment and fur garment industry, which began as a cottage industry, has been transformed into small units employing about 50,000 workers in total.

Turkish sheepskin leather is now of excellent quality, thanks to the work done in tanning by the project and LRTI.

To assist the Government of Turkey to improve the organization and operations of LRTI, UNIDO assigned an expert for a two-month mission, from 28 March to 27 May 1977. The duties of the expert were as follows:

- (a) To survey and analyse the existing production techniques employed in selected enterprises;
- (b) To give short courses on the design and manufacturing of leather garments and fur garments to technicians;
- (c) To give a course on leather garments and fur garments to teachers and students from the Governmental Design School;



(d) To advise the leather garment industry on technical improvements in processing, plant development etc. with the aim of improving manufacturing methods and design for leather garments and fur garments, as well as ensuring the proper utilization of furs and leather garments;

(e) To instruct a national counterpart in new processes and technologies and prepare him to continue the assistance to enterprises after the expert leaves the country;

(f) To prepare a programme for extension services, demonstrations and formal training courses aimed at improving the quality of leather garments and fur garments, and to prepare a list of machines and tools to facilitate such work at LRTI.

## FINDINGS

At the start of the mission there was a meeting between the expert and the principal expert, Mr. Nemezes, in which a schedule of activities was worked out (annex I). In accordance with this schedule, the expert visited leather garment and fur garment factories at Istanbul, accompanied by his counterpart Ali Özdemir and a technician from the leather confection department of LRTI, Ridvan Demirel.

### Visit to a co-operative

The first visit was to the "Konfeksion-Küçük Sanat Kooperatifi". This co-operative is made up of about 20 leather garment and fur garment makers; they have a show-room where they sell part of their production. The articles that the expert saw in the show-room were typical of the work of the Turkish leather garment industry as a whole.

The top-quality sheepskin nappa leather was good and so was the lining. The garment appeal was not as good as the leather used, and the leather surface was spoilt because of poor manufacturing methods. The front of the jacket, the lapels and the upper collar surfaces were wrinkled because too much glue had been used; the same applied to the jacket and sleeve hems. The fitting was unsatisfactory, and above all the armholes were too low, hampering a wearer's movements. Sizes were not standardized, so that size 48 from one maker could be equivalent to size 50 or 52 from another maker. Besides the leather garments, there were some wool-suede garments (shearlings) and some fox- and lamb-fur jackets in the show-room. The shearling garments showed the following characteristics: wool-suede hard, sizes not standardized, lack of style. The fur jackets were unfashionable, the lamb was bristly and too long, craftsmanship was inferior, and no chemical-spray finish had been used.

A meeting of members of the co-operative was convened by the Chairman, Süleyman Koyuncu, and the expert lectured on the manufacturing process, style, use of sizes in different countries and anatomical rules applied to the industrial patterns for ready-made clothing, especially to leather garments and fur garments. Many technical problems were discussed.

At the end of the lecture the garment makers were interested in more instruction and therefore decided to take a short technical course at LRTI. The course included a demonstration of leather garment processing. The course outline is given in annex II.

#### Plant visits at Istanbul

About 10 workshops were visited at Istanbul. They consist of small rooms - some of them much too small - which are poorly lit and ventilated. Layout is also unsatisfactory.

#### Machinery

Old machines are used, making it difficult to get good seams and therefore good quality. Pressing is done with irons; only a few big factories in Turkey use pressing machines.

#### The manufacturing process

Garments are made using traditional methods. Too much glue is applied, causing wrinkles on the outside surface. To cut, the pattern is marked and then cut with scissors, making two operations and stretching the leather. The best way to cut leather (nappa for garments) is with a knife in a single operation, cutting around a pattern set on the leather, i.e. without marking. The lining along the hem allowance is not properly prepared, so that wrinkles appear along the seam allowance.

#### Raw materials

The nappa leather is fine, smooth and even with few faults, which means little waste, as low as 3-10% according to the quality of the leather. The wool-suede shearling is hard because the practice is to kill the animals when they are old so as to get large skins. If the animals are younger when killed, the skins will be softer and lighter but smaller. For export softer skins are preferable.

#### Auxiliary materials

The lining is good, similar to that used in leather garments in other countries. The interlining is muslin attached with glue. However, the kind of fusing interlining that is used by the larger factories in developed countries is also available in Turkey. Such interlining is attached to the reverse side of the leather with a fusing machine or a steam iron, resulting in a very smooth outside surface and saving time in the manufacturing process.

### The Governmental Design School

The expert and his counterpart were received at the Governmental Design School at Istanbul by the Manager, Sükran Çinay. They were shown the curriculum and some of the products made by the students, traditional hand-embroidered costumes. The School is important and the courses are properly organized. Training has so far concentrated on ladies' cloth garments, but now the School wants to begin training new technicians for the leather garment industry. It was decided to give a two-week course in pattern technology and manufacturing processes for leather garments at LRTI. Six teachers and 15 students from the School attended. The course outline is given in annex III.

### Plant visits at Izmir

A series of visits were made at Izmir. The expert was accompanied by his counterpart, by the Manager of the LRTI and by the Chairman of the Leather Garments Association at Izmir. Seven plants were visited (see annex IV).

The plants were larger than those at Istanbul, but the manufacturing process and layout were comparable. Only one firm had the right manufacturing process and a correspondingly high output. Staff at the Leather Garments Association complained that the visits were too short; they are interested in having technical lectures at Izmir to learn about the manufacturing process and techniques for making industrial patterns. As at Istanbul, the factories at Izmir lack the technology for pattern making; patterns are usually obtained from buyers.

### The confection department of LRTI

In LRTI there is a confection department for leather garments. It is set in a corner of the leather-goods department and is equipped with only one single-needle machine, two tables, one iron and two manikins; there are also three machines for furs that cannot be used for leather garments. LRTI intends to give demonstrations about the manufacturing process to garment makers and courses for training new technicians, but with this equipment and setting it will be impossible to carry out these activities. The expert prepared a list of the machines, including specifications, that would be needed to fit out the department properly.

Three technicians work in the confection department. The expert found their knowledge of craftsmanship good but not up to an industrial level. To develop a pattern they take measurements, as tailors do; since their work is like tailoring, employers from LRTI and people from outside LRTI bring them leather and they make garments to measure.

The manufacturing method was like that of the factories at Istanbul, i.e. a muslin interlining was attached with glue, causing wrinkles on the front, lapels and upper collar of the garment.

### RECOMMENDATIONS

The Turkish leather garment industry has great export potential, which may be enhanced by finding new markets or enlarging existing ones and by developing indirect export by increasing sales to tourists. To accomplish this, improvements are needed in the manufacturing process, the cutting of patterns and the range of sizes. Additional requirements are better facilities at LRTI and courses and lectures to train technicians.

1. The surface of the leather must be smooth, and this will be possible only if the makers change the manufacturing process. They should use less glue and substitute fusing interlining for muslin to stiffen or reinforce the leather. Several good varieties of fusing interlining are available in Turkey.
2. The wrinkles along the seams are caused by the old machines used in the workshops. New machines should therefore be acquired, and, if necessary, legislation passed to facilitate their purchase.
3. Training to improve the technology for cutting patterns should be given to technicians working in the leather garment industry.
4. At present the garments are made to fit only one height. If the purchaser is shorter or taller, the garment is not suitable and the sale is lost. As this happens many times a day, the country loses much of the export revenue that would be obtained from sales to tourists. The garments could be made for three different heights, for example:

Short	-	for 1.64 m
Medium	-	for 1.72 m
Long	-	for 1.80 m

so that more customers could find well-fitting garments.

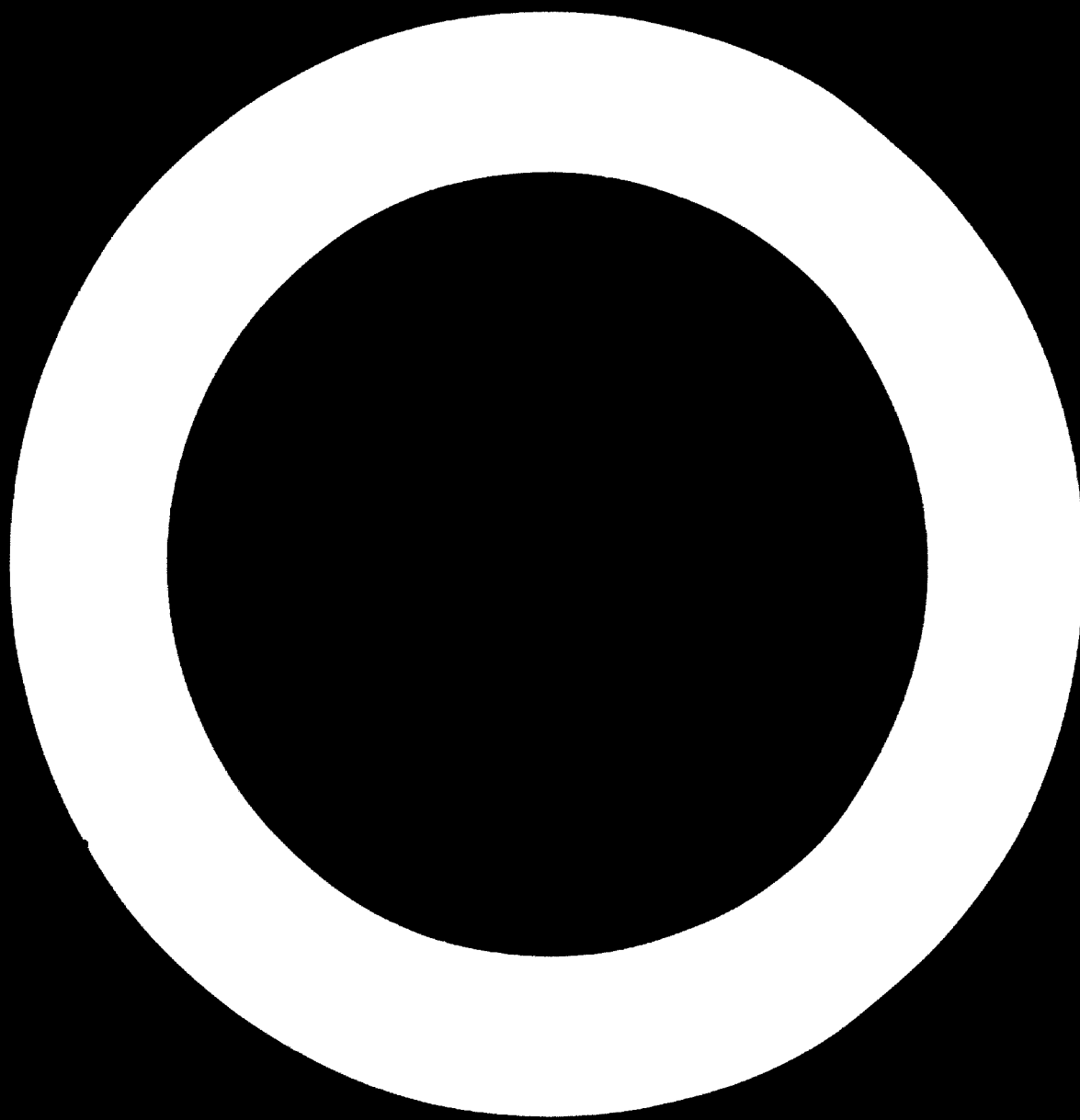
5. The expert instructed his counterpart and the technicians in the confection department in the technology needed for implementing the above recommendations, and they are now skilled enough to teach others. None the less, LRTI should reorganize and modernize the confection department before giving demonstrations about the manufacturing process, since the department cannot give good results with the existing equipment. Such a reorganization should be done promptly because the small enterprises urgently need orientation

about the manufacturing process, technology for cutting patterns and sizes. To give demonstrations successfully, LRTI needs at least a suitable room, with one machine with two needles and one pressing machine.

6. As LRTI is expected to give training courses for new technicians, a programme should be worked out including the duration of the courses, the content and the number of participants. Then an appropriate room must be found and a list of equipment prepared taking into account the courses' content and purpose. It would be advisable to have an expert start the first training course.

7. When the Governmental Design School begins to train people in the technology for making leather garments, it should be careful to prepare its programme utilizing the notes taken by the teachers during the expert's lectures and, to avoid errors, the School should consult the expert's counterpart at LRTI. Moreover, it would be profitable for the teachers from the School to visit well-organized factories.

8. LRTI is also expected to organize a series of technical lectures for the staff of the enterprises at Izmir, either at LRTI or at Izmir. The lectures should be complemented by practical demonstrations about manufacturing processes.





Annex I

ACTIVITIES OF THE EXPERT

28 March-1 April	Journey Rome-Vienna-Istanbul-Pendik; two days of technical lectures to the staff of the confection department at LRTI
4 April-9 April	Visits to factories at Istanbul; one-day technical lecture at the confection department, LRTI
11 April-15 April	Visits to factories at Istanbul; three days of technical lectures at LRTI to technicians from Istanbul
18 April-22 April	Visits to factories at Istanbul; three days of technical lectures at LRTI to technicians from Istanbul
25 April-29 April	Course to students from the Governmental Design School
2 May-6 May	Course to students from the Governmental Design School
9 May-13 May	Three days of visits to factories at Izmir; technical lectures at the confection department, LRTI
16 May-20 May	Three days preparing final report; two days of technical lectures at the confection department
23 May-27 May	Two days of technical lectures at the confection department; journey to Vienna and debriefing; journey to Rome

During the technical lectures at LRTI new patterns were developed, several garments were made with modern technology and the use of fusing interlining was demonstrated. In addition, a fur garment was made with a pattern supplied by the expert, and the technicians in charge of the confection department learned a new industrial method for making fur garments.

Annex II

OUTLINE FOR LECTURES TO TECHNICIANS

Elements of anatomy

Application of anatomical rules to the development of industrial cutting patterns

Rules about sizes for ready-made clothing for men and women

The basic design outline for a man's jacket

Single- and double-breasted jackets

Outline for a shirt-collar jacket

Outline for sleeves

Outline for collars for the above styles

Overcoats made according to the above styles

Development of sizes by centimetres

Development of sizes by inches

Development of a normal pattern into an industrial pattern, with allowances, interfacing and lining

Basic outline for a lady's jacket

Basic outline for a lady's coat

Basic outline for sleeves, one and two pieces

Outline for the collar of a lady's garment

Development of sizes for a lady's garment by centimetres

Development of sizes for a lady's garment by inches

Outlines for children's garments

Factory organization

Cost control

Quality control and inspection

Demonstration of manufacturing processes

Annex III

OUTLINE OF THE COURSE GIVEN AT THE GOVERNMENTAL DESIGN SCHOOL

Elements of anatomy

Application of anatomical rules to the development of an industrial pattern

Drawing an ideal silhouette for a fashion sketch

Silhouette positions appropriate to the style being created

Different sizes for the silhouette sketch

Designing classical fashions on the silhouette

Making a fashion sketch

Fashion sketches suitable for sheepskin

Outline of basic pattern for a man's jacket

Outline of basic pattern for a man's coat

Outline of basic pattern for a lady's jacket

Outline of basic pattern for a lady's coat

Outline of basic pattern for children's coats

Assembling and fitting the pattern

Lecture about style

Lecture about raw material

Fitting a pattern on nappa leather and on suede

Lecture about the manufacturing process

Development of a pattern from a fashion sketch for sheepskin

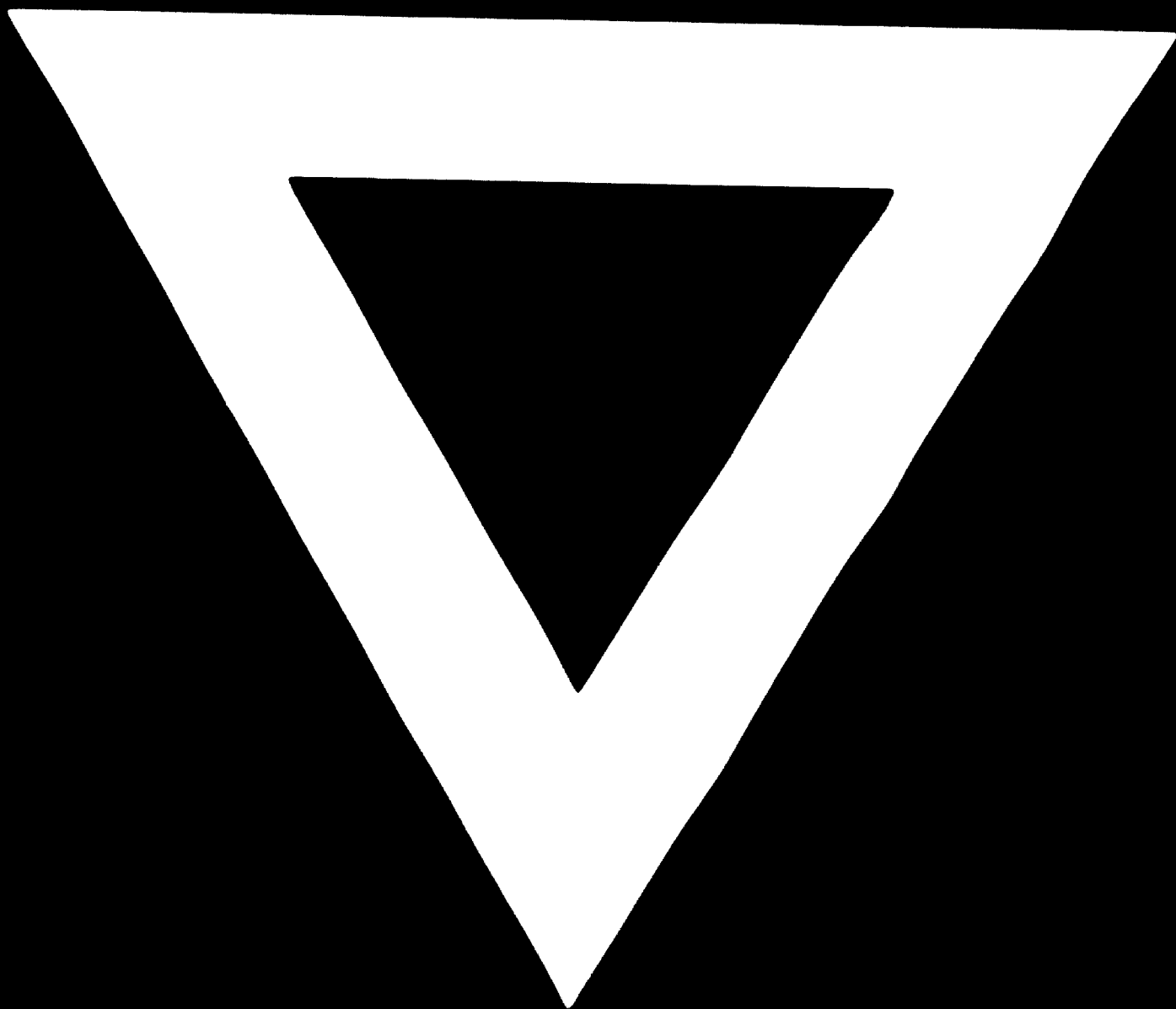
Demonstration about manufacturing processes

Annex IV

LIST OF PLANTS VISITED AT IZMIR

ALFA DERI Kamil Soyoglu ve Ort. 913 Sokak No. 71	Tel.: 14 78 83 13 43 06
DERMA Deri Mamulleri Sanayii ve Ticaret A.Ş. Yeşildere Cad. No. 97	Tel.: 13 50 70
DERİ TÜRK KOLLEKTİF ŞİRKETİ Mehmet Güventürk ve Ortakları Anafartalar Cad. Piyaloğlu Han No. 250/39-36	Tel.: 13 69 05
DERSAN DERİ SANAYİİ KOLL. ŞTİ. Tugay Sagay 1372 Sokak No. 21. Kat 3	Tel.: 12 51 93
OR-ÇİFT Deri Sanayi ve Ticaret Koll. Şti. Mehmet Oray ve Ortakları 2260 Sokak No. 41 Gürgeçme	Tel.: 12 23 98
KİSMET Deri Sanayii ve Ticaret, A.Ş. 1334 Sokak. No. 10	Tel.: 14 98 49 14 18 90
ÇINAR Deri Konfeksiyon Sanayii Ve Tic. A.Ş. Gürgeçme Cad. No. 57	Tel.: 14 06 11

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