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FINAL REPORT ON THE FIRST TRAINING PRO= GRAMME ON THE PRODUCTION AND APPLICATION OF SYN. FIBRES

L. Machherndl

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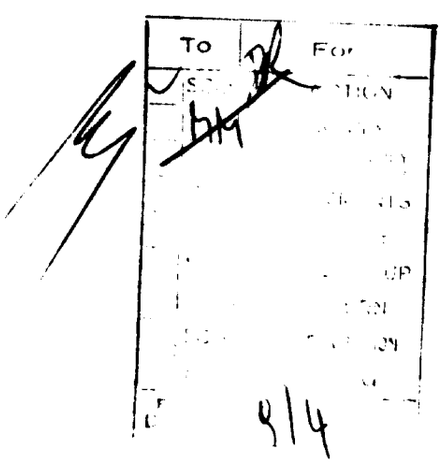

Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie Wien V
Österreichisches Chemiefaserinstitut, A-1040 Wien, Plößlg. 9, Vienna

Director H. WIEHART
Managing Director: R. KATSCHINKA

First Training Programme on the Production and Application of Synthetic Fibres.

Organized by the United Nations Industrial Development Organization (UNIDO) in co-operation with the Government of Austria,
Austrian Federal Chamber of Commerce,
Association of Austrian Industrialists
Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie Wien V und
Österreichisches Chemiefaserinstitut, A-1040 Wien, Plößlg. 9, Vienna

held in Vienna, Austria
from 7 October to 30 October 1974

Final Report

by
L. MACHHERNDL
Executive Manager

C O N T E N T S

1. Acknowledgements

The HBLVATI and ÖCI wish to express their appreciation to the UNIDO for organizing this training programme and for the excellent and successful co-operation.

Our thanks are specially directed to

Mr. G. Veliky
Mr. G.S. Gouri
Mr. M.C. Verghese
Mr. H. Pichler
Mr. H. May
Mr. M. Maung
Mr. R. Wotava
Miss L. Doss
Mrs. H. Schindlauer

At the same time we give our thanks to the Austrian authorities and corporations, whose aid, preparatory work, valuable aid and understanding enabled us to achieve a remarkable effect of the training programme.

Austrian Foreign Office:

Mr. K. Wolf
Mr. H. Birnleitner

Ministry of Education and Art

Mr. W. Molzer
Mr. F. Pany
Mr. H. Rotter
Mr. F. Hosch-Merkl

Austrian Federal Chamber of Commerce:

Mr. W. Melis
Mr. A. Vejborny
Mr. H. R. Seidl
Mr. O. Jaschke

Association of Austrian Industrialists (VÖI)

Mr. F.J. Mayer-Gunthof
Mr. P. Kapral
Mr. K. Wolfrum

We also are indebted to the Austrian Companies which we visited to complete our training programme.

2. Background and Objectives

The background and objectives of the training programme were stated in the Aide-Memoire circulated by UNIDO as follows:

The United Nations Industrial Development Organization (UNIDO) has been giving attention to the problem of training engineers in various fields of technology drawn from industries in developing countries. In accordance with resolutions of the Industrial Development Board where the need for training of national personnel for industrial development was stressed, UNIDO is organising this year for the first time a "Training Programme on the Production and Application of Synthetic Fibres". Similar programmes in plastics technology, carried out annually by UNIDO since 1970, have proved to be very successful.

The synthetic fibre industry is growing rapidly in many developing countries. Food, clothing and shelter are foremost among the needs of developing countries, and synthetic fibres are becoming increasingly important as material for clothing. Most developing countries do not have the finances or know-how to start fibre synthesis but they generally have a relatively well developed industry for processing of synthetic fibres.

The principal objective of the programme is to bring together a group of selected persons whose work is expected to benefit from a concentrated course in modern synthetic fibre technology which otherwise would require a long period of training, research and development work. The course is designed to give the main emphasis on synthetic fibre processing technology including the use and selection of modern processing equipment, quality control and testing as well as on various applications of synthetic fibres.

3. Description of the Training Programme

The programme took place in Vienna, Austria, from 7 October to 30 October (see appendix I for the time-table).

The programme reveived generous support from the Austrian Federal Ministry of Foreign Affairs, the Austrian Federal Ministry of Education and Fine Arts, the Austrian Federal Chamber of Commerce, the Association of Austrian Industrialists (VOI) and the Österreichische Chemiefaser Institut. The Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie (HBLVA), a leading technological institute, gave full co-operation in running the theoretical and practical courses on its premises utilizing its laboratories and equipment for this purpose. (See appendix II for details of lectures and appendix III for equipment used in the practical classes.)

The Institute's staff of highly qualified specialists took full charge of the lectures, demonstrations, laboratory work, discussions, in-plant training and plant visits. (See appendix IV for list of staff members who participated in the training programme.)

In addition to the course conducted at the Institute, plant visits in Austria were arranged to provide an opportunity for the participants to see some new developments in materials, processes and applications, to exchange technical information with experts as well as to study the possibility of obtaining licenses and know-how on processes as well as equipment. (See appendix V for details of in-plant training and plant visits.)

The training programme was attended by ine participant each from the following countries: Argentina, Bangladesh, Brazil, Bulgaria, Egypt, Iran, Mexico, Philippines, Romania, Singapore, Turkey and Yugoslavia. (See appendix VI for list of participants.)

Each participant presented a short paper on the present status and future plans for the development of the synthetic fibre industry in his home country.

During the course of the training programme individual appointments were arranged for interested participants to discuss with UNIDO staff members problems affecting the development of the synthetic fibre industry in the participant's home country.

A programme of social activities was organized by HBLVA and other sponsors for the benefit of the participants. (See appendix VII for details of social activities.)

4. Results achieved

From the statements made by the participants at the closing session, it was clear that, within the limitations imposed by shortage of time and funds, the principal objective of the programme as set forth by UNIDO had been achieved.

The benefits derived from the training programme are summarized below:

a) The participants had improved their theoretical and practical knowledge of the chemistry of synthetic fibres and of synthetic fibre processing technology including the use and selection of modern processing equipment.

b) They had improved their knowledge, both theoretical and practical, of quality control and testing of synthetic fibres.

c) They hade become familiar and had seen practical demonstrations of new developments in materials, processes and applications in the field of synthetic fibres.

d) They had the chance to exchange technical information with experts from the Austrian synthetic fibre industry.

e) They had the opportunity to discuss the possibility of obtaining licenses and know-how on processes as well as equipment with representatives of the Austrian synthetic fibre industry.

f) They had ample opportunity to discuss among themselves and exchange views on the development of the synthetic fibre industry in their home countries.

g) They had the opportunity to discuss with UNIDO staff members problems related to the synthetic fibre industry in their home countries.

5. Recommendations

Based on comments and suggestions made by the trainees and by other involved in the training programme, the following recommendations are made for the improvement of the programme in future years:

a) The duration of the training programme should be increased, if possible, to six weeks.

b) The participants selected for the programme should be employed in a technical capacity in the synthetic fibre industry rather than as planners or civil servants. To ensure homogeneity of the group and to facilitate arrangements for the theoretical and practical courses, it is suggested that a questionnaire on technical background be filled in by all prospective participants.

c) To allow time for selected candidates to prepare for the training programme, an outline of the lecture course in the form of a synopsis of each lecture should be forwarded in advance to the selected candidates.

d) A complete set of lecture notes should be given to each participant on arrival so as to allow more time for the participants to study the subject and enter into a deeper discussion with the lecturer.

e) As far as possible, lectures should be held in the morning and followed by practical classes in the afternoon.

Note: All the above recommendations except the one regarding the duration of the training programme, will be adopted beginning with the 1975 programme. Owing to lack of funds it would not be possible to increase the duration of the training programme to more than four weeks in 1975.

Appendix I

Agenda and programme of work

Monday, 7 October 1974, at UNIDO

9.30 - 12.30 Opening Session

Opening speech:	Mr. G. Veliky, Director, UNIDO Industrial Technology Division
Speeches:	Mr. M. C. Verghese, UNIDO Chief of Fertilizers, Pesticides and Petrochemicals Industries Section, Industrial Technology Division
	Mr. H. Birnleitner Austrian Federal Ministry of Foreign Affairs
	Mr. H. Rotter Austrian Federal Ministry for Education and Art
	Mr. I. Vejborny Austrian Federal Chamber of Economy
	Mr. T. Oliva Federation of Austrian Industrialists
	Mr. H. Wiehart Höhere Bundeslehr- und Versuchsanstalt für Textilindustrie
	Mr. R. Katschinka Österreichisches Chemiefaser-Institut
	Mr. H. Krässig Chemiefaser Lenzing AG.
Speech on administrative matters	Mr. H. Pichler, UNIDO Chief of Budget Section Division of Administration
Presentation of overall programme	Mr. H. May, UNIDO
	Mr. M. Maung, UNIDO, Officer-in-charge of the programme

Monday, 7 October 1974	Lectures at Höhere Bundes-
14.00 - 16.45	Lehr- und Versuchsanstalt für Textilindustrie (HBLVAT)

Tuesday, 8 October - Friday, 11 October 1974

9.00 - 12.00	Lectures at Höhere Bundes-
14.00 - 16.45	Lehr- und Versuchsanstalt für Textilindustrie (HBLVAT)

Monday, 14 October - Friday, 18 October 1974

9.00 - 12.00	Practical courses in synthetic fibre physics and chemistry at Höhere Bundes- Lehr- und Versuchsanstalt für Textil-
14.00 - 16.45	industrie (HBLVAT)

Monday, 21 October - Wednesday, 30 October 1974

In-plant training and plant visits

Wednesday, 30 October 1974, at UNIDO

14.00 - 17.00	Comments and suggestions from participants about the Training Programme
	Discussions on possible UNIDO assistance
	Closing session - distribution of certificates
Closing statement	Mr. H. May/Mr. M.C. Verghese, UNIDO

Appendix II

Details of Lectures

Subject	Hours
Man-made Fibres - Their Development and Economic Significance H. Krässig, Dr., University lecturer, Director of the Research Department of Chemiefaser Lenzing AG, Lenzing	2
Polyamides - Their Chemistry and Technology H. Steffens, Dr., Head, Research Department Enka Glanzstoff, Wuppertal	4
Polyesters - Their Chemistry and Technology Part I: G. Peters, Dr., Managing Director of Austria Faserwerke, Lenzing Part II: H. Zimmermann, Dr. Farbwerke Hoechst AG, Frankfurt	4
Polyacrylics - Their Chemistry and Technology F. Gotschy, Dr., Research Department, Chemiefaser Lenzing AG, Lenzing	4
Polyolefines - Their Chemistry and Technology H. Frank, Dr., Head of Department for Research and Development, Chemie Linz AG, Linz	4
Fibre Modifications: Chemical Methods H. Lass, Dr., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	2
Fibre Modifications: Physical Methods Miss E. Neumann, Representative of Hetex AG, Wattwil, Swizzerland	2
Synthetic Fibres and Blends - Their Properties and Processing J. Hördler, Dipl.Ing., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	4
Pretreatment of Synthetic Fibres for Dyeing and Printing L. Machherndl, Dr., Head of the Department for Textile Chemistry at the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	2

Subject	Hours
Dyeing of Synthetic Fibres and Their Blends W. Lebensaft, Dr., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	3
Printing of Synthetic Fibres and Their Blends Mrs. H. Dangl, Dr., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	2
Finishing (Wet Processing) of Synthetic Fibres and Their Blends J. Zartl, Dr., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Wien 5.,	2
Synthetic Fibres and Their Blends in Non-wovens R. Teichmann, Dr., Research Department Chemiefaser Lenzing AG, Lenzing	3
Synthetic Fibres and Their Blends for Technical Purposes H. Hailwax, Management Department of Erste Österr. Glanzstoff-Fabrik AG., Wien	2
Total Theory:	40

Appendix III

Synthetic Fibre Testing Equipment used in the Training Programme

VIBROSKOP, linear density of fibres

MICRONAIRE, linear density of fibres

AIR-FLOW, linear density of fibres

JOHANNSEN-ZWEIGLE, fibre length and length distribution by array-method

USTER, fibre length and length distribution

ALMETER, fibre length and length distribution automatically working

INSTRON, breaking-strength and elongation fibres, yarns, fabrics

ZWICK-Textimat, breaking-strength and elongation yarns, automatically working

USTER-Dynamometer, breaking-strength and elongation yarns, automatically working

ZWICK-Tearing-tester

TWIST-Tester

PRESSLEY-Tester, strength of fibres, bundle-method

BURSTING-Tester, VEB Rauenstein

USTER-Testing equipment (Unevenness of textile strands)

THICKNESS-gage

ABRASION-Tester

AIR-PERMEABILITY-Tester

RANDOM tumble pilling Tester

ACCELEROTOR

PRETEMA, Schweiz; Pretema-Spectromat FS 3A (Filterspectro-photometer) Colour measurement

C.ZEISS, BRD; Spectrophotometer PM Q II

ORIGINAL HANAU QUARZLAMPENGESELLSCHAFT, BRD; Fixotest

ORIGINAL HANAU QUARZLAMPENGESELLSCHAFT, BRD; Xenotest

ORIGINAL HANAU QUARZLAMPENGESELLSCHAFT, BRD; Linitest

ORIGINAL HANAU QUARZLAMPENGESELLSCHAFT, BRD; Praxitest

E. BENZ, Schweiz; Labor-stenter

Labor-padding machine

CONTRAVES, Schweiz; Epprecht Rheomat 15

Appendix IV

Staff for the Training Programme

Director: Dipl.Ing. Mag.rer.nat. H. Wiehart
Managing Director: Dr. R. Katschinka
Executive Manager: FV. Prof. Dr. Dipl.Ing. L. Machherndl
Scientific Adviser: Doz. Dr. H. Krässig
Public Relations and Social Engagements: FL. Ing. R. Hetzer
Plant Visits: Dr. R. Katschinka

Lectures: Dr. H. Dangl
Dr. H. Frank
Dr. F. Gotschy
Dr. M. Hackauf
Ing. H. Hailwax
Prof. Dipl. Ing. J. Hördler
Doz. Dr. H. Krässig
Prof. Dr. techn. Dipl. Ing. H. Lass
Prof. Dr. techn. D. M. Sc. W. Lebensaft
FV. Prof. Dr. techn. Dipl. Ing. L. Machherndl
Mr. E. Neumann
Dr. G. Petters
H. Rönitz
Dr. H. Steffens
Dr. R. Teichmann
Dr. techn. Dipl. Ing. J. Zartl
Dr. H. Zimmermann

Assistance and Preparation

Dr. A. Loibl
Ing. Wantke
Mag. Leberbauer
Ass. Girsch
Ass. Neuwirth

Gabmayer
Podhorsky
Neufingerl
Luger
Prets
Stütz
Gschmeidler
Nothelfer
Thomas

Appendix V

In-plant training and plant visits

To the special interest of the participants inplant training at fibre producing companies and plant visits to fibre-using companies during the three-and-a-half-week course were organized. The selection of the companies gave a regional and technical survey on the Austrian man-made fibre-producing and using industry:

1) Chemiefaser Lenzing AG Pulp, Viscose staple fibres, Acrylic staple fibres, Paper, Sodiumsulfate, Sulphuric acid, Synthetic sheets and foil strips, Machinery for processing synthetic sheets	Lenzing O.Ö. A-4860
2) Austria Faserwerke GesmbH Polyester staple fibres	Lenzing O.Ö. A-4860
3) Chemie Linz AG Filaments, Spun fibres, Sheets, Non-wovens, Fertilizers, Pharmaceuticals	Linz, A-4021, St. Peterstraße 25
4) Erste Österr. Glanzstoff-Fabrik AG Viscose rayon for textile end-uses and tyre cords	St. Pölten N.Ö. A-3100
5) Maschinenfabrik Dr. O. Angleitner Textile machinery for producing non-wovens	Linz, O.Ö. A-4010
6) Maschinenfabrik Dr. Ernst Fehrer Textile machinery for producing non-wovens	Linz, O.Ö. A-4010
7) Textilwerke Sattler AG Heavy weight cloths, canvas, coated fabrics, fabrics for technical end-uses (awnings) Air-houses	Rudersdorf, A-7571 Graz Thondorf, A-8010

8) Bunzl & Biach AG — Ortmann, A-2762

Pulp, Paper, Non-wovens
(needle felt floor covering)

9) Pottendorfer Textilwerke AG — Pottendorf, A-2486
Felixdorf, A-2603

Cotton spinning and weaving including the processing of viscose fibres and synthetic fibres. Texturizing of synthetic fibres.

Appendix VI

P A R T I C I P A N T S

Country	Name	Position and address
Argentina	RUDA, Margarita Maria	Researcher in Charge of Textile Chemical Laboratory Centro de Investigaciones Textiles (INTI) Libertad 1235 Buenos Aires
Bangladesh	TAHIR, Abu	Assistant Manager Meghna Textile Mills Tongi, Dacca
Brazil	LYRA, Mario Souto	Textile Engineer Department of Industry and Commerce Av. Nilo Pecanha 50, sla 2612 ZC-P, Rio de Janeiro
Bulgaria	DITCHEVSKI, Ivan Spassov	Director Woollen Textile Factory 119 Tsar Samuil Street, Sofia
Egypt	EL-SAEIDY, Mohamed Fawzy Ibrahim	Research Chemist Societé Misr pour la Rayonne Research an Investigations Dept Misr Nylon Kafr el-Dawar 26, Sarhank Street Louran, Alexandria
Iran	BADIE, Abdolmajid	Head of Textile Industries Department Ministry of Industries & Mines, Teheran
Mexico	LANUZA ESCOBAR, José Agustin	Head, Dept. of Pharmaceuticals & Organic Intermediates Blvd. Circunvalcion 21 Col. Atlantida, Mexico City
Philippines	ALFONSO, Ricardo	Supervising Science Technologist Philippine Textile Research Institute P.O. Box 3596, Manila
Romania	STEFANESCU, Vasile	Engineer, Head of Marketing Dep. Centrala Industriala de Fire si Fibre Chimice Savinesti, Piatra Neamt

Country	Name	Position and address
Singapore	TSENG, Hseu Tsan	Deputy Chief Engineer Singapore Nylon Corp. (Pte) Ltd. 8 Yung Ho Road Jurong Town, (22)
Turkey	YALINAY, I. Engin	Chief Project Engineer Sümerbank General Directorate Chemical Project Department 9 Sergenler Street Iccebeci, Ankara
Yugoslavia	POZLEP, Anton	Research Manager Industrija voskoznih proizvoda i celuloze Centar za hemijska vlakna Viskoze Beograd, Terazije 13/I

Appendix VII

Social Activities

Visit to the Monastery of Klosterneuburg. Dinner (Monastery Restaurant)
Sight-Seeing Tours in Vienna, Dinner, Fish Restaurant, Fischamend
Visit to the Lake District Salzkammergut, Dinner at Altmünster (in connection with the in-plant training and plant visits)
Trip to the Wachau, Dinner at Joching
Visit to the State Opera ("Fidelio")
Visit to the Spanish Horse Riding School
Folklore Evening at Jennersdorf
Farewell Party, together with LKT at Sievering
Unido-Cocktail
Private Invitations

The UNIDO in Vienna has to be congratulated on bringing about this training programme and we want to express our appreciation to all UNIDO-members who have contributed to the realization of this project.

We hope that we could fulfill the intentions of UNIDO by giving the participants as much as possible of insight, knowledge and experience.

We also want to give our thanks to the participants for their co-operation and wish them an effective evaluation in their native countries.

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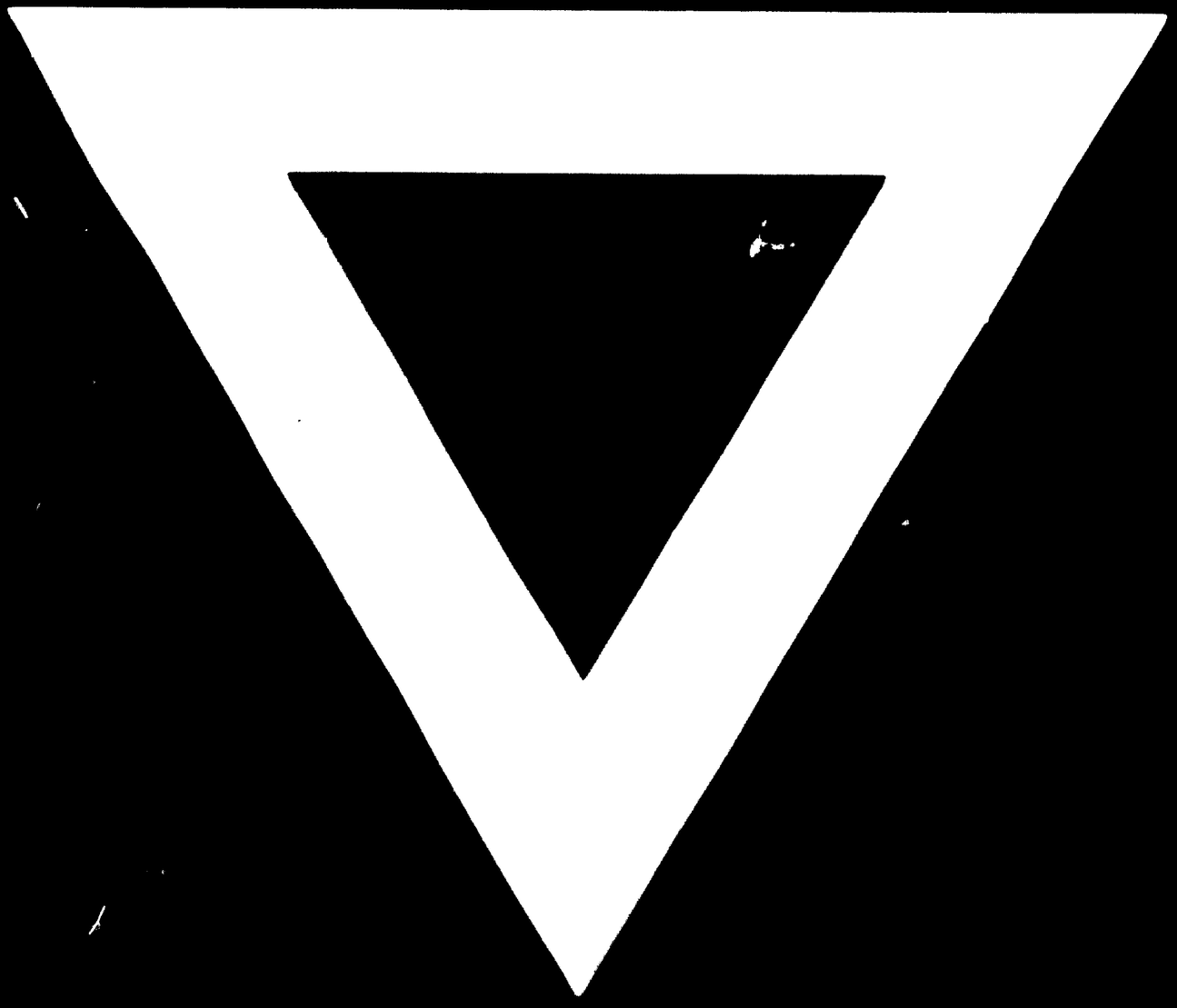

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