

dicembre
6th November 1951

Mr. Sven Lindmark
Specialmaskiner Aktiebolag
Gothenburg, Surbrunnsgat. 6
SWEDEN

Dear Mr. Lindmark,

I am in receipt of your letter of 24th November. I had studied the plant for methanol production in Argentina in collaboration with the Montecatini CO., that furnished also internal parts of catalysis chambers directly from Italy.

I am hearing from your letter that there is interest for a new methanol plant in Sweden. Actually, we have made a considerable improvement in this field and can grant very high yields and methanol purity.

In the case that you like it, I will speak about to Montecatini Co., to examine the possibility of furnishing the project of a plant and the know out.

I should like to know the plant capacity and the raw materials that should be used, the Company that will build up it and the locality where it will be built.

Awaiting to hear you again, I am

Yours faithfully

(Prof. G. Natta)



VERTRAULICH

SPECIALMASKINER A.B.

TELEGRAMS: SPECIALMASKIN. GOTHENBURG

CODES: A. B. C. 5TH. ACME. MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79

11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:
STOCKHOLM
MALMÖ

GOTHENBURG, den 24. Nov. 1951.
SURBRUNNSGAT. 6
SWEDEN

Sonnabend.

Herrn Professor Giulio Natta,
Via Mario Pagano 54,
MILANO
Italien

YOUR REF.

OUR REF. Dir/EB

Sehr geehrter Herr Professor;

Wie Ihnen bekannt haben wir seinerzeit den Vertrag mit Sentab für die Lieferung der Methanol-Anlage nach Argentinien für Skodawerke abgeschlossen.

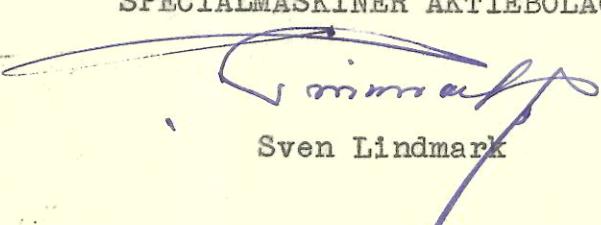
Unterzeichneter, Direktor Lindmark, hatte in diesem Anschluss auch das Vergnügen mit Ihnen während Verhandlungen in Stockholm zusammenzutreffen.

Es besteht hier in Schweden momentan Interesse eine Methanol-Anlage zu errichten, und weil die Liefermöglichkeiten der Skodawerke nicht die aller besten sind, gestatten wir uns anzufragen, ob Sie dafür Interesse haben könnten mit uns in diesem Objekte zusammenzuarbeiten.

Wir stehen mit dem fraglichen Reflektanten schon in Verbindung (es ist nicht Sentab), und es wäre in Ihrer Antwort auch von Interesse für uns zu erfahren, wie Sie glauben eine Lieferung also von den Maschinen-teilen in diesen Tagen vielleicht von Ihrem oder einem anderen Lande durchzuführen wäre.

Wir bleiben Ihre Antwort mit Interesse erwartend und empfehlen uns bestens.

Hochachtungsvoll
SPECIALMASKINER AKTIEBOLAG


Sven Lindmark

P.S. Wir korrespondieren auch Englisch.



SPECIALMASKINER A.B.

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11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:

STOCKHOLM

MALMÖ

Besie
GOTHENBURG, den 31. März 1952
SURBRUNNSGAT. 6 Montag
SWEDEN

YOUR REF.

OUR REF.

Dir/EH

Herrn Professor G. Natta
Istituto Di Chimica Industriale
Politecnico
Piazza Leonardo da Vinci
MILANO/Italy

Sehr geehrter Herr Professor!

Unter weitere Bezugnahme auf mein Schreiben vom 27.ds.Mts. berichtige ich die Anfrage derart, dass die Kapazität der Anlage 53 Tonnen N entsprechend 65 Tonnen H₃N pro 24 Stunden sein soll.

Hochachtungsvoll

SPECIALMASKINER A.B.

Gothenburg - Surbrunsgat 6

March 27th, 1952

Prof.G.Natta
Istituto Chimica Industriale
Milano

Dear Professor Natta,

Many thanks for your letter of March 10th.

The question of the Methanol plant has not developed any further up to now, but I am in constant contact with the customer.

The reason why I am writing you to-day is a subject of a new Nitrogen Fertilizing plant to be built in Sweden. I have worked this project with Skoda for long time, but understand there is nothing to get from that source at present, and now being free to contact any other supplier, I ask you in the first line, whether you and the Montecatini Company gave interest in co-operating with us regards this business.

I enclose herewith a very brief specification in German.

It is the question of the same customer, to which we supplied for Skoda a nitrogen factory shortly after the war.

The question of erecting this new plant will be decided by the Swedish Government, I think in the next month, and after that the matter can be more detailed discussed.

As soon however as I receive your positive reply regards co-operation, I will give you all particulars available at present.

Yours faithfully

S P E C Z I F I K A T I O N

Ueber Stickstoffwerk

Eine kompl. maschinelle Ausrüstung zur Herstellung von Kalksalpeter als Düngermittel.

Kapazität der Anlage: 53 Tonnen H₃N pro 24 Stunden

Ausgagsmaterial; Gas von Schieferölwerken folgende Zusammensetzung:

CO ₂	5.9 %
CO	13.2 %
H ₂	56.8 %
N ₂	22.8 %
CH ₄	1.0 %
Ar	0.3 %
H ₂ S	100 mg/Nm ³ (kann auf 450 mg steigen)

woraus die erforderliche Quantität H und N durch Spalten und Reinigung herzustellen ist.

Alles H₃N soll in Salpetersäure oxidiert werden. Die Salpetersäure soll zur Lösung von Kalkstein verwendet werden und die Lösung alsdann zu verdampfen zur Herstellung von Kalksalpeter gewöhnlicher Düngermittel-Qualität.

Lagergebäude und Sackstation sind auszuführen

Dampf, Strom und Wasser liefert das befindliche Schieferölwerk

Erforderliche Reparaturwerkstätten sind schon vorhanden

Kurze Lieferung ist fuer das Geschäft ausschlagsgebend.

SPECIALMASKINER A.B.

Gothenburg - Surbrunsgat 6

March 27th, 1952

our ref: Dr/EH

Prof.G.Natta
Istituto Chimica Industriale
Milano

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ITALCABLE

Prefisso e Numero; Provenienza; Numero Parole - Data - Ore - Indicazioni eventuali.

LUM800 ISW173 GOTEBORG 27 17 1222

PER LA RISPOSTA
TELEFONATE AL **N. 88.38**

= ELT PROFESSOR NATTA
ISTITUTO CHIMICA INDUSTRIALE
POLITECNICO PIAZZA
LEONARDODAVINCI 32 MILANO =



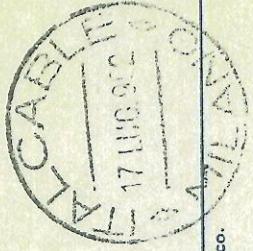
TELEGRAMMA *via Italcable 6/a Italo Radio*

1952 LUGLIO 17

LAZ
POG

1103

YOURS 14TH RECEIVED 30 TONS DAY CORRECT GREAT INTEREST FUR FURAL
AWAITING PLANT AND WORKING COSTS = ELEKTROKEMI SKA +



ITALCABLE

Prefisso e Numero - Provenienza - Numero Parte - Data - Ore - Indicazioni eventuali.

+ 1 UMC 296 1S59 STOCKHOLM 18 3 1240 IR

24/2/59
PER LA RISPOSTA N. 88.38

NATTA ISTITUTO DI CHIMICA
INDUSTRIALE PIAZZA
LEONARDODAVINCI MILAN

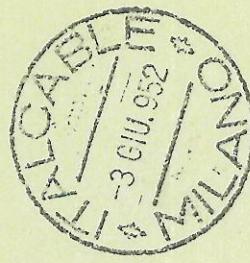


TELEGRAMMA via Italcable via Italcable
1952

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= REISEKOSTEN AN AVIOLINER UEBERSANDT BITTE BESORGET FAHRKARTEN
TELEGRAPHIERT ANKUNFTDATUM = SIMONSSON +



TELEFONATO
ore 15.30 MILANO

Il Governo Italiano e le Società Italcable non assumono alcuna responsabilità in conseguenza del servizio telefonico.

ELEKTROKEMISKA AKTIEBOLAGET - Bohus (Sweden)

Società Montecatini,
Settore Progetti e Studi,
Via Filippo Turati, 18
Milano (Italia)

BOHUS

(SWEDEN)

Your reference: Your letter Our reference
Tf/ir July 7th, 1952 CF/GW

Dear Sirs,

re: Methanol.

We have received, with thanks, your letter of the 7th ult. together with covers containing calculations attached thereto.

It is with great interest that we have made ourselves acquainted with these statements which, however, will have to be examined by us further which will take some time.

As soon as it has been possible for us to take up our position in reference to this project, we will not fail to revert to the matter and, in the meantime, we remain, Dear Sirs,

Yours faithfully,

ELEKTROKEMISKA AKTIEBOLAGET
TAGE NILSSON

fto: illegibile

MONTECATINI
SOC. GEN. PER L'INDUSTRIA MINERARIA E CHIMICA
ANONIMA - CAPITALE VERSATO L. 30.000.000.000
MILANO

SETTORE PROGETTI E STUDI

MILANO 18 agosto 1952
VIA F. TURATI, 18

Preg.mo Signore
Prof. Giulio Natta
Politecnico di
Milano.

In relazione alle conversazioni che Ella ha avuto con la Elektrokemiska A.E. di Bohus (Svezia) ed al successivo invio da parte nostra di un avanprogetto per la produzione di 30 t/d di metanolo, ci pregiamo allegarLe copia della risposta inviataci dalla sud detta Ditta svedese.

"MONTECATINI"
redin *D'Adda*

All.: 1
Tf/ca

C. C. POSTALE: 3/3711 - CAM. DI COMM.: 524 - CASELLA POSTALE: 3596 - TELEFONO: 6323
TELEFONI INTERURBANI CHIEDERE: GABBRO-MILANO - TELEGRAMMI: GABBROPROGETTI

MOD. DIPS 5 (A 5) 5000 - 7-50

October 9, 1952

Ing.C.A.Fredriksson
Elektrokemiska Aktiebolaget
BOHUS (SWEDEN)

Dear Sir,

please excuse me if I have not replyied till now to your letter of August 9, which arrived here during Sommer holidays.

When back, I had to go abroad; then I have been ill. Just a short time ago I came back to work.

In your letter you were asking me for some informations.

Furfural - Yields in furfural, by employing flax straw as raw material, have been higher than 12% (based on dried weight), by using our process. With wheat straw yields are lower (about 10%). Will send you me a sample of about 20 Kg of birch chips, we shall be able to examine them in our laboratory plant.

Fatty alcohols - the cost of catalysts used for manufacturing fatty alcohols produced in Italy is at present 1600-2000 Italian Lire, that is about 3 \$ /Kg.

Yours faithfully
(Prof.G.Natta)

July 14, 1952

E'lektrokemiska Aktiebolaget
BOHUS - SWEDEN

Methanol

Back to Milan after a trip in Germany, I found your letter of June 27 (CF/CW).

In your letter you are speaking of a plant producing 10t/day, while in meetings of Göteborg we spoke of a plant of 30 t/day. While I was away from Milan, the Montecatini Soc. sent you the cost estimation for a methanol plant producing 30 t/day. Please wire to me if you think to build up a plant for 10 t/day. In this case Montecatini will send you a new cost estimation.

But now I read the English text of the project sent you by Montecatini and observed that some errors of translation have been made: they will be rectified by the Montecatini.

Data related to the utilities correspond to those resulting from plants operating since a long time, and will be subjected to little improvements on the basis of results that have been recently obtained in plants of the Montecatini. For example, only 2,2-2,4 Nm³ of synthesis gas were employed per Kg. of methanol. I think that there is no other in Europe, nor in U.S.A., which have a so low gas consumption.

In the project of the Montecatini, the possibility of utilising your hydrogen, a by-product of soda and chlorine production, is not considered; you have to consider that 6000 m³/day of this hydrogen correspond to a decreasing of naphta consumption (2500 Kg) or coke (3000 Kg) and also of oxygen for gasification. Coke may be substituted for wood coal.

Using wood coal, the gases are sulphur free and it is possible to avoid the plant for conversion of synthesis gas, in the case that the composition of gases may be corrected by addition of

LEKTROKEMISKA AKTIEBOLAGET

ESTABL. 1895

Cables:
ELEKTROKEMISKA
GOTHENBURG

Codes:
BENTLEY'S, RUDOLF MOSSE,
A. B. C. 5TH & 6TH ED.



Telephone:
GOTHENBURG
680520

Bankers:
SKAND. BANKEN A/B
GOTHENBURG

Prof. Ing. Giulio Natta Esq.,
c/o. Istituto di Chimica In-
dustriale del Politecnico,
Piazza Leonardo Da Vinci, 32,
M i l a n o .
Italien.

Your reference:

Your letter

Our reference

BOHUS
SWEDEN

July 31st, 1952

CF/GW

Aug. 9th, 1952

Dear Sir,

Methanol. We have received your letter of the 14th ult. and calculations from Messrs. Montecatini. The statements thus received have been noted by us with interest and we will again revert to this matter when we have had time to go further into the data submitted.

Furfurol. We are in receipt of your letter of the 31st ult. re this product. In this case, too, we are at the present time busy examining our possibilities of starting a manufacture of this kind in Sweden, i.e. the availability of a suitable raw material, in particular. As soon as we have been able to form a conception of the possibilities of obtaining cheap birch chips, we will send you a sample. We would not fail to inform you that there is a good supply of flax straw and rape and wheat straw. It would, therefore, be useful for us to know whether these materials are suitable as raw materials. Flax straw alone is not likely to be available in sufficient quantities.

Fatty Alcohols. We thank you for the information given us in this connection and can tell you that this project, too, is now being examined by us here. In the calculation representing cost of manufacture of fatty alcohols there is included an item of 15-20 kos. catalyzer and it would be of interest for us to know the approximate price of same.

Yours faithfully,

ELEKTROKEMISKA AKTIEBOLAGET

TAGE NILSSON

b. a. Fredriksson

ELEKTROKEMiska AKTIEBOLAGET

ESTABL. 1895

Cables:
SELEKTROKEMiska
GOTHENBURG

Codes:
BENTLEY'S, RUDOLF MOSSE,
A. B. C. 5TH & 6TH ED.



Telephone:
GOTHENBURG
680520

Bankers:
SKAND. BANKEN A/B
GOTHENBURG

Herrn Professor Ing. Giulio Natta,
Piazza Leonardo Da Vinci, 32,
Milano.
Italien.

Your reference:

Your letter

Our reference

BOHUS
SWEDEN

CF/GW

den 27. Juni 1952

Betr.: Methanol.

Wir nehmen Bezug auf die angenehme Zusammenkunft, die wir vor einiger Zeit, teils hier in Bohus, teils in Göteborg, mit Ihnen hatten.

Im Verlauf unserer damaligen Rücksprache wurde vereinbart, dass Sie nach Ihrer Rückkehr einen Präliminarkalkul der ungefährten Kosten für die Errichtung einer Fabrik für etwa 10 t Methanol pro 24 Stunden baldigst machen sollten. Elektrische Ausrüstung für die Erzeugung evtl. erforderlichen Gleichstroms sollte in diese Kosten nicht mit einbezogen werden. Auch die erforderlichen Zisternen sollten darin nicht mit einbegriffen werden, sondern nur deren Anzahl und Volumen. Ausser diesen Angaben sollten Sie uns eine ungefähre Zahl des erforderlichen Bauraumes nennen.

Eine Präliminarkalkulation für die Herstellungskosten von Methanol sollte auch ausgearbeitet werden. Es sollten darin die Arbeitslöhne nicht in Kronen angegeben werden, sondern nur wie viele Leute erforderlich sein würden, um die verschiedenen Einheiten der Fabrik zu treiben.

Betr.: Furfurol.

Ueber die Herstellung von Furfurol, z.B. aus Birkenabfällen, nach Ihrem Verfahren wurde auch gesprochen. Da die amerikanischen Preise bei Lieferung in Kesselwagen etwa schwed.Kr. 1.20 je Kilo betragen, wird dieses Projekt voraussichtlich nicht besonders verlockend sein, doch würden wir Ihnen für eine ungefähre Angabe der Errichtungskosten und einen ungefähren Kalkul der Herstellungskosten für Furfurol dankbar sein. Eine geeignete Grösse der Pro-



Herrn Professor Ing. G.Natta, Milano. 27.6.1952. Blatt 2.

duktion können wir nicht vorschlagen, sondern es wäre einfacher, wenn Sie diese selbst angeben könnten. Wenn Sie in dem Kalkul nur die für jede Tonne hergestelltes Furfurol benötigte Menge Birkenabfälle angeben, können wir selbst den Kalkul hier fertig bringen.

Ihrer gefl. Rückäusserung sehen wir baldigst mit Interesse entgegen und zeichnen inzwischen

hochachtungsvoll

ELEKTROKEMISKA AKTIEBOLAGET
TAGE NILSSON

gm. b. G. Fredriksson



SPECIALMASKINER A.B.

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CODES: A. B. C. 5TH. ACME, MOSSE

TELEPHONES: 137985 - 131185 - 118501 - 138279

119070 - 119071 - 136014 - 111185

GOTHENBURG C,
SURBRUNNSGATAN 6
SWEDEN

den 17. Juli 1952.
Donnerstag.

B R A N C H E S:
STOCKHOLM
MALMÖ

Herrn Prof. Dott. Ing. Giulio Natta,
Politecnico Di Milano,
Piazza Leonardo da Vinci 32,
MILANO/Italien

YOUR REF.

OUR REF. Dir/EB

Sehr geehrter Herr Professor,

Vielen Dank für Ihr freundliches
Schreiben vom 27. v.Mts.

Sofort nach Erhalt desselben habe
ich Herrn Osvald in Milano depeschiert, dass Sie dort
erst am 7. Juli sowie auch Ing. Orsoni zu treffen wären.

Direktor Osvald ist hier nach Schweden
noch nicht zurückgekehrt. Ich hoffe indessen zuversichtlich,
dass er doch Gelegenheit bekam, verschiedene interessante
Angelegenheiten mit Ihnen zu besprechen.

Sofort nach Rückkehr wird sich Herr
Osvald mit mir in Verbindung setzen. Sehr interessant
wäre indessen auch von Ihnen über den Besuch was zu er-
fahren.

Betr. Herstellung von hohen Alkoholen durch Hydrierung
von Oele.

Ich danke für die übersandte, interessante
Spezifikation. Oberingenieur Fredriksson ist bis 28.ds.Mts.
auf Urlaub, und ich kann also die Sache mit ihm vor der
Zeit nicht besprechen.

Inzwischen würden Sie vielleicht auch
die Gelegenheit haben die gewünschten Angaben über die
Methanol-Synthese zu senden.

Mit freundlichem Gruss

Ihr ergebener

elektrolytic hydrogen. The cost of the wood coal is too high in Sweden and its use will increase the cost of methanol more than the diminution of the cost due to the elimination of the conversion plant.

The most convenient solution is to use naphtha as raw material. Production of synthesis gas from naphtha is at present effected in a plant of the Montecatini, giving very good results.

Furfural

For a production of 5 t/day of furfural, at least 50 t/day of birch residues are necessary. A lower production of 2 t/day, for example, cannot let furfural to be produced at a cost lower than 1.20 Kr/Kg. In the case that the necessary amounts of raw material are at your disposal, please communicate it to me. I shall send you the data relating to the plant and working costs.

I am at your disposal for other informations that interest you.

With best regards, I am

Yours very sincerely

(Prof. G. Battia)



SPECIALMASKINER A.B.

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B R A N C H E S:
STOCKHOLM
MALMÖ

YOUR REF.

OUR REF. Dir/EH

GOTHENBURG C, den 17. Juni 1952
SURBRUNNSGATAN 6
SWEDEN

Dienstag

Herrn Professor Giulio Natta
Politecnico Milano
Istituto Di Chimica Industriale
Piazza Leonardo da Vinci
MILANO/Italy

Sehr geehrter Herr Professor!

Höfl. bezugnehmend auf die Unterredungen bei Ihrem Besuche hier in Göteborg gestatte ich mir Ihnen mitzuteilen, dass Herr Direktor Osvald applaniert hat, am Abend den 3. Juli in Milano einzutreffen. Selbstredend kann er auf die Reise was verspätet werden. Ich habe ihm indessen Ihre obige Adresse sowie Tel.No. gegeben, und er wird sich gestatten, mit Ihnen nach Eintreffen in Milano in Verbindung zu gehen.

Ich habe auch Montecatini über den Besuch laut Brief anbei informiert, und wäre Ihnen sehr verbunden, falls Sie Herrn Direktor Osvald dort gütigst introduzieren wollten.

Mit freundlichem Gruss und
vorzüglicher Hochachtung

10

Einl. 1 Brief

Mailand, 27.6.1952

Herrn Dir. Lindmark
Specialmaskiner Gothenburg C. (Sweden)
A.B. Surbrunnsgatan 6

Sehr geehrter Herr Direktor,

Bezugnehmend auf die Unterredungen während meines Besuches in Göteborg teile ich Ihnen mit, dass ich in der nächsten Woche auf Reise bin und daher Herr Ostwald in Mailand bevor dem 7 Juli nicht treffen kann. Auch wird Ing. Orsoni Mittwoch 3 Juli nachmittag abfahren und 6 Juli zurückkommen. Herr Ostwald könnte Ing. Tredici der Firma Montecatini treffen. Erst nach meinem Zurückkunft werde ich Ihnen die gewünschten Angabe über die Methanol Synthese schicken.

Anbei schicke ich Ihnen einen Bericht über die Herstellung von hohen Alkoholen durch Hydrierung von Öle, die Herr Obering Fredriksson interessierte. Im Fall dass die Elektrokemiska A.B. über das Verfahren keine Interesse hatte. Bitte ich Sie zu prüfen ob es andere schwedischen Industrien gibt, die darüber Interesse haben können.

Mit freundlichem Gruss

Ihr ergebener

För Prof. Natta

, June 17th, 1952
Tuesday

M O N T E C A T I N I
Via F. Turati, 18
MILANO/Italy

Or/sl.
Dir/EH

Dear Sirs,

Re visit of Mr. G. Osvald

With further reference to your letter of May 24th we now beg to inform you that Mr. Osvald will arrive in Milano on July 3rd late. It may be that he will be somewhat delayed but he will go in contact with you at earliest opportunity after his arrival.

In accordance with the very pleasant conversation we had here in Gothenburg with Prof. Natta we have asked Mr. Osvald in the first line to contact Mr. Orsoni.

No doubt you know that M. Osvald as member of the Board of Directors of the Co-operative Union and Technical Manager of their chemical industries represents the most important customer in your line here in Sweden.

Anything you will do for Mr. Osvald will therefore be very much appreciated by us.

The writer, Mr. Lindmark, has now planned to visit you in the beginning of September.

We have also informed Mr. Natta about Mr. Osvald's visit.

Please accept our best regards

Yours sincerely,

SPECIALMASKINER AKTIEBOLAG



SPECIALMASKINER A.B.

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B R A N C H E S:

STOCKHOLM

MÄLMO

GOTHENBURG C, June 3, 1952
SURBRUNNSGAT. 6
SWEDEN

Tuesday

Prof. G Natta, Esq.
Istituto Di Chimica Industriale
Politecnico
Piazza Leonardo da Vinci
MILANO/Italy

YOUR REF.

OUR REF. C

Dear Sir,

This is to acknowledge due receipt of your letter of the 31st ult. and we are happy to note that we shall soon be able to meet here.

Our director Mr. Lindmark is in Stockholm at present but he will return until the 9th inst., and he looks forward with much interest to this opportunity to discuss matters of common interest with you. We are preparing for your visit and if we could assist you in some respect, please do not hesitate to write us on your requirements.

Yours faithfully,

SPECIALMASKINER AKTIEBOLAG

O Melin/bb



SPECIALMASKINER A.B.

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CODES: A. B. C. 5TH, ACME, MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79

11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:
STOCKHOLM
MALMÖ

YOUR REF.

OUR REF. Dir/EH

GOTHENBURG, March 4th, 1952
SURBRUNNSGAT. 6
SWEDEN

Professor G. Natta
Istituto Di Chimica Industriale
Politecnico
Piazza Leonardo da Vinci
MILANO/Italia

Dear Professor Natta,

I duly received your letter of November 6th, which has been very delayed in reply owing to the fact that the customer has so little idea about what he wants, and as I do not dispose of any expert, it is rather difficult to discuss matters with him.

Now I am not quite familiar with how the Montecatini Company is working, and if they should have interest in sending over a man here to take the matter technically up. If this is the case, I shall contact the customer and ask him if he has interest in going the matter earnestly through with you.

Awaiting the pleasure to hear from you again, I am,

Yours faithfully,



SPECIALMASKINER A.B.

TELEGRAMMADRESS: SPECIALMASKIN, GÖTEBORG

TELEFON LINJEVÄLJARE
13 79 85, 13 11 85, 11 85 01
13 82 79, 11 90 70, 11 90 71
13 60 14, 10 54 70

GÖTEBORG C , den 1. August 1952
SURBRUNNSGATAN 6 Freitag

Herrn Prof. Dott. Ing. Giulio Natta
Politecnico Di Milano
Piazza Leonardo da Vinci 32
MILANO/Italien

EDER REF.
VÄR REF.

Dir/EH

Sehr geehrter Herr Professor!

Unter weitere Bezugnahme auf mein Schreiben vom 17.v.Mts. wurde ich nunmehr durch Direktor Osvald über seinen kurzen Besuch bei Montecatini detailliert informiert.

Er bedauert ausserordentlich, dass er zufolge der Hitze nicht in Milano mehr als einen Tag bleiben konnte, umso mehr als seine Familie auch dabei war. Er musste sich sofort nördlich ziehen. Er ist hierüber sehr traurig, weil er mit Ihnen so gerne zusammentreffen wollte, hofft indessen dass dies doch in einer absehbarer Zeit noch möglich wird.

Dir. Osvald erzählte mir, dass er eine sehr interessante Aussprache mit Ingenieur Tredici hatte. Besonders interessierte es ihn die Synthesgashersstellung aus Öl, was Montecatini wahrscheinlich schon beherrschte. Ich schreibe hierüber heute separat an Montecatini.

Dir. Osvald interessiert sich auch sehr für die in USA nunmehr zur Verwendung gekommenen kombinierten Düngemittel, d.h. Kali, Fosfat und Stickstoff zusammen, und man ist hier der Ansicht, dass diese Düngemittel besonders für Schweden Zukunft hat. Vielleicht könnten Sie mir über Ihre Erfahrungen in dieser Richtung schreiben? Es ist natürlicherweise ein Projekt auf lange Zeit, aber Dir. Osvald folgt die Entwicklung der Düngemittelerzeugung und ist bestrebt, wenn es in Köping zum Umbau oder Ausbau kommt, das Geeignete zu erzielen.

Ganz vertraulich will ich Ihnen auch mitteilen, dass Dir. Osvald bei und von Montecatini einen sehr guten Eindruck erhielt, was mich sehr freut, umso mehr als er auf seine Reise auch gewisse Unternehmungen in Deutschland besuchte.

Er schätzt auch sehr, dass Montecatini für eine Zusammenarbeit Interesse zeigte, woraus sich ganz bestimmt was entwickeln wird. Vielleicht wollen Sie die Betreffenden bei Montecatini hierüber vertraulich informieren.

Betr. Herstellung von hohen Alkoholen durch Hydrierung von Öle

Oberingenieur Fredriksson, Elektrokemiska, ist erst gestern von Urlaub zurück. Ich habe mit ihm heute telefonisch gesprochen, und nach Studieren des erhaltenen Berichtes werde ich auf die Angelegenheit näher zurückkommen.

Für diese Herstellungsmethode dürften auch Olje slagerierna und Karlshamns Oljefabrik Interesse haben, und sollte Obering. Fredriksson kein Interesse haben, werde ich die Angelegenheit mit den genannten Unternehmungen besprechen.

Icherfahre auch von Obering. Fredriksson, dass er die erwünschten Angaben über die Methanolsynthese direkt erhalten hat, und er wird diese sage Anfang Sept. näher besprechen. Ich wäre indessen dankbar, falls Sie mir einen Durchschlag derselben zugehen lassen wollten.

Mit freundlichem Gruss

Ihr *ergoecet*

modnauft

(Prof.G.Natta)

Yours faithfully

awaiting the pleasure of hear from you, I am

With reference to your Letter of March 4th (Dir/EH), I beg to inform you that I shall come to Gothenborg and participate in the International Symposium on the reactivity of solids. I shall stay from 9th to 12th June. I think that in these rays we shall be able to discuss together the questions related to the synthesis of methanol.

Göteborg - SWEDEN
Surbrunnsgat 6
Specialmaskiner A.B.

May 31, 1952

April 2, 1952

SpecialMaskiner A.B.
Surbrunnsgat 6
Gothenburg, Sweden

Politecnico

I am in receipt of your letter Dir/EH of March 31.

I have informed Montecatini Soc. Which will get in touch with you directly.

With best regards, I am

Yours sincerely

(Prof.G.Natta)



SPECIALMASKINER A.B.

TELEGRAMS: SPECIALMASKIN. GOTHENBURG

CODES: A. B. C. 5TH. ACME. MOSSE

TELEPHONES: 1379 85 - 1311 85 - 1185 01 - 1382 79

1190 70 - 1190 71 - 1360 14 - 1111 85

BRANCHES:
STOCKHOLM
MALMÖ

GOTHENBURG C, den 28. Nov. 1952
SURBRUNNSGAT. 6 Freitag
SWEDEN

Herrn Professor Giulio Natta
Via Mario Pagano 54
MILANO/Italien

YOUR REF.

OUR REF. Dir/EH

Sehr geehrter Herr Professor!

Leider bekam ich in Italien eine unangenehme Influenza sodass ich nach meiner Rückkehr 14 Tage krank war.

Nun bin ich indessen wieder in Schwung und will da die erste Gelegenheit benutzen, Ihnen für die aussergewöhnlich freundliche Aufnahme bestens zu danken. In diesem Sinne gestattet sich auch meine Frau ihre besten Grüsse an Ihre Frau Gattin und Sie zu überbringen.

Für Ihren Besuch in Schweden nächsten Sommer sende ich Ihnen beiliegend das neuerschienene Buch MY VISIT TO SWEDEN, und ich hoffe gerne, dass Sie dies interessant finden.

Was die Geschäfte anbetrifft, so erlaube ich mir Ihnen einliegend Durchschlag meines heutigen Schreibens an Montecatini zu übersenden.

Herr Direktor Fredriksson bei Elektrokemiska Bohus lässt sich bestens begrüßen. Er hat endgültiges Interesse für die Methanolanlage. Nur die schwierigen Zeiten verhindern eine Entscheidung. Früher oder später kommt indessen was daraus.

Bei unseren Unterredungen waren Sie so liebenswürdig in Aussicht zu stellen, mir einen Durchschlag Ihrer Beschreibung über die Furfurolherstellung zu übersenden, um für mich zu ermöglichen, diese Angelegenheit mit den beiden Firmen Tannin und Weibull zu besprechen. Vielleicht wollen Sie mir gelegentlich diese Beschreibung übersenden.

Ich wiederhole meine Dankbarkeit für Ihre freundliche Aufnahme, und sowohl meine Frau als ich hoffen gerne diese in Schweden nächsten Sommer einigermassen reziprieren zu können.

Mit bestem Gruss

Ihr ergebener

Einl. 1 Buch

1 Durchschlag vom Briefe an Montecatini

Va.



SPECIALMASKINER A.B.

TELEGRAMS: SPECIALMASKIN, GOTHENBURG

CODES: A. B. C. 5TH. ACME, MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79

11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:

STOCKHOLM

MALMÖ

YOUR REF.

OUR REF. Dir/EH

GOTHENBURG C, October 8th, 1952
SURBRUNNSGAT. 6
SWEDEN

Wednesday

Professor G. Natta, Esq.,
Instituto Di Chimica
Industriale Del Politecnico
Piazza Leonardo da Vinci, 32
MILANO/Italy

Dear Professor Natta,

Many thanks for your letter of October 6th, from which I regret to note that you have been ill for some time.

I do hope, however, that you will now be quite fit again.

I will see this afternoon Mr. Nilsson, the Manager, and Mr. Fredriksson of Elektrokemiska and discuss with them the Methanol project.

Owing to foreign competition the Swedish chemical industries have difficulties at present, and I therefore fear the result will not be very favourable.

I will be in Milano between the 20th and 23rd inst. and shall contact you at first possible opportunity.

Until that I remain, with best regards,

Yours sincerely,

Sven Lindmark



SPECIALMASKINER A.B.

TELEGRAMS: SPECIALMASKIN. GOTHENBURG

CODES: A. B. C. 5TH, ACME, MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79

11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

B R A N C H E S:
STOCKHOLM
MALMÖ

GOTHENBURG , den 24. Sep. 1952.
SURBRUNNSGAT. 6
SWEDEN

Mittwoch.

Herrn Professor Giulio Natta
Via Mario Pagano 54
MILANO
ITALIEN

YOUR REF.

OUR REF. Dir/EB

Sehr geehrter Herr Professor,

Hierdurch gestatte ich mir Ihnen mitzuteilen, dass ich gegen Mitte Oktober in Milano sein wird und es sollte mich sehr freuen die Möglichkeit zu erhalten bei dieser Gelegenheit mit Ihnen zusammenzutreffen.

Ich habe auch Montecatini über meinen Besuch unterrichtet und dabei könnte das Projekt Methanol - Elektrokemiska sowie Synthesengas Kooperativa weiter besprochen werden.

Mit bestem Gruss.

Ihr ergebener

March 10, 1952

Politecnico

Specialmaskiner A.B.
Surbrunnsgat. 6
Gothenburg, SWEDEN

I am in receipt of your letter of March 4th (Dir/TH).

I think that it is not the matter of sending a technician of the Montecatini Company to Sweden if it is not cleared on the whole what your customer wants. In particular, it is necessary to know what is the raw material (e.g. woodcoal) and what is the desired capacity of the plant. On the basis of these data, we shall be able to let you know the approximative plant and working cost. In the case that your customer will find the matter interesting, negotiations will be developed.

Another solution could be this, that you or your customer come to Italy for a preliminary discussion of the question.

Yours faithfully

(Prof. G. Natta)

15th December 1952

Dr. Lindmark
Specialmaskiner A.B.
Surbrunnsgat. 6
Gothenburg - Sweden

Dear Dr. Lindmark,

many thanks for your kind letter of November 23 (Dir/RH) and
for the book "My visit to Sweden" that you have sent to me. It is
very interesting and it will be certainly very useful during my
stay in Sweden.

Herewith I am sending you a short report on furfural production
by the Natta-Bombrini Paroi Delfino process.
With best regards, I remain

Yours very truly

(Prof. G. Natta)

October 6, 1952

Specialmaskiner A.B.

Surbrunnsgat 6

Gothenburg - SWEDEN

Dear Sir,

please excuse me delaying so long in replying to your letter of September 24 (Dir/EB).

This delay is owing to the fact that I was away from Milan, then I have been ill, and only today I am back to the Polytechnic.

I shall be very pleased to see you in Milan, so we shall be able to discuss the problems relative to the Methanol Project.

With best regards, I am

Yours faithfully

(Prof. G. Natta)

INST. FÖR SILIKATKEMISK FORSKNING

PROF. DR J. A. HEDVALL

CHALMERS TEKNISKA HÖGSKOLA

(Sweden) CÖTEBORG

Gibraltargatan 5 j.

Tel. 16 23 18

29 oktober 1952

Monsieur le Professeur G.Natta
Istituto di Chimica Industriale

M i l a n o

=====

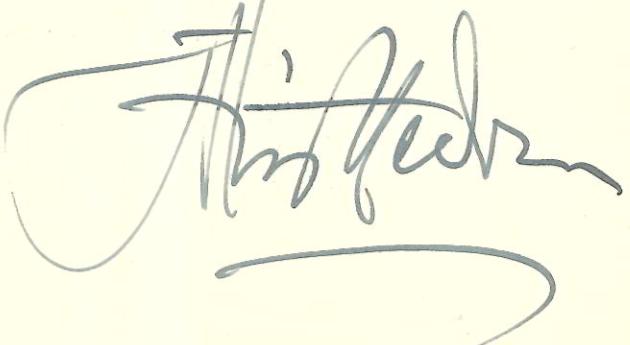
Mon cher Collègue et Ami,

Je m'occupe maintenant avec la publication des conférences du congrès. Malheureusement je ne trouve pas votre mémoire; probablement ne pas délivré avant votre départ.

Notre travail étant très pressé, je vous prie d'envoyer votre manuscrit avec les figures et leurs légendes par retour du courrier.

Je me permets aussi de vous remercier très cordialement pour votre aimable invitation à vous visiter. Ce serait pour ma femme et moi un plaisir très apprécié.

Je vous prie de bien vouloir agréer, cher Collègue, l'expression de mes sentiments bien cordiaux.



le 17 Novembre 1952

Prof.Dr.J.A.Hedvall
Inst.för Silikatkemisk Forskning
Chalmers Tekniska Högskola
Gibraltargatan 5j
Göteborg (Sweden)

Mon cher Collègue et Ami,

j'ai reçu votre lettre du 29 Octobre, et je vous prie de m'excuser si je vous réponds seulement aujourd'hui, puisque j'étais en voyage hors de Milan.

A mon vif regret, je n'ai plus le manuscrit complet de mon travail. Certainement je ne vous l'ai pas délivré avant mon départ, mais je ne le trouve plus. Comme je vous avais déjà écrit, j'ai laissé tout, c'est-à-dire mes notes, diagrammes et figures, je ne sais plus où, si dans les salles du Congrès ou à l'hôtel. Maintenant nous sommes en train de la refaire, mais je pense que je ne pourrai pas vous envoyer mon manuscrit avec tous les diagrammes et figures avant le 15 Janvier. Est-ce-qu'il est trop tard?

Je vous prie de m'excuser et de bien vouloir agréer, mon cher Ami, l'expression de mes sentiments les meilleurs.

(Prof.G.Natta)

INST. FÖR SILIKATKEMISK FORSKNING

PROF. DR J. A. HEDVALL

CHALMERS TEKNISKA HÖGSKOLA

(Sweden) GÖTEBORG

Gibraltargatan 5 j.

Tel. 16 23 18

21 november 1952

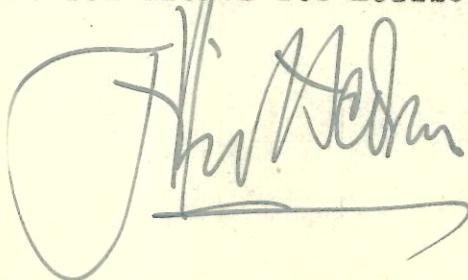
Professeur G.Natta
Istituto di Chimica Industriale
Del Politecnico
Milano
=====

Mon cher Collègue et Ami,

Je vous remercie beaucoup de votre aimable
lettre. Ça me fait de la peine de vous déranger.
Cependant notre publication des conférences
montrerait une "structure défectueuse" sans votre
contribution.

Alors nous attendons aussi tôt que possible
votre mémoire, en tout cas avant le 15 Janvier.

Je vous prie de vouloir agréer mon cher ami,
l'expression de mes sentiments les meilleurs.



Prof. Hedvall

Chalmers Tekniska Högskola
Göteborg

Enverrai manuscrit probable demain
par avion Neder

CHALMERS UNIVERSITY OF TECHNOLOGY

INST. FOR SILICATE RESEARCH

PROF. DR. J. A. HEDVALL

Dr. phil. h. c. Dr. Eng. h. c.

M. R. Swed. Acad. Sci.

M. Swed. Eng. Acad. Sci.

(Sweden) GÖTEBORG

Gibraltargatan 5 j.

Tel. 16 58 23

28/6

M. le Professeur L. Nau,

Je vous remercie beaucoup de
votre très aimable lettre. Ça me
fait grand plaisir que vous ayez
apprécié nos arrangements.

Je vous remercie aussi de votre
invitation. Très attrayante en effet.

Nous nous cherchons de trouver vos
filles, malheureusement sans succès

Tous nos vœux à vous
et Madame Nau

J. Hedwall

Le 14/1/1953

Prof. J.A.Hedvall
Chalmers Techniska Högskola
Göteborg

Mon cher Collègue et Ami,

ci-enclosed, je vous envoie le manuscrit de mon travail "Influence des réactions à l'état solide sur l'activité des catalyseurs à base d'oxyde de zinc".

Il n'y a pas encore les figures, mais je vous les enverrai lundi prochain. Je vous prie d'excuser le retard et d'agréer, mon cher Collègue et Ami, la sincère expression de mes sentiments les meilleurs. Veuillez présenter mes hommages à Madame Hedvall et mes salutations à Votre fils.

(G.Natta)

le 20 Janvier 1953

Prof. Jr. J.A.Hedvall

Inst. för Silikatkemisk Forskning

Chalmers Tekniska Högskola

Gibraltargatan 5 j.

Goteborg (Sweden)

Mon cher Collègue et Ami,

ci-enclos, je vous envoie les figures qui sont à joindre au manuscript du travail:

"G.Natta,P.Corradi - Influence des réactions à l'état solide sur l'activité des catalyseurs à base d'oxyde de zinc".

Je pense qu'il n'y aura aucune difficulté pour les réduire aux dimensions requises pour la publication.

Dans le manuscript, j'avais déjà indiqué la position dans laquelle les figures doivent être insérées.

Veuillez m'excuser pour le retard et agréer, mon cher Collègue, mes salutations les meilleures

(Prof.G.Natta)

BJÖRN HOLMSTRÖM

ÖSTERMALMSTORG 5

STOCKHOLM

TG: pittsburghbjorn

Stockholm, July 8th, 1954.

Professor Giulio Natta,
Istituto di Chimica Industriale,
Piazza Leonardo da Vinci,
M i l a n o.

My dear Professor Natta:

Thank you very much for the delightful lunch
to which you were kind enough to invite me in Milano.

It was indeed nice to meet you and have an opportunity to be informed also about some of the interesting projects which you are studying in the laboratory. I hope that I shall soon again have the pleasure of meeting you and that we will then discuss somewhat more in detail the main lines of interest of Columbia-Southern Chemical Corporation.

I have asked my Company's Pittsburgh Office to forward to you the Annual Report and the instructive booklet published for University Students mainly.

I am looking forward to receiving your letters of introduction to Bombrini Parodi.

Sincerely yours,

Björn Holmström
Björn Holmström

15 . 5. 1953

Mr. E. Hemlin

Editeur des "Proceedings of the
International Symposium on the reactivity
of solids - GOTHENBURG 1952"

Je regrette beaucoup que Vous n'ayez pas été satisfait de la traduction française de mon travail. Je l'ai envoyé tout de suite pour la correction à quelqu'un qui connaît assez bien la langue française et qui a pu remarquer qu'en effet le texte précédent contenait plusieurs fautes. Ci-joint je Vous envoie le nouveau texte en espérant que maintenant tout aille mieux et que Vous puissiez le transmettre à l'imprimerie.

Je Vous prie d'agréer cher Monsieur l'expression de mes meilleures sentiments.

(Prof. G. Natta)

9 Luglio 1954

Egr.Ing. Conte Scribani Rossi
Direttore Generale
Soc.Bombrini Parodi Delfino
Roma - via del Corso 267

Egregio Ingegnere,

Il Sig. Björn Holmström che è addetto tecnico per l'Europa della Columbia-Southern Corporation Pittsburgh, Pa e che mi è stato presentato da una serissima industria svizzera, mi ha espresso il desiderio di conoscere la Vs. Società.

Mi permetto perciò di presentarlo a Lei, affinchè Ella possa conoscerlo e presentarlo a qualcuno dei Suoi tecnici.

Cordiali saluti

G.Natta

9 Luglio 1954

Egr.Dr. Duca Serra di Cassano
Presidente della
Soc.Bombrini Parodi Delfino
Roma - via del Corso 267

Egregio Dottore,

Il sig. Björn Holmström che è addetto tecnico per l'Europa della Columbia-Southern Corporation Pittsburg Pa e che mi è stato presentato da una serissima industria svizzera, mi ha espresso il desiderio di conoscere la Vs. Società.

Mi permetto perciò di presentarlo a Lei, affinchè Ella possa conoscerlo e presentarlo a qualcuno dei Suoi tecnici.

Cordiali saluti

G.Natta

9 Luglio 1954

Egr. Sig. Björn Holmstrom
Stockholm - Östermalmstorg 5

Egregio Sig. Holmstrom,

Le invio con la presente due lettere di presentazione per l'Ing. Scribani Rossi e per il Dr. Serra di Cassano della Società Bombrini Parodi Delfino di Roma. Potrebbe anche presentarsi a mio nome al Prof. Rolando Rigamonti, Direttore dell'Istituto di Chimica Industriale del Politecnico di Torino - Castello del Valentino.

Distinti saluti

(Prof. G. Natta)

N.2 allegati

9 Luglio 1954

Egr. Sig. Björn Holmström
Stockholm - Östermalmsgatan 5

Egregio Sig. Holmstrom

Le invio con la presente due lettere di presentazione per l'Ing. Sribani Rossi e per il Dr. Serra di Cassano della Soc.B.P.D.

BJÖRN HOLMSTRÖM

ÖSTERMALMSTORG 5

STOCKHOLM

TELEGR.: PITTSBURGHBJORN

Stockholm le 5 aout 1954.

Egr. Prof. Giulio NATTA
Piazza Leonardo da Vinci
M i l a n o

Cher Monsieur Natta,

En vous remerciant très sincèrement pour votre aimable lettre d'introduction auprès des Messieurs de la Société Bombrini Parodi-Delfino je signale que je viens de faire une visite chez eux à Rome où j'ai délivré les deux lettres , que vous m'aviez confiées.

Ma visite était de type tour d'horizon et je suis heureux d'avoir fait une si agréable visite cette fois.

Veuillez agréer, cher Monsieur Natta, l'expression de mes sentiments les meilleurs.

B. Holmström

September 1st, 1954.

FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA
SWEDENTELEFONER: 355 55 , 355 56 , 355 57 , 355 58
400 57 , 400 58ny 26
1

International Symposium on Macromolecular Chemistry

Instituto Chimica Industriale Politecnico
Piazza Leonardo da Vinci 32,
Milano, Italy

Gentlemen,

In my formal application for the Symposium I also asked you to arrange accomodation for me in Milano. I would like to cancel that room because I have got a private accomodation, c/o Prof. M. Baccaredda, Piazza Vesuvio 15, Milano.

I am greatful for the hotel reservation in Hotel Regina, Turino, during the Turino Session, obtained through the Congress Bureau (CIT).

Yours sincerely


Bengt G. RånbyInstitute of Physical Chemistry
University of Uppsala
Sweden

201

31 August 1955

Slesie

Herr Dr.B.Sjöberg
Uddeholms Aktiebolag
Skoghallsverken
Elektrokemiska Fabriken
SKOGHALL

Sehr geehrter Herr Doktor

nach einem Ferienaufenthalt nach Mailand zurückgekehrt,
antworte ich Ihnen hiermit auf Ihr Schreiben vom 9 August.

Ich bestätige, dass alle meine Patente auf dem Gebiet der Polymerisation der alpha-Olefine der Firma Montecatini gehören.

Was das Polyaethylen anbetrifft, produziert die Soc.Montecatini zwei Typen dieses Polymeren:

1. Polythen (Fertene) auf Lizenz des I.C.I.- Processes. Dieses Polyaethylen besitzt bekanntlich verzweigte Ketten und eine begrenzte Kristallinität.

2. Polyaethylen (Rotene) nach Patenten von K.Ziegler, fuer das die Montecatini exclusiver Patentnehmer fuer Italien ist. Das Zieglersche Polyaethylen unterscheidet sich vom I.C.I.-Produkt durch seinen hohen Kristallinitätsgrad. Es kann je nach Belieben mit Molekulargewichten zwischen 30.000 und 500.000 hergestellt werden.

Fuer etweige Lizenzen fuer die Zieglerschen Patente des Polyaethylens können Sie sich an Herrn Prof. K.Ziegler (Max Planck Institut fuer Kohlenforschung, Mülheim (Ruhr) wenden. Die Soc. Montecatini ist in der Lage ihr "Know how" fuer die Produktion und die Verwendung dieser Polymeren an die Lizenznehmer der Zieglerschen Patente zu erteilen.

Die Soc.Montecatini verfügt ausserdem ueber meine Patente zur Gewinnung der anderen Polyolefine (Polypropylen, isotaktisches Polystyrol, Polybutylen usw), sowie ueber die späteren Patente Zieglers auf diesem Gebiet, fuer die ganze Welt (ausschliesslich Deutschlands).

Ich bin der Ansicht dass verschiedene Poly-alpha-Olefine und insbesondere das Polypropylen in der Zukunft eine nicht geringere Bedeutung als das Polyaethylen erreichen werden.

Falls Sie Gelegenheit haben sollten nach Mailand zu kommen, würde ich mich ueber Ihren Besuch freuen

*Herzliche Grüsse
Dre berke*

(G.Natta)

Dr. E.H. Immergut

FYSIKALISK-KEMISKA INSTITUTIONEN
UPSALATELEFONER: 355 55 . 355 56 . 355 57 . 355 58
400 57 . 400 58*Yarne Fransén*
Uppsala, May 25th 1955

Professor G.Natta
Instituto di Chimica Industriale
del Politecnico
Milano, Italy.

Dear Professor Natta :

After a year's work here at the Institute of Physical Chemistry in Uppsala, I am now planning my return to Brooklyn, where I will be working on fibers. In this connection your excellent work on "isotactical polymers" is of course of great interest and I would very much like to discuss these materials with you before my return to Brooklyn. I will be in Milano on Thursday, June 16th and would be very happy if I could visit you at that time, provided this is a convenient day for you.

Hoping that it will be possible for you to spare some time for me on June 16th and looking forward to meeting you again, I am, with best wishes ,

Yours sincerely,

E.H. Immergut

May 31, 1955

Dr. Edmund H. Immergut
Institute of Physical Chemistry
Uppsala University
U P P S A L A

Dear Dr. Immergut,

I received your letter of May 25, In regards to your scheduled visit to Milan on June 16, I inform you that I will participate on 6th to 15th June to the Fourth World Petroleum Congress in Rome, but I hope to be back in Milan on 16th June. If I am here, I shall be very glad to meet you again and to discuss with you some subjects of mutual interest.

With best regards, I am,

Sincerely yours,

Giulio Natta

8. 26. 1955

(189)
Svezia

Prof. S.Claesson
Institute of Physical Chemistry
Upsala (Svezia)

Dear Prof.Claesson,

as you probaly have received, as a member of the Commission on Macromolecules, a copy of the "Report on the Meeting of the Macromolecular Commission in Zurich", I take the liberty of sending you a copy of a letter I have sent today to Prof. H.Mark on the subject.

Very sincerely yours

(Prof.G.Natta)

21 July 1953

olitecnico-Milano

Secretary of
XIIIth International Congress of
Pure and Applied Chemistry
STOCKHOLM 70

Having been impossible to send to you the fee required for the Journey to Narvik, I inform you that I have decided to give up the idea of that trip.

Yours truly

(Prof.G.Natta)

THE ROYAL INSTITUTE OF TECHNOLOGY,
DEPARTMENT OF INORGANIC CHEMISTRY
Kemistvägen 37. Tel. 23 65 20 (ext. 173, 174)
STOCKHOLM 70, SWEDEN

Stockholm, den 9. August, 1955

(290)
Wesie

LGS/D

Professor Giulio Natta
Istituto di Chimica Industriale
Politecnico
Piazza Leonardo da Vinci 32
Milano
Italien

Lieber Herr Kollege Natta!

Als wir nun glücklich in Stockholm zurück sind, wollten wir Ihnen nochmals herzlich danken für alle Freundlichkeit die Sie uns in Milano erwiesen haben. Persönlich war ich sehr dankbar über die Gelegenheit, etwas über Ihre bedeutungsvolle Forschungen lernen zu können.

Meine Frau wohnt nun mit unseren Kindern auf einer Insel in den Stockholmer Schären und lässt herzlich grüßen. Mit bestem Gruss auch an Ihre Frau Gemahlin,

Ihr sehr ergebener


Lars Gunnar Sillén

Kristoffers
2/9/55
euroline

THE ROYAL INSTITUTE OF TECHNOLOGY,
DEPARTMENT OF INORGANIC CHEMISTRY
Kemistvägen 37. Tel. 23 65 20 (ext. 173, 174)
STOCKHOLM 70, SWEDEN

Stockholm, May 20th, 1955.

LGS/BL

Professor G. Natta
Istituto di Chimica Industriale
Politecnico di Milano
Milano
Italien

Dear Dr Natta,

In July, I am going in my car to southern Europe in order to visit various chemical institutions. I would appreciate it very much if I could have a chance to see you on Monday, 18. July, and also to visit some of the chemical institutions of the Politecnico. Unfortunately, I can have only that day since I shall have to start out on the morning of Tuesday July 19th, in order to be in Zürich for a meeting at 14.30 on July 20th.

May I ask you if you are going to be at the institution on July 18th and if not, to whom I should address myself. I would also appreciate very much if you could try to think out which people I should see at the Politecnico in that much too short day. Of course I would like to see something of Professor Piontelli's institution; otherwise my general interests are in inorganic and physical chemistry. I would also like to know something about the educational system at the Politecnico, but perhaps this could be taken care of if I could get a couple of programs. I do not find it so hard to read your beautiful language, although, unfortunately, I can not write and speak it.

I am sorry for causing you inconvenience and hope it will be not too great.

Best regards to yourself and to Professor Piontelli.

Thank you in advance.

Sincerely,


Lars Gunnar Sillén

May 26, 1955

Professor Lars-Gunnar Sillén
The Royal Institute of Technology
Department of Inorganic Chemistry
Kemistvägen 37
Stockholm 70, Sweden

Dear Professor Sillén,

I received your letter of 20th May and I shall be very glad to meet you in Milan, on July 18, if I am here. Otherwise, I hope to see you in Zurich, because I too will participate to the Congresso of Chemistry and to the Symposium of the Macromolecular Chemistry.

In regard to your request of visiting our laboratory, I shall be pleased to let you see it, and, as I am not sure to be in Milan, my assistants are instructed for accompanying you.

I am sending your letter to Professor Piontelli, who will reply directly to you.

With best regards, I am,

Very sincerely yours,

Giulio Natta

204

September 2, 1955

Werke

Professor G. Rausing
Aktiebolaget TETRA PAK
L U N D = Sweden

Dear Mr. Rausing,

Please excuse my delay in answering to your kind letter of August 10, but your letter has reached Milan when my summer holidays had just begun. In regard to your interest in the questions regarding the polyethylene, I inform you that I personally worked principally in the field of the polymerization of propylene and other alpha-olefins. However, I study particularly and minutely the crystallographic structure and the properties of different types of polyethylene, and I shall be very glad to discuss with you these arguments and the poly-alpha-olefins. My patents on the poly-alpha-olefins belong to the Montecatini Company, and I shall be able to put you in contact with the Montecatini, if afterwards it can be of interest for you. The Montecatini produces the polythene with the process I.C.I. (Fertene) and with the process Ziegler (Rotene).

I think that in the future the polypropylene would become almost important as the polyethylene, because it is possible to obtain it in two types. The first type is crystalline, isotactical, with the melting point of about 165°C (30°C higher than that of high crystalline polyethylene); suitable for manufacturing fibres, films, tubes, etc. The second type is linear, amorphous not crystallizable (not isotactical) and gives more elastic products. The production cost of polypropylene could result lower than that of polyethylene.

Awaiting your further news, I remain,

Very truly yours,

Giulio Natta

(251)

Geric



LUND · SWEDEN

TELEFON 17700
CABLE ADDRESS:
TETRAPAK

AKTIEBOLAGET

T E T R A P A K

Lund, August 10th, 1955.

Professor Giulio Natta
Politecnico
Milano
Italien

Dear Sir,

I understand from Dr. Sunner that he has had the opportunity of discussing some of our problems, more particularly our need for great quantities for polyethylene, with you at the 14th International Congress of pure and applied chemistry at Zürich. He probably mentioned at the time that we are now the largest consumers of polyethylene in Skandinavia, using it to coat paper for packages, primarily for liquid products. This is now growing into an international business and we feel certain that our future need of polyethylene will greatly exceed those of to-day.

Until now, there has been no polyethylene manufactured in this country, but there is a great interest in this type of manufacture. I would therefore appreciate very much if I could come to see you to discuss the technical side of the question, both as regards the types of polyethylene as required in this country, and the possibility of arranging manufacture here.

Very sincerely

Yours,
G. Rausing.
G. Rausing.

GR/ALL

Il costo di ~~pro~~^{costo} il polipropilene potrebbe aumentare anche
più tardi se i guelli del polietilene

~~fatto~~ con

- per il polietilene e' un'altra esistente - i fornitori
ridisegneranno il prof. Ricoperto accanto la espans. sopra-
della v. d. now ~~sulla~~ ~~now~~ per le prese ind.



AKTIEBOLAGET
T E T R A P A K

(313)
Skriv

LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

Telex nr 3329

Lund, 6th September 1955.

Professor Dr. Giulio Natta
Istituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci, 32
MILANO
Italien

Dear Sir,

Many thanks for your letter of 2nd September which reached me to-day. I am very glad to see that you will be able to receive me and also to put me in touch with the Montecatini Company.

As you point out in your letter polypropylene seems to be a most interesting material from the converters' point of view, but although I have received small samples of it from various sources I have not been able to obtain sufficient quantities for a larger scale experiment.

I would appreciate very much if you could spare me some of your time. I hope you will let me know when it would be convenient to you, and also if possible, if I could visit Montecatini at the same time.

I hope that our discussion may prove interesting and fruitful to all parties.

Very sincerely yours,

G. Rausing
G. Rausing

GR/LS

UDDEHOLMS AKTIEBOLAG
SKOGHALLSVERKEN

TELEGRAMMADRESS: SKOGHALLSVERKEN, KARLSTAD
TELEFON: KARLSTAD 27200, växel
POSTGIROKONTO: 72360

(332)
SKOGHALL, den 9. September 1955.

Eder ref.:

Herrn Professor G. Natta

Vår ref.:

Istituto Di Chimica Industriale
Del Politecnico
Piazza Leonardo da Vinci, 32
M i l a n o /ITALIEN

Sehr geehrter Herr Professor!

Wir haben Ihre Briefe vom 18. und 31. August empfangen und danken herzlichst für die vielen Auskünfte, die wir in diesen erhalten haben. Mit grossem Interesse haben wir von Ihrer Mitteilung Kenntnis genommen, dass es möglich sein würde "Know how" von Montecatini zu erhalten, wenn wir ein Lizenzübereinkommen für die Zieglersche Methode erwerben können. Professor Ziegler hat aber das Schutzrecht für die Methode an die Arbeitsgemeinschaft für Olefinchemie, Essen, verkauft, und wir wissen noch nicht, ob wir ein Lizenzabkommen mit diesem Unternehmen zu Stande bringen können. Wir untersuchen eben diese Möglichkeit.

Wenn es möglich ist, haben wir die Absicht unsere Herstellung von Polyäthylen auf Äthylalkohol und nicht auf Olefin-Kohlenwasserstoff aus Mineralöl zu basieren, und wir sehen daher augenblicklich keine Möglichkeit eine Herstellung von Polypropylen oder Polybutylen aufzunehmen. Wir sind von der Entwicklung auf diesem Gebiete doch sehr interessiert.

Mit der Hoffnung Gelegenheit zu haben auf diese Angelegenheit zurückzukommen danken wir Ihnen nochmals sehr für Ihr freundliches Entgegenkommen.

Hochachtungsvoll
SKOGHALLSVERKEN
ELEKTROKEMISKA FABRIKEN
STEN KJELLGREN

Gunnar Seby

B. Seby

TRYCKT PÅ UDDEHOLMS KRAFTPOST

(243)

September 13, 1955

Svesse

Prof. A. Tiselius
Biokemiska Institutionen
der Universität
U P S A L A (Sweden)

Dear Prof. Tiselius,

I remember very well your kind interest in our works on the isotactical and syndiotactical polymers and I am taking the liberty of sending you a copy of the conference I presented at the International Symposium on Macromolecular Chemistry in Zurich and of the communication presented at the International Congress of Pure and Applied Chemistry held in Zurich. These works are in course of being printed on "La Chimica e l'Industria" and, respectively, on "Die Makromolekulare Chemie" and on the "Journal of Polymer Science".

I am taking the liberty also of sending you a copy of a Prof. Mark's letter, regarding the proposal for the official acceptance of the words "isotactical" and "syndiotactical".

I enjoyed very much I had been able to meet you in Zurich and I look forward to seeing you soon in Italy or in Sweden.

With my best personal regards, I am,

Very sincerely yours,

Giulio Natta

N. 3 enclosures

UDDEHOLMS AKTIEBOLAG
SKOGHALLSVERKEN

TELEGRAMMADRESS: SKOGHALLSVERKEN, KARLSTAD
TELEFON: KARLSTAD 27200, växel
POSTGIROKONTO: 72360

(248)
Presse

SKOGHALL, den 9. August 1955.

Eder ref.:

Vår ref.: Elektrokemiska Fabriken
Dr. B. Sjöberg/Oe

wichtig für Montag morgen
Herrn Professor G. Natta

Instituto di Chimica Industriale
del Politecnico

M i l a n o

ITALIEN

Sehr geehrter Herr Professor!

Wir haben erfahren, dass Sie neue wichtige Methoden für Herstellung von Polyäthylen ausgearbeitet haben, und dass Sie Patentgesuche über diese Verfahren eingereicht haben.

Da wir an einer Anlage für Polyäthylenherstellung grosses Interesse haben, wenden wir uns an Sie mit der Anfrage, ob Sie Interesse haben eine solche Anlage für unsere Rechnung in Schweden lizenziieren zu wollen.

Wenn dies der Fall ist, wären wir dankbar, wenn wir Sie in Milano besuchen dürfen um diese Angelegenheit näher zu diskutieren.

Mit grösstem Interesse sehen wir Ihrer Antwort entgegen.

Hochachtungsvoll
UDDEHOLMS AKTIEBOLAG
SKOGHALLSVERKEN
Elektrokemiska Fabriken

276

September 16, 1955

G. Natta

Prof. G. Rausing
Aktiebolaget TETRAPAK
L U N D - Sweden

Dear Professor Rausing,

Thank you for your letter of September 6. In regard to your visit, I inform you that probably I shall be out of Milan from October 20 to November 7. Until October 20 and after November 7, if I leave Milan, it will be only for 1-2 days, and therefore, you may choose the date you like better.

However, I think that the Montecatini is not for the time being in a position to have useful discussion with you about licensees of polypropylene patents, because they would like to conclude before the studies on the uses of these polymers.

With best regards, I am,

Very sincerely yours,

Giulio Natta

8. 26. 1955

Göteborg

Prof. Arne Tiselius
Biokemiska Institutionen - Universität
UPSALA (Svezia)

Dear Prof. Tiselius,

as you probably have received, as a President of Union, a copy of
the "Report on the Meeting of the Macromolecular Commission in Zurich",
I take the liberty of sending you a copy of a Letter I have sent today
to Prof. H. Mark on the subject.

Very sincerely yours

(Prof. G. Natta)



AKTIEBOLAGET

T E T R A P A K

(371)

Vanne
Gremer

LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

Telex nr 3329

Lund, sept. 15, 1955.

Professor Giulio Natta
Istituto di Chimico Industriale del
Politecnico.
Piazza Leonardo da Vinci 32
MILANO.

Italien.

Dear sir,

As I will not be able to leave Sweden until next month, I wonder whether it would be possible for you to receive me in Milano either late in the afternoon of oct. 12. or on october the 13th, in order to discuss polyethylene and the methods for making it.

I would also appreciate very much if you could introduce me to those people at Montecatini in responsible positions with whom I could discuss the same problem, more particularly the possibility of starting polyethylene production in this country.

I will arrive in Milano in the afternoon of oct. the twelfth, (at half past two), and will have to leave in the afternoon of the fourteenth, (at five o'clock).

I certainly hope that some time during these days will be convenient both to you and to Montecatini.

If not, I could change my schedule, but this will involve changing a number of appointments in various cities.

I hope and believe that a discussion would be of benefit to everybody concerned.

Looking forward to your reply, I remain

Very sincerely yours,

Gad Rausing.



AKTIEBOLAGET

T E T R A P A K

399

West
Sweden

LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK
Telex nr 3829

Lund, 19th September 1955.

Professor Dr. Giulio Natta
Istituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci, 32
MILANO
Italien

Dear Sir,

From your letter of 16th September I note that you could receive me at any time before October the 20th. I would appreciate very much if I may visit you on October the 13th, preferably in the morning. If this is acceptable to you I will come to the Istituto di Chimica Industriale del Politecnico at 9 o'clock.

I look forward to an interesting discussion!

Very sincerely yours,

Gad Rausing.

Gad Rausing

GR/LS

Avv. S. L. Lund 19.9.1955.
Per favore si venga a Milano il 13
Ottobre a qualsiasi ora. Attesto per
tutte le ore e la sera anche
nella settimana successiva
e per un anno, nel caso
di nuovo invito, una
l'invito per Giovedì 13 Ottobre
alle ore 9.

110

July 14, 1955

Sparre

Prof. A. Tiselius
Biokemiska Institutionen
der Universität
U P P S A L A (Svezia)

Dear Prof. Tiselius,

As I remember your kind interest in my works on the synthesis of isotactical polymers, I am taking the liberty of sending you copy of my paper on crystalline structure of isotactical polystyrene, and a preprint of the paper I presented at the Fourth World Petroleum Congress.

I am very glad to let you know that, besides the isotactical Polymers with their chains containing series of asymmetric carbon atoms with the same steric configuration, we have succeeded recently, in synthetising some high crystalline polymers of hydrocarbons, containing alternately "levo" and "dex~~tro~~" carbon atoms, and in determining their structure that is planar.

I shall announce these works during the International Symposium of Macromolecular Chemistry in Zurich, on July 28.

Looking forward to seeing you in Zurich, I send you my best personal regards.

Very sincerely yours,

Giulio Natta

Enclosures.

(312) Tours
Vern
September 22, 1955

Mr. Gad Rausing,
Aktiebolaget TETRA PAK
LUND- Sweden

Dear Mr. Rausing,

Thank you for your letter of September 19. I think I shall be in Milan on October 13, and therefore, I shall wait for you at 9 o' clock.

With best regards, I am,

Very sincerely yours,
Giulio Natta.

FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA

TELEFON: VÄXEL 39460

Uppsala, September 28th, 1955

Venil
Trani

Professor G. Natta,
Milano.

Dear Sir,

For a long time I have intensively been looking for a high molecular substance with certain specified properties. My intention is to apply quite a new method of controlled degradation of polymers. Therefore I must have a high polymer of $M.W. > 10^6$ with parallel chains and with such chemical properties that it both before and after degradation could be investigated in solution by physical chemical methods e.g. centrifugation, viscosity etc. Up till now I had no success in finding the right polymer.

A short time ago, however, my eyes fell upon a publication of yours, J.Am. chem. Soc. 77, 1708 (1955) "Crystalline high polymers of α -olefins", which gave the information that by a special synthesizing method head-to-tail polymers could be obtained, furthermore that these could be drawn to fibers giving parallel arrangement of the molecules and so far I can understand of the publication that at least in the case of crystalline polystyrene fibers they were soluble in benzene.

If my last assumption is right a well-oriented high crystalline polystyrene $M.W. > 10^6$ of your type would be a most suitable substance for me and as I understand that certain amounts of this materiel is produced in your laboratories I take the liberty of asking if you could be so kind to supply me with a sample.

If you are willing to help me the best sample for me would be: Polystyrene $M.W. > 10^6$ with the narrowest possible M.W.-

FYSIKALISK-KEMISKA INSTITUTIONEN

UPPSALA

TELEFON: VÄXEL 394 60

distribution, $\sim 100\%$ crystallinity and drawn into a thickest possible fiber. An amount of two grams would be enough. With these figures I only want to indicate what I am aiming at and what would be best for me. I hope that even samples with less extreme properties could be used. Any details regarding the sample I hope to be in opportunity to discuss with you later on.

Yours sincerely,

Åke Lewné

(351)

October 1, 1955

Very truly yours,

Dr. Åke Svensson
Fysikalisk-Kemiska Institutionen
U P P S A L A - Svezia

Dear Dr. Svensson,

Referring to your letter of September 28, I inform you that I can send you ^{only} sample(s) of powder of Polystyrene M.W. > 1.000.000 because of the enormous difficulties we had in drawing to fibers polystyrenes of such high molecular weight. These difficulties are due to the high viscosity of polymer, also at temperatures considerably higher than that of 1st order transition (crystallinity disappears at 230°C). Therefore, I cannot supply you with thick fibers of highest molecular weight polymers.

If you are interested in, I shall be able to send you samples of powder of linear polyethylene with molecular weight of 500.000 - 1.000.000.

I have only very small quantities of fractionated polymers, and, therefore, I can send you only products derived from synthesis with a rather large molecular weight distribution. The low molecular weight polymers, may be removed very easily by solvent extraction, using Soxhlet Model extractors.

With best regards,

Very truly yours,

(Prof. G. Natta)

FYSIKALISK-KEMISKA INSTITUTIONEN

UPPSALA

TELEFON: VÄXEL 39460

Å.S./AS

Uppsala, October 17th, 1955.

Vane
Wrenier

Professor G. Natta
Istituto di Chimica Industriale del Politecnico
Piazza Leonardo da Vinci
Milano.

Dear Professor Natta,

Many thanks for your kindness to supply me with a sample of your isotactical polystyrene and for the information given in your letter.

As I am just in detail planning my experiments I would appreciate some further information regarding the sample.

In your publication J. Am. Chem. Soc. 77, 1708 (1955) you mentioned a sample with $[\eta] = 3.8$ in benzene. In my case $[\eta] = 3.2$ in tetraline at 100° was stated. Does that mean that my sample cannot be completely dissolved in benzene or toluene but only the lowest molecular fraction of it? I tried to dissolve in toluene at room temperature but without any success. At the boiling temperature of toluene most of the polystyrene went into solution but there were still undissolved flocks in the flask. The concentration was calculated to slightly less than 0.1 g/100 ml. As I pointed out in my first letter I must work at room temperature. Further, what solvent was used for extraction of the low molecular weight molecules?

In your letter was enclosed a curve showing $[\eta]$ as a function of time during a degradation experiment. If you could supply me with information about what temperature, if the experiment was made in the solid or liquid phase and what substance you used it would help me very much.

When you tell me about the properties of the isotactic polystyrene I fully understand the extreme difficulties you had in drawing the sample into fibers. As this point is very important to me I plan to undertake some experiments in this direction. Therefore I would appreciate some information about

the following points from the literature:
1) Preparation of the isotactic polystyrene.
2) Influence of various solvents on the isotactic polystyrene.
3) Influence of various solvents on the isotactic polystyrene fibers.

Prof. G. Natta

Okt. 17, 1955.

the construction of the apparatus for drawing of the fibers and at what temperature it is suitable to draw at.

I hope I have not asked too many questions, my excuse is that I don't want to spoil any of the material you gave me.

If you would send me the reprints of your articles on isotactical substances I would be very glad.

Yours sincerely,

Åke Svensson

Åke Svensson

(365)

October 3, 1955

Varil
Thunen

Dr. Åke Svensson

Pysikalisk - Kemiska Institutionen
UPPSALA - Svezia

Dear Dr. Svensson,

Following up my letter of October I , I am sending you a little sample of isotactical polystyrene with an intrinsic viscosity $[\eta] = 3,2$. I am enclosing also some data on the thermic depolymerisation of the isotactical polystyrene.

I inform you that the presence of tertiary carbon atoms in the principal chain ^{makes} ~~renders~~ the peroxidation much easier , mainly if the peroxide is heated in the presence of air.

When in a polymer there are some peroxides, the depolymerisation takes place in a manner very different than that in their absence.

A polymer that is peroxidized at its surface , depolymerise more easily than a completely hydroperoxide free product.

With best regards , I am,

Very sincerely yours,

Prof. G. Natta.

Enclosures

(439)

October 19, 1955

Vane
Ghezzi

Dr. Åke Svensson
Fysikalisk-Kemiska Institutioner
Uppsala Universitet
U P P S A L A = Sweden
=====

Dear Doctor Svensson,

I received your letter of October 17 and I am replying to your questions.

The sample I sent to you was different from that showed in the publication. In fact, that I sent, was one of our raw not fractioned samples, from which generally, only amorphous polymer is dissolved by extraction with acetone or methylethylketone.

I should counsel you to dissolve the polymer in toluene at its boiling temperature, to filter, recover the soluble fraction and work on that fraction.

I am sending you, enclosed herewith, a lower molecular weight sample (about 500.000), more soluble, of course.

As to the degradation curve I sent you, the experiment was carried out with tetraline at its boiling temperature, with pure N₂ atmosphere.

I hope to be able to send you, shortly, polystyrene fibers, drawn from sample with molecular weight lower than one million, that may be drawn into fiber more easily.

I hope that the informations I gave you are useful for your studies. I am sending you, also, under separate cover, the reprints of my papers on isotactical polymers.

With best regards,

Yours sincerely

G. Natta

Encl.

oct. 17, 1955.

552

Dr. Bengt G. Rånby
FYSIKALISK-KEMISKA INSTITUTIONEN
UPSALA
Sweden
TELEFONER: 355 55 . 355 56 . 355 57 . 355 58
400 57 . 400 58

*Yane
Tranier*

Prof. G. Natta,

Instituto Chimica Industriale
Politecnico - P:za Leonardo da Vinci
Milano, Italy.

Dear Prof. Natta:

Thank you for the reprints of your very interesting and important work on the isotactic polymers.

Next week (oct. 27) I am invited to give a lecture at The Swedish Chemical Society in Stockholm about "The Crystallization of Native and Synthetic Polymers".

At the end of my talk I plan to describe your isotactic polymers. Therefore I would be very happy if I had some small samples of these remarkable materials to show the audience. I am sure that such a demonstration would be of great interest to the chemists both from the universities and from industry. After the lecture I could send the samples back to you, if you like me to do so.

I am sorry if I cause you trouble, but I can assure you that your work has been followed with great interest also in this country.

With the best regards, I am,

Very sincerely yours

Bengt G. Rånby
Bengt G. Rånby
Institute of Physical Chemistry
University of Uppsala
Uppsala, Sweden.

October 20, 1955

440

Venice
9/25/55

Dr. Bengt G. Ranby
Institute of Physical Chemistry
University of
UPPSALA = Sweden

Dear Doctor Ranby,

I received your letter of October 17, and I am glad to send you, enclosed herewith, three samples of isotactical polypropylene, to show at the end of your talk at the Swedish Chemical Society in Stockholm.

As Montecatini Co., that disposes on our patents on isotactical polymers, have not yet begun to delivery the new products, I deeply beg you to keep these samples reserved and not to give them to anybody.

With best regards,

Sincerely yours,

G. Natta

Encl.

UPSALA UNIVERSITET Nov. 7, 1955.

655

Vad står

Dr. Bengt G. Rånby

FYSIKALISK-KEMISKA INSTITUTIONEN

UPSALA
Sweden

TELEFONER: 355 55 . 355 56 . 355 57 . 355 58
400 57 . 400 58

Professor G. Natta
Politecnico di Milano
Piazza Leonardo da Vinci
Milano, Italy.

Dear Prof. Natta,

Thank you for your kind letters of Oct. 20 and 26 with the enclosed samples of isotactic polypropylene as foil, staple and yarn. These samples were shown at the end of my lecture on Polymer Crystallization, and the members of the Swedish Chemical Society were very interested indeed. I am happy I got the opportunity and the privilege to present these new and important products in our country. Thank you for your kind cooperation.

With my best wishes for continued progress also in the future, I am,

Sincerely Yours

Bengt G. Rånby

Bengt G. Rånby

Institute of Physical Chemistry
University of Uppsala
Uppsala, Sweden.

ESPRESSO - Via Aerea
pero no D. 20.

October 26, 1955 *vare
varit*

657

Prof. Bengt G. Rånby
Professor of Physical Chemistry
University of Uppsala
c/o The Swedish Chemical Society
S T O C K H O L M - Svezia

Dear Professor Rånby,

I am sending you, enclosed herewith, copy of my conference I held in Zurich, published on "La Chimica e l'Industria". This conference will be published shortly also on "Die Makromolekulare Chemie"

I am sending you also a sample of drawn and twisted of polypropylene fiber, of a transparent film, and of polypropylene staple.

With kindest regards,

Sincerely yours,

Giulio Natta

Encl.

FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA
TELEFON: VÄXEL 394 60
Å.S./AS

Uppsala, December 13th, 1955.

Professor G. Natta
Istituto di Chimica Industriale del Politecnico
Piazza Leonardo da Vinci
Milano.

Dear Professor Natta,

Many thanks for your kindness to send me another and more soluble fraction of your isotactical polystyrene sample. Since I received it I have done some experiments on its degradation which appeared quite nice. Now, as I have mentioned in earlier letters the orientation influences the results quite a lot and therefore I would be very grateful for a sample, mentioned in your letter of the 19th October, with parallel chains drawn into fibers and with M lower than one million to make it soluble in toluene. If you have such a sample available at the moment it would be possible to extend my investigation after Christmas. I would also appreciate a copy of your last article in Makromo. Chemie 16, 213 "Polymerie isotactique".

Yours sincerely,

Åke Svensson
Åke Svensson

57A

January 21, 1956

G. Natta

Mr. Åke Svensson
Fysikalisk-Kemiska Institution
Uppsala Universitet
U P P S A L A = Sweden

Dear Mr. Svensson,

Please excuse me if I reply only today to your letter of December 13, 1955, but I was away long time for my winter holidays.

In my laboratory we are now studying the production of other isotactical polymers and we prepared already more than ten new crystallin polymers. Therefore, we left out the work on the polystyrene and now I don't have polystyrene samples with low molecular weight drawn into fibers.

The Montecatini, however, are working very hard in the field of the production and the uses of Polystyrene. The Montecatini, have not distributed, till now, samples of this polymer, because they wish to make a more profound study of isotactical polymers uses. I hope, however, that they have no objections to make to send you some little samples for a scientific study. Therefore, I written to the Montecatini in Ferrara, where polystyrene is made, so that they send you the sample required.

I am sending you, under separate cover, a reprint of my article "Polymères isotactiques".

With best regards,

Very sincerely yours,

Giulio Natta

619

December 6, 1955

Panie 7/1

Mr. Gad RAUSING
Aktiebolaget TETRA PAK
L U N D = Sweden

Dear Mr. Rausing,

Following up my letter of October 20, I wish to inform you that I am sending you, under separate covers, two samples of Montecatini polythene (Rotene) of molecular weight of 40.000 and 100.000.

If you wish to receive samples with higher crystallinity and higher melting point ($> 130^\circ$), I could send you them, and also samples of less crystallin products with lower melting point and more flessible.

I shall be gratefull if you may send to me the results of your tests.

With kindest regards,

Very sincerely yours,

G. Natta

651

October 20, 1955

Varie styrmen

Mr. Gad Rausing
Aktiebolaget TETRA RAK
L U N D = Sweden

Dear Mr. Rausing,

Following up our conversation of October 13, I inform you that I have sent you, under separate cover, two samples of polythene with not very high molecular weight (80.000) prepared by Montecatini Co., according to the Ziegler process.

I hope, however, to be able to send you soon some samples with higher molecular weight, higher melting point and better mechanical properties, we prepared according to a process modified by us. Of these new types of crystallin polymers, with highest molecular weight, highest melting point and high mechanical properties we patented also some uses.

With kindest regards,

Sincerely yours,

G. Natra

571



AKTIEBOLAGET
T E T R A P A K

LUND . SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329

Lund, 19th October 1955.

Vari
Auer

Professor Giulio Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci
Milano
Italien

Sehr geehrter Herr Professor!

Für die grosse Freundlichkeit, die Sie mir bei meinem Besuch in Milano gezeigt haben, danke ich Ihnen herzlich. Es war für mich sehr interessant die Frage der Zukunft der Polyäthylen und Polypropylen zu besprechen.

Ich werde die Muster, die Sie mir versprochen haben, sofort nach ihrer Ankunft hier untersuchen, und ich werde Ihnen danach sofort über die Ergebnisse schreiben.

Ich hoffe auch, dass wir Sie hier in Lund bald empfangen dürfen, und verbleibe,

Ihr ergebener

Gad Rausing.

Gad Rausing

GR/LS



LUND . SWEDEN

TELEFON 17700
CABLE ADDRESS:
TETRAPAK
TELEX NR 3329

A K T I E B O L A G E T
T E T R A P A K

903
rene
ofter.

Lund, 14th December 1955.

Professor Giulio Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci 32
MILANO
Italien

Dear Sir,

Many thanks for your letter of 6th December informing me the samples of Rotene with molecular weights of 40,000 and 100,000 respectively were on their way. The samples have now arrived, and we will try them out immediately. I hope to be able to write you within a week or so as to the results obtained with these materials.

With the best personal regards,

Very sincerely yours,

G. Rausing
G. Rausing

GR/LS



LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329

Curpi polibutene 3
262 A

AKTIEBOLAGET
T E T R A P A K

Lund, den 13. Februar 1956.

Voné
stran.

Herrn Professor Giulio Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci

MILANO

Italien

Sehr geehrter Herr Professor!

Wir haben jetzt gewisse Versuche mit den von Ihnen über-sandten Kunststofffolien durchgeführt, Versuche, die sehr interessant gewesen sind. Es hat sich aber leider gezeigt, dass unsere Verpackungsmaschine augenblicklich nicht mit reiner Polyäthylenfolie arbeiten kann, da dieses Material zu weich ist um gesteuert werden zu können.

Dies ist aber wahrscheinlich nur eine Frage der Zeit, da es in der Zukunft vermutlich möglich sein wird die Maschine so zu verändern, dass auch eine Verarbeitung der weichen Filme möglich sein wird. Unser grösstes Problem ist aber augenblicklich ein Streichmaterial zu finden, das auf Papier getragen werden kann und das genügend heissiegelfähig ist. Wir haben dafür auch das von Ihnen übersandte Niedrigdruck-polyäthylen versucht, aber die Schmelzviskosität (= das Molekulargewicht) war zu hoch um es mit den heutigen Streichmaschinen verarbeiten zu können.

Ich möchte Sie daher fragen, ob Sie Muster mit einer Schmelz-viskosität entsprechend der der Imperial Chemical Industries Grade 7 bis Grade 5 herstellen. Mit diesen Viskositäten haben wir nämlich bisher die besten Erfolge erreicht.

Mit den besten persönlichen Grüßen,

Ihr ergebener

Adolf Rausing.

GR/LS

290 A

8.3.56

Herrn Doktor Gad Rausing
Aktiebolaget
Tetra Pak

L u n d

rene
ther

Sehr geehrter Herr Doktor Rausing,

Auf Ihren Brief vom 13. Februar Besugnehmend, teile ich Ihnen mit dass es möglich ist Niederdruckpolyäthylen mit einer Schmelzviskosität entsprechend den I.C.I.- Polyäthylenen der grade 5-7 herzustellen.

Ich bitte Sie, mir mitzuteilen welche Menge Sie benötigen ~~ken~~ und in welcher Form, ob als Folie oder als Pulver, Sie das Polymere bevorzugen.

Mit den besten persönlichen Grüßen

G. Natta

441 A
11 April 1956

Vanni Natta

Herrn Doktor Göran Philipson
Ab Svenska Metallverken
VÄSTERÅS (Sweden)

Sehr geehrter Herr Dr. Philipson,

Ich habe Ihren freundlichen Brief vom 7. April erhalten.

Ich werde sehr erfreut sein Sie am 20. April in Mailand zu sehen und habe Ihnen ein Hotelzimmer für die Nacht vom 20/21. April im Hotel Continentale reservieren lassen.

Mit besten Grüßen

(G.Natta)



AB SVENSKA METALLVERKEN

VÄSTERÅS
SWEDEN

851A
Västerås

TELEPHONE
VÄSTERÅS 37120

TELEGRAMS
METALLVERKEN

Herrn Professor Giulio Natta
Istituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci, 32
Milano

ITALIA

Your reference

Your letter

Our reference

SY/Philipson/js

VÄSTERÅS,

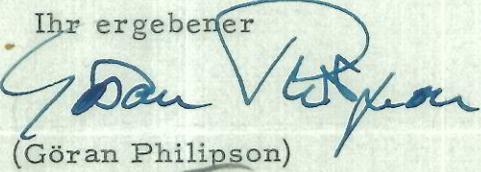
den 12. Mai 1956

Sehr geehrter Herr Professor Natta.

Hiermit bitte ich Ihnen für die freundliche Aufnahme bei meinem Besuch in Mailand recht herzlichst zu danken sowohl als für die interessante Besprechung und das ausgezeichnete Mittagessen in Ihrer Familie.

Was eine eventuelle schwedische Herstellung von Polyäthen betrifft habe ich Ihre Erfahrungen der gemeinsamen Arbeitsgruppe, die hier gibt zwischen Stockholms Superfosfat Fabriks AB, Svenska Celullosa AB und Svenska Metallverken, mitgeteilt. Möglicherweise würde man, mit Hinsicht auf die neue Entwicklung auf diesem Gebiet und die Dienlichkeit Crackgas jedenfalls in länger Sicht als Ausgangsmaterial zu benutzen, das ganze Projekt einige Jahre späterhin aufschieben. Ich hoffe aber, dass wir, sobald die Pläne mehr konkret sind, Gelegenheit haben werden unser Kontakt zu erneuen.

Mit den besten Grüßen.

Ihr ergebener

(Göran Philipson)



AB SVENSKA METALLVERKEN

VÄSTERÅS
SWEDEN

6274
Yane Thos.

TELEPHONE
VÄSTERÅS 37120

TELEGRAMS
METALLVERKEN

Herrn Professor Giulio Natta
Istituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci, 32
M i l a n o

ITALIA

Your reference

Your letter

Our reference

VÄSTERÅS ,

SY/Philipson/js

den 7. April 1956.

Sehr geehrter Herr Professor Natta,

Besten Dank für Ihr freundliches Schreiben vom 20. März. Wie meine Reisepläne jetzt gemacht sind, würde es mir ganz gut passen mit einem Zug von Florenz am 20. April morgens zu fahren und werde ich denn gegen 10.10 Uhr in Mailand eintreffen. Ich werde Sie so bald wie möglich nach meiner Ankunft aufsuchen.

Leider aber ist es mir bisher nicht gelungen ein Hotelzimmer in Mailand zu erhalten und ich erlaube mir deshalb Sie hiermit zu fragen, ob Sie die grosse Güte haben wollen ein Zimmer da für meine Rechnung zu arrangieren. Ich werde nur eine Nacht in Mailand bleiben, da ich am 21. April morgens per Flugzeug nach Schweden reisen werde.

Mit den besten Grüßen,

Ihr

Göran Philipson /

Sekr.

Falkberg



AB SVENSKA METALLVERKEN

VÄSTERÅS
SWEDEN

482 100 77
*Perle
Mho*

TELEPHONE
VÄSTERÅS 37120

TELEGRAMS
METALLVERKEN

Herrn Professor Giulio Natta
Via Mario Pagano 54

Mailand

ITALIEN

Your reference

Your letter

Our reference

SY/Philipson/js

VÄSTERÅS,
den 16. März, 1956.

Sehr geehrter Herr Professor Natta,

In Schweden diskutiert man z.Z. die Möglichkeit eine einheimische Herstellung von Polyäthen anzufangen. Dieses Material scheint ja das Kunststoffmaterial der Zukunft zu sein, dessen Verbrauch im schnellsten Wachsen begriffen ist und dessen Verwendung auch im langen Lauf grosse Möglichkeiten bietet. Wie es Ihnen bekannt ist, haben wir in Schweden kaum eine petro-chemische Industrie auf Grund von Mangel an Naturgas och Rohöl. Vorstudien haben aber gezeigt, dass eine Herstellung von Polyäthen, gegründet auf Äthylalkohol, ergiebig werden könnte, und vermutlich sollte dies sich besser für schwedische Verhältnisse eignen, als eine entsprechende Herstellung gegründet auf Äthylen als auf Petroleumbasis.

Anderseits wird man mit Äthylalkohol als Rohstoff zum Polyäthylen eingeengt und kann auf kein Kunststoffmaterial, das sich auf höhere Homologen gründet, eingehen. Es ist mir bekannt, dass Sie Herr Proffesor diese Frage betr. der Polymerisation der Homologen und ihre Dienlichkeit als Kunststoffmaterial studiert haben und es würde sehr wertvoll sein, wenn Sie mir Ihre Gesichtspunkte betr. diesem Problem mitteilen wollten.

Ich werde am 18-19 April einer Zusammenkunft der International Wrought Non-Ferrous Metals Council in Florenz beiwohnen. Ich würde, wenn Sie dann zu Hause sein sollten, die Möglichkeit benutzen Mailand auf meiner Rückreise zu besuchen, um diese Fragen mit Ihnen zu diskutieren. Ich wäre Ihnen sehr dankbar für eine Mitteilung, ob es Ihnen passen würde.

Mit den besten Grüßen an Sie und Ihre gnädige Frau Gemahlin.

Ihr ergebener:

Göran Philipson
(Göran Philipson)

20. März, 1956

Vanni Natta

Herrn Professor Göran Philipson
Ab Svenska Metallverken
Västerås (Söder)

Sehr geehrter Herr Professor Philipson,

Ich bin sehr froh zu erfahren, dass Sie Mitte April nach Italien kommen und mich besuchen werden.

Ich beabsichtige am 20.-21. April in Mailand zu bleiben, aber am 23. April werde ich nach Frankfurt abfahren, da ich am 25. April in Bad Neuheim einen Vortrag ueber Stereospezifische Synthesen und isotaktische Polymeren, und am 27. April einen zweiten Vortrag in Strassburg halten werde.

Die Synthese der Polyathylen hat in letzten Jahr grosse Fortschritte gemacht und es ist heute möglich, Polyathylen zu produzieren, die Temperaturen bis 130° ertragen können uns erst bei $135 - 140^{\circ}$ zu schmelzen beginnen. Trotzdem bin ich überzeugt, dass das Polypropylen in der Zukunft grössere Anwendungsgebiete und grosse Wichtigkeit als das Polyäthen haben wird.

Für kleine Produktionen (2-3.000 T/Jahr) ist wahrscheinlich eine Produktion von Athylen aus Alkohol fuer schwedische Verhältnisse geeignet.

Fuer grösseren Produktionen möchte ich vorschlagen, eine kleine Krackinganlage einzurichten, die bis 40 % Olefine aus Rohöl (Nafta) geben kann, alle niedrigen Olefine wie Aethylen, Propylen und 1-Buten für die Herstellung von interessanten und Verschiedenartigen festen kristallinen Polymeren nach den heutsten Niederdruckverfahren anwendbar sind.

Ich werde sehr froh sein mit Ihnen in Mailand diese Frage zu diskutieren.

Mit den besten Grüßen an Sie und Ihre gnädige Frau Gemahlin

Ihr ergebener

(G. Natta)

976 A



LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329

AKTIEBOLAGET
T E T R A P A K

Lund, den 29. Mai 1956.

*Vari
Nro*

Herrn Professor Giulio Natta
Istituto di Chimico Industriale del
Politecnico
Piazza Leonardo da Vinci
MILANO / Italien

Sehr geehrter Herr Professor!

Wir haben nun endlich die Versuche mit dem von Ihnen übersandten Muster von Niedrigdruckpolyäthylen durchgeführt. Es hat sich dabei leider gezeigt, dass unsere Maschine noch nicht für die Verarbeitung von reinem Polyäthylenfilm geeignet ist. Wir arbeiten jedoch zur Zeit mit einer Neukonstruktion und rechnen damit, in der Zukunft einen reinen Film brauchen zu können. Bis dann brauchen wir aber ein Polyäthylen, das auf Papier gestrichen werden kann, und dessen Heissiegelfähigkeit sich nicht allzu weit von der heutigen Hochdruckpolyäthylen unterscheidet.

Ich möchte Sie deshalb fragen, ob Montecatini in der Zukunft ein Niedrigdruckpolyäthylen herstellen wird, dessen Schmelzviskosität und Heissiegeleigenschaften ungefähr dieselbe sind als die der I.C.I. Grade 7?

Mit den besten persönlichen Grüßen,

Ihr ergebener

G. Rausing.

G. Rausing

GR/LS



LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329

AKTIEBOLAGET
T E T R A P A K

Lund, den 21. März 1956.

*Värd
Ström*
Professor Dr. Giulio Natta
Istituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci 32

MILANO Italien

Sehr geehrter Herr Professor!

Vielen Dank für Ihren Brief vom 8. März, worin Sie mir mitteilen, dass Niederdruck-Polyäthylen in Molekulargewichten hergestellt werden kann, dessen Schmelzviskosität denen der I.C.I. Polyäthylenen, Grade 5 und 7, entspricht.

Ich wäre Ihnen sehr verbunden, wenn Sie uns ein Muster von ung. 10 Kg von diesem Material herstellen würden, damit wir einen kleinen praktischen Versuch durchführen könnten.

I hoffe, dass dies Ihnen möglich werden wird, und sehe Ihren weiteren Mitteilungen mit grösstem Interesse entgegen.

Mit den besten persönlichen Grüßen,

Ihr ergebener

Gad Rausing.

G. Rausing

GR/LS

699A

June 1, 1956

*Vare
of m*

Mr. Gad Rauding
Aktiebolaget TETRE PAK
L U N D - Sweden

Dear Mr. Rausing,

With reference to your letter of March 21, I wish to inform you that at the present, I have not 10 kg. of polyethylene having melt-viscosity corresponding to the grade 5 and 7 of the I.C.I. polyethylene.

I am leaving Milan for the U.S.A., where I shall stay for about two months. On my return, if we have the requested material, I shall examine the possibility of sending it to you.

I think however, that other new polymers may satisfy better than polythene your needs, and about this argument, I shall give you more detailed information on my return from the U.S.A.

With best regards.

Very sincerely yours,

Giulio Natta

Milano, 19 Giugno 1956

Egregio Signor
Dr. Ake SVENSSON
Istituto Fisico Chimico
della Università di
UPPSALA (Svezia)

Egregio Dottore,

ci sono pervenute in questi giorni le lettere
che Lei ha indirizzato :

- in data 6 Giugno al Direttore dello stabilimento di Ferrara
- in data 7 Giugno alla Segretaria del Sig. Prof. Natta.

Contiamo, tra qualche giorno, di spedirLe
una parte dei campioni che Ella ci ha richiesto.

Gradiremmo però che Ella riscontrasse, per
accettazione, la lettera che in allegato Le rimettiamo.

Distinti saluti.

"MONTECATINI"

19th June 1956

Dr. Ake SVENSSON
Chemical Physical Institut
of the University of
UPPSALA (Svezia)

SL/ab

Dear Sir,

We received the letters you addressed to:

- the Director of the factory at Ferrara dated on June 6th,
- the Secretary's office of Prof. Natta dated on June 7th.

We hope to be able to send to you in a few days some samples you have asked for.

We should like however to receive your confirmation of our enclosed letter.

Yours very truly

"MONTECATTINI"

19 Giugno 1956

Egregio Signor
Dr. Ake SVENSSON
Istituto Chimico Fisico della Università di
UPPSALA (Svezia)

SC/ac

Chiarissimo Dottore,

Il chiarissimo Prof. Natta ci informa del Suo desiderio di disporre, a scopo di studio, di campioni di polistirolo isotattico prodotto dalla nostra Società.

Siamo naturalmente ben lieti di aderire a questo desiderio per rendere possibili le ricerche di carattere scientifico che Ella si propone di compiere. Peraltro, trattandosi di un prodotto non ancora messo in commercio, per il quale abbiamo in corso un programma di ricerche e di sviluppo e la cui situazione brevettuale è tuttora in via di sistemazione, Lei si renderà certamente conto della necessità in cui ci troviamo di prendere preliminarmente alcuni accordi al riguardo.

Poichè la messa a disposizione dei campioni è fatta per consentirLe di svolgere ricerche di carattere scientifico, è evidente che è da escludere qualsiasi ricerca nel campo dell'applicazione industriale, che è, e quindi rimane, di esclusiva pertinenza della nostra Società. In conseguenza non dubitiamo che Ella sia senz'altro d'accordo con noi nell'escludere la possibilità che siano depositate domande di brevetto in tale campo, tanto da parte Sua quanto da parte dei Suoi collaboratori.

Inoltre, nella eventualità che Ella voglia dare pubblica notizia dei risultati degli studi che compirà sul materiale da noi messo a Sua disposizione, pensiamo che non abbia difficoltà a compiacerci di farci avere, due mesi prima che gli scritti vengano pubblicati o le comunicazioni vengano fatte, il testo degli scritti o delle comunicazioni medesime, e ciò per la necessità in cui ci troviamo (nella attuale fase delicata che impone la massima riservatezza) di conoscere con precedenza su chiunque altro e con congruo anticipo, tutto ciò che, anche nel campo scientifico, abbia attinenza col nostro prodotto.

Infine siamo certi che, per le esigenze di assoluta riservatezza alle quali abbiamo accennato, Lei vorrà compiacersi di far

19/6/1956 al Sig. Dr. AKE SVENSSON di Uppsala (Svezia)

sì che i nostri campioni siano esaminati e studiati soltanto da coloro che facciano parte della cerchia dei Suoi collaboratori e non da persone estranee a tale ambiente.

Naturalmente queste intese che Le proponiamo e sulle quali gradiremmo avere la Sua cortese adesione, dovranno considerarsi automaticamente decadute non appena il materiale di cui si tratta sarà disponibile sul mercato.

In attesa di Sue comunicazioni, La preghiamo intanto di gradire, Chiarissimo Dottore, i nostri migliori saluti.

"MONTECATTINI"

19th June 1956

Dr. Ake SVENSSON
Chemical Physical Institut
of the University of
UPPSALA (Svezia)

SL/ab

Dear Sir,

We are informed by Prof. Natta that you wish, because of your studies, to receive some samples of isotactical polystyrene produced by our Company.

We are of course very glad to satisfy your desire so that the scientific researches you have in mind to do may be carry out. However, as the product is not yet available on the market, and we are still developing researches on it, and the patent situation is still in way of settlement, it is necessary first to establish some previous arrangements with you regarding this object.

We give you some samples to perform researches of scientific nature and it is evident that any research regarding the field of industrial application must be excluded. Researches of this kind are and therefore remain of exclusive pertinence of our Company. Consequently we are sure that you will agree of course with us in excluding the possibility both for you and your coworkers to file patent applications pertinent to this field.

On the other hand, in the case you want to publish the results of your studies on such a material, we believe that you do not find any difficulty to let us have the text of the writings and communications two months before they will be published or communicated. In fact in the present delicate stage that requires the greatest reserve, we need to know before anybody else and with a sufficient time of anticipation everything pertinent to our product, also from the scientific point of view.

(2

Finally, because of the necessity of absolute reserve, we are sure that you will make our samples examined and studied only by your coworkers and not by any one off this circle.

The above agreements, for which we should like to receive your kind consent, will be considered automatically cancelled as soon as the product will be available on the market.

Awaiting your kind reply, please accept our best regards.

Very truly yours

"MONTECATTINI"

1023A

Varie st.

C O P I A

UPPSALA UNIVERSITY

SIKALISK-KEMISCKA-INSTITUTIONEN
UPPSALA

Uppsala, June 7, 1956

Dr. sa Rossana Lamma
Istituto Chim. Ind. Politecnico
Milano

Dear Madam,

In a to-day's letter from Professor Natta I was promised some samples of isotactical polystyrene from the Montecatini factories, and he wrote that you could help me with the practical details in getting them.

Three samples which would suit me best would be polystyrene in form of plates with M.W. 200.000; 500.000 and 1.000.000. 5 g of each will be enough.

With best regards,

Sincerely

f. to

Åke Svensson

Natta
mille al Dr.
Montecatini (12.6.56)

715A

1.6.1956

varil stran.

Dr. Ake Svensson
Fysikalisk-Kemiska Institutionen
Uppsala University
UPPSALA (Sweden)

Dear Dr. Svensson,

I had not been able to send you~~s~~ till now, the requested samples, because the Montecatini that possesses all rights on my patents concerning the isotactic polymers synthesis, like~~s~~ better not to distribute samples before having sufficiently developed the study on the ~~their~~ uses.

At the present the Montecatini only, is well disposed to send samples of such materials. If they are of any interest to you, I think you may have samples of the following products:

- 1) Isotactic polypropylene (M.W. between 50.000 and 200.000)
- 2) " polystyrene (M.W. " 200.000 and 2.000.000)
- 3) " polybutylene (M.W. about 100.000)

These materials will be available in powder or in plate.

I leave ~~now~~ Milan to reach ~~the~~ U.S.A. for a cycle of lectures. As I shall have to attend also three Gordon Conferences I foresee to remain in the U.S.A. about two months. During my absence if you desire any sample you can address yourself to my secretary Drsa Rossana Lamma, who will mind to request to the Montecatini the samples you may be interested in.

With best regards

(G.Natta)

FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA

TELEFON: VÄXEL 39460

Uppsala, April 6th, 1956.

Varie sten.

Professor G. Natta,
Istituto di Chimica Industriale
del Politecnico,
Milano
Italien.

Dear Professor Natta,

Many thanks for your kind letter of January 21th including the reprint of your article "Polymeres isotactique". It is a pity however that you are not still working on polystyrene so that you could supply me with a sample of fibers with molecular weight $\sim 500\ 000$. From the Montecatini in Ferrara I have not heard anything, so I wonder if your request has been lost somewhere in the organization or if they don't want to let their product appear yet. I would very much like to know if I still have the possibility to get a sample of the abovementioned type. If not, I will have to give up the project.

I hope that I don't give you trouble with my questions.

Yours sincerely

Åke Svensson

Å. Svensson

482A

April 23, 1956

Julio Natta

Dr. Åke Svensson
Fysikalisk-Kemiska Institutionen
Uppsala University
U P P S A L A = Sweden

Dear Dr. Svensson,

I received your letter of April 6, and I am sorry to inform you that it has been not possible for me to supply you with samples of polystyrene fibers with molecular weight ~ 500.000 , as the products with such molecular weight are not, usually, drawn into fibers. I shall be able, if you are interested in ^{to}, send you samples of polystyrene powder or strips.

With best regards.

Sincerely yours,

Giulio Natta

THERMOCHEMISTRY LABORATORY
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF LUND
LUND - SWEDEN



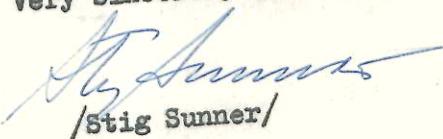
Lund, December 14, 1956.

Prof Dr Giulio Natta
Istituto di Chimico Industriale del
Polytechnico
Piazza Leonardo Da Vinci
Milano

Dear Professor Natta,

We should very much like to know if it is possible to buy sheets of your polyethylene and polypropylene from Montecatini. We need 50 sheets each, 34x17x0,2 cm, for an investigation on the resistance of different plastic materials towards microorganisms. Each experiment takes about 8 months and we intend to begin in the middle of Februar 1957. Your kind cooperation in this matter is very much appreciated.

Very sincerely yours,


/Stig Sunner/

Fil. Dr

MONTECATINI

SOC. GEN. PER L'INDUSTRIA MINERARIA E CHIMICA
ANONIMA - CAPITALE VERSATO L. 84.000.000.000

MILANO

1094 A

SETTORE RESINE

/ac

MILANO (134)
Via F. Turati, 18

Vari
Avv.

Egregio Signor

Prof. NATTA

Politecnico di

M i l a n o

Piazza L. Da Vinci, 32

Egregio Professore,

Per Sua opportuna conoscenza e documentazione, in allegato Le trasmetto copia di quanto abbiamo scritto al Sig. Dr. Svensson di Uppsala, in merito ai campioni da lui richiesti.

Cordiali saluti.

(Dr. G. Saccenti)

Allegati.

C. C. postale 3/3711 - Cam. di Comm. 524 - Casella postale 8596 - Telefoni 6338 - 6334
Telefoni interurbani chiedere GABBRO-MILANO - Telegrammi GABBRORESINE

MOD. SERE 1 (A5) - 2000 - 10.55

20th December, 1956

To the

Thermochemistry Laboratory
Department of Chemistry
(to the Attention Dr. Stig Sunner)
University of Lund

L U N D - Sweden

Dear Sirs,

I received your letter of December 14, and I wish to inform you that I have sent it to the Montecatini Co., so that they send to you the requested samples, if it is possible.

As the shkets are, generally, made with a thickness less than 0,2 cm, I should like to know is the thickness you requested may be modified. If so, please let me know the minimum thickness, sufficient for your experiments.

With best regards.

Sincerely yours,

(Prof. G. Natta)



LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329



AKTIEBOLAGET

T E T R A P A K

Lund, den 8. Januar 1957.

Herrn Professor Giulio Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci 32

M I L A N O / Italien

Sehr geehrter Herr Professor,

Wie Sie vielleicht schon anderweitig gehört haben, hat man in mehreren europäischen Ländern mit einer Antikunststoffkampagne begonnen. Die offensichtliche Absicht der verantwortlichen Beteiligten ist, die Menschheit vor Cancer zu schützen, der durch für Lebensmittel als Verpackungsmaterial verwendete und darin aufgelöste Kunststoffe verursacht wird.

So ist in Deutschland ein Gesetz zur Regelung der Herstellung, Verpackung und des Verkaufs von Lebensmitteln vorgeschlagen worden, das u.a. die Verwendung von Kunststoffen für Verpackungszwecke verbieten würde. Was in Deutschland geschieht, wird von den Behörden in verschiedenen Ländern mit grosser Aufmerksamkeit beobachtet.

Kürzlich wurde in Belgien ein "Verband zur Verhütung von Cancer und für Volksgesundheit" gebildet. Dieser scheint ein Prototyp für zukünftige ähnliche Verbände zu sein, nicht nur in Europa, sondern überall. Obwohl ich darüber keinen endgültigen Beweis habe, scheint es mir, als ob die Glasindustrie hinter der belgischen Tätigkeit, und vielleicht auch hinter der deutschen stände.

Das Program des belgischen Verbandes ist u.a.:

"..... Der Verband wird bald ein Manifest in ganz Belgien verbreiten, das eine Liste über alle Produkte, die cancererregend sein können, enthält. Es wird auch den Verbrauch von Milch aus Glasflaschen anstatt aus gewachsten Tüten oder kunststoffbelegtem Papier empfehlen.

Die Absicht dieser Veröffentlichung ist, die Verbraucher zu warnen und zu leiten. Außerdem beabsichtigt der Verband, eine "Qualitätsbezeichnung" auszuarbeiten, um den Verkauf von Waren, die beweislich nicht cancererregend sind und spezielle Prüfungen erfolgreich bestanden haben, zu schützen und zu steigern. Ein spezielles Kommittee wird mit der Kontrolle dieser Waren beauftragt. ----- Ein spezieller Vertrag wird zwischen dem Hersteller der Lebensmittel und dem Verband geschlossen. Hierbei ist zu betonen, dass der Vertrag zwischen dem Hersteller der Lebensmittel und nicht dem Hersteller der Verpackungen einerseits, und dem Verband andererseits geschlossen wird."

Die Tätigkeit dieses Verbandes wird schon in der allernächsten Zukunft internationale Rückwirkungen haben.



Professor Giulio Natta, Istituto di Chimica Industriale del Politecnico, Milano.

8. Januar 1957.

Der Vorsitz des Verbandes besteht aus den leitenden Persönlichkeiten der politischen, sozialen, industriellen und medizinalen Kreise Belgiens. Ausserdem ist eine ausländische wissenschaftliche Kommission ernannt worden, bestehend aus:

Deutschland

Professor Dr. Eichholtz, Direktor des Pharmacologischen Institutes der Universität Heidelberg.

Professor Dr. Souci, Direktor der Deutschen Forschungsanstalt für Lebensmittelchemie der Universität München.

England

Professor E. Boyland, Director of the Chester Beatty Research Institute of London.

Professor P. R. Peacock, Member of the Cancer Prevention Committee of New York and Chief of the Cancer Research Department of the Glasgow University.

Frankreich

Professor Delore, Professeur à la Faculté, Directeur du Centre Interdépartemental d'Education sanitaire et du Centre d'Etudes, d'Enquêtes et d'Informations médico-sociales à Lyon.

Holland

Dr. W. F. Wassink, Direktor des Niederländischen Cancer Institutes und Chef der Medizinal-Sozialen Abteilung.

Italien

Professor P. Rondoni, Direktor des Cancer Institutes von Mailand, Präsident des Italienischen Verbandes gegen Cancer.

Schweden

Professor Elis Berven, Direktor des Komitees für Volkbildung in Stockholm

U.S.A.

Professor W. C. Hueper, Chairman of the Cancer Prevention Committee, International Union Against Cancer. Chief of the section "Environmental Cancer" at the National Cancer Institute at Bethesda.



Professor Giulio Natta, Istituto di Chimica Industriale del Politecnico,
Milano.

8. Januar 1957.

Der Generalsekretär des ganzen Verbandes ist Dr. Reding, Agrégé à
la Section Médicale de l'Université de Bruxelles.

Äusserst wichtig ist, dass, laut Professor Hueper, Polyäthylen als
cancererregend zu betrachten ist, und zweifelsohne wird sich der ganze
Verband dieser Ansicht anschliessen.

Meiner Ansicht nach ist es ebenso wichtig für Istituto di Chmica Industriale
del Politecnico, als Hersteller von Kunststoffen im Allgemeinen und besonders
von Polyäthylen, wie für uns, dass die Wahrheit ans Licht gebracht wird,
und die grundlosen Beschuldigungen gegen diese Kunststoffe abgewehrt werden.
Ich möchte deshalb vorschlagen, dass Ihr Institut sich mit den Mitgliedern
des obenerwähnten Verbands in Verbindung setzt, um diese über den richtigen
Sachverhalt zu informieren.

Es würde mich sehr freuen, Ihre Meinung über diese Angelegenheit zu hören.

Hochachtungsvoll

A handwritten signature in blue ink, appearing to read "Gad Rausing".

Gad Rausing

Die U.S. Food and Drug Administration hat Polyäthylen als ein passendes
Material für Verpackung von Lebensmitteln akzeptiert. Diese Information
ist in "Quarterly Bulletin of the Association of Food and Drugs Officials
of the United States", Vol. 15, Nr. 3, Juli 1951, veröffentlicht worden.
Sie heisst "Chemicals in Food" von A.J. Lehman Die französischen Behörden
haben die Verwendung von Polyäthylen in Lebensmittelverpackungen gut-
geheissen.

GR/LS

CENTRE ANTI-CANCÉREUX ROMAND
DES CANTONS DE FRIBOURG, NEUCHATEL, VALAIS & VAUD

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Direction et Dépt. Hormones Tél. 21 43 01 (335)
Dépt. Isotopes radioactifs Tél. 21 43 01 (336)
Ligne directe 22 15 30

LAUSANNE, le 6 décembre 1956.
Hôpital cantonal

107

Tekis - Park
Dr. Dorner
Chef du Laboratoire
Centrale laitière de Lausanne
35 Rue Saint Martin
LAUSANNE

Monsieur,

En réponse à votre lettre du 4 crt., je puis vous dire que le polyéthylène utilisé comme matériel d'emballage ne présente aucun danger cancérigène.

Veuillez agréer, Monsieur, l'assurance de mes sentiments distingués.

Neukomm

Dr. S. Neukomm, P.D.



Eidgenössisches Gesundheitsamt
Service fédéral de l'hygiène publique
Servizio federale dell'Igiene pubblica

Bern, Bollwerk 27, Tel. (031) 2 81 51
Teleg. FEDHYOGENE

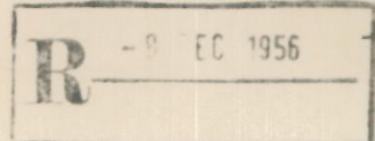
Ihr Zeichen:
V. réf.-N. rif.:

Unser Zeichen: 8.-U
N. réf.-N. rif.: Mi/Ko

Bitte in der Antwort zu wiederholen
Prière de rappeler dans la réponse

Berne, le 7 décembre 1956

Centrale laitière de Lausanne
rue St-Martin 35
Lausanne.



Messieurs,

Nous accusons réception de votre lettre du 1er décembre ainsi que des annexes mentionnées.

En réponse à vos questions nous pouvons vous faire part de ce qui suit:

1) À notre connaissance, les matières plastiques polymérisées (polyéthylène) ne présentent un danger pour notre organisme que s'il y a "implantation" de ces matières dans les tissus vivants de l'organisme, et l'apparition des symptômes du cancer ne se produit dans ces conditions qu'après plusieurs années. Dans le cas qui vous concerne, il nous paraît donc pas probable qu'un danger puisse être retenu dans ce sens. Nous nous permettons cependant de vous conseiller de demander encore l'avis très autorisé du Dr. Neukomm, Chef des travaux, Centre anticancéreux romand à Lausanne sur cette question importante qui est du ressort d'un spécialiste.

2) D'une manière générale, les emballages qui entrent en contact avec des denrées alimentaires doivent être conformes aux art. 459-460 et suivants de l'Ordonnance fédérale réglant le commerce des denrées alimentaires (ODA). A ce sujet, le Laboratoire officiel du contrôle des denrées alimentaires du canton de Vaud (Chimiste cantonal) vous donnera toutes indications utiles et vous fera les analyses nécessaires, afin de s'assurer que les emballages en question ne cèdent au lait aucun composé nocif connu.

3) Pour notre part, nous ne voyons aucun empêchement à ce que vous vendiez le lait au poids, pour autant que vous vous conformiez aux exigences de l'art. 16 de l'ODA (indication déchet). Il va de soi que la désignation et la marchandise doivent être conformes et répondre aux exigences de l'ODA (en particulier art. 15).

Nous vous retornons la page du journal "L'industrie laitière" dont nous avons pris connaissance avec intérêt. A première vue ce genre d'em-

- 2 -

pour le lait.
nous parait idéal pour le lait.
ballage nous donnera satisfaction, nous vous
espérant que notre réponse vous donnera salutations distinguées.
Espérons, Messieurs, l'expression de nos salutations publiques
Service fédéral de l'hygiène publique
Le chef du contrôle des denrées alimentaires
prions d'agréer, Messieurs,

H. Högl
(Prof. Högl)

Annexe:
1 page de journal.

17 Gennaio 1957

Madame
Tetra Pak
Svezia

~~MX~~
Brew 13

Egr. Sig. Ing. Piero Giustiniani
Amministratore Delegato
Soc. " MONTEVATINI "

S e d e

e, p.c. :

Ing. G. DE VARDA
Ing. R. ORSONI
Dott. G. SACCENTI

Egregio Ingegnere,

ho ricevuto dalla "Tetra Pak" di Lund la lettera
di cui le trasmetto copia per conoscenza, dato che si tratta di
un argomento di notevole importanza per noi. Penso che, se la campagna
iniziatà dovesse intensificarsi, sarà necessario intervenire.

Durante il mio ultimo viaggio a Parigi ho avuto notizie
relative alla deliberazione presa dalla Commissione di Igiene contro
i polimeri, ma se che vi è già stata una notevole reazione in pro-
posito.

I migliori saluti.

(G. Matta)

ALL

25
Varie str.

January 21, 1957

To the
Thermochemistry Laboratory
Department of Chemistry
(to the attention of Dr. Sunner)
University of
LUND - Sweden

With reference to your letter of January 2, I am
glad to inform you that I have been informed that the Monte-
catini Company will send to you the requested sheets of poly-
propylene about on the end of February or the beginning of
March.

With best regards.

Sincerely yours,

(Prof. G. Natta)

~~508~~

4 marzo 1957

~~Vanek~~

Egr.Cav.Gr.Gr.Vladimir VANEK
Specialmeskiner AB
Parco Pepoli, 4

R O M A

Egregio Cav.di Gran Croce,
ho ricevuto la Sua gentile lettera del
14 febbraio e le prego di porgere i miei saluti al Sig. Lindmark.

Ho trasmesso la Sua lettera all'Ing. Bartolomeo Orsoni, direttore del Settore Progetti e Studi della Soc. Montecatini, che ritengo sia la persona più adatta per prendere contatti con la Sua Società.

I migliori saluti.

(Prof.G.Natta)

11 aprile 1957

Mr. Gad Rausing
Aktiebolaget Tetra Pak
LUND - Sweden

N° 87 / Vane Sheein

Dear Mr Rausing ,

Please excuse my long delay in answering you kind letter of January 8, 1957, and in thanking you very much.

I read your letter with great interest and I sent it to the Montecatini Co.

I wish to inform you that specialized Laboratories are carrying out tests on polypropylene, in order to set up if this has cancerigenic properties.

I believe that as regard to polyethylene or polypropylene, we should not trouble ourselves if we use polymers with very high molecular weight and free of parts soluble in the liquids or greases with which the polymer comes into contact.

I shall inform you about the polypropylene properties as soon the current studies have been completed.

I wish also to inform you that during next months the industrial production of polypropylene will start, at Ferrara plant. Also at Milan Fair, during the current month, many manufactured articles of polypropylene will be exposed.

With best personal regards, I remain very sincerely yours,

(Prof. G.Natta)



LUND · SWEDEN

TELEFON 17700
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TELEX NR 3329

AKTIEBOLAGET
T E T R A P A K

Lund, 23rd April 1957.



Prof. Dr. Giulio Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci 32

MILANO / Italien

Dear Sir,

Many thanks for your letter of April 11th with the enclosed information on polypropylene and its production.

Personally I agree with you that a pure hydrocarbon of high molecular weight, free from monomers, is certainly not dangerous.

Enclosed you will find some extracts from various publications, which bear on the problem.

With the best personal regards,

Yours sincerely,

Gad Rausing

Gad Rausing

GR/LS

Milano, Mai 22, 1957

Vane
Premier
Sweden

Mr. Gad Rausing
TETRA PAK
L U N D - Sweden

Dear Mr. Rausing,

I am writing to you today, because I meet, some days ago, a friend of mine Dr. Reti, who is interested in a important chemical Industry in Brazil:

Dr. Ladislao Reti - c/o MEDICINALIS S.A. - Rua Da Veridiana 177 - SAO PAULO.

The problem is arisen to substitute the present packages for a product of large diffusion in Brazil, that is a solution of sodium hypochlorite (containing 35 g/l of active chlorine).

It has been thought to use, in the place of 1-l bottles, 350cm³ packages containing a solution of 100 g of active chlorine per liter, that the user should dilute to a liter. We believe that a polyethylene package will suit very well to the use. In fact the polyethylene is permeable to the oxygen and, therefore, an eventual slow decomposition of the product does not present drawbacks.

Please let me know if your Company has some experience in this field and if you may conseil my friend who is TetraPak packages enthusiast. If you have no experience in this field, please send some samples of your packages to Dr. Reti in Brazil, writing also the available information.

Awaiting your kind reply, I am

Very sincerely yours,

Giulio NATTA

P.S. I thank you very much for your letter of April 23, and for the reprints you kind sent to me, that I read with great interest.

~~1143~~
Varie Stren. (Sisterie)

June 4, 1957

Mr. Gad Rausing
T E T R A P A K
Lund - Sweden

Dear Mr. Rausing,

Many thanks for your kind letter of May 29, concerning the Dr. Fetti's problem, and for the interest you have put in this experiments.

With my best personal regards, I remain,

Sincerely yours,

Giulio Natta



AKTIEBOLAGET
T E T R A P A K

LUND · SWEDEN

TELEFON 17700

CABLE ADDRESS:

TETRAPAK

TELEX NR 3329

Lund, 29th May 1957.

Prof. Dr. Giulio Natta
Piazza Leonardo da Vinci 32

MILANO / Italien

Dear Sir,

Very many thanks for your kind letter of May 22nd which reached me to-day and for having drawn my attention to Dr. Reti's problem.

We have never tried packing a solution of sodium hypochlorite, but I cannot see why it should not be possible. I will prepare a solution for an experiment, and will also contact Dr. Reti immediately. In due course I hope to be able to write you about the results of our packaging experiment.

With the very best personal regards,

Sincerely yours,

Gad Rausing

GR/LS

Dr. Ladislao Reti
c/o Medicinalis S.A.
Rua Da Veridiana 177

SAO PAULO Brasilien

Lund, 8th July, 1957.

Dear Dr. Reti,

We refer to your discussion with Dr. Natta about the possibilities to pack a salution of sodium hypochlorite in Tetra Pak and we attach a copy of our letter to Dr. Natta.

We are a little afraid to use the Tetra Pak package for a chemical product like sodium hypochlorite at the same time as Tetra Pak is being used for milk and cream, especially during the introduction period for the Tetra Pak package for milk and cream in Brazil. Nevertheless we have asked our representative in Brazil, Mrs. Gerd Axelson-Onsten, Máquinas para Industria, Rua Senador Queirós 96-50, sala 505, São Paulo, telephone 34-2794, to contact you for further discussions about this problem.

Under separate cover as printed matter by air mail we have sent you a booklet describing the Tetra Pak method and the two first numbers of our journal "Tetra".

Yours very truly,

AB TETRA PAK


Gustav Magnusson

GM/NV



LUND · SWEDEN

TELEFON 17700
CABLE ADDRESS:
TETRAPAK
TELEX NR 3329

AKTIEBOLAGET
T E T R A P A K

Lund, 5th July, 1957.



Prof. Dr. Giulio Natta
Piazza Leonardo da Vinci 32

MILANO Italien

Dear Dr. Natta,

Referring to Mr. Gad Rausing's letter of May 22nd we wish to inform you that we have discussed the possibilities of packing a solution of sodium hypochlorite, and even if from the technical point of view we may be able to pack such a product, we regard it to be somewhat dangerous from the commercial point of view.

Within short we will introduce Tetra Pak in Brazil on a large bases for milk and cream and we do not think it is recommendable to use the package at the same time for a chemical product like sodium hypochlorite.

However, we have asked our representative in Brazil, Mrs. Gerd Axelson-Onsten, Máquinas para Industria - Tetra Pak Ltda, Rua Senador Queiróz 96-50, sala 505, São Paulo, telephone 35-2794, to contact Dr. Reti for further discussions about this problem.

We attach the latest number of our journal "Tetra". As you may see from this journal, one of the most important events for Tetra Pak during 1956 was the participation in the International Dairy Congress in Rome and the International Dairy Exhibition arranged in connection with the congress. The participation was a real success for the Tetra Pak method. Nearly all of the delegates representing dairy industry, dairy technology and dairy science from all over the globe visited the Tetra Pak stand at the exhibition. The official statements made by delegates and committees during the congress were very favourable for the Tetra Pak method, and some of these reports are quoted in this number of the journal "Tetra".

Yours very truly,

AB TETRA PAK

Gustav Magnusson

GM/MV

MONTECATINI

SOC. GEN. PER L'INDUSTRIA MINERARIA E CHIMICA
ANONIMA - CAPITALE VERSATO L. 84.000.000.000

MILANO

SETTORE
IDROCARBURI E DERIVATI
Direzione

Chiar.mo Signor
Prof. G. Natta

e p.c. Polymer

MILANO (134)
Via F. Turati, 18

6.6.1958



m. jess

Egregio Professore,

l'originale della lettera della Tetra
Pack è pervenuto al Servizio Estero,
che in conformità delle disposizioni date
dall'Ing. Giustiniani per le applicazio-
ni relative al film, l'ha passata alla
Polymer.

Trasmetto pertanto a Polymer la Sua
gradita del 3 u.s.

Con i migliori saluti.

G. Ballabio

Ing. G. Ballabio

perdono
con big
Lorcher

cc/

C. C. postale 8/3711 - Cam. di Comm. 524 - Casella postale 3596 - Telefoni 6333 - 6334
Telefoni Interurbani chiedere GABBRO-MILANO Telegrammi GABBROIDRO
(AS) - 2000 - 6.56

cc: Prof. Dr. Giulio Natta, MILANO

Varil
Trenever
Svesive
Tetra Pak

Lund, May 27, 1958

Montecatini S.A.
MILANO Italien



Gentlemen,

For a particular purpose we want to investigate the possibility of using polypropylene as a coating material for paper in our packing process. Until now we have only used polyethylene, but certain fluids require a better protection than that afforded by this plastic. I would appreciate if you would let me know what different types of polypropylene you manufacture at the present time, and also whether any of them has been successfully coated on to paper. I would also need the oxygen transmission figures and the figures for the film strength. For an evaluation I require about 50 kgs of the material.

Very sincerely yours,
AB TETRA PAK

Gad Rausing

/Gad Rausing/

2 separate

Sedg Lander, Seite 667
Kraft Papier Aktiengesellschaft

Bruno ist ein sehr guter
mann der Tetra Pak alle
Anstrengungen.

Nun ist er sehr zuver-
sichtlich.

Deshalb schreibe ich
I Tetra Pak ein und mache
mir keine Sorgen mehr.

GR/bjn

GR/bjn

*Neri
Trevi
TetraPak*

3 Giugno 1958

Rif. N. 666/ri

Egr. Ing. S. LARCHER
Direttore S.p.c. Polymer
Via F. Turati 18

Egregio Ingegnere,

ricevo copia di una lettera inviata dalla TetraPak alla Società Montecatini; non so però chi abbia ricevuto tale lettera e Le invio copia.

Desidero informarLa che La Tetra Pak usa carta impregnata di politene per l'imballaggio del latte, ed ha sviluppato un originale sistema di imballaggio usato in tutto il mondo (in Italia credo solo dalla Centrale del Latte di Modena).

Penso che il polipropilene possa essere usato con vantaggio e probabilmente da solo senza carta.

I migliori saluti.

(G. Natta)

All/ copia Tettiera Tetra Pak

3 Giugno 1958

Rif. N. 667/rl

Spett. Società Montecatini
Direzione SEID
Sede

Ricevo copia di una lettera inviata dalla Società TETRA PAK alla Montecatini; non so però chi abbia ricevuto tale lettera e ve ne allego copia.

Desidero informarVi che la Soc. Tetra Pak usa carta impregnata di politene per imballaggi del latte, ed ha sviluppato un originale sistema di imballaggi usato in tutto il mondo (in Italia credo soltanto dalla Centrale del Latte di Modena).

Penso che il polipropilene possa essere usato con vantaggio e probabilmente da solo senza carta.

I migliori saluti.

(Prof. G. Natta)

All/ copia lettera della TETRA PAK

ELEKTROKEMiska AKTIEBOLAGET

ESTABL. 1895

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Mr. G. Natta, Professor
Instituto di Chimica Industriale
del Politecnico
Piazza Leonardo da Vinci, 32
M I L A N O.

ITALIE.

Your reference

Your letter

Our reference

BOHUS
SWEDEN

CF/GW

June 10th, 1959

Dear Sir,

In 1952, we were in contact with you regarding various projects for manufactures at our Works here at Bohus. We refer, i.a., to your letter dated July 14th, 1952.

Regarding one of these, viz. methyl alcohol, we also received a quotation from Montecatini, dated July 2nd, 1952. In the meantime, we have, i.a., built and have had in operation a small ammonia synthesis plant in connection with our chlorine-alkali plant which has made it possible for us to get some experience from high pressure synthesis. Now, our interest has again been directed towards methanol and we are this time investigating the possibility of starting a production of 20,000 tons pure methanol per annum, that is approximately 55 tons/24 hours.

Our intention is to base this production upon a synthesis gas obtained by oil gasification (system SHELL or TEXACO), partial conversion, separation of carbonic acid and desulphuration. It is subject to a pressure of abt. 40 kos./cm².

We herewith wish to inquire whether you are still interested in making the basic data required for the investigation of this matter available to us, viz. those to be found on pages 5, 6, 7 and 8 of the above mentioned quotation from Montecatini but rectified to comprise a plant for 55 tons/24 hours, starting from ready synthesis gas made available to us with a pressure of 40 kilos/cm². We wish these statements to be supplemented with figures of consumption (Co + 2H₂) per kilo of methanol. There is a statement to be found in your letter of July 14th, 1952, but the composition of your synthesis gas is not quite clear to us. In addition, you are also requested to let us know the financial conditions for the necessary engineering and know-how.

Yours faithfully,

ELEKTROKEMiska AKTIEBOLAGET
L. A. Falckius

*Janek
Strömieri*

June 25 1959

Elektrokemiska Aktiebolaget
BOHUS
Sweden

our reference 711/eg

Sirs,

I have received your letter dated 10th May regarding methanol? I forwarded it to Ing.Tredici, SEPS - Montecatini, who will answer your requests directly.

Best regards.

G.Natta

we shall never
1 March 1960

Dr.Ing.S.A.J.Lindmark
Specialmaskiner AB
Surbrunnsgatan 6
Gothenburg C (Svezia)

ur refs. 178/eg

Dear Dr.Lindmark;

It was a great pleasure for me to hear from you, by your letter of February 22.

With regard to the request made by the Svedenska Gummifabriks Aktiebolaget, Gislaved, to get a sample of the Montecatini C23 synthetic rubber as soon as possible, I inform you that I forwarded it to Dr.B. Orsoni, Director of the Studies and Projects Dept., who also deals with these matters.

With my kindest regards.

G.Natta

BOZZA DA TRADURRE IN INGLESE.

Milano, 17 Giugno 1959.

Elektrokemiska Aktiebolaget
Bentley's, Rudolf Mosse
A. B. C. 5th and 6th Ed.
Bohus (Svezia).

Impianto per la produzione di metanolo.

Ci riferiamo alla Vostra del 10. VI. 1959 indirizzata al sig. prof. Natta e che lo stesso ci ha rimesso.

Comprendiamo che Voi desiderate avere da noi la nostra collaborazione tecnica consistente nella cessione di una licenza, fornitura di know-how e del progetto per un impianto capace di produrre 55 t/d di metanolo a partire da una miscela purificata, proveniente da combustione parziale di combustibili liquidi, disponibile alla pressione di 40 kg/cm².

Ci dichiariamo disposti a collaborare con Voi nel senso da Voi richiesto.

Per poterVi fornire le informazioni desiderate gradiremo conoscere se Voi desiderate la collaborazione tecnica limitata alla produzione di metanolo grezzo, oppure di metanolo rettificato. In tale ultimo caso gradiremo conoscere quali sono le caratteristiche alle quali deve rispondere il prodotto.

Per poterVi comunicare i consumi di gas, Vi preghiamo di volerci comunicare la composizione e la temperatura del gas di combustione parziale, convertito e purificato, che Voi potrete mettere a disposizione. A noi interessa in modo particolare il contenuto di CH₄ ed N₂ che si comportano come inertii nella produzione di metanolo. Vogliate tener presente che il contenuto di CO₂ nel gas può variare dallo 0 sino anche al 7-8% vol. e che in relazione al contenuto di CO₂ varia anche il rapporto fra H₂ e CO nel senso che tale rapporto deve essere tanto maggiore quanto più alto è il contenuto di CO₂ nel gas di sintesi. Ad esempio, mentre per un contenuto nel gas di sintesi del 0,7% vol. di CO₂ il rapporto fra l'H₂ ed il CO si aggira sul 2,15%, nel caso di un contenuto di CO₂ del 4,2% il rapporto fra idrogeno e CO si aggira sul 2,6%.

Restiamo in attesa di avere gli elementi richiesti per poter rispondere.

I nostri migliori saluti.

" M O N T E C A T I N I "

Tf/amc.

MONTECATINI

SOC. GEN. PER L'INDUSTRIA MINERARIA E CHIMICA
ANONIMA - CAPITALE VERSATO L. 100.000.000.000
M I L A N O

SETTORE PROGETTI E STUDI

MILANO 8 Marzo 1960.
VIA F. TURATI, 18
TELEGRAMMI GABBROPROGETTI
TELEFONI 6333 - 6334

Preg.mo Signore
Prof. Giulio Natta
Istituto di Chimica Industriale
Politecnico di
M i l a n o.

Caro Professore,

Lindmark.

Sua del 7 Marzo.

Rimetto copia di mia lettera al sig. Lindmark, cui
prego rispondere analogamente.

In altre parole ci riserviamo di dare una risposta
verbalmente al Direttore della Svenska Gummifabriks
Aktiebolaget quando sarà a Milano, in relazione a
quelle che saranno le attività produttive della Società
che egli rappresenta.

Cordialità :

* Or/sl.
All.

Bartolomeo Orsoni

C. C. POSTALE 3/3711 - CAM. DI COMM. 524

MOD. SEPS 5 (AB) - 5000 - 3.58

MONTECATINI

SETTORE STUDI PROGETTAZIONI E BREVETTI
Servizio Studi e Progettazioni

7th March 1960

Mr. S. A. J. Lindmark
Specialmaskiner AB
Surbrunnsgatan 6
Gothenburg C

Dear Mr. Lindmark,

I wish to thank you for your letter of the 5th March and to assure you that it will be a pleasure to me to meet Mr. Gislaved, Manager of Svenska Gummifabriks Aktiebolaget, in Milan at the end of March or at the beginning of April.

Please remember however that during the days going from the 27th to the 31st March included I shall be abroad.

Sincerely,

Ito: Orson!

Bartolomeo Orsoni

Or/epc.

7 Marzo 1960

Egr.Ing.P.Giustiniani
Amministratore Delegato
Società Montecatini

S e d e

P.o. Ing.B.Orsoni
Ing.G.deVarda

/rl

Caro Ingegnere,

ricevo l'unica lettera da parte del Dr.Lindauk,
a L'e La prego di dirmi cosa devo rispondere.

Cordiali saluti.

G.Natta

All/

*Venue
of meeting*

nur refs. 216/eg

March 16th 1960

Mr. S. A. J. Lindmark,
Specialmaskiner AB
Gothenburg C,
Surbrunnsgatan 6
(Svezia)

Dear Mr. Lindmark,

I am told that Dr. Orsoni wrote you with regard to the visit of the Technical Manager and the Production Manager of Svenska Gummifabriks Aktiebolaget.

I would most appreciate receiving some information concerning the above-said Company, and furthermore I would like to know which is the activity of that Firm in the field of the Chemical Industry. I ask you about this, having received an analogous request by the Montecatini men.

I would like also to know in which field the Specialmaskiner AB develops now its activity.

With my best regards,

G. Natta

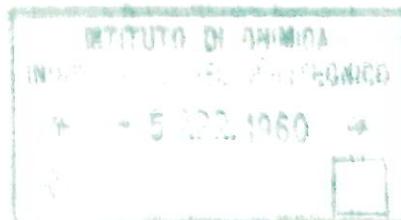
MONTECATINI

ORE STUDI PROGETTAZIONI E BREVETTI

Servizio Studi e Progettazioni

Varese 4th April 1960.

Frid
Mr. Yka Gummifabriks Aktiebolaget
c/o S v e d.
G i



Dear Sir,

thanks for your letter of March 30; it would be agreeable for me to meet you here in Milan on May 3.

I believe you have been informed that for the moment being we are not prepared to grant licences on the production of polyolefinic elastomers.

Presently, we have ~~a~~ pilot plant running and we have a plant having the capacity of 15.000 t/y under construction.

With best regards,

Sincerely,

[Red stamp: Ito: Orsoni]

M

Bartolomeo Orsoni

Or/sl.



SPECIALMASKINER AB

TELEGRAMS: SPECIALMASKIN, GOTHENBURG
CODES: A. B. C. 5TH. ACME, MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79
11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:
STOCKHOLM
MALMÖ

YOUR REF.
OUR REF.

178/eg
Dir/BA

GOTHENBURG C , March 5, 1960
SURBRUNNSGATAN 6
SWEDEN

ISTITUTO DI CHIMICA
INDUSTRIALE DEL POLITECNICO

* 7 MAR 1960 *

R

216

Professor G. Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci, 32
MILANO
Italy

Dear Professor Natta,

Many thanks for your letter of the 1st inst. and for your kind advice that you have forwarded Svenska Gummifabriks Aktiebolaget's request for a sample of the Montecatini C-23 to Dr. B. Orsoni.

I have therefore written also to him on this matter today.

As it now happens that the Technical Manager and the Production Manager of Svenska Gummifabriks Aktiebolaget will be in Milano the last days of March or the first days of April, they should be very interested to get wherever possible an opportunity of seeing you on this occasion.

Perhaps will you be so kind to inform me whether you are in Milano about this time and I shall then inform you about the exact date when the representatives for the customer will be in Milano.

With best regards,

Yours sincerely,

S.A.J. Lindmark

Copie: Ing. Svart
Dr. Orsoni
Dowd



SPECIALMASKINER AB

TELEGRAMS: SPECIALMASKIN. GOTHENBURG
CODES: A. B. C. 5TH. ACME. MOSSE

TELEPHONES: 13 79 85 - 13 11 85 - 11 85 01 - 13 82 79
11 90 70 - 11 90 71 - 13 60 14 - 11 11 85

BRANCHES:
STOCKHOLM
MALMO

YOUR REF.
OUR REF.

216/eg
Dir/BA

ISTITUTO DI CHIMICA INDUSTRIALE DEL POLITECNICO
* 28 MAR 1960
R 327
GOTHENBURG C SURBRUNNSGATAN 6 SWEDEN

March 24, 1960

Professor G. Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci, 32
MILANO
Italy

Dear Professor Natta,

Many thanks for your letter of March 16th and it will now evidently be agreed that Mr. Anders Rydin, Technical Manager; and Mr. Yngve Frid, Production Manager, of Svenska Gummifabriks Aktiebolaget, Gislaved, will be in Milan on April 20th. You will later on get a definite confirmation of this date as soon as it was definitely agreed with Dr. Orsoni.

Regarding Svenska Gummifabriks Aktiebolaget, Gislaved, they are the leading rubber goods manufacturer in Sweden, producing rubber tyres, rubber shoes, technical rubber goods a.s.o. They belong to the very big Swedish Co-operative Association, which controls a great many of industries in Sweden and abroad covering chemical, mechanical and household products, rubber, oil etc.

Also the fertilizer plant at Köping, Svenska Salpeterverken, belongs to the same concern.

Regarding the activity of our company it is the same as earlier but it has of course developed. It covers the sale of industrial plants, machinery and material for shipbuilding, mechanical and chemical plants generally.

We have also in the last years developed our connections with Italy in several directions and I think that for example Professor Bartocci of Terni, Società per l'Industria e l'Elettricità, knows us so well that he can give you any information about our activity and organisation.

Should information regarding any special part of our activity be of interest for you please do not hesitate to write me again.

With best regards,

Yours sincerely,

S. M. J. Lindmark

p.p. *Lindmark*

Ak/h

*Varie Shaw
Svezia*

Dec. 16, 1960

Dipl.Ing.Ingeborg von Mehlem
Svenska Rayon Aktiebolaget,
Polymerlaboratoriet,
Kontor och Fabrik Alvänds,
Vålberg (Svezia)

Dear Ing.von Mehlem,

Please, excuse the delay in answering
your letter of Oct. 5, 1960.

Since we have no-available copies of
the lecture presented by Dr.Fior in Linz, we herewith
enclose a summary of it.

Sincerely yours,

the secretary
to Prof.Natta

Encl./

Dipl. Ing. Ingeborg von Mehlem
in Firma

Svenska Rayon Aktiebolaget

KONTOR OCH FABRIK ÄLVENÄS, VÄLBERG
TELEFON 054 / 42100



TELEGRAMADRESS RAYON, KARLSTAD
TELEX 5486, POSTGIRO 19 24 09

vM/AMC

Herrn Prof. Dr. G., Natta
Istituto di Chimica Industriale del Politecnico
Milano
Piazza Leonardo da Vinci 32,
Italien.

Älvenäs, Välberg, den 5. Okt. 1960

Sehr geehrter Herr Prof. Natta:

Ihr ausgezeichneter Vortrag, der von Herrn Dr. Fior in Linz vorgetragen wurde, hat uns sehr interessiert und wir bedauern nur, dass Sie durch Krankheit verhindert waren. Wir wären nun äußerst dankbar zu erfahren, ob Ihr Vortrag publiciert wird oder ob Sie die Freundlichkeit hätten, uns den Text und das Bildmaterial zur Verfügung zu stellen. Es wurden so viele interessante Einzelheiten genannt, über die man sich in der dichten Auseinandersetzung nicht so rasch klar werden konnte.

Wir hoffen Sie schon wieder wohllauf und zeichnen

hochachtungsvoll
Svenska Rayon Aktiebolaget

Polymerlaboratoriet

J. v. Mehlem

I. von Mehlem

Janet von Mehlem

Mihail
warum
fett de Certe

Dec. 20, 1960

*Dear
Sir*

Mr. Göran Philipson,
Verkst. Dir. Ab Svenska Metallverk
Västerås
(Svezia)

Dear Mr. Philipson,

I wish to express my sincerest thanks for the beautiful book you kindly sent to me. I assure you that I have most appreciated it.

Thank you also for your kind wishes which Mrs. Natta and I heartily reciprocate.

Sincerely yours,

G. Natta

GÖRAN PHILIPSON

VERKST. DIR. AB SVENSKA METALLVERKEN

VÄSTERÅS

GP/Wä

10 December 1960

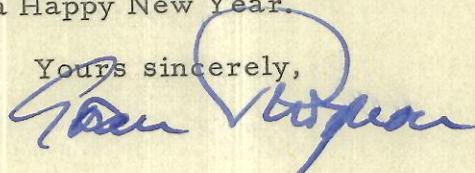
Il Professore Giulio Natta
Via Mario Pagano 54
Milano / ITALIA

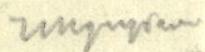
Dear Professor Natta,

I am sending you under separate cover a newly published book about the Swedish Warship WASA which was found by a classmate of mine a couple of years ago in the harbour of Stockholm. I thought that it might interest you, knowing your interest in archaeology and deep-sea diving.

I will also take this opportunity of wishing you and Mrs. Natta a Merry Christmas and a Happy New Year.

Yours sincerely,


Göran Philipson



*Wenil
Natta*

Jan. 18, 19

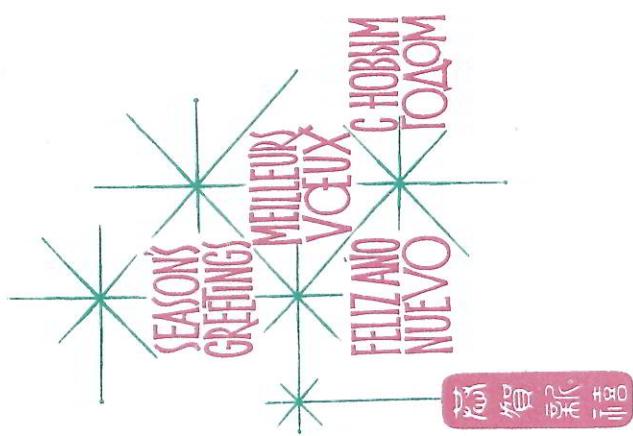
Mr. Sigrid Ewe,
Persens väg 2,
Malmö (Svezia)

Dear Mr. Ewe,

Thank you very much for the kind words you expressed to me and for the wishes which I heartily reciprocate for a happy 1962.

With my kindest regards.

G. Natta



my new year

Sigris Dene ad. Tersus vāg 2, Malmo-Sweden

19.12.61.

Dear Giulio Natta !

I happened to read in a magazine,
that you were awarded a fine prize
in London (it has to do with rubber)
and that you were a well famous
Scientist. I was glad to hear it, and
I send you my best wishes for X-mas
and the new year. My profession is a
librarian's. During my holidays I have
often visited your beautiful country. Hope
these lines will reach you, thank you -
here no proper address. Greetings from

*Varle
Nemmer
Soria*

May 9, 1962

Dr. George Hevesy,
Kungl. Universitetet i Stockholm,
Institutionen für organisk kemi
och biokemi,
Sandsgatan 2 - Stockholm Va

Dear Dr. Hevesy:

With regard to your letter of May 1, 1962, concerning your two volumes "Adventures in Radioisotope Research" I wish to inform you that I have already forwarded them to Prof. Staudinger as you desired.

I remind the courtesies you extended to me when, 30 years ago, I had the pleasure to meet you in Freiburg, and I will be very glad too if an opportunity arises to meet you again either in Stockholm or in Italy.

Accept my kindest regards,

Giulio Natta

KUNGL. UNIVERSITETET I STOCKHOLM

Institutionen för organisk kemi och biokemi

Sandåsgatan 2 - Stockholm Va

Tel. 34 08 60 (växel)

Ref.

1 May 1962



Prof. G. Natta,

Istituto di Chimica Industriale

Milano

Dear Professor Natta,

Pergamon Press sent you by some misunderstanding a copy of my book Adventures in Radio-isotope Research. The 2 volumes should have been sent to another great pioneer in Macromolecular Research to

Professor Herman Staudinger

Lugo Strasse 14

Freiburg i.B.

You would do me a great service by occasionally forwarding the volumes to Professor Staudinger.

It is very, very long ago I had the last time the pleasure of meeting you and I hope it won't take long and we shall see you in Stockholm.

With kind regards

Sincerely yours

George Hevesy
George Hevesy

Oct. 31, 1963

Prof. Bengt Ranby,
Division; Polymer Technology,
The Royal Institute of Technology
Stockholm 70

Dear Professor Ranby,

Further to my letter of Oct. 28, I herewith enclose
some recent photographs of myself with some of my co-workers:
their names are indicated on the back of the picture.

Accept my kindest regards.

Giulio Natta

Encl/ 5 pictures

*Venice
Invenzione
Svezia*

October 28, 1963

our ref. 928/eg

Prof. Bengt Ranby,
Division : Polymer Technology
The Royal Institute of
Technology
Stockholm 70 (Svezia)

Dear Professor Ranby,

On my return to Milan, after a few days spent in Rome, I answer your kind letter of October 19.

Under separate cover I send you a few reprints of our recent papers published in 1963; perhaps they can be of interest for your presentation.

I know that my secretary already sent you a few pictures of myself: I herewith enclose two further pictures: in one of them, I am with three co-workers of mine, i.e. from the left to right, Prof. Farina, Prof. Mazzanti, Prof. Porri.

If the opportunity arises for you to come to Italy, I will be very glad to meet you and to show you my Institute, which has been recently enlarged.

Accept my kindest regards.

G. Natta

to 2002(2) } 1957
2002(7) }

pubblicazioni N. 598 - 604 - 610 - 614 -
627 - 629 - 630 - 636 -
637 - 641 - 642

miati il 30.10.63

Oct. 22, 1963

Prof. Bengt Rånby,
Division: Polymer Technology,
The Royal Institute of
Technology,
Stockholm 70 (Svezia)

our ref. 928/lv

Dear Professor Ranby,

Your letter of Oct. 19 has reached us to-day, while Prof. Natta is absent from Milan.

Considering that you have an urgent need of Prof. Natta's pictures, we enclose them herewith.

On his return to Milan on Oct. 28, Prof. Natta will answer you personally and, if necessary, send you other pictures.

With kindest regards,

Very truly yours,

the Secretary
to Prof. Natta

Encl/ 2 pictures

TO OPEN CUT HERE / OUVRIR ICI

AEROGRAM



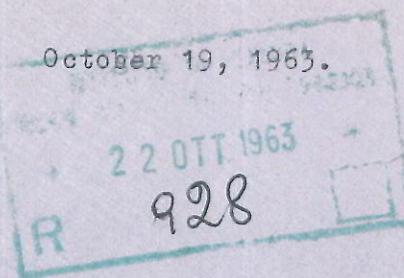
Professor G. Natta
Istituto di Chimica Industriale del
Politecnico
Piazza Leonardo da Vinci 32
Milano, Italy.

Professor Bengt Rånby
Division: Polymer Technology
The Royal Institute of Technology
Stockholm 70
Sweden

NYGEFÖRDAS ÖVER HEDA VÄRDEN UΤAN TILLÄGGSSÄR.
BEHÖRDA ICKE SOM AEROGRAM OM NAGOT DIGGES INHU
GODEANT AV KUNG'L. GENERALPOSTMÄSTAREN

DIVISION: Polymer Technology
THE ROYAL INSTITUTE OF TECHNOLOGY
STOCKHOLM 70
SWEDEN

October 19, 1963.



Professor G. Natta,
Instituto de Chimica Industriale del Politecnico
Piazza Leonardo da Vinci 32
Milano, Italy.

Dear Professor Natta,

You may recall that I wrote in the fall of 1955 and asked for material to be used for a lecture on "The Crystallization of Polymers" by invitation of the Swedish Chemical Society. This lecture was later printed in Svensk Kemisk Tidskrift.

I have now been asked by the Swedish Academy of Science to give an account of yours and Professor Ziegler's discoveries in the field of stereospecific polymerization. For this presentation, I would like very much to have a couple of pictures, e.g. a portrait, and a picture of you in the laboratory, lecturing or discussing with some of your associates.

In deep admiration of your contribution to science, I send my best personal regards and wish you continued success,

Very sincerely yours,

Bengt Rånby

Bengt Rånby

Professor

on the 4th of November 1963.

To Professor Giulio Natta
with best wishes,
Svensk Kemisk Tidskrift 76:2 (1964) Bengt Rånby Särtryck
June 26 1964.
1963 ÅRS NOBELPRIS I KEMI.

84

BENGT RÅNBY

Institutionen för Polymerteknologi, Kungl. Tekniska Högskolan, Stockholm 70

THE NOBEL PRIZE IN CHEMISTRY FOR 1963

The Nobel Prize in Chemistry for 1963 was awarded to Professor Karl Ziegler, Mülheim/Ruhr, Germany, and to Professor Giulio Natta, Milano, Italy, *for their discoveries in polymer chemistry and technology*. Ziegler's metal-organic synthesis of hydrocarbons and the discoveries leading to the low-pressure process for polyethylene using complex metal-organic catalysts are described. Natta's synthesis of stereoregular polyolefins (stereospecific polymerization) using Ziegler catalysts and the elucidation of chain conformation, conformation and lattice structures is outlined. The technical importance of the new linear and stereoregular polymers, esp. polyethylene and polypropylene, and their use as plastics, elastomers, films and fibers are discussed.

1963 års Nobelpriis i kemi har tilldelats professorerna Karl Ziegler, Mülheim/Ruhr, Tyskland, och Giulio Natta, Milano, Italien, *för deras upptäckter inom högpolymerernas kemi och teknologi*. De prisbelönta upptäckterna gjordes under 1950-talet, och de har redan lett till nya industriella framställningsmetoder för syntetiska polymerer med vidsträckt användning som plast, gummi, folier och fibrer. De två forskarnas insatser är så nära sammankopplade, att den beslutade delningen av Nobelpriiset förefaller väl motiverad. De belönade upptäckternas innehörd, samband och tekniska betydelse skall här i korhet beskrivas.



Karl Ziegler

Karl Ziegler

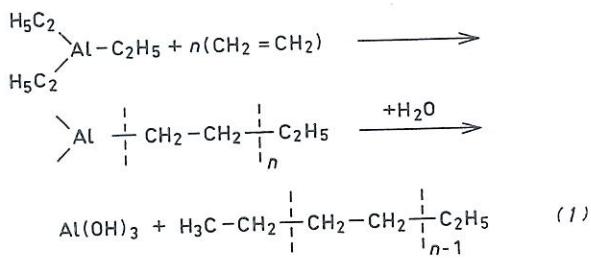
Professor Karl Ziegler är sedan år 1943 föreståndare för Max Planck-institutet för kolforskning i Mülheim/Ruhr. Han föddes år 1898 i Helsa nära Kassel, fick sin utbildning som organisk kemist vid universitetet i Mar-

1—416102 Sep.

burg och var under några år professor först i Heidelberg och sedan i Halle. Sin nuvarande befattning kombinerar Ziegler med en professur i teknisk organisk kemi vid den närlägna Tekniska högskolan i Aachen. Karl Ziegler har med början på 1920-talet gjort omfattande undersökningar över metallorganiska föreningar, främst av lithium och aluminium. Ziegler har därvid byggt upp ett system av organiska syntesmetoder av en betydelse som är jämförbar med Grignardreaktionernas, vilka baseras på magnesium-organiska föreningars reaktivitet. Denna nya gren av den organiska kemin brukar betecknas som Ziegler-kemi.

Metallalkyler och olefiner

Karl Ziegler har funnit, att metallhydrider och metallalkyler med lätthet kan addera olefiner. Till en början beskrevs denna reaktion som en addition av metallföreningen till en dubbelbindning i olefinen, t. ex. alkalialkyl till butadien.¹ Men vid användning av lithiumalkyl gick reaktionen med eten stegvis under bildning av butyl-lithium, hexyl-lithium, o. s. v.² Det blev då av praktiska skäl lämpligare att betrakta reaktionen som en addition av eten till metallalkylen. Denna metallorganiska syntes (1) genomfördes lättast med aluminiumalkyl och eten under bildning av långkedjiga Al-alkyler.³ Vid sönderdelning av produkten med vatten erhölls jämte aluminiumhydroxid högre mättade kolväten (n-paraffiner) med jämnt antal kolatomer. Reaktionsschemat tillhör numera de klassiska reaktionsformlerna (1). Det bör observeras, att samtliga tre alkylgrupper är likvärdiga vid uppbyggnaden av de långa alkylkedjorna. Produkten är en blandning av jämna n-paraffiner

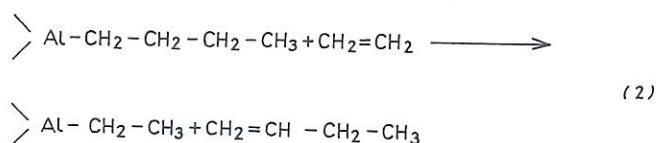


med olika kedjelängd. När reaktionerna görs i autoklav (ca 100 at) vid 110–120°, kan omsättningen av eten bli nästan fullständig. En fraktion av paraffinkolvätena är vaxartad vid rumstemperatur och innehåller då minst 16 kolatomer (hexadekan har smp + 20°).

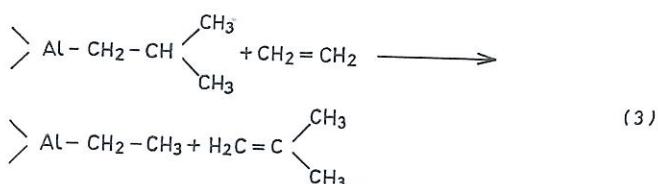
Dessa reaktioner var av stort intresse av två skäl. Dels kunde det visas att kolvätekedjorna växte som hårstrån genom att etenmolekyler addrades stegvis mellan aluminiumatomen och den ursprungliga etylgruppen. Detta var en ny reaktionstyp, som med eten gav i huvudsak raka (ogrenade) kolkedjor. Genom att använda ett stort etenöverskott kunde man öka kedjelängden till ett hundratals kolatomer (motsvarar molekylvikt 1 000–2 000). Substanserna blev då hårda paraffiner, och deras egenskaper började likna plastmaterialet polyeten, som i princip har samma kemiska struktur, men normalt har molekylkedjor innehållande tusentals kolatomer.

Professor Ziegler och hans medarbetare sökte intensivt efter metoder för en vidare utveckling av den beskrivna metallorganiska syntesen med alumi-

niumalkyl. Orsaken till att paraffinernas molekylvikt inte kunde ökas upp emot de för polyetener normala, visades vara en typ av kedjeöverföring som benämndes förträngning. Man fann, att eten med aluminiumalkyl gav en sidoreaktion, som innebar ett lösgörande av alkylgruppen i form av motsvarande olefin under bildning av aluminiumetyl (2). I vissa



stålautoklaver var förträgningsreaktionen så framträdande att påvisbara mängder 1-buten bildades av eten. I andra försök observerades att grenade alkylgrupper mycket lätt förträngdes av eten utan att adderas på



normalt sätt (3). På detta sätt utvecklas en process för dimerisering av propen baserad på reaktioner med aluminiumpropyl och propen. Ett klargörande av förträgningsreaktionen var således viktigt, dels för syntes av olefiner och dels för kontroll av alkylernas kedjelängd vid försöken att framställa polyeten. Lösningen på problemet kom genom en tillfällighet.

Ziegler-katalysatorn

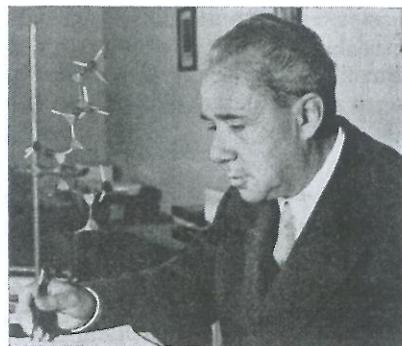
Vid ett alkyléringsförsök enligt (1) i autoklav erhölls stora mängder 1-buten ur trietylaluminium och eten, dvs. en förträgningsreaktion med högt utbyte. Det konstaterades att autoklaven innehöll spår av nickelföringen till följd av bristande rengöring. Autoklaven hade tidigare använts för hydrering med kolloidal nickel som katalysator. Vid rengöring med salpetersyra och ett fosfathaltigt tvättmedel hade ett svårlöstnickelfosfat bildats och verkat som katalysator.⁴ Vid det följande systematiska sökandet efter lämpliga förträgningskatalysatorer för kombination med aluminiumalkyl upptäcktes år 1953, att små mängder lösliga föreningar av vissa tunga metaller ur grupperna 4, 5 och 6, t. ex. zirkonium och vanadin, befordrade bildningen av polyeten med hög molekylvikt, dvs. hade en motsatt effekt. Titanföreningar var särskilt effektiva katalysatorer för etenpolymerisation. Med aluminiumalkyl och titanetraklorid som katalysator kunde polyeten framställas i högt utbyte vid atmosfärtryck och låg temperatur (40–50°).⁴ Zieglers nya »normaltrycksmedet» för framställning av polyeten gav en hårdare polymer med högre smältpunkt än den tidigare högtrycksmedeten. Orsaken till detta är skillnader i polymerkedjornas struktur. Det konventionella mjuka polyetenetet framställs vid hög temperatur (ca 200°) och högt tryck (ca 1 500 at) genom en friradikalreaktion i gasfas vid snabb strömning av eten genom ett rör enligt den s. k. Fawcett-processen.⁵ Dess molekylkedjor blir till följd av sidoreaktioner grenade i sådan utsträckning,

att man normalt finner en grenpunkt per 30—50 kolatomer. Molekylkedjorna hos Zieglers polyeten är betydligt mer lineära (normalt en grenpunkt per 200—300 kolatomer), vilket ger högre kristallinitet, högre densitet, större mekanisk hållfasthet och bättre temperaturbeständighet (se Tabell 1).⁶

TABELL 1. Egenskaper hos typiska Fawcett- och Ziegler-polyetener.

Polyetentyp	Densitet vid 20°	Kristallinitet, % vid 20°	Youngs modul kp/cm² vid 20°	Smältpunkt
Fawcett	0,93	50—60	1 500	115°
Ziegler	0,96	90	10 000	135°

Zieglers polymerisationsmetod var elegant och av stort tekniskt intresse, och den har därför patentsökts i många länder jorden runt. En av licenstagarna var det italienska bolaget Montecatini i Milano som hösten 1953 fick en beskrivning av polymerisationskatalysatorn. Montecatinis vetenskapliga rådgivare och medarbetare, professor Giulio Natta, som tidigare hos professor Ziegler deltagit i ett seminarium om metallorganiska syntesmetoder, fick genom licensöverenskommelsen sina detaljerade informationer om Zieglers arbeten och den nyupptäckta titan-aluminium-katalysatorn. Därmed börjar en ny fas i utvecklingen av de nya polymerisationsmetoderna.



Giulio Natta

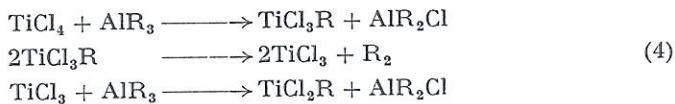
Giulio Natta

Professor Giulio Natta är sedan 1939 professor i industriell kemi vid Politecnico di Milano, en läroanstalt som motsvarar våra tekniska högskolor. Giulio Natta föddes i Imperia i Ligurien år 1903, blev doktoringenjör i det kemiska facket i Milano 1933 och tillträdde sedan en lärarbefattning i allmän och oorganisk kemi vid universitetet i Pavia. Han blev år 1936 professor i fysikalisk kemi vid universitetet i Rom och övergick år 1939 till sin nuvarande befattning i Milano. Från sina tidigare arbeten var professor Natta väl förtrogen med röntgenkristallografi för strukturbestämning, katalytisk kemi vid industriella tillämpningar (t. ex. oxoprocessen) och polymerisationsreaktioner för framställning av syntetiskt gummi. Dessa tidigare erfarenheter skulle visa sig vara en närmast idealisk

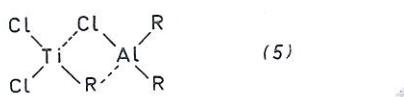
bakgrund för professor Natta vid de följande arbetena över katalytisk polymerisation.

Kinetik och sterokemi

Ziegler hade koncentrerat sina arbeten till katalytisk polymerisation av eten till linär polyeten. Orienterande försök att polymerisera andra omättade föreningar med samma katalysator gjordes utan framgång vid Zieglers laboratorier.⁷ Nattas först publicerade arbete över metallorganisk polymerisyn gällde kinetiken vid polymerisation av eten med aluminiumalkyl.⁸ Arbetena inriktades sedan på polymerisation med titan-aluminium-katalysator av Zieglers typ, främst av propen, 1-buten och styren. De ledde snabbt till framgång redan under år 1954. Natta fann, att många av de erhållna polymererna kristalliserade, och han tolkade detta som en effekt av regelbunden kedjestruktur, s. k. stereoregularitet. Det första offentliggörandet kom år 1955 och det innehöll omfattande data om de nya polymerernas kedje- och kristallstruktur.⁹ Dessutom modifierades Ziegler-katalysatorn genom användning av titantriklorid (ett mörkfärgat fast ämne) i stället för titantetraklorid, som är en färglös vätska. Därigenom erhöll Natta i många fall polymerer med en högre grad av stereoregularitet. Denne katalysator är dock att betrakta som en variant av den ursprungliga Ziegler-katalysatorn. Vid blandning av titantetraklorid och aluminiumalkyl reduceras titanföreningen snabbt under bildning av en brunfärgad fällning innehållande di- och triklorid av titan (4). Den aktiva katalysatorkomponenten anses i båda fallen vara en koordinationsförening av titan- och aluminium-alkyl-klorid, adsorberad på ytan av fast titanklorid. Strukturen för



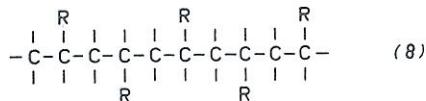
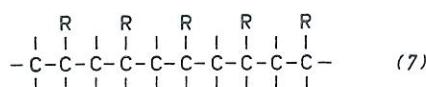
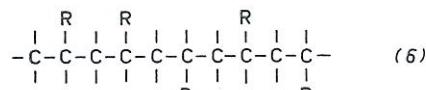
den adsorberade koordinationsföreningen är inte säkert fastlagd, men den brukar anges enligt formel (5). Hur detta



komplex kan styra polymerisationen och ge kedjorna en bestämd struktur är inte klarlagt trots mycket omfattande arbeten.¹⁰ Det är dock troligt, att reaktionen sker vid Ti-atomen genom öppning av Ti-R-bindningen och är en anjonpolymerisation, dvs. den växande kedjeändan (närmast Ti-atomen) har negativ laddning.

Stereospecifik polymerisation

Professor Natta och hans medarbetare har gjort sina största insatser vid syntesen av olika stereoregulära polymerkedjor och klarräggandet av deras struktur. Vid polymerisation av en vinylmonomer ($\text{CH}_2 = \text{CHR}$), t. ex. med



radikalpolymerisation, erhålls normalt en amorf polymer. Varannan kolatom i kedjan är asymmetrisk med en slumpvis fördelning av D- och L-former längs kedjan (6). Det har länge varit känt, att denna oregelbundenhet i stereostrukturen förhindrar kristallisation av polymerkedjorna. Vid polymerisation av propen och andra 1-olefiner med en stereospecifik katalysator riktas de monomera enheterna vid anlagringen till kedjan. Natta kunde framställa två typer av kristalliserande polypropen. Den ena formen framställdes med en Ziegler-katalysator, och dess kedjestruktur befanns innehålla regelbundet byggda segment enligt formeln (7). Metylgrupperna är riktade åt samma håll längs kedjan. Natta kallade denna strukturtyp *isotaktisk*, som är härlett av de grekiska orden för »liko ordning». Den andra kristallina

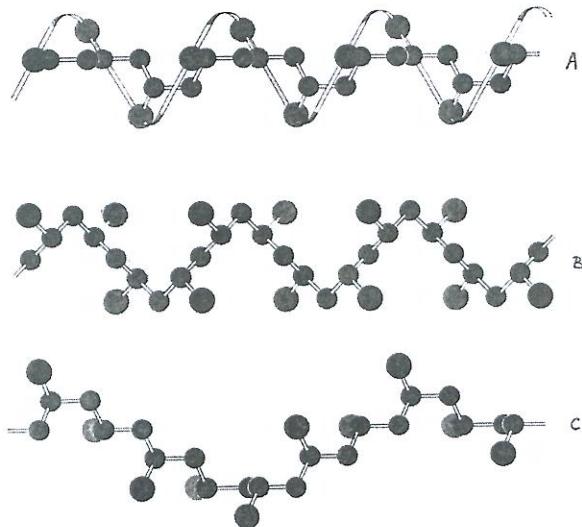


Bild 1. Kedjekonformation för polypropen med isotaktisk (A), syndiotaktisk (B) och oregelbunden eller ataktisk (C) struktur enl. Natta.

polypropenformen (8) framställdes med en katalysator innehållande ett vanadinsalt och aluminiumalkyl. I dess kedjestruktur ligger methylgrupperna

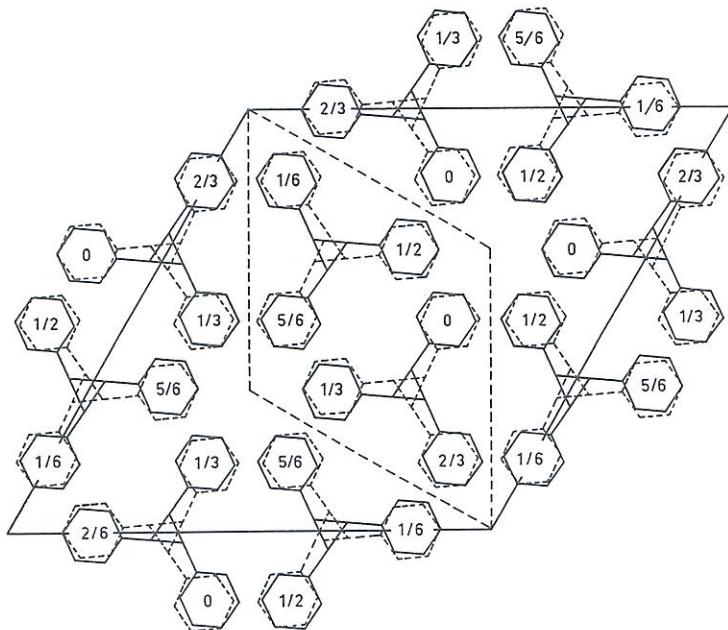


Bild 2. Projektion av enhetscellen för isotaktisk polystyren, vinkelrätt mot kedjespiralernas axel,
enl. Natta.

omväxlande på var sin sida om kedjan (8), och Natta kallade denna strukturtyp *syndiotaktisk* (härlett av det grekiska ordet *syndyo* för »varannan»). De två polymertyperna i kristallin form visar helt olika kedjestruktur. Vid syndiotaktiska polymerer intar ofta kedjorna en enkel sick sack-form analogt med en normal alkylkedja såsom i polyeten. Ibland är dock kedjeformen i kristallgittret betydligt mer komplicerad, t. ex. för syndiotaktisk polypropen

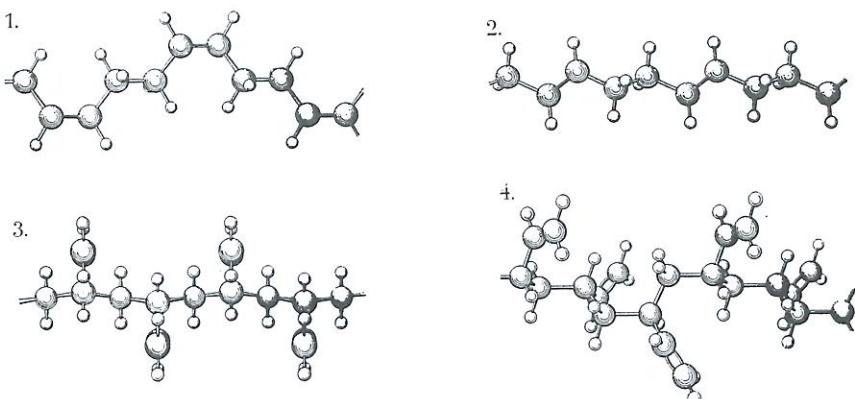


Bild 3. Kedjestrukturen hos de fyra formerna av stereoregulär polybutadien enl. Natta:
1. 1,4-cis, 2. 1,4-trans, 3. 1,2-syndiotaktisk och 4. 1,2-isotaktisk struktur.

TABELL 2. Stereoregulära polybutadiener enligt Natta.¹¹

Kedjestruktur	Sterisk renhet, %	Smältpunkt
1 <i>Cis</i> 1,4	98—99	—9°
2 <i>Trans</i> 1,4	> 99	145°
3 Syndiotaktisk 1,2	98—99	156°
4 Isotaktisk 1,2	> 99	128°

(bild 1 B). Vid isotaktisk kedjestruktur, då sidogrupperna ligger på samma sida om huvudkedjan, uppstår trängsel mellan sidogrupperna vid utsträckt kedja. Vid kristallisationen intar därför polymerkedjan en spiralstruktur med sidogrupperna riktade utåt (bild 1 A). Spiralens stigning bestäms av sidogruppernas storlek och form. Vid små sidogrupper, t. ex. isotaktisk polypropen med methylgrupper, har spiralen tre monomerer (= sex kolatomer) per varv, men vid större sidogrupper, t. ex. isotaktisk poly(3-metylbuten) med isopropylgrupper, har spiralen fyra monomerer (= åtta kolatomer) per varv. Mellanformer med sju monomerer per två varv, t. ex. isotaktisk poly(4-metyl-1-penten) har också påvisats. En typisk gitterstruktur har isotaktisk polystyren (bild 2), vars kedjespiraler innehåller tre monomerenheter per varv.

Med hjälp av olika modifierade Ziegler-katalysatorer har Natta och medarbetare under några få år framställt ett mycket stort antal polymerer med stereoregulär struktur. Som exempel på de stereospecifika katalysatorernas möjligheter kan nämnas den fullständiga serie av de olika butadienpolymerer, Natta framställt och strukturbestämt.¹¹ De olika strukturtyperna och motsvarande smältpunkter återges i Tabell 2, och kedjekonformationerna i kristallgittren visas i bild 3. Av dessa polymerer är *cis*-1,4-formationerna i kristallgittren visade i bild 3. Av dessa polymerer är *cis*-1,4-formationerna i kristallgittren visade i bild 3. Av dessa polymerer är *cis*-1,4-

polybutadien ett lovande gummimaterial medan de övriga är hårdare eller fibrösa. Under de senaste åren har Nattas arbeten inriktats på mer komplicerade polymerstrukturer. Om monomeren är en 2-olefin ($R_1-CH=CH-R_2$), kan sidogrupperna R_1 och R_2 ordnas i isotaktisk eller syndiotaktisk struktur vid polymerisationen, och sådana polymerer har framställts. Av speciellt intresse är optiskt aktiva polymerer. Med användning av monomerer med asymmetriska sidogrupper (en racemisk blandning) har nyligen med Ziegler-katalysator framställts polymerer, vilka kunnat delas upp i optiskt aktiva polymerfraktioner.¹² Detta tyder på att även katalysatorns aktiva punkter (»sites») på titankloridytan är D- eller L-former på liknande sätt som de optiska antipoderna i en racemisk blandning. Resultaten visar också, att sidogruppens struktur påverkar den växande polymerkedjans stereostuktur. Styrningen av additionspolymerisationen sker således genom en växelverkan mellan kedjeändan, katalysatorkomplexet och den reagerande monomer-molekylen.

Ziegler-katalysatorerna är synnerligen specifika. Vissa isotaktiska polyolefiner, t. ex. polypropen, kan framställas i en form som efter extraktion av amorf polymer kristalliseras till över 80 % (mätt med röntgendiffraktion) och med en kristallitsstorlek på ca 100 Å. Enligt beräkningar betyder detta, att de stereoreguljära kedjesegmenten har en längd av 50 till 100 monomera

enheter, dvs. endast några få procent av monomermolekylerna adderas i en avvikande stereostruktur, vilket senare här kan betecknas som en sidoreaktion. Grening av polypropenkedjorna har ännu inte påvisats. Utbytet av stereoregulär polymer med Ziegler-katalysator kan således vara mycket högt under vissa väl valda betingelser. Man brukar i detta sammanhang jämföra de stereospecifika polymerisationerna med den enzymatiska uppbyggnaden av nativa polymerer, t. ex. proteiner, polysackarider och nukleinsyra. Dessa biologiska polymerer torde dock ha en ännu mer regelbunden stereostruktur än de syntetiska. Hos cellulosen, t. ex. med en nativ kedje längd på flera tusen glukosenheter, har ännu ingen grening eller strukturell oregelbundenhet kunnat påvisas, dvs. kedjans steriska renhet torde vara över 99 %.

... viktigaste kemiska upptäckt eller förbättring

Zieglers upptäckt av de specifika katalysatorerna för olefinpolymerisation har beskrivits i ett fåtal originalpublikationer^{3,4} och diverse patent-skrifter. Dessa arbeten kan betecknas som ett fruktbart mellanspel, och Ziegler har nu återgått till den mer grundläggande metallorganiska kemien. Nattas arbeten inom stereospecific polymerisation har varit synnerligen omfattande. Tillsammans med sina medarbetare har Natta sedan år 1955 publicerat över 250 uppsatser inom detta område. En del av dessa arbeten och de tidigare patent-skrifterna har refererats i Gaylord-Marks bok.⁹ Ziegler gjorde således en pionjärgärning, och med den som grund har Natta utvecklat nya vägar inom polymerforskningen och tekniken. Vi har nu metoder för framställning av polymerer som vi för tio år sedan bara kunde spekulera om. Hundratals forskare världen runt arbetar nu på stereospecific polymerisation. Därigenom har Zieglers och Nattas arbeten kommit att stimulera och berika både den rent vetenskapliga och den tillämpade polymerforskningen.

Från praktisk synpunkt är polymerer med linär och regelbunden struktur av mycket stort värde. Kristallisationen höjer en polymers mjuknings-temperatur med 100—150°. Stereoregulariteten förbättrar i många fall de elastiska egenskaperna hos en gummipolymer. En hög kristallinitet är mycket viktig för goda fiberegenskaper. De industriellt viktigaste produkterna av detta slag är linär polyeten (enligt Ziegler) och isotaktiskt polypropen (enligt Natta), vilka båda kan användas som plastmaterial, folier och fibrer och redan framställs i stor skala. Sampolymerer av eten och propen är kommersiella gummimaterial, som också framställs med Ziegler-katalysator. En del av de industriella tillverkningarna av linära och stereoreguljära polymerer bygger på upptäckter, som gjorts oberoende av Zieglers och Nattas upptäckter. Detta hör t. ex. linär polyeten enligt den s. k. Phillips-processen med CrO₃-katalysator¹³ och syntetiskt naturgummi, poly(1,4-cis-isopren), med butyl-litium som katalysator.¹⁴ Denna senare polymer kan också framställas med Ziegler-katalysator.¹⁵ I andra fall är beroendet ej klarlagt med patentvister som följd. Detta bör dock inte påverka vår bedömning av Zieglers och Nattas insatser. Vetenskapsakademiens utdelning av årets Nobelpris i kemi bör hälsas med tillfredsställelse bland forskare och tekniker i hela världen. Det är inte ofta en Nobelprisbelönad upptäckt fått en så påtaglig, snabb och omfattande teknisk tillämpning som Ziegler-Natta-pro-

cesserna. Denna prisutdelning är helt i Alfred Nobels anda till *den som har gjort den viktigaste kemiska upptäckt eller förbättring såsom testamentet föreskriver.*

Litteratur

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Prof. Arne Riselius,

THUNBERGSVÄGEN 22
UPPSALA

—
Véronique
(Suisse)

Jan. 19, 1964

23 GEN. 1964

Dear Professor and Mrs. Natta.

Now that we are back home again after our séjours in your country we wish first of all to thank you again for all you did to make our brief visit so interesting and full of events. We were quite overwhelmed by all the kind helpfulness by Signora Natta to show us all the interesting and beautiful places along the Riviera. We were also delighted to meet the members

of the year by a good chance
to see in San Pedro. And we
had practically nothing else to do
but go to the "Mole" (Collection)
in Miharo. — You will very
soon see shall have
time to see kindred.
(Please tell your daughter that
we have sent the key to
your hotel, Stockholm.)

Our last day in San Pedro
we had some work and a
black sky and the beautiful
weather started clearing. The good day
to you so that we said
some of the other places along

that beautiful coast.
As you raised the question
about the "Mole" (Collection)
in Miharo in June. I think
that you should go. It is
interesting and you need not take
out in every thing if you do not
like. We shall not come, as I
believe it would be better for us
to go to Greece.

I hope we shall meet again
in your country or in another
— you are always welcome.
With kind regards. To
both of you and the like family.
Sincerely yours,
Dame Pickard

*Wen'e
G. Natta
Milano*

Feb. 27, 1964

Prof. Stig Claesson,
Fysikalisk-Kemiska Institutionen,
Uppsala Universitet,
Uppsala (Svezia)

our ref. 95/1v

Dear Professor Claesson,

Thank you for your kind letter of Feb. 10, 1964 from which I am glad to learn that you accept our invitation to deliver a lecture at our Institute.

Since in the period until April 12, a lot of engagements are foreseen, among which the centennial anniversary ceremonies of our Polytechnic Institute, as well as duties in Rome for the Ministry of Education, I think it desirable to postpone your visit to the second fortnight of April. I think that also Professor Rossi agrees, since engagements have come about also for him for the period considered before.

You may arrange the details of your visit to Italy directly with Prof. Rossi: I think I shall be in Milan during the 2nd fortnight of April.

Obviously, you will be our guest during your stay in Milan.

Looking forward to learning from you the exact time of your visit here, I send you my kindest personal regards.

Giulio Natta

P.S. Please let us know the exact date of your arrival and how many days you plan to stay in Milan as soon as possible: in fact, due to the International Industrial Exhibition (April 12-27) it is rather difficult to find rooms in Milan on that period.

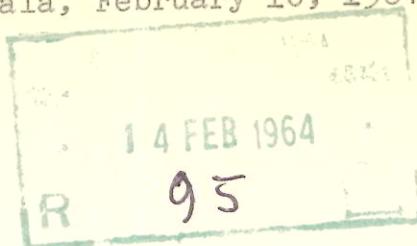
FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA

TEL. 394 60 (VÄXEL)

/AS

Your ref. 23/eg

Uppsala, February 10, 1964



Professor Giulio Natta
Istituto di Chimica Industriale del Politecnico
Piazza Leonardo da Vinci, 32
Milano

Dear Professor Natta,

I have just written to Professor Rossi in Genoa suggesting that I come to Genoa the first week in April. It would be a great pleasure for me to include Milan in my visit to Italy, and I hope that time will be convenient for you. I am also willing to give a lecture or a seminar.

I very much regret that you were unable to visit Uppsala when you received the Nobel Prize. It will always be an event for us whenever you will be able to come to Uppsala.

Cordially,


Stig Claesson

January 15, 1964

Prof. Stig Claesson
Institute of Physical Chemistry
University of Uppsala (Svezia)

our ref. 23/eg

Dear Professor Claesson:

I mostly regret I could not come, when I was in Sweden, to Uppsala to meet you and thank you for your kind letter. Prof. Pino has told me about his visit to your well equipped laboratory. I have also been told that you will come to Italy to give a lecture in Pisa in the near future.

I do hope that, during your journey to Italy, you would be able to make a short trip to Milan to give a lecture also at our Institute.

Looking forward to meeting you soon, I send you and Mrs. Claesson, kindest regards and best wishes, to which Rosita joins.

G. Natta

P.S. If you think it possible to accept our invitation, please let me know with some advance the exact day you foresee to come to Milan.



BREVKORT
CARTE POSTALE

Professor Giulio Natta
Istituto di Chimica Industriale
del Politecnico di Milano

M I L A N O / Italien

Vänste
UPPSALA UNIVERSITET
KEMISKA INSTITUTIONEN
UPPSALA

Arne Fredga
Sweden -

Vielen Dank für die interessanten
Sonderdrucke. Mit herzlichen Grüßen,
auch an Ihre Familie,

Ihr ergebener
Arne Fredga

Uppsala, den 2. Juli 1964

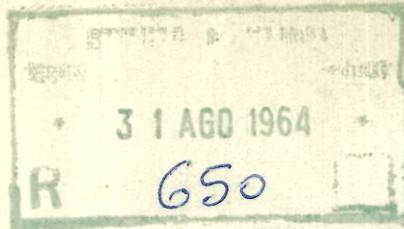
ALFA-LAVAL

Resiel
ALFA-LAVAL AB, STOCKHOLM

THE ALFA-LAVAL/DE LAVAL GROUP

Professor Giulio Natta
POLITECNICO de Milano
P. L. da Vinci, 32
MILANO

Italien



Your reference

Your letter

Please refer to

G/Öbg/MK

Stockholm

August 26, 1964

Dear Professor Natta,

You may recall our brief encounter on December 13 last year when you were kind enough to let me have an interview with you for our house magazine - The ALFA-LAVAL INTERNATIONAL.

I enclose a copy of our magazine and hope that I have been able to capture our very interesting conversation.

Yours sincerely,

S. Öberg

*microbior
mater
produkt
lett arbete*

cc: Società Alfa-Laval, Milano

Encl.

Postal address
ALFA-LAVAL AB
Postfack 2
STOCKHOLM TULL, Sweden

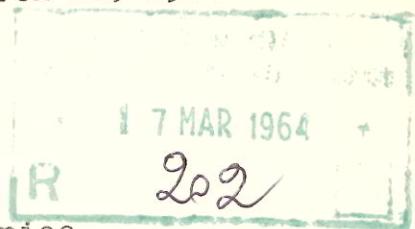
Telephones
Long distance 08/54 02 20
Local 54 02 00

Telex
1550

Telegrams
Alfalaval Stockholm

FYSIKALISK-KEMISKA INSTITUTIONEN
UPPSALA
TEL. 304 60 (VÄXEL)
S.C./AS

Uppsala, March 12, 1964



Professor Giulio Natta
Istituto di Chimica Industriale del Politecnico
Piazza Leonardo da Vinci, 32
Milano, Italy

Dear Professor Natta,

From the enclosed copy of a letter to Dr. Morf you can see that we have suggested an international scientific award in memory of the late Professor Kuhn.

As I know that you also appreciated Professor Kuhn's work very much I would like to ask you if you would participate in this action by sending a similar letter to Dr. Morf. It would certainly help very much if you would like to do so, and if you think it appropriate you could ask some other Italian scientists to co-sign your letter.

With best personal regards.

Sincerely,

Stig Claesson

Similar letters have been sent to Prof. Flory, U.S.A.
Prof. Melville, England
Prof. Overbeek, The Netherlands
Prof. Sadron, France
Prof. Smets, Belgium
Prof. Staudinger, Germany

Copy

Uppsala, March 5, 1964

S.C./AS

Dr. Rudolf Morf
Secretary General
International Union of Pure and Applied Chemistry
c/o F. Hoffmann-La Roche and Co. Ltd.
Basle 2, Switzerland

Dear Dr. Morf,

In Memory of the late Professor Werner Kuhn

The death of Professor Werner Kuhn was a great loss to the scientific world. He made pioneering and outstanding contributions in a variety of scientific areas; to mention a few: quantum theory of spectra, optical activity, theory of chain molecules, polyelectrolytes, distillation, conversion of chemical into mechanical energy, diffusion and dialysis.

We feel that it would be most appropriate to pay tribute to the late Professor Kuhn by establishing some permanent scientific award carrying his name, for instance a medal, a prize, an honorary lecture or a combination of these to be given each year for scientific achievements in an area connected with Professor Kuhn's work. Because of Professor Kuhn's very wide range of interests, we believe that there would be possible to find every year a scientist worthy of such a distinction.

In order to find out if this suggestion would meet with response in Switzerland and also to find somebody willing to take the necessary initial steps we have written to you as being both a personal friend of the late Professor Kuhn and the Secretary General of IUPAC.

Yours very sincerely,

The Svedberg
Uppsala University

George de Hevesy
University of Stockholm

Arne Fredga
Uppsala University

Ole Lamm
Royal Institute of Technology,
Stockholm

Stig Claesson
Uppsala University

March 23, 1964

Dr.Rudolf Morf, Secretary General
Inter.Union Pure & Applied Chem.
c/o P.Hoffmann-La Roche & Co.Ltd.
Basel 2 - Switzerland

our ref.219/lv

Dear Dr.Morf,

We have got knowledge of the enterprise of some of our University colleagues to honour the memory of Prof.N.Kuhn, by establishing an award to be granted every year to a worthy scientist, who has developed his research works in the same fields of research of Prof.Kuhn.

We have ever mostly appreciated the thorough and accurate works of Prof.Kuhn in the various fields of physical chemistry, and the outstanding originality of his works.

Therefore we wish to support this enterprise of our colleagues and will be very glad to give our contribution to the fulfilment of their proposal.

Very truly yours,

Prof. Giulio Matte

Prof. P. Danusso

Prof. I. Pasquon

March 23, 1964

our ref.202/lv

Prof. Stig Claesson,
Fysikalisk-Kemiska Institutionen,
Uppsala Universitet,
Uppsala (Svezia)

Dear Professor Claesson,

Thank you for your kind letter of March 12, 1964.
I have very much appreciated your enterprise to honour the
memory of Prof. Kuhn, who truly developed important and original
works in many branches of pure and applied physical chemistry.

Therefore I gladly join you and write Dr. Morff a
letter, a copy of which is herewith enclosed.

Looking forward to meeting you in April, I send you
my kindest regards.

Giulio Natta
Giulio Natta

Encl/

With the Secretary's Compliments

Sir Harry Melville, K.C.B., F.R.S.

DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH
STATE HOUSE, HIGH HOLBORN,
LONDON, W.C.1.

CHANCERY 1262

23rd March, 1964

Thank you for your letter of March 12
telling me of your suggestions for an
international scientific award in memory
of Professor Kuhn. This is an excellent
scheme and I am very happy indeed to
support this proposal. I enclose a copy
of the letter I am sending to Dr. Norf.

With kindest personal regards,

H. W. MELVILLE

Professor Stig Claesson,
Uppsala Universitet,
Fysikalick-Kemiska Institutionen,
Uppsala,
Sweden.

Copies of this letter have been sent to:

Professor Flory, U.S.A.
Professor Natta, Italy,
Professor Overbeek, The Netherlands,
Professor Sadron, France,
Professor Smets, Belgium,
Professor Staudinger, Germany.

23rd March, 1964

Professor Claesson has sent me a copy of the letter he and some of his colleagues in Sweden have sent to you suggesting that it would be appropriate to pay tribute to the late Professor Kuhn by establishing some permanent scientific award carrying his name. I wish to give my warmest support to this proposal and if the mechanism exists in IUPAC I hope you will do all within your power to put it into effect. I am sending a copy of this letter to: Prof. Flory, U.S.A. Prof. Natta, Italy, Prof. Overbeck, The Netherlands, Prof. Sadron, France, Prof. Smets, Belgium, Prof. Staudinger, Germany.

H. W. MELVILLE

Dr. Rudolf Morf,
Secretary General,
International Union of Pure and Applied Chemistry,
c/o F. Hoffmann-La Roche and Co. Ltd.,
Basle 2,
Switzerland.

14. 4. 1964

Chiar.mo Prof. P. Corradini, Direttore
Istituto di Chimica Generale e Inorganica
dell'Università di

N a p o l i - Via Mezzocannone 4

Caro Corradini ,

ricevo una lettera dal Prof. Claesson dell'Università
di Uppsala, della quale Le allego copia insieme a copia della nostra rispo-
sta. Se Lei è del nostro stesso parere, La prego di scrivere al Dr. Morf
una lettera analoga alla nostra di cui Le allego copia.

Molti cordiali saluti.

G. Natta

N. 4 All/

15.4.1964

Chiar. mo Prof. V. CAGLIOTI
Istituto di Chimica Generale
e Inorganica dell'Università
Città Universitaria

R o m a

Carissimo Caglioti,

ricevo una lettera dal Prof. Claesson dell'Università
di Uppsala della quale ti allego copia, insieme a copia della nostra risposta.

Se tu sei del nostro stesso parere, ti prego di scrivere
al Dr. Morf una lettera analoga alla nostra, dinanzi cui ti allego copia.

Molti cordiali saluti.

Giulio Natta

N. 4 All/

15.4.1964

Chiar. mo Prof. Corrado ROSSI
Istituto di Chimica Industriale
dell'Università di
G e n o v a - Via A. Pastore

Caro Rossi,

ricevo una lettera dal Prof. Claesson dell'Università di Uppsala della quale Le allego copia insieme a copia della nostra risposta. Se Lei è del nostro stesso parere, La prego di scrivere una lettera al Dr. Morf, analoga alla nostra di cui Le invio copia.

Molti cordiali saluti.

Giulio Natta

N.4 All/

MONTECATINI

DIVISIONE IMPIANTI E BREVETTI

IMPIANTI

Herrn
Prof. Otto Stelling
bei der Schwedischen Ambassade
Viale del Policlinico, 129 A
R o m.

Willkommen
Wesle

den 22. April 1964.

Sehr geehrter Herr Professor !

Herr Prof. Giulio Natta hat mir Ihren an ihn gerichteten Brief vom 3. April gezeigt.

Wir werden uns recht daran freuen, Ihnen einige unserer Anlagen fuer die Spaltung von Kohlenwasserstoffen, sowie unser Forschungs-institut zeigen zu duerfen.

Wenn Sie mir den Termin bekanntgeben, an welchem Sie diese Besichtigungen vornehmen moechten, so wird es mir sehr angenehm sein, dieselben zu organisieren.

Bis dahin, genehmigen Sie bitte den Ausdruck meiner ausgezeichneten Hochachtung.

I.to: Orsoni

Bartolomeo Orsoni

Or/lf.

April 10, 1964

Prof. Otto Stelling,
Hotel Splendide Royal,
Lugano (Svizzera)

Dear Professor Stelling,

Your letter of April 3 has reached us only to-day, just when Prof. Natta was leaving for Genoa. Before leaving, Prof. Natta has charged me to inform you that he will be in Milan from April 14 to 16 and from April 26 to 30. He will be very glad to meet you if you can come in one of the days mentioned above. Otherwise someone of his colleagues and co-workers will accompany you on a visit to our Institute.

With regard to your possible visit to the Montecatini plants you are interested in, Prof. Natta will inform the Montecatini managers of your wish and will highly recommend your request, since Montecatini grants that permission very seldom.

Prof. Natta will send you their answer at the Rome Swedish Embassy next week.

With kindest regards.

The Secretariat
of Prof. Natta

*Verne
Natta
Giulio*

July 2, 1964

our ref. 506/lv

Prof. Bengt Rånby,
Kungl. Tekniska Högskolan,
Institutionen för Polymerteknologi
Stockholm

Dear Professor Rånby,

Thank you for your kind letter of June 26, and for the reprints you sent to me.

I mostly regret that you have to postpone your visit to Milan, but I do hope that another opportunity will arise soon to meet you. I wish to inform you that in August I will be on holidays and that my Institute will be closed for the most part.

Thanking you very much again, I send you kindest personal regards.

Giulio Natta

Professor Otto Stelling
Institutionen för kemisk teknologi
Kungl. Tekniska Högskolan
Stockholm 70
Tel. 23 65 20

Stockholm den 3. April 1964.

Herrn Professor Dr. Giulio Natta
54 Via Mario Pagano
Milano
Italy

Sehr geehrter Herr Professor!

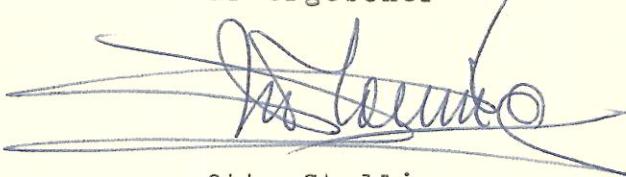
Als Professor in Chem. Technologie an der Techn.Hochschule in Stockholm seit zwanzig Jahre habe ich natürlich viel von den Ein-satzen der Techniker und Forscher in Italien gelesen, leider habe ich jedoch keine persönliche Kontakte. Ich habe mir deshalb an meinen Freund, Professor Sven Brohult, IVA in Stockholm gewandt um einen guten Rat gebeten. "Schreibst an Professor Natta" war sein Antwort und ich habe seinen Rat gefolgt.

In den nächsten Tage gehe ich mit meiner Frau in Auto nach Rom und berechne in Italien bis etwa 1. Mai zu bleiben. Während dieser Zeit möchte ich sehr gern etwas von der italienischen Chem. Industrie kennen zu lernen vor allem einige Montecatini Anlagen zu sehen. Was mich besonders interessiert ist Anlagen für Spaltung von Kohlenwasserstoffe und für Darstellung von Baschemikalien durch direkte Oxydation von Kohlenwasserstoffen. Die Fortschritte in Italien auf diesem Gebiet sind ja sehr gross. Wenn Sie mich bei einigen Kollegen auch introduzieren möchten wäre ich Ihnen natürlich sehr dankbar.

Können und wollen Sie, Herr Professor, mir in dieser Angelegenheit helfen, wäre ich für eine Antwort sehr dankbar. Ein Brief kann mir erreichen z.B. in Hotel Splendide Royal, Lugano vom 13. bis zum 15. April, später am besten unter die Adresse der Schwed.Ambassade, 129 A, Viale del Policlinico, Rom.

Ich danke Ihnen voraus für Ihre Freundlichkeit,

Ihr ergebener



Otto Stelling
Prof.Dr.

Stockholm, June 26, 1964.



Professor Giulio Natta,
Istituto di Chimica Industriale del Politecnico,
Piazza Leonardo da Vinci 32,
MILANO
Italy.

Dear Professor Natta,

When we met last December I mentioned my plans to visit you and your institute this summer. Unfortunately, I have had to postpone this trip, and I hope to come at a later date.

Enclosed I send two copies of a reprint from the Swedish Chemical Journal, describing yours and Professor Ziegler's research work for which the Nobel Prize was awarded.

With kindest personal regards and best wishes to you, Mrs. Natta and your research group,

Very sincerely yours

Bengt Rånby
Bengt Rånby

A large, faint, handwritten signature of Bengt Rånby is visible across the bottom half of the page, oriented diagonally from the bottom left towards the top right.

Feb. 25, 1965

Sverige

Amnesty International
Kungsgatan 24 V
Stockholm C (Sverige)

Dear Sirs,

With regard to the request that Profs. Lagerkvist, de Hevesy and Tiselius addressed to me of signing the appeal for freedom of Albert Luthuli, I am very glad to join all Nobel Prize winners in this enterprize.

On this purpose, the re-typed appeal has been signed by myself. If I have to sign something else, do not hesitate in sending it to me.

Sincerely yours,

Giulio Natta

Encl/

Stockholm, Febr. 16th 1965

2 letters I wrote
of Feb 16
1 about
of Feb 16

Dear Professor Natta,

Albert Luthuli, the South African Nobel Peace Prize winner in 1960, has for many years been held isolated from the outside world, confined to a Bantu Reservation. He is not allowed to leave this centre and nobody may visit him without permission of the South African Department of Justice. Because of this treatment the Nobel Committee of the Norwegian Parliament has in June 1964 demanded that the restrictions on Chief Luthuli be lifted. However, the Government of South Africa refused to accede to this request.

We Swedish Nobel Prize winners intend to appeal to the Government of South Africa for the liberation of Chief Luthuli. We now ask you and all other Nobel Prize winners to join us in signing the following appeal:

"Peace Price winner Albert Luthuli is South Africa's leading advocate of a peaceful transition to democracy with equal rights for all races. He has been kept isolated for many years, and to quote him is a criminal offence."

We Nobel Prize winners appeal to the Government of South Africa to restore to Albert Luthuli his freedom of speech and movement in accordance with the U. N. Declaration of Human Rights."

We hope to obtain as wide support as possible for our action. We would be very grateful for an early, and favorable replay, preferably before March 1st, when the appeal will be sent.

Yours faithfully

Pär Lagerkvist

Pär Lagerkvist
Author

George de Hevesy

George de Hevesy
Professor

Arne Tiselius

Arne Tiselius
Professor

The Swedish section of Amnesty International takes the liberty of sending this letter to you in the hope that you will sign the appeal and return it to this address:

Amnesty International
Kungsgatan 24 V
Stockholm C



Varje
Mannen
Fraser

AMNESTY INTERNATIONAL

Svenska sektionen

En rörelse för mänskliga rättigheter och frigivande av samvetsfänglar

Kungsgatan 24v Stockholm
Postgiro nr 45 977

Stockholm, in July, 1965.

To all Nobel Prize Winners who signed the appeal for Albert Luthuli.

Dear Sir,

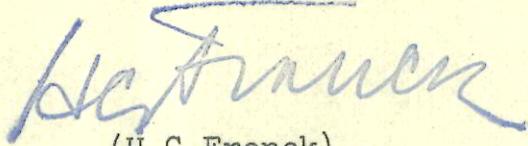
Thank you for your participation in the action from the Nobel Prize Winners for Chief Albert Luthuli.

There was good publicity about this event in all the big daily papers as well as on TV and radio. I am enclosing a cutting from a Swedish periodical "Freden" which gives a report in English.

I have now received a reply, dated June 15th, from Mr. Hamilton, the South African Ambassador in Stockholm. It reads as follows:

"Dear Sir, I have been instructed to acknowledge receipt of your letter of April 3rd and enclosure addressed to the Honourable the Prime Minister of the Republic of South Africa. It is evident that neither your organisation nor the distinguished Nobel prize-winners who were induced to sign the appeal on behalf of Mr. Luthuli are properly informed on the implications of his chairmanship of the African National Congress, or of the subversive character of this body and its threat to peace and order. Your communication can therefore carry no weight. Yours truly, A.M. Hamilton, Ambassador."

Yours sincerely


(H.G. Franck)

Chairman of the Swedish Section of
AMNESTY INTERNATIONAL

Feb. 25, 1965

Peace Price winner Albert Luthuli is South Africa's leading advocate of a peaceful transition to democracy with equal rights for all races. He has been kept isolated for many years, and to quote him is a criminal offence.

We Nobel prize winners appeal to the Government of South Africa to restore to Albert Luthuli his freedom of speech and movement in accordance with the U.N. Declaration of Human Rights.

Giulio Natta

Noril
Hamer
Svezia

14/1/1966

Marchese Benedetto Capomazza di
Campolattaro - Abasciata d'Italia

Stoccolma (Svezia)

Gentilissimo Marchese Capomazza,

ricordando sempre quanto sia grande la Sua cortesia, ho incoraggiato il Prof. Beonio Brocchieri ad inviarLe la lettera allegata, contando molto sul Suo autorevole appoggio per ottenerne l'adesione da parte di S.M.Re Gustavo di Svezia a voler ricevere la "Matricola d'onore" dell'Università di Pavia, intervenendo personalmente alla Cerimonia.

Spero proprio che Lei possa aiutarci in questa delicata ambasciata presso Sua Maestà e La ringrazio anticipatamente per quanto potrà fare.

Colgo l'occasione per inviarLe, assieme a mia moglie, gli auguri più fervidi per il nuovo anno.

Molti cordiali saluti.

163

Stoccolma, 3 febbraio 1966

Caro e Illustre Professore,

mi sono subito preoccupato di accertare se Sua Maestà sia disposto a recarsi a Pavia per ricevere la "Matricola d'Onore" dall'Associazione Laureati di quello storico Ateneo.

Dopo aver preso contatto preliminare con il Capo della Segreteria di S.M. il Re, ho potuto esporre ed illustrare personalmente al Sovrano l'iniziativa, nel corso di un pranzo ufficiale.

Sua Maestà ha subito manifestato molto interesse alla iniziativa e si è detto lusingato di essere stato prescelto per tale onorifica distinzione da parte del secolare Ateneo di Pavia. Egli comunicherà direttamente all'Università le definitive determinazioni circa l'invito rivolto Gli.

Poichè il Sovrano non potrà essere a Pavia alla fine di maggio, il conferimento della "Matricola" dovrebbe aver luogo o nel periodo pasquale o in settembre. Del resto lo stesso Professor Beonio-Brocchieri mi aveva già informato che si sarebbe rimesso alla data che il Sovrano avrebbe scelto.

Augurandomi che il Sovrano dia la Sua adesione definitiva all'invito e che così la brillante iniziativa possa aver luogo con pieno successo, Le ricambio

*Caro Professore
i miei più cordiali saluti - Suo*

Caro Professore

C. M. N. B.

Illustre Prof. Giulio NATTA

Via Mario Pagano, 54

= MILANO =

THE ROYAL INSTITUTE OF TECHNOLOGY

Department of Polymer Technology

Stockholm 70, Sweden

April 12, 1967



*Boil
Ranby
Bresie*

Professor Giulio Natta
Istituto di Chimica Industriale del Politecnico
Piazza Leonardo da Vinci, 32
MILANO - Italien

Your ref. 162/lmv

~~Bent~~

Dear Professor Natta:

Referring to your kind letter of March 15, I have now received the sample of cis-1,4-poly(1,3-pentadiene) to be used for UV degradation studies with ESR analysis.

I am most grateful to you for your help and I will be glad to send you the results of our studies when the research work is completed.

With best wishes and kind regards,

Very Sincerely Yours,

Bengt Rånby
Bengt Rånby
Professor

*Verde
Pavie
Svezia*

Milano, 8 Febbraio 1966

Marchese Capomazza di Campovattaro
Ambasciatore d'Italia
Stoccolma (Svezia)

Eccellenza,

La ringrazio per la sua lettera del 3 febbraio che ho ricevuto stamane. Ho subito telefonato al Professor Beonio-Brocchieri, il quale avrebbe subito parlato con il Rettore dell'Università circa la data. Brocchieri riterrebbe possibile fissare la cerimonia a Pavia per domenica 24 aprile, escludendo il rinvio a settembre, mese in cui gli universitari sono ancora in vacanza. Occorrerebbe perciò insistere presso Sua Maestà circa la data d'aprile e sapere piuttosto presto una decisione al riguardo per poter organizzare bene la cerimonia.

Sono anch'io molto lieto che Sua Maestà Re Gustavo accetti l'onorificenza dell'Università di Pavia.

Molti ringraziamenti e cordiali saluti.

Giulio Natta

THE ROYAL INSTITUTE OF TECHNOLOGY
Department of Polymer Technology
Stockholm 70, Sweden

March 10, 1967

ISTITUTO DI CHIMICA
INDUSTRIALE DEL POLITECNICO

13 MAR. 1967

162

Bent
Copie R
13/3/67

Professor Giulio Natta
Polytechnic Institute
Piazza Leonardo da Vinci
MILANO
Italien

Dear Professor Natta:

We are working on the radiation induced degradation of defined rubber polymers using ESR measurements. For comparison with results for commercial polymers, we would be very much interested in having a small sample of poly(1,3-pentadiene). This is the analoge of poly(1,4-isoprene) with the methyl group shifted.

According to Rubber Reviews for 1966 (p. 14-35) you have prepared and studied this polymer. If at all possible, we would be most grateful to you if you could send us a small sample for our investigation. One gram would be sufficient, but also smaller amounts would be of interest for us in our work. We will be glad to inform you about the results.

With best wishes and kind regards to you and your research group,

Very Sincerely Yours,

Bengt Rånby
Professor

Resine
March 15, 1967

our ref. 162/1mv

Prof. Bengt Rånby,
The Royal Institute of Technology,
Dept. of Polymer Technology,
Stockholm 70, Svezia

Dear Professor Rånby,

This is in reply to your letter of March 10, with which you ask me for a sample of poly(1,3-pentadiene) having 1,4 structure.

At my Institute, we have prepared both a cis-1,4 poly-pentadiene, which is an elastomeric substance, and a trans-1,4 poly-pentadiene, which is a crystalline substance melting at about 95°C.

Since, by your letter, you seem mainly interested in polymers having rubber character, I think you desire the former polymer. Therefore I will send you, possibly within next week, a sample of few grams of cis-1,4 polypentadiene.

Kindest regards,

Giulio Natta