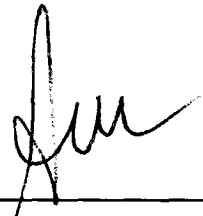


# Monsanto



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Monsanto Triangle Park Development Center, Inc.  
P. O. Box 12274  
Research Triangle Park, North Carolina 27709  
Phone: (919) 549-8111

February 28, 1974

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

Dear Professor Natta:

Chemstrand Research Center has changed its name effective March 1, 1974. We are now Monsanto Triangle Park Development Center, Inc. Details are in the enclosed press release. The name change will implement existing corporate identity policy and reflect more accurately the nature of the work carried out at Monsanto's wholly owned Research Triangle Park subsidiary.

You will also note that our mailing address has changed to take advantage of the postal facilities at Research Triangle Park, N. C.

The name change is a reflection of our present status, and we do not anticipate any change in the nature of our work at the Triangle Park facility or in any of our good relationships with our friends and neighbors.

Sincerely yours,



Herbert N. Friedlander  
Vice President and  
Director, Technical Operations

HNF:JBM  
Enclosure

Sept.23, 1968

Dr. James C. Woodbrey,  
Monsanto Company,  
Central Research Dept.,  
St. Louis, Missouri (USA)

Dear doctor Woodbrey:

Thank you very much for kindly sending me your  
chapter on NMR. I will read it with much interest.

Kindest regards,

Giulio Natta

Am

Oct. 31, 1968

Dr. James Woodbrey  
Monsanto Co.,  
800 N. Lindbergh Boulevard  
St. Louis, Missouri 63166 (U.S.A.)

our ref. 454/lmv

Dear doctor Woodbrey:

Thank you for your letter of Oct. 22, 1968.

I believe that very precise data may be obtained on the steric purity of isotactic polypropylene, using deuterated polymers, by deuterium decoupling and summing up thousands of spectra. However, direct and not equivocal experimental data already exist (Makromol.Chemie 110, 1 (1967); Polymer Letters 6, 473 (1968) ) to establish whether the hypotheses put forward by Flory to explain the average dimensions of the isotactic polymer chains in solution, are correct or not.

In my opinion, it is of less importance to precisely establish whether the syndiotactic diads that are present in a given polymer are less than 2% (Makromol.Chemie 110, 1 (1967)), or less than 0.5 % (Macromolecules 1, 93 (1968) ), or even below.

I regret that I cannot send you a sample of isotactic poly-2,3,3,3-propylene d<sub>4</sub>, since the samples I had at my disposal were used for other measurements.

Kindest regards,

Giulio Natta

**Monsanto**  
C O M P A N Y

*Prof. Natta*  
*Angela*

800 N. Lindbergh Boulevard  
St. Louis, Missouri 63166  
(314) OXford 4-1000  
October 22, 1968

RECEIVED  
OCT 23 1968  
454

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

Dear Professor Natta:

I would like to perform some experiments which should yield definitive results about the values of steric purity of highly isotactic polypropylenes and their characteristic unperturbed dimensions in solution. The stimulus for doing such experiments is, of course, the discrepancy between (1) the many experimental results indicating very high steric purity for many isotactic polypropylenes and (2) the calculations of polypropylene unperturbed chain dimensions by Professor Flory and co-workers. I believe there is strong evidence that most highly isotactic polypropylenes are much more pure in steric isomerism than indicated by comparisons of Professor Flory's theoretical results with experimental values of chain dimensions. There appears to be a real need, however, for (1) direct experimental results which yield unequivocal definition of the very high stereochemical purity of specific samples of isotactic polypropylenes and (2) experimental results for the characteristic unperturbed dimensions of the identical polymers in solution.

If proper assessments for effects of thermal degradation in solution are made, the latter types of results can be attained by classical methods.

I believe direct and unequivocal definition of the very high steric purity of a highly isotactic polypropylene can be obtained from high-resolution proton magnetic resonance (PMR) experiments of the proper kind; i.e., from spectra of highly isotactic poly(2,3,3,3-propene-d<sub>4</sub>) obtained under conditions of "slow-passage" without saturation and under conditions

of very high signal-to-noise ratio (S/N of 30-50 times that normally achieved). Of course, the polymer would need to be made from monomer having very high isotopic purity. The spectral conditions I've mentioned can be achieved easily in this laboratory; possibly they can in yours also. One needs only to use deuterium - proton decoupling as Annalaura Segre has done and to accumulate a few thousand spectra with a computer of average transients. Symmetry of the resultant AB-type quartet due to heterosteric meso methylene protons of the isotactic placements, plus the intensities of resolvable lines due to racemic or syndiotactic methylene protons, should provide a very sensitive and unequivocal measure of minimum isotactic purity. Stereochemical impurities of syndiotactic placements or dyads in otherwise isotactic chains must yield characteristic and resolvable lines or contribute to asymmetry of the AB-type quartet.

I would appreciate very much your opinions regarding the problem I've outlined, and I would be deeply appreciative if you would loan me a sample of poly(2,3,3,3-propene-d<sub>4</sub>) of the type which appears appropriate for the proposed experiments.

Kindest regards,

  
James Woodbrey

bh

Dec.3, 1965

*James*

Dr. James C. Woodbrey,  
Monsanto Co.  
800 N. Lindbergh Boulevard,  
St. Louis, Missouri 63166 (U.S.A.)

Dear doctor Woodbrey:

With regard to your request of Nov.15, I send you a copy of the paper on NMR we presented at the IUPAC Symposium on Macromolecular Chemistry, held in Prague: "NMR Analysis of Some Deuterated Polypropenes". I also send you the microfilm of the figures reported, since they are not clear in the pre-print enclosed.

Kindest regards,

Giulio Natta

# Monsanto

C O M P A N Y

800 N. Lindbergh Boulevard  
St. Louis, Missouri 63166  
(314) WYdown 3-1000

November 15, 1965

Professor Giulio Natta  
Istituto di Chimica  
Industriale del Politecnico di Milano  
Centro Nazionale di Chimica  
della Macromolecole, Sez. I,  
Milan, Italy

Dear Professor Natta,

I am planning to write a chapter on NMR studies of stereoregulation in polymers for a forthcoming monograph on the general topic of stereoregulation. I would very much appreciate your sending me copies of your more recent papers on these topics and any related preprints you prepare in the near future.

Sincerely,

*James C. Woodbrey*  
James C. Woodbrey  
em

*Lombardi*

JCW PM

*Am*

April 1, 1965

Dr. J.C. Woodbrey  
Plastics Research Department  
Mondanto Division  
Springfield, Mass.

Dear Doctor Woodbrey:

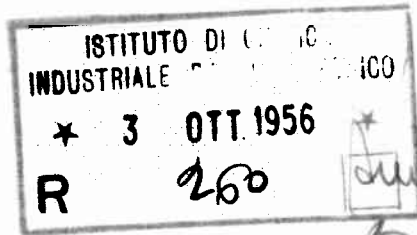
Thank you very much for kindly sending me a copy of  
the paper you had previously submitted to publication.

On our turn, under separate cover, we send you a photostat  
of the galley proof of our paper, which will appear in the  
April issue of "La Chimica e l'Industria".

Kindest personal regards.

G. Natta





September 30 1956.  
Kmsants

Dear Professor Natta,

Buchdole

I just received your letter of September 25<sup>th</sup>. I will be arriving in Milan during the afternoon of October 22 (Tuesday) and I will be at your Institute on October 23 about 9:00 a.m. on 17,30

The topic of my talk will be: "The mechanical properties of heterogeneous polymeric systems."

I am looking forward with the greatest interest to my visit in Milan.

Sincerely, Yours Rolf Buchdole.

P.S. Would it be possible for your secretary to make a hotel reservation for me at the Palace Hotel for Oct 22 and 23.

hi

Thank you very much

R.B.

260

October 4, 1956

*Am*

Dr. Rolf BUGHDAHL  
c/o Kempinski Hotel  
B E R L I N - Germany

Dear Dr. Buchdahl,

I received your kind letter of September 30, and I am glad to confirm you that your lecture will be held on October 23 at 5<sup>h</sup> 30' p.m.

My secretary has already made a hotel reservation for you at the Palace Hotel for October 22 and 23.

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

Very sincerely yours,

Giulio Natta

**EST**

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T.

L'Amministrazione non assume alcuna r  
lità delle in conseguenza del servizio

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MOD. 30 (Ediz. 1935)

IN D-URGENZA	Ricevuto il .....	19..... ore .....	La ora si contano sul meridiano corrispondente al tempo medio dell'Europa Centrale. Ma telegrammi, imperti a caratteri romani, il primo numero dopo il nome del luogo di origine rappresenta quello del telegramma il secondo quello delle parole, gli altri la data e l'ora e i minuti della presentazione.			
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PLAN TO BE IN MILAN OCTOBER 22 WILL CONFIRM BY TELEPHONE SEPTEMBER 25

= BUCHDAHL ++

*M. M. M. M.*

# MONSANTO CHEMICAL COMPANY



PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

September 19, 1956

A I R M A I L

Dr. Giulio Natta  
Istituto Di Chimica Industriale  
Del Politecnico  
Piazza Leonardo Da Vinci, 32  
Milano, Italy

Dear Dr. Natta:

Since your letter arrived after Dr. Buchdahl left for Europe, I will try to answer your inquiry. According to Dr. Buchdahl's trip itinerary, he is scheduled to visit you on October 22nd.

If you should find it necessary to contact Dr. Buchdahl he can be reached by writing him c/o J. W. Barrett, Monsanto Chemicals Limited, Monsanto House, 10-18 Victoria Street, London S.W. 1, England before October 4th. From October 6 to October 9 you can write him at the Kempinski Hotel, Berlin, Germany.

Sincerely yours,

*Edith Fuller*

Edith T. Fuller  
Secretary to Dr. Buchdahl

September 25<sup>th</sup> 1956

*Am*

Dr. Rolf BUCHDAHL  
c/o Mr. J.W. Barrett  
Monsanto Chemicals Ltd.  
Monsanto House  
10-18, Victoria Street

L O N D O N, S. W. 1 - (England)

Dear Doctor Buchdahl,

as I told you by telephone, this morning, I received both your cable and the letter of your secretary, Mrs. E.T. Fuller.

According to your wish I could fix your lecture on October 23, in the afternoon. This lecture will be held at the Polytechnic Institute with the participation also of the members of the Milan Section of the "Società Chimica Italiana". Please, let me know at least ten days before the scheduled day, if you wish to do some change in your program.

Looking forward to seeing you in Milan, I am,

very sincerely yours

( G. Natta )

# MONSANTO CHEMICAL COMPANY

ISTITUTO DI CHIMICA INDUSTRIALE DEL POLITECNICO	
* 10 SET 1956 *	
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PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

September 6, 1956

*fu*

A I R M A I L

Dr. Giulio Natta  
Istituto Di Chimica Industriale  
Del Politecnico  
Piazza Leonardo Da Vinci, 32  
Milano, Italy

Dear Dr. Natta:

Thank you very much for your letter of August 30th. I am sorry to hear that you might not be at your institute after October 15, and I have given some thought to re-arranging my schedule. However, this would involve so many rearrangements at this late date that this cannot be done any more.

I hope that you will still be there during the week of October 15, but if this is not possible, I am sure that some of your co-workers are perfectly capable of taking care of me. Incidentally, if you would like me to give a seminar talk on the mechanical properties of heterogeneous polymeric systems I would be very glad to oblige.

*h*

Best regards.

Sincerely yours,

*Rolf Buchdahl*  
Rolf Buchdahl

RB/etf

85

September 12, 1956

Mr. Rolf Buchdahl  
MONSANTO CHEMICAL CO.  
Plastics Division  
SPRINGFIELD 2 - Massachusetts

Dear Mr. Buchdahl,

I received your kind letter of September 6, and I shall do my best to be in Milan when you arrive. I am very glad that you may give a seminar talk on the mechanical properties of heterogeneous polymeric systems at my Institute or at the Milan Section of the "Società Chimica Italiana". Please, let me know, as soon as possible, the exact date of your coming so that I can arrange your seminar.

Awaiting your kind reply, I remain,

Very sincerely yours,

Giulio Natta

# MONSANTO CHEMICAL COMPANY

1295  
Am

PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

August 21, 1956

A I R M A I L

Dr. Giulio Natta  
Istituto Dr Chimica Industriale  
Del Politecnico  
Piazza Leonardo DaVinci, 32  
Milano, Italy

Dear Dr. Natta:

Many of us here at Springfield have regretted that it was impossible for you to stop by our laboratories; possibly on another visit you might find the time to spend a day with us.

I will be in England to attend the discussions of the Faraday Society in September and subsequently will visit a number of laboratories and universities on the Continent. As you know, Dr. Nielsen and myself have for some years been working on mechanical properties of high polymers, and I would be interested in discussing certain problems of mutual interest with you, if you could find the time for it. It would not be possible for me to come to Milan until the second half of October, and I would like to suggest October 18 or 19 as possible dates, if this is agreeable with you.

I am sorry that it was not possible for me to talk to you a little more during the recent Gordon Conference, but maybe I will have this opportunity in the not too distant future.

Sincerely yours,

*Rolf Buchdahl*  
Rolf Buchdahl

RB/etf

*Handwritten notes in left margin:*  
In the morning  
I will be in England  
to attend the discussions  
of the Faraday Society  
in September

*Handwritten notes at bottom left:*  
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Pembel...  
I will be in England  
to attend the discussions  
of the Faraday Society  
in September

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I will be in England  
to attend the discussions  
of the Faraday Society  
in September  
I will be in England  
to attend the discussions  
of the Faraday Society  
in September



9.47  
August 30, 1956

*du*

Mr. Rolf Buchdahl  
Monsanto Chemical Company  
Plastics Division  
Springfield 2 - Massachusetts

Dear Mr. Buchdahl,

I received your kind letter of August 21 and I shall be glad to see you in Milan during your stay in Europe. I cannot assure you, till now, if I am in Milan on October 18 or 19, as after October 15 I shall be obliged to go to France. However, I shall do my best to be here during your visit and, if not possible, I shall charge some of my coworkers, working in the field of the mechanical properties of high polymers, to meet you here in our Institute.

With best regards.

Sincerely yours,

Giulio Vatta

16  
July 30, 1956

Dr. H. W. Mohrman, Director of Rese.  
Monsanto Chemical Company  
Plastics Division  
SPRINGFIELD 2 - Massachusetts

Dear Mr. Mohrman,

----- Following up my letter of June 2, I am very sorry  
not to have been able to visit you in Springfield.

My trip through the United States was so busy that I  
had no time to come to Springfield not to write to you before  
my coming back to Milan. Furthermore, I have been obliged to  
come back before the foreseen date, owing to some problems in  
my Institute.

Hoping to have soon the opportunity to meet you, I  
send you my best wishes.

Sincerely yours,

Ciudio Natta

# MONSANTO CHEMICAL COMPANY

PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

June 12, 1956

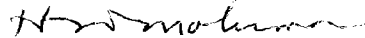
Professor Giulio Natta  
c/o Chemore Corporation  
21 West Street  
New York 6, New York

Dear Professor Natta:

Thanks very much for your letter of June 2. We are indeed very sorry that you will not be able to visit Springfield. Since Dr. Mark indicated earlier this year that you were planning a visit to this country, we had looked forward to the opportunity of meeting with you.

Mr. Trementozzi has told me that you may return later this summer to this country. If this is the case, we sincerely hope that you will find time on that occasion to spend a day with us.

Sincerely yours,



H. W. Mohrman  
Director of Research


/jh

1294 A

# MONSANTO CHEMICAL COMPANY

PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

August 20, 1956



Dr. Giulio Natta  
Istituto Di Chimica Industriale  
Del Politecnico  
Piazza Leonardo Da Vinci, 32  
Milano, Italy

Dear Dr. Natta:

Thanks very much for your letter of July 30th. We were indeed sorry that you did not have time to visit us in Springfield. Despite this, many of our men were able to meet and talk with you at the various scientific meetings this summer.

You will shortly hear from Dr. Rolf Buchdahl, who is planning a trip to Europe in September. If his schedule permits, he may be able to enjoy a brief visit at your Institute.

Sincerely yours,

  
H. W. Mohrman

/jh

Milano, June 2, 1956

Dr. H. W. Mohrman, Director of  
Research - Monsanto Chemical Co.  
Plastics Division  
Springfield 2  
Massachusetts - U.S.A

Dear Mr. Mohrman,

Many thanks for your very kind letter of May 25<sup>th</sup> and for your gracious invitation to visit you in Springfield on June 16, 17 and 18. Your proposal is very pleasant, but I fear to be obliged to reduce my staying in the USA and therefore, I must renounce a part of the already scheduled program.

During the period from June 15 and July 2, I shall need some time to prepare the lecture I shall present at the Gordon Conference on High Polymer, as I had no time before my starting, because of the tremendous work in my Institute.

Moreover, I foresee that in such a period Dr. Giustiniani will be in the USA, and, therefore, I shall be very busy also with him. So, I regret very much not to be able to accept, till now, your kind invitation, but I shall write to you again, if might have some time to dedicate to your Company.

With kindest regards.

Very sincerely yours,

Giulio Natta

During my stay in the U.S.A, you may address the eventual mail to me: c/o Chemare Corporation, 21 West Street, New York 6, N.Y.

MONSANTO CHEMICAL COMPANY

601A  
Am.

ORGANIC CHEMICALS DIVISION  
800 NORTH TWELFTH BOULEVARD  
ST. LOUIS 1, MISSOURI  
March 19, 1956

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

Dear Professor Natta:

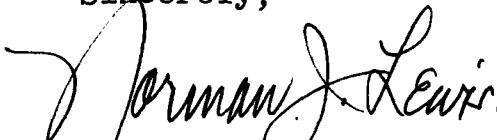
It is a pleasure to hear of your interest in our alkylated polyamine, Amine ODT. The technical bulletin covering this material is enclosed herewith.

At the request of Dr. D. S. Weddell we have entered an order for a one-pound sample to be forwarded to you at once. We hope that it is transmitted without delay.

Amine ODT is a developmental product with Monsanto; as such, it is currently available only in pilot plant quantities. However, it is hoped that regular manufacture may be established shortly.

Other products having more than two amino groups are not available at this time. However, certain research now in progress may lead to products of the desired structure. Your interest in such materials has been noted; we shall be happy to advise whenever any chemicals of this type become available.

Sincerely,



Norman J. Lewis  
DEVELOPMENT DEPARTMENT

NJL/km

July 31

Dr. C. A. Hochwalt  
Monsanto chemical Company  
1700 So. 2nd Street  
St. Louis 4, Missouri

Dear Dr. Hochwalt,

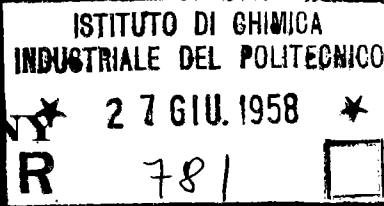
I am in receipt of your letter of July 30. I thank you very much for your kind invitation and I'll attend your reception if I'll be able to be in New York on September 6. I'll be accompanied by my wife.

As I think to stay in U.S. at least two weeks after the end of the Congress, I shall be very pleased to be able to visit your Research Laboratories and eventually your plants, if this is possible. I am particularly interested in the field of plastics and olefin derivatives.

With many thanks and best regards, I am

Yours sincerely

MONSANTO CHEMICAL COMPANY



PLASTICS DIVISION  
SPRINGFIELD 2, MASSACHUSETTS

June 24, 1958

Professor Giulio Natta  
Istituto Di Chimica Industriale  
Del Politecnico  
Piazza Leonardo Da Vinci, 32  
Milano, Italy

Dear Professor Natta:

I had the pleasure of listening to the talk you gave a few weeks ago in Brooklyn dealing with the kinetics of propylene polymerization. Unfortunately, I was not able to write down all the important equations which you discussed, and I would very much appreciate receiving a preprint of this paper if it is available.

I am enclosing a preprint of a paper which we gave at the San Francisco meeting, dealing with a subject that I think will be of interest to you.

Sincerely yours,

*Rolf Buchdahl*

Rolf Buchdahl  
Assistant Director of Research

/jcb



July 22, 1958

*Am.*

Dr. Rolf Buchdahl  
Assistant Director of  
Research  
Monsanto Chem. Co.,  
Springfield 2  
Mass., U.S.A.

Our ref.: 781/mb

Dear Dr. Buchdahl,

Prof. Natta, who is actually in England, had charged us to thank you for your letter dated June 24th and to acknowledge the good receipt of the preprint of the work you presented at the American Chemical Society meeting in San Francisco last April.

As far as it concerns the talk given by Prof. Natta in Brooklyn, we are sorry not to be able to send you a copy of it as the manuscript of such talk is not available. However, such paper corresponds almost completely, to a lecture which is to be presented this month at the International High Polymer Conference in Nottingham.

We do not know whether some people of your Company is attending the conference; in case nobody had gone and you were not able to get the preprints, please inform us about it so that we might, on Prof. Natta's return, let you have a photocopy of the work you are interested in.

Best regards,

Secretariat to Prof. Natta

Am

Jan.18, 1962

Dr. Robert L. Miller,  
Monsanto Chemical Co.  
Plastics Division,  
Springfield 2, Massachusetts (USA)

Dear Doctor Miller:

I send you, herewith enclosed, your letter of Dec.21, with my permission to use the material requested. Of course, in your book you have to quote the author and the original paper of each figure.

I also suggest you to request the same permission to the editorial board of Nuovo Cimento. Their address is:

Redazione del Nuovo Cimento,  
presso Istituto di Fisica,  
Università,  
Bologna (Italy)  
Via Irnerio 46

With my kindest regards.

G.Natta

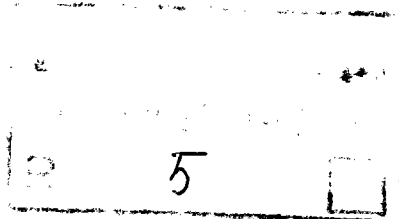
MONSANTO CHEMICAL COMPANY

PLASTICS DIVISION

SPRINGFIELD 2, MASS.

December 21, 1961

Professor G. Natta  
Istituto Chimica Industriale  
Politecnico del Milano  
Milano, Italy



Dear Professor Natta:

I request permission to use the material specified below from your publication, in a book I am preparing entitled "Crystalline Olefin Polymers," and in future editions or revisions thereof, to be published by Interscience Publishers, Inc.

Nuovo Cimento 15, Supplement (1960).

- |                     |                       |
|---------------------|-----------------------|
| 1) Fig. 13, page 24 | 8) Fig. 4, page 71    |
| 2) Fig. 3, page 41  | 9) Fig. 8, page 77    |
| 3) Fig. 9, page 46  | 10) Fig. 11, page 81  |
| 4) Fig. 10, page 46 | 11) Table I, page 47  |
| 5) Fig. 7, page 57  | 12) Table II, page 75 |
| 6) Fig. 8, page 58  | 13) Table I, page 60  |
| 7) Fig. 10, page 59 |                       |

It is understood, of course, that full credit will be given to your publication.

Your consideration of this request will be greatly appreciated. A release form is given below for your convenience. The duplicate is for your files.

Very truly yours,

Robert L. Miller

lmh

I (we) hereby grant permission for the use of the material requested above.

Jan. 18, 1961

Date

Signed

Author

22nd February 1960

Dr. Alain Stein  
MONSANTO CHEMICAL CO.  
Plastics Division  
Indian Orchard, Mass.

Dear Sir,

According to your request of the following reprint:  
"Conformation of Linear Chains & their Mode of Packing in the  
Crystal State", J. Polymer Sci. 39, 29 (1959), we are sorry to  
inform you that we have no available copies.

With best regards.

Secretary to Prof. G. Natta

MONTECATINI

SETTORE PROFFILE, 22 UP, Luglio 1959.

Preg. mo Signore  
Ing. Piero Giustiniani,  
S e d e.

Monsanto.

Il 24 Settembre alle 09.00 saremo visitati dal

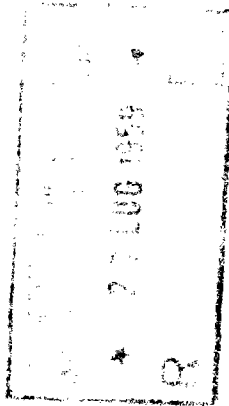
dr. G. Steahly, research rubber chemicals. e  
Mr. McIntyre, development, rubber chemicals,

che desiderano parlare dei nuovi migliorati stabili-  
zzanti per polistilene e polipropilene.

Essi saranno accompagnati dal dr. David S. Weddell,  
rappresentante della Monsanto in Europa.

f.to: Oreoni

Or/si.



mf. prof. vvvv

**MONTECATINI**

Società Generale per l'Industria Mineraria e Chimica

SETTORE IDROCARBURI

*Am. Monsanto*

Date, 29.9.59

PROMEMORIA per il Sig. Prof. Natta

INC.  
\* - 1 OTT 1959 \*  
R 1057

Le inviamo in allegato un breve appunto sull'incontro tra i tecnici della Montecatini e i tecnici della Monsanto.

Cordiali saluti.

*Am.*  
Servizio Ricerche

All/o

**REUNIONE TRA I TECNICI DELLA MONTAGANINI E I TECNICI DELLA MONTANTE,  
TENUTA A MILANO IL 24 SETTEMBRE 1959**

**PRESENTE**

**per la Montante :** Sig. Philip H. McIntyre  
Manager, Rubber Chemicals Section

Sig. George W. Steahly  
Assistant Director Research  
Organic Chemicals Division

Sig. David S. Waddell  
European Technical Representative

**per la Montantini :** Ing. Bartolomeo Grassi  
ENPS

Ing. Fernando Damante  
ENPS

Dr. Gerardo Mussolini  
ENIP

L'Ing. Grassi delinea brevemente la situazione che si prospetta per l'industria della gomma sintetica con l'avvento dei nuovi elastomeri ai cui sviluppi è impegnata la Montantini, in particolare di polibutadiene 1,4-cis e i copolimeri etilene-propilene.

I Signori della Montante, nella loro posizione di non produttori di gomma sintetica ma di produttori di ausiliari, dichiarano il loro interesse per i nuovi elastomeri, in ordine all'appuntamento di antiossidanti particolarmente adatti. La Montante prevede che l'industria della gomma si attardi ancora per lungo tempo ai sistemi tradizionali di vulcanizzazione con zolfo e acceleranti; le alternative a questi sistemi di vulcanizzazione sono rappresentate, e dalla vulcanizzazione con perossidi, e dalla irradiazione con raggi gamma.

Secondo i tecnici della Montante il sistema di vulcanizzazione con perossidi incontrerebbe notevoli difficoltà ad essere introdotto nella grande industria per i seguenti motivi

- 1) Costo elevato del perossido (90 \$ / lb negli USA)
- 2) Alta temperatura di vulcanizzazione (ca. 200°C più alta di quella solitamente usata) che richiederebbe una modifica ai servizi di riscaldamento e di controllo delle temperature
- 3) Difficoltà di lavorazione delle mescele
- 4) Pericolosità a causa della facile infiammabilità.

Inoltre, i vantaggi che si riscontrano nella vulcanizzazione della gomma tradizionale con perossidi (maggiore resistenza all'invecchiamento) non sono facilmente riproducibili nella lavorazione di manufatti di relativamente grandi dimensioni. La vulcanizzazione mediante irradiazione, pur quanto si presenti come un metodo quasi ideale, è al momento irrealizzabile per l'alta costo delle apparecchiature necessarie e per il grande dispendio di energia elettrica che richiede; essa potrà avere diffusione in un futuro non vicino, quando le tecniche nucleari siano arrivate ad uno stadio più avanzato.

I tecnici della Monsanto offrono la loro collaborazione per lo sviluppo di ausiliari adatti per il C 2); a questo scopo chiedono che siano loro inviati campioni del nuovo elastomero. L'Ing. Cecchi risponde che la cosa è, per il momento, impossibile, ma che potrà essere ripresa in considerazione l'anno venturo.

Passando a parlare degli antiossidanti, i tecnici della Monsanto chiedono se gli antiossidanti adatti per polietilene e polipropilene siano da considerarsi adatti anche per il copolimero etilene-propilene. Viene loro risposto che ciò è senz'altro probabile, per quanto il problema della stabilità lineare del C 2) non sia, per ora, determinante per i futuri impieghi di tale gomma.

Si passa a discutere i sistemi di prova degli stabilizzanti. L'invecchiamento accelerato dei polimeri stabilizzati (in particolare di polietilene e polipropilene) viene eseguita mediante il controllo delle proprietà meccaniche, che rimane sempre il fatto più indicativo a scopo pratico.

Altre misure, come la determinazione dell'ossigeno consumato in cella chiusa e la determinazione all'infrarosso dell'ossigeno legato come gruppo oss-

benzile, vengono seguite soltanto a scopo di studio.

Inoltre ad altro argomento, i tecnici della Monsanto consigliano di provare il loro ELASTOPAR per il C 13 anche vulcanizzato con perossidi. L'ELASTOPAR va introdotta nella miscela insieme con la carica rinforzante, e la miscela dev'essere lavorata fino a completa dispersione della carica. Subsequently viene introdotta l'agente vulcanizzante. L'effetto dell'ELASTOPAR sarebbe di promuovere un legame molto più efficace tra l'alastomero e la carica rinforzante. Si assicura che verranno eseguite prove in tale senso.

Viene fatta, da parte dei rappresentanti la Monsanto, una interrogazione di conferma all'informazione da loro avuta secondo cui la Montecatini produrrebbe copolimeri di propilene-acetilene. L'Ing. Grandi risponde che la Montecatini ha i brevetti fondamentali di questi copolimeri, ma che, per mancanza di tempo, non ne è stato concesso avanti lo sviluppo.

I tecnici della Monsanto chiedono ancora alcune informazioni sulla fabbricazione di acrilati, metacrilati e malamina. L'Ing. Grandi accenna brevemente alle difficoltà tecnologiche che si frappongono alla realizzazione industriale della sintesi della malamina a partire da urea e comincia che la Montecatini metterà in marcia, nei primi mesi del prossimo anno, un impianto per la produzione di malamina da urea.

L'Ing. Grandi annuncia infine che la fibra di polipropilene della Montecatini sta per essere lanciata sul mercato. I signori della Monsanto si complimentano per questo nuovo successo della Montecatini.