



**AKZO**

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Annual meeting of stockholders to be held at the RAI Congress Center, Europaplein, Amsterdam, on Wednesday, May 10, 1978, at 10 a.m.

**Agenda**

- 1 Opening
- 2 Report of the board of management for the financial year 1977
- 3 Approval of the annual accounts and consideration of the proposal, contained therein, to omit the dividend
- 4 Determination of the number of members of the supervisory council; appointment of members of the supervisory council
- 5 Determination of the number of members of the board of management; appointment of a member of the board of management
- 6 Annual decision concerning issues as required by the London Stock Exchange\*
- 7 Any other business

\* annually recurring agenda item in re compliance with the requirements of the London Stock Exchange concerning the listing of Akzo shares on that stock exchange

Akzo N.V. common stock is listed on the following stock exchanges:

the Netherlands:	Amsterdam
West Germany:	Frankfurt, Düsseldorf and West Berlin
Belgium:	Brussels and Antwerp
United Kingdom:	London
France:	Paris
Norway:	Oslo
Austria:	Vienna
Switzerland:	Zurich, Basel and Geneva

Translation

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Akzo N.V., 82 IJssellaan, Arnhem, the Netherlands

# Supervisory council and board of management

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## 2 **Supervisory council**

J.R.M. van den Brink, chairman  
Y. Scholten, deputy chairman  
S.C. Bakkenist  
P.M.H. van Boven  
H.L. Merkle  
Mrs. K. Schudel-van Zwanenberg  
W.F.G.L. Starrenburg  
F.H. Ulrich  
L. Vaubel  
J. de Vries  
O. Wolff von Amerongen

## **Board of management**

G. Kraijenhoff, president  
A.G. van den Bos, deputy president  
H.J. Schlange-Schöningen, deputy president  
J.A. Wolhoff, deputy president  
H. van Doodewaerd  
A. van Driel  
H. Kramers  
H.J. Kruisinga  
A.A. Loudon  
J. Veldman  
H.J.J. van der Werf  
H.G. Zempelín

Adviser: W.K.N. Schmelzer

## **Secretary**

A.H.M. Wentholt

At the annual meeting of stockholders held May 5, 1977, H.M. van Mourik Broekman and P.M. van Doormaal resigned from the supervisory council, having reached the mandatory retirement age. L. Vaubel, whose term of office had ended, was re-elected.

At the above meeting, stockholders adopted the proposal to reduce the council's membership to eleven and appointed to the council S.C. Bakkenist, who retired on the same date as a member and a deputy president of the board of management.

The supervisory council elected Y. Scholten to succeed H.M. van Mourik Broekman as deputy chairman of the council.

Mr. van Mourik Broekman and Mr. van Doormaal made valuable contributions to the rebuilding and expansion of the chemical industry in the Netherlands after the Second World War. For many years they directed, each in his own field, the development of the chemical activities that are now combined within Akzo. During their period as members of the supervisory council, the company continued to have the benefit of their wide industrial experience.

The name of Mr. Bakkenist is especially associated with the building up and structuring of the Akzo group and with the guidance he gave in regard to the new group's social policy under extremely difficult circumstances. We are pleased that he has become a member of the supervisory council.

The annual meeting of stockholders appointed to the board of management A.A. Loudon, who previously held executive positions with Akzo companies in France and Brazil. In the board he will be specifically charged with the conduct of social policy.

At the annual meeting of stockholders convened for May 10, 1978, Mrs. K. Schudel-van Zwanenberg, F.H. Ulrich and L. Vaubel will resign from the supervisory council. Mrs. Schudel-van Zwanenberg is eligible for re-appointment. Mr. Ulrich and Mr. Vaubel wish to curtail their business activities and have therefore announced that they are not available for re-appointment.

A proposal will be submitted to stockholders to fix the council's membership at twelve. To fill the vacancies we recommend re-appointment of Mrs. Schudel-van Zwanenberg and appointment of A. Herrhausen, G. Kraijenhoff and H.J. Schlange-Schöningen.

In conformity with the arrangements made at the time of his appointment as president of the board of management, G. Kraijenhoff will resign the presidency and membership of the board.

Mr. Kraijenhoff was appointed a deputy president of Akzo at its formation in 1969, and became president of the board of management in 1971. He had a prominent share in building up the Group. His task became even more exacting in the last five years when dramatic

changes in the company's principal markets necessitated a restructuring of Akzo. With his acute understanding of the requirements imposed by the changes in the international order, he resolutely guided the reorientation of the company, while making every effort to minimize the social consequences of the readjustment process.

Through the Group's restoration to health he sought to ensure in the long term useful work for as many employees as possible and to create new growth opportunities for the benefit of all who are associated with our company.

We consider ourselves fortunate that Mr. Kraijenhoff has consented to become a member of the supervisory council; thus the company will continue to receive the benefit of his great abilities.

H.J. Schlange-Schöningen, who has reached the age of retirement, will likewise resign as a member and a deputy president of the board of management.

Mr. Schlange-Schöningen will be remembered for his valuable services to the company, especially in regard to international operations. He also made a major contribution toward the setting up of our Enka man-made fiber division. We are pleased that we can continue to draw upon his vast international experience.

Effective May 10, 1978, the supervisory council will appoint A.G. van den Bos president and A.A. Loudon a deputy president of the board of management. The executive committee, composed of the president and the deputy presidents of the board of management, will then consist of Messrs. van den Bos, Loudon and Wolhoff.

Stockholders will be asked to appoint M.D. Westermann, president of Akzo Chemie, to the board of management.

The supervisory council periodically obtained and considered written and verbal reports on the company's business. The issues outlined below received the council's special attention.

After ample deliberation, the supervisory council fully endorsed a regrouping of all man-made fiber interests, except American Enka (Akzona), in the Enka group, headquartered in Wuppertal.

The continuance of the loss situation is a matter of great concern to us because of the structural nature of the problems in the Western European man-made fiber industry, and the adverse impact of the protracted business depression on other Group sectors. We fully subscribe to the necessity of further drastic action and we are convinced that the board of management is making every possible effort to restore profitability.

We herewith submit to you the financial statements, comprising the balance sheet and statement of income, with notes, inclusive of the consolidated statements of the Group, prepared by the board of management for the

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4 financial year 1977. These financial statements have been examined by Klynveld Kraayenhof & Co., *Register-accountants*. Their report appears on page 54.

We approve these financial statements, which show a net loss, inclusive of extraordinary items, of Hfl 166 million, which has been charged against reserves.

We agree to the proposal of the board of management to omit the 1977 dividend, and we propose that you also approve the financial statements, thus discharging the responsibility of the members of the board of management for their conduct of the business and of the members of the supervisory council for their supervision.

In May 1978, A.H.M. Wentholt, secretary to the supervisory council and to the board of management, will

resign from the company, having reached retirement age. We gratefully acknowledge the excellent services he has rendered for many years to the company and, notably, to the council.

J.P. Hugues, now deputy secretary to the company, has been appointed to succeed Mr. Wentholt.

Arnhem, March 29, 1978

For the supervisory council,

J.R.M. van den Brink,  
chairman

## Financial highlights

on an historical-cost basis	1977	1976	5
in Hfl million			
sales	10,433	10,750	
value added	3,620	3,679	
operating income	240	305	
net income (loss) before extraordinary items	(52)	6	
net income (loss) after extraordinary items	(166)	(153)	
funds from operations*	539	503	
property, plant and equipment			
capital expenditures	409	413	
depreciation	494	533	
stockholders' equity	2,325	2,628	
per share of common stock, par value Hfl 20 per share, in Hfl			
net income (loss) before extraordinary items	(1.75)	0.20	
net income (loss) after extraordinary items	(5.63)	(5.16)	
dividend	—	—	
stockholders' equity	78.52	88.78	
on a current-value basis (see pages 50 and 51)			
in Hfl million			
operating income	104	77	
net income (loss) before extraordinary items	(126)	(125)	
stockholders' equity	2,870	3,193	
per share of common stock, par value Hfl 20 per share, in Hfl			
net income (loss) before extraordinary items	(4.26)	(4.22)	
stockholders' equity	96.95	107.87	
number of employees	84,400	91,100	

\* total of Group income (loss) and charges to income not requiring funds; see page 44

## General review

### 6 No recovery

1977 results fell considerably short of our initial expectations. At Hfl 10,433 million, sales were down 3% from 1976. Before extraordinary items, the Group suffered a net loss of Hfl 52 million, compared with a net profit of Hfl 6 million in 1976. Recomputed on a current-value basis, the net loss before extraordinary items works out at Hfl 126 million in 1977 (1976: loss Hfl 125 million).

This recurrence of disappointing results reflects the failure of the economy in most industrial countries to recover, and throws into relief the chronically distressed position of the man-made fiber industry and the slowing of the growth rate of the chemical industry.

Results were also adversely affected by a further depreciation of many foreign currencies against the Dutch guilder and the Deutsche mark. In particular the further depreciation of the U.S. dollar by 7% and 11% relative to the guilder and the Deutsche mark, respectively, reduced our exports from the Netherlands and West Germany, which amounted to Hfl 3,300 million in 1977.

For a number of companies the possibilities of offsetting losses with tax deductions were exhausted. Thus, no deduction for taxes could be made in respect of losses in the amount of Hfl 310 million (1976: Hfl 250 million).

The year brought evidence that problems of a structural nature are harder to solve when economic growth in the majority of industrial countries is at a low rate. This was particularly felt in our man-made fiber sector. Although the rationalization measures taken so far have resulted in substantial savings – for Enka Glanzstoff amounting to about Hfl 250 million annually at year's end – a further net loss was suffered in this sector, namely Hfl 250 million (inclusive of extraordinary items), against a net loss of well over Hfl 300 million in 1976. In the other sectors, net income declined from over Hfl 150 million to approximately Hfl 80 million.

Having suffered losses for the third year in succession, the Group now finds itself in a situation where energetic and drastic action is inevitable. Toward this end, the Group's divisions have developed or are preparing rationalization plans, which mainly bear upon the man-made fiber and chemicals sectors of our operations in Western Europe. In actions associated with these plans, overheads will also be adjusted.

The statement of income for 1977 includes an amount of Hfl 122 million for extraordinary losses (minus extraordinary gains), against Hfl 167 million for 1976. The principal extraordinary losses relate to the costs of the shut-down of the Ferenka steel cord plant in the Irish Republic and of the flooding of Akzona's manufacturing complex at Enka, North Carolina. They further include an addition of Hfl 65 million to the provision of Hfl 75 million already

formed at the end of 1976. The resulting Hfl 140 million provision is available to meet extraordinary losses expected to arise from further adjustments of production capacities and overheads. It will also be used to cover additional write-downs of property, plant and equipment in unprofitable sectors.

Including extraordinary items, and after deduction of minority interest, the 1977 net loss amounts to Hfl 166 million (1976: Hfl 153 million), which has been charged against reserves.

In light of the negative results for the year under review, we must propose to omit the dividend.

### Reorientation

The absence of prospects of a significant improvement has necessitated a reorientation with respect to existing activities. This reorientation is aimed at consolidating and strengthening our position in product areas where we are among the stronger producers in terms of size, quality or specific know-how. Activities offering little prospect of commercial health in the context of the Group will be sold or terminated.

In careful consultation with personnel representatives and, where desirable and useful, with the authorities, we will endeavor to foster understanding for the necessity of taking further measures. We will strive to minimize the social consequences of the various measures.

### Man-made fibers

In 1977, the situation in the Western European man-made fiber industry has gone from bad to worse. Despite a number of plant closures, overcapacity in the industry was not reduced because of mounting imports of textile products, which further eroded the price level of textile yarns and staple fibers. As a consequence, the losses sustained in 1977 by the Western European man-made fiber industry are expected to approach closely the 1975 level (approximately U.S. \$ 1,000 million). The recently renewed Multi-Fiber Agreement, and particularly the bilateral agreements concluded between the EEC countries and a number of major textile exporting countries, may in due course afford some respite to the textile industry and hence to the man-made fiber industry, so that the process of structural change can proceed more gradually. Jointly with other European producers, consultations are furthermore being held with the European Commission on ways to remedy the industry's structural overcapacity.

In Western Europe, we were among the first companies to try to cut back production capacity for textile yarns and staple fibers. Our first efforts were already made before the oil crisis. The measures taken so far have resulted in a 36% reduction of capacity relative to





*Enka today is a worldwide group of, predominantly, man-made fiber companies. The consolidated and non-consolidated companies together registered sales of about Hfl 4,200 million and employed some 46,000 people.*

1974; 14 points of this reduction was accounted for by the sale of Fabelta.

So as to be in a better position to cope with the changed competitive conditions, we decided in 1977 to regroup all of our man-made fiber interests, except American Enka (Akzona Inc.), in the Enka group. The group's operations are directed by the board of management of Enka (formerly Enka Glanzstoff), with headquarters in Wuppertal. Akzo International will continue its activities within the Enka group under the name of Enka International. One of the first objectives of the new Enka group is to achieve a closer match between sales and production of its fiber companies in Western Europe; a start was made in the year under review. Further readjustment measures will be implemented within this new organizational set-up.

Not envisaged in these measures was the closure in November 1977 of our steel cord plant in the Irish Republic and the ensuing liquidation of Ferenka Ltd. For quite some time, conditions for normal operation had been lacking; but the situation eventually became intolerable due to a strike of several weeks which broke out over a conflict between two trade unions.

In the United States, American Enka again experienced a downturn in the second half of 1977, due to the unsettled market situation. The flooding of one of its

production plants was an additional setback.

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### **Chemical products**

The chemical industry, notably in Western Europe, is increasingly being faced with overcapacities and mounting pressure on prices. For chemical products, as for man-made fibers, this trend is associated with an abrupt transition to a situation where for the near future a substantially reduced growth in demand must be taken into account.

Some of our basic chemicals and specialty chemicals were affected by this development and are now yielding too low returns. Moreover, our shipments of some basic chemicals are impeded by keen price competition from the East bloc, and from the United States, also as a result of the weak dollar.

In order to restore competitiveness, measures will be taken in the chemical sector over both the line of products and sites. Overheads will also be curtailed.

Akzo Chemie, having a wide range of operations distributed over a large number of sites, at year's end started discussions with social partners about a rationalization plan aiming at consolidation of structurally sound activities and termination of some unprofitable activities, and about the consequences for each of the sites.

Akzo Zout Chemie also prepared plans to improve the relation between its costs and revenues. Realization of these plans will be started in 1978. Emphasis will be laid on tailoring the organization to the diminished growth prospects both on the domestic and on the international market.

For the Akzo Zout Chemie plants located in the Netherlands an improvement in competitiveness relative to foreign producers is essential. Most helpful in this regard would be elimination of the existing difference in rates for natural gas and electricity, which favors the foreign producers.

### **Other products**

The other divisions are also taking measures to improve profitability; in general, the consequences are of a less drastic nature. In preceding years, the consumer products division already successfully implemented a rationalization program, and has now achieved satisfactory profitability.

In various countries, our pharmaceutical products division is exposed to the combined pressure of price controls, unfavorable changes in exchange rates, and more stringent regulations in regard to medicines, which reduced earnings. Cost-cutting programs are now being implemented, and efforts are being made to find a solution for the problems encountered in the sector of crop protection products.

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8 **Personnel**

We are grateful to our employees for the extra effort they made in the year under review. The protractedness of the difficult period the Group now passes through and the requisite drastic measures make high demands on their endurance and motivation. In 1978, further job losses will be inevitable, but we will do our utmost to mitigate the consequences for all persons concerned.

We are confident that continuation of our joint efforts will enable us to overcome our present problems.

**Financing and investments**

At December 31, 1977, cash and marketable securities stood at Hfl 580 million. In view of the extent of standby facilities of banks, our liquidity remains ample.

New borrowings could be restricted to Hfl 289 million, against aggregate repayments of borrowings of Hfl 408 million.

As a result of the failure of the economy to pick up, expenditures for investments of Hfl 421 million remained substantially below the amount of Hfl 600 million projected for 1977. Such expenditures for the current year are not anticipated to exceed Hfl 500 million.

Compared with 1977, no significant change in our financing picture is foreseen for 1978.

**Outlook**

In Western Europe, growth of industrial production is expected to be slight in 1978. If there is no improvement in the position of the U.S. dollar, our Dutch and German export position will be further eroded.

For the United States the outlook seems somewhat brighter. However, an improvement in Akzona's earnings will largely depend on a recovery of the local man-made fiber market. So far the recovery has been slight.

Cost-cutting programs will increasingly have a positive effect. Hopefully, and barring further adverse developments, they will restore profitability by the end of 1978 and significantly improve earnings in 1979.

**Coatings**

In line with a budding tradition, we incorporate in this report a special section featuring one of our activities, this year Akzo Coatings, highlighting the aspects of color that are of particular relevance to this branch of industry (page 34 and following).

## Results of operations

### Sales, value added and operating income

The table below shows that operating income was down from 1976 (figures given relate to consolidated companies):

in Hfl million and in %	1977		1976	
sales	10,433	100	10,750	100
raw materials, supplies, energy, and purchased services	(6,422)	(61.6)	(6,635)	(61.7)
depreciation	(494)	(4.7)	(533)	(5.0)
value added	3,517	33.7	3,582	33.3
salaries, wages and social charges	(3,277)	(31.4)	(3,277)	(30.5)
operating income	240	2.3	305	2.8

Sales declined 3% to Hfl 10,433 million in the year under review. This decline is attributable to the sale of operations to third parties (2%) and to translation into guilders, at lower rates of exchange, of sales by Group companies outside the Netherlands (4%). Without these factors, sales would therefore have shown a slight increase.

The aggregate cost of raw materials, supplies, energy, and purchased services decreased, due in part to lower prices for a number of cost items. Higher energy prices were offset by distinctly lower prices of raw materials, notably those used for synthetic fibers and for a few basic chemicals.

The amount of value added was almost the same as in 1976. Expressed as a percentage of sales, it was 33.7%. This percentage still falls far short of the average of 37.3% for the years 1969 through 1974.

Salaries, wages and social charges were, in absolute terms, the same as in 1976 because of a reduction in the number of employees. Expressed as a percentage of sales they were up 0.9 points to 31.4%.

Operating income was down to Hfl 240 million, equivalent to 2.3% of sales (1976: 2.8%); a wholly inadequate margin.

Exchange losses on borrowings in foreign currencies reduced operating income by Hfl 44 million (1976: Hfl 6 million).

The following table presents a breakdown by quarter of sales and operating income for the last two years.

in Hfl million	sales		operating income		operating income in % of sales	
	1977	1976	1977	1976	1977	1976
first quarter	2,683	2,821	85	129	3.2	4.6
second quarter	2,582	2,718	77	87	3.0	3.2
third quarter	2,467	2,507	13	35	0.5	1.4
fourth quarter	2,701	2,704	65	54	2.4	2.0
total	10,433	10,750	240	305	2.3	2.8

### Sales and operating income by main product group

Consolidated sales developed as shown below:

in Hfl million and in %	1977		1976		1969	
man-made fibers for:						
textile uses	2,592	25	2,834	26	2,746	43
industrial uses	1,006	10	970	9	580	9
	3,598	35	3,804	35	3,326	52
chemical products:						
salt and heavy chemicals	1,776	17	1,722	16	627	10
specialty chemicals	1,146	11	1,061	10	315	5
coatings	974	9	941	9	340	5
	3,896	37	3,724	35	1,282	20
other products:						
pharmaceuticals	1,095	10	1,071	10	374	6
consumer products	605	6	789	7	747	12
miscellaneous products*	1,239	12	1,362	13	637	10
	2,939	28	3,222	30	1,758	28
total	10,433	100	10,750	100	6,366	100

\* including plastics, technical products, leather, non-wovens, and dialysis membranes

### Man-made fibers

Business for man-made fibers for textile uses was bad. The 9% drop in sales was largely due to lower shipments, which were in part the result of capacity reductions in our Western European fiber operations.

In Western Europe, the market for these fibers was still completely under pressure of overcapacity. The massive – and growing – flow of imports of textile products from low-wage countries canceled the effect of a few plant closures in the industry. Improvements in the range of products successfully countered a tendency for sales revenues to continue their downward slide beyond the present low level. Shipments of carpet yarns and fibers barely increased, owing to a marked slowing of the growth rate of the Western European carpet industry.

In the United States, American Enka saw initial gains in shipments and earnings reversed after the summer as a result of market weakness for polyester textile and polyamide textile filament yarns, with prices falling again.

Sales of industrial fibers were up 4% over 1976, mainly because of higher shipments. The continuance of boom conditions in the automotive industry was a prime contributory factor in this regard. Overall, prices for rayon tire cord and steel cord rose somewhat, but the gains were not sufficient to provide adequate compensation for higher costs. Prices of synthetic yarns, on the other hand, showed a decrease. The utilization rate of the Group's industrial fiber facilities remained satisfactory.

Helpful developments in the man-made fiber sector were sizable price reductions of a number of raw materials and the further economies that were achieved. For the former Enka Glanzstoff, these economies attained a level of about Hfl 250 million annually at year's end.

Operating results in 1977 for these products worked out at a negative amount of Hfl 109 million, versus a negative amount of Hfl 142 million in 1976.

### Chemical products

Chemical products achieved a 5% sales gain in 1977 and stood at Hfl 3,896 million.

In Western Europe, the most characteristic feature of our markets in 1977 was stagnancy of shipments and mounting pressure on prices, in part reflecting keener competition from the United States and the East bloc. This particularly affected Akzo Zout Chemie's basic chemicals.

Akzo Chemie's specialty chemicals had to cope with a weakening market. Opportunities were scant for realizing markups needed to secure fair returns.

Partly as a result of the high level of activity in the automotive industry, sales of coatings were on the whole satisfactory, although higher costs in Western Europe could not sufficiently be passed on.

In North America, business of International Salt prospered on account of weather conditions which favored the sale of highway salt. The earnings performance of Armak's specialty chemicals was likewise better than in 1976. For several products the market situation permitted price increases.

Operating income from chemical products was down to Hfl 137 million from Hfl 182 million in 1976.

### Pharmaceuticals, consumer products and miscellaneous products

At Hfl 1,095 million, sales of pharmaceuticals were about the same as in 1976. This disappointing development was attributable to stagnating demand for ethical drugs

and to lower rates of exchange of foreign currencies relative to the guilder. This development also began to affect pharmaceutical raw materials.

For consumer products, the lower sales figure was due to the sale of our interests in paper manufacture. The level of operating income was satisfactory, although results for oils and fats in the foodstuffs sector were disappointing.

For miscellaneous products, sales by Barmag Barmer Maschinenfabrik declined owing to diminished investment activity in the textile and man-made fiber industries. Income from dialysis membranes was satisfactory and on a higher level than in 1976. Earnings of Brand-Rex (wire and cable products) were substantially higher.

The developments outlined above combined to cause a decline in operating income for pharmaceuticals, consumer products and miscellaneous products from Hfl 265 million in 1976 to Hfl 212 million in 1977.

The development of operating income of the consolidated companies, in a breakdown by main product group, was as follows:

in Hfl million and in % of sales	1977	1976	1975
man-made fibers	(109) (3.0)	(142) (3.7)	(326) (8.8)
chemical products	137 3.5	182 4.9	80 2.6
pharmaceuticals, consumer products and miscellaneous products	212 7.2	265 8.2	229 7.8
total	240 2.3	305 2.8	(17) (0.2)

### Net income

Low operating income and a high negative balance of extraordinary items resulted in another significant net loss for the year.

in Hfl million	1977	1976
operating income	240	305
interest	(245)	(249)
	(5)	56
taxes on operating income		
less interest	(65)	(59)
equity in earnings of non-consolidated companies	34	24
Group income (loss) before extraordinary items	(36)	21
extraordinary items	(122)	(167)
minority interest	(8)	(7)
net income (loss)	(166)	(153)

The unbroken rise of interest expense came to an end in the year under review, due to the fact that aggregate borrowings decreased.

In appraising the amount for taxes in relation to income (loss) before taxes, one must realize that the tax base is composed of earnings subject to taxes in some countries and of losses in other countries, notably the Netherlands and West Germany, against which no tax savings could be offset. Additionally, in West Germany, taxes are also levied on capital and reserves.

Equity in earnings of non-consolidated companies was up from Hfl 24 million in 1976 to Hfl 34 million in the year under review. Aggregate results of the man-made fiber operations were lower than in 1976, especially because Cyanenka (Spain), a producer of acrylic staple, recorded a severe loss. Several of our man-made fiber companies in Latin America achieved higher levels of income. In the chemical products sector, earnings of Methanol Chemie Nederland were higher than in the preceding year.

Business for Silenka (glass fibers) did not rally sufficiently for the company to close the year with a profit.

With effect from 1977, the preparation and start-up expenses of facilities involving amounts in excess of Hfl 50 million are capitalized. After such facilities have come on stream, the expenses will be written off in five years. Thus a better balance is achieved between costs and revenues.

The capitalized expenses primarily relate to projects under construction by joint ventures, such as COBAFI (Brazil) and Stikstofderivaten (Belgium).

In 1977, capitalization of preparation and start-up expenses added Hfl 15 million to both equity in earnings of non-consolidated companies and net income.

The extraordinary items were already commented upon on page 6.

If the results are computed on the basis of the current value of property, plant and equipment and of investments in non-consolidated companies (see pages 50 and 51), the 1977 net loss before extraordinary items is Hfl 126 million, compared with a net loss of Hfl 52 million computed on an historical-cost basis.

#### Shares in value added

Value added, which represents the value added by consolidated companies plus equity in earnings of non-consolidated companies and some other items of income, was Hfl 3,620 million and was distributed as follows among employees, providers of capital, and governments:

in Hfl million and in %	1977		1976	
employees	3,277	90.5	3,277	89.1
providers of loans	302	8.3	310	8.4
governments	77	2.1	71	1.9
stockholders				
Akzo N.V. stockholders	—		—	
minority stockholders	20		18	
	20	0.6	18	0.5
	3,676	101.5	3,676	99.9
added to (deducted from)				
Group equity	(56)	(1.5)	3	0.1
total	3,620	100	3,679	100

Value added in 1977 was insufficient to provide full coverage of personnel costs, interest charges and taxes. There was again no scope for dividend payments to Akzo N.V. stockholders, while furthermore an amount of Hfl 56 million had to be withdrawn from Group equity. As in previous years, the extraordinary items were not included in the calculation of value added, by reason of their special nature.

# Financing

12 The table below presents a survey of financing in 1977 and 1976; for details see page 44.

in Hfl million	1977	1976
working capital at January 1	2,327	2,441
funds from operations	539	503
investments, including acquisitions, less disposals	(421)	(464)
borrowings	289	496
repayment of borrowings	(408)	(446)
other changes	(98)	(203)
working capital at December 31	2,228	2,327

Funds from operations were Hfl 36 million higher than in 1976.

Expenditures for investments (Hfl 421 million) remained substantially below the Hfl 600 million ceiling established by us, and were also lower than in the preceding year. The principal acquisition move was the purchase of a majority interest in the French pharmaceutical company R.E.T.I.

Expenditures for property, plant and equipment in 1977 totaled Hfl 409 million. The breakdown by main product group shows a further decrease in expenditures for man-made fibers.

in Hfl million and in %	1977		1976		1975	
man-made fibers	122	30	132	32	311	42
chemical products	184	45	176	43	278	37
pharmaceuticals, consumer products and miscellaneous products	103	25	105	25	156	21
total	409	100	413	100	745	100

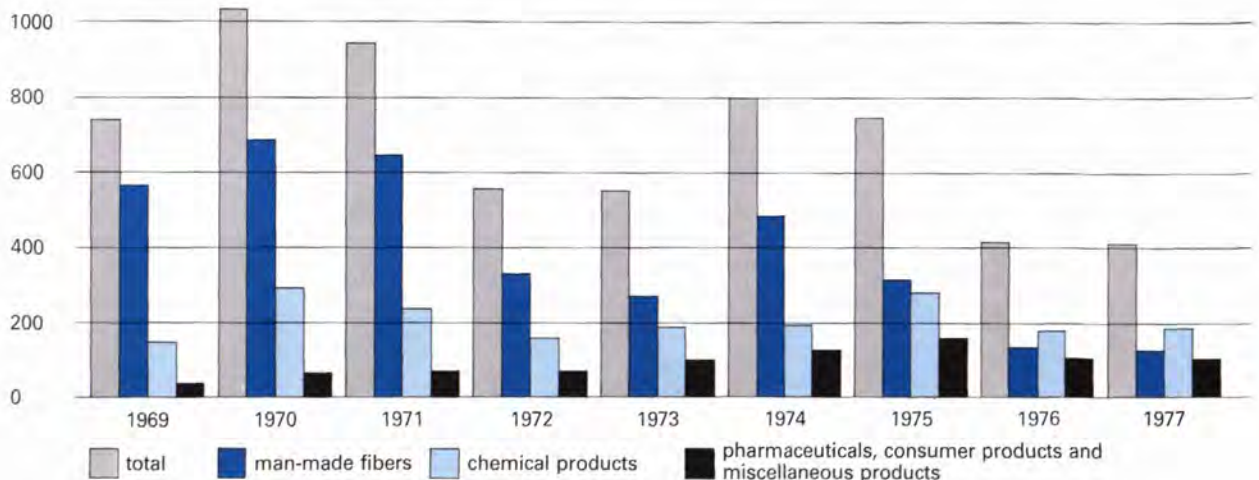
Our share in expenditures for investments by non-consolidated companies was Hfl 30 million in 1977 (1976: Hfl 20 million). Major construction projects in progress at these companies at December 31, 1977 totaled about Hfl 800 million, with the contribution from our resources being limited to Hfl 90 million.

Funds for repayment of borrowings, including the redemption before maturity of a Sfr 50 million 9 1/2% private borrowing (Akzo N.V.), were only in part obtained through new borrowings.

The principal new borrowings contracted were:

- Hfl 60 million 7 1/2% Euroguilder notes, final maturity 1984 (Akzo N.V.);
- U.S. \$ 25 million 8 1/2% bank borrowing, final maturity 1984 (Akzona Inc.);
- DM 30 million 6.7% private borrowing, final maturity 1992 (Enka AG).

Expenditures for property, plant and equipment, in Hfl million



Interest on medium-term and long-term borrowings arranged in 1977 averaged 8.3%. The average interest rate on debentures and private borrowings outstanding at December 31, 1977 was 7.9% (1976: likewise 7.9%).

In 1977, working capital was reduced Hfl 99 million, largely on account of translation into guilders, at lower rates of exchange, of working capital outside the Netherlands. Inventories and trade receivables together were on roughly the same level as at the end of 1976. At December 31, 1977, cash and marketable securities totaled Hfl 580 million, while credit facilities arranged and not yet utilized totaled well over Hfl 800 million.

Financially, it continues to be our policy to limit expenditures for investments to the level of funds from operations, so that new borrowings have to be arranged only for repayment of existing borrowings.

#### Foreign exchange

In the operational area, where short-term commercial and financial positions are taken, we reduce exchange risks by securing full or partial coverage for such positions, chiefly through forward transactions.

In regard to investments in countries having weak currencies, our practice is to arrange financing in local currency whenever this is feasible.

The limitations of the various national capital markets often confront the Group and its companies with the necessity of partly contracting borrowings in other currencies than the local ones; inevitably, this entails exchange risks. In 1977, the resulting exchange losses aggregated Hfl 44 million, versus Hfl 6 million in 1976.

A substantial part of Group equity is invested outside the Netherlands. Due to the continued depreciation of most currencies relative to the Dutch guilder, the translation into guilders of stockholders' equities of foreign Group companies resulted in an exchange loss of Hfl 131 million (1976: Hfl 280 million), which was deducted from Group equity.

#### Composition and financing of assets

in Hfl million and in %	Dec. 31, 1977		Dec. 31, 1976	
non-current assets	4,046	48	4,354	50
current assets	4,442	52	4,406	50
total	8,488	100	8,760	100
financed from:				
Group equity	2,739	32	3,114	35
long-term liabilities	3,535	42	3,568	41
current liabilities	2,214	26	2,078	24
total	8,488	100	8,760	100
Group equity : liabilities		0.48		0.55
Group equity : non-current assets		0.68		0.72
current assets : current liabilities		2.01		2.12

Group equity declined Hfl 375 million to Hfl 2,739 million. This was largely due to the 1977 loss and to the aforementioned exchange loss, which were charged against reserves.

Recomputed on the basis of the current value of property, plant and equipment and of investments in non-consolidated companies, Group equity declined, on balance, from Hfl 3,764 million at December 31, 1976 to Hfl 3,369 million at December 31, 1977 (see page 50).

The ratio of Group equity to liabilities was down further from 0.55 to 0.48 at December 31, 1977 on an historical cost basis, and from 0.61 to 0.54 on a current-value basis.

#### Insurance

There were no material changes in the nature and scope of our insurance arrangements. The insured value of property, plant and equipment is almost entirely based on replacement value, and was approximately Hfl 16,000 million at December 31, 1977 (unchanged from December 31, 1976).

## Social policy and developments

### 14 Employment

In our 1976 annual report we wrote that the restoration of the Group's earning capacity is a painful process, especially from a social viewpoint, due to the resulting job losses. The table below shows that in 1977 the number of employees decreased a further 6,700 to 84,400 at year's end.

Employees in numbers and in %	Dec. 31, 1977		Dec. 31, 1976	
the Netherlands	25,400	30	27,600	31
West Germany	21,800	26	23,800	26
other EEC countries	10,000	12	11,000	12
total EEC countries	57,200	68	62,400	69
rest of Europe	6,300	7	7,600	8
total	63,500	75	70,000	77
North America	15,300	18	15,500	17
rest of the world	5,600	7	5,600	6
total	84,400	100	91,100	100

The largest reduction in the number of employees was again recorded in the Netherlands and West Germany, mainly as a consequence of the rationalization measures which are now being implemented by the Enka group, and which will lead to further job losses in 1978.

Owing to the sale of our interests in paper manufacture, the number of employees was reduced by 1,300, while the figure for December 31, 1977 comprises for the first time the 700 employees of R.E.T.I. (France).

We regret that the shutdown of the Ferenka plant in the Irish Republic has caused the loss of 1,400 jobs in an area already having a very high rate of unemployment. This is all the more distressing because for some time sales opportunities for steel cord had been developing favorably and were promising to make a steady contribution toward employment. However, no manufacturing operation, and certainly not a continuous shift operation (such as Ferenka), can indefinitely tolerate a succession of disturbances and interruptions of production. The unrest at the Irish plant was generating losses of a magnitude the Group could no longer allow.

The renewal of the Multi-Fiber Agreement, effective January 1, 1978, will bring some relief to both the textile industry and the man-made fiber industry in Western Europe, thus extending the time for readjustments. However, the agreement is not expected to offer short-term easing of the job situation in our fiber sector.

Primarily through relocations and early retirement of older employees we succeeded in minimizing the social impact of the termination of nylon 6.6 textile yarn pro-

duction at Kelsterbach and Obernburg (West Germany), the shutdown of the texturing plant at Waldniel (West Germany), and the closure of the hosiery yarn plant at Emmercompascuum (the Netherlands) and the dimethyl terephthalate plant at Delfzijl (the Netherlands).

Undoubtedly, a larger number of relocations could be realized if the mobility of our personnel were greater. However, numerous employees, at all levels, can not, or only with great difficulty, be persuaded to move to positions elsewhere within the Group, however fair the conditions of employment may be.

The increase in sickness absenteeism in the industrialized countries of Europe is a matter of concern to us, both because the workers' welfare is at stake and because it raises industrial costs. The deteriorating pattern of sickness absenteeism is increasingly inviting attention and study. The Heilbronner report, a French study which also attracted international attention, claims a 23% increase for France for the period 1950 - 1975. For the Netherlands, studies even arrive at an increase of more than 40% over the same period, while in 1977 sickness absenteeism was up a further 8% over 1975.

The causes to which most writers attribute the increase in absenteeism are:

- shifts in social norms regarding work, sickness and absence from the job;
- greater social security in the event of sickness and, especially, less strict enforcement of the pertinent rules and regulations;
- factors peculiar to the type of job or business, such as working conditions, job content, style of management, etc.

Here lies an important field of action for which government, industry and trade are jointly responsible. We are prepared to contribute to an intensification of joint efforts in this field. Within the company, we will go on doing what we can to improve job quality and working environment.

In several European countries, the authorities endeavor to improve the employment situation by stimulating investment in labor-intensive industry. Without entering into a discussion of ways and means, we venture to doubt the wisdom of tackling the unemployment problem from this angle. Our doubts are shared by a report on this subject published in 1977 by the Dutch *Wetenschappelijke Raad voor het Regeringsbeleid* (Scientific Council for Government Policy). In this report, the Council states that industry as a direct source of employment will gradually become less important, as previously happened in agriculture. It therefore advocates a policy which seeks to create jobs in the non-profitmaking services sector (health and family care, sociocultural activi-



ties, etc.), which is in large measure subsidized by the government. Toward realization of higher employment in this sector, prosperity of industry is a *sine qua non*. Only if it flourishes can industry make a substantial contribution to the development of society.

While the Council's conclusions relate to the Netherlands, it seems to us that they could well possess relevance for other industrial countries, particularly such countries as are members of the European Community.

Appreciation of the importance of a prosperous industry is certainly growing. Governments, and international agencies, are now beginning to speak out on this matter. We believe that attitudes over the concept of profit are becoming more balanced and less negative.

We are happy with this trend, because it should benefit the image of corporate enterprise according as it becomes established in public opinion.

#### **International developments**

In the year under review, multinational enterprise remained a center of interest. On the model of the guidelines of the Organization for Economic Cooperation and Development (OECD), the International Labor Organization (ILO) adopted in November 1977 a declaration of principle concerning "Multinational Corporations and Social Policy". The fact that it was drawn up in consultation with governments as well as employer and employee associations merits approval. We deem compliance with these international rules of conduct in the social field to be in the interest of all persons and organizations concerned; for Akzo it is in agreement with the company's endorsement of the OECD guidelines.

We therefore regret that in the year under review political considerations should have induced the United States to withdraw, after long hesitation, from the ILO.

The social and economic position of the black worker in South Africa had the interest of many groups in 1977. As in all countries, our policy in the few small Akzo companies in South Africa is aimed at creating equal

opportunities for all employees, irrespective of creed, nationality, sex, or race.

The last important international development we mention here is that industry is increasingly placed under a legal obligation to furnish information on social matters. Thus the United States, Belgium, the United Kingdom, and since recently also France, have a growing body of laws in this field, while obligations to provide information also arise from the guidelines mentioned above.

We give this development our loyal support, because it advances social acceptance of enterprise, and especially of multinational enterprise, and contributes toward a more realistic evaluation of business behavior.

Finally, we should note that in 1977 Akzo Nederland concluded the first separate collective labor agreement for senior staff. Besides the traditional trade unions, the union that specifically represents the interests of senior staff was also a contracting party. This event reflects the increasing influence of unions such as the latter, which is also manifest in other countries.

#### **Management training**

All over the world, the necessity to take account of factors such as the above social trends makes additional demands on the attention and time of our executives. We feel that they should have the tools to handle these issues in a responsible manner, and we consequently make a special effort to equip them properly.

We explicitly deal with these trends in the management courses, among them two international ones, that are annually organized for our executives. Apart from this, we expect that they also follow such trends of their own accord, that they give consideration to possible consequences, and that they raise these consequences for discussion within their own organizations.

We think that this is one of the ways that will enable us to maintain the requisite flexibility in this period of rapid social change.

## Research and engineering

### 16 Research and development

The Group's depressed earnings performance, the continued upsurge in costs per employee of the research centers (largely established in the Netherlands, West Germany and the United States), and the changed prospects of certain product groups occasioned a further reduction in the number of research workers. This reduction was in large measure confined to the sector of textile fibers.

	1977	1976	1975	1974	1973
R & D costs, in Hfl million	430	410	390	360	310
ditto, in % of sales	4.1	3.8	4.1	3.4	3.3
number of employees	5,390*	5,550	5,950	6,025	5,750

\* including 160 due to participation in R.E.T.I.

The vital adjustments come at a time when environmental and product safety requirements are claiming an increasing share of R & D capacity. Additionally, the road from the conception of an idea to its commercial exploitation has become longer, riskier and hence costlier. The need to keep up and improve research output therefore imposes stricter standards of efficiency and productivity. In this regard the research committee for man-made fibers set up in 1977, which has very full powers relative to the fiber research programs of each of the Group's centers, has already accomplished good results.

Those R & D activities whose immediate purpose is consolidation of the position of our strong products, and development of new products and applications consistent with our specific skills and the community's changing needs, continue to be of the first importance.

In these activities our Corporate Research, a centrally directed organization with some 350 employees, has a major supporting role. Some central topics are innovating research in the area of polymer systems, process technology for existing and new chemical products, and new coatings systems; in all of these fields there is close cooperation with the divisions and product groups concerned. Apart from this, a relatively modest measure of innovating research of a more speculative nature is undertaken.

Interesting examples of findings having no immediate relation with any of the Group's existing activities are metal-polymer systems and porous polymers.

Metal-polymer systems, which are electro-deposited in the form of metal layers incorporating finely dispersed polymer particles, possess unique properties and may give rise to numerous new products and applications. Their further development and market introduction will be undertaken jointly with Schering AG, a company commanding the requisite galvano-technical and commercial know-how and experience.



*The physical laboratory of Corporate Research at Arnhem uses electronic data processing equipment to simulate chemical, physical and biological processes with the aim of making complex systems more readily understandable.*

Armak (Akzona) discovered a new technique of making porous polymers with a special pore structure exhibiting a high degree of regularity. This material can be used in microfiltration and for the controlled uniform release of active substances, such as insecticides.

Further details of research activities are set forth in the product group reports.

### Engineering

In 1977, Akzo Engineering (the Netherlands) completed a number of projects, mainly relating to chemical plants in the Netherlands and Belgium.

Under construction were:

- the nitrogen derivatives plant at Mons (Akzo Chemie and NIM);
- the extension of the VC monomer plant in Rotterdam (Akzo Zout Chemie);
- the second methanol plant at Delfzijl (MCN, Dyno Industrier, and KemaNord);
- the ethylene diamine plant at Delfzijl (Akzo Zout Chemie, Toyo Soda Manufacturing, and NOM);
- the monochloroacetic acid plant in Japan (Akzo Zout

- Chemie and Denki Kagaku Kogyo);
- the nylon tire-reinforcing yarn and fabric plant in Brazil (COBAFI);
  - the polyester filament plant in Nigeria (Nichemtex).

Contracted work for third parties, involving Group know-how, mainly concerned projects in Czechoslovakia (man-made fibers) and Brazil (soda ash).

Akzo Engineering again furnished significant technical support toward new developments, such as fluid bed electrolysis for the removal of metals from effluent (Akzo Zout Chemie) and *Arenka*<sup>®</sup> aromatic polyamides (Enka group); this support included process development in regard to the requisite raw materials.

## Safety and the environment

In recent years, the authorities in the industrial countries have been under increasing pressure to enact stricter safety and environmental regulations.

It is understandable that the public should adopt a more critical attitude toward industrial activities according as a higher level of prosperity is attained and opposition to effects interfering with people's well-being is supported by the results of more sophisticated research.

However, this critical attitude is attended with a feeling of growing insecurity caused by the layman's inability to understand and visualize industrial and, more specifically, chemical processes. Such insecurity is nourished by a fascination with calculations quantifying the maximum possible consequences of an imagined catastrophe. In their emotional approach to the problem, people tend to forget, however, that the chances of such a catastrophe happening have been reduced to infinitesimal proportions.

In prescribing excessively stringent rules and procedures for manufacturing processes, the authorities may feel they are affording society maximum protection. Like them, we wish to attain a high degree of safety. If, however, in the drawing up of regulations abstract theory gets the upper hand, there is a risk of society's losing sight of past achievements in the formulation and observance of safety regulations.

We regret that this risk now tends to become reality. This is the more regrettable because the western chemical process industry has become one of the safest branches of industry thanks to its deep concern with the workers' and the public's safety.

In our policies regarding industrial safety, product

safety and environmental protection, we emphasize, besides vital instructions and inspections, the importance of a working climate that fosters watchfulness and responsibility on the part of our employees. Additionally, we pursue maximum openness in our relations with the authorities and the public.



*For reasons of efficiency and safety, certain liquid organic peroxides intended for high-volume users in the plastics industry are shipped in refrigerated road tankers. Soon these road tankers will also carry solid peroxides in aqueous suspension, providing a safe mode of transportation of this product type developed by Akzo Chemie.*

## Man-made fibers

18

**This main product group comprises filament yarns and staple fibers of polyamide, polyester and cellulose; it further includes steel cord.**

**Typical textile uses are: apparel, carpeting and other home furnishings, and household textiles.**

**Typical industrial uses are: auto tires, conveyor belts, safety belts, fishing nets, ropes, and building and construction materials.**

Apparel is by far the largest single end-use of man-made fibers. In Western Europe and the United States, roughly half of man-made fiber consumption is for apparel. Carpets, with other home furnishings and with household textiles, account for one-third, while the remainder goes into industrial uses, including auto tires.

man-made fiber consumption (1976), in %	Western Europe	United States
apparel	52	43
carpets	16	25
other home furnishings and household textiles	18	10
tires	4	7
other industrial uses	10	15
total	100	100

It is hard to tell whether the breakdown of consumption in the United States presages the pattern in Western Europe. Today, at approximately 17 kg, annual per capita consumption of man-made fibers in the United States is about twice as high as in Western Europe.

### Apparel

The shift in production of textile goods to countries with a lower wage level – a shift that is still continuing – has been a major causative factor for the overcapacity situation in the Western European man-made fiber and textile industries. The 1974 Multi-Fiber Agreement has created the conditions for a vigorous increase in the flow of imports of semi-finished and, especially, finished textile products. In 1977, the import surplus of textile products in Western Europe was estimated at 600,000 metric tons: more than triple the surplus in 1972.

This shift in the geographical production pattern coincides with a reduction in growth of mill consumption of man-made fibers; hardly any growth is expected in Western Europe for the years ahead. Additionally, the major export positions some industrialized countries of the West had achieved in the area of high-grade textile products and man-made fibers can no longer compensate for the losses in volume sales in the home markets.

The fact that the ready-made clothing industry in

in Hfl million	1977	1976	1975
sales: textile uses	2,592	2,834	2,880
industrial uses	1,006	970	827
total	3,598	3,804	3,707
operating income (loss)	(109)	(142)	(326)
operating income (loss), as percentage of sales	(3.0)	(3.7)	(8.8)

Western Europe has increasingly come to use its sales channels to the consumer for imported textile products is harmful to the domestic man-made fiber industry. Likewise detrimental are marked improvements in fabric printing and piece-dyeing technology because they stimulate fabric imports.

If the further reorganization and rationalization of the Western European textile, ready-made clothing and man-made fiber industries is to be accomplished without undue strains, particularly social ones, government cooperation is indispensable. In this respect the Multi-Fiber Agreement, just renewed for another four years, and the additional import quotas the EEC countries negotiated with some major textile exporting nations may help achieve phased adjustments in the number of jobs in these industries, which for all Common Market countries together was approximately 3 million in 1977.

In the United States, demand and supply are not so radically disturbed. Added to a greater uniformity and transparency of the market, favoring better discipline on the part of producers, is a higher degree of protection against excessive imports which the country has been able to secure in bilateral agreements with low-wage countries. In the United States, as in Europe, a restoration of the market equilibrium will in large measure depend on adjustments in production capacity; here, too, some plant closures have meanwhile taken place.

In Latin America, the products of the man-made fiber industry, which in that area is still clearly in a growth phase, have generally found a ready market.

Consumption of *polyamide filament* is declining, notably in Western Europe. Even for specialties – at least such as are produced in the Netherlands and West Germany – it is scarcely possible to achieve profitable operation, which contrasts with the situation in the United States. In the year under review, Enka wholly terminated production of hosiery yarns and now only manufactures products for selected end-use areas. American Enka, on the other hand, expanded production of specialty hosiery yarns.

In regard to *polyester textile filament* there is greater scope for introduction of specialties that will enable the textile industry in the industrialized countries of the West to compete on the basis of quality. In the present market situation, however, revenues for these yarns are insufficient to meet costs.

The Western European market position of *polyester staple* is likewise far from comfortable, as a result of the severe pressure from imports of textile products. Matters are different in the United States, where – despite cotton price drops in 1977 – no large-scale resubstitution of cotton for polyester staple is anticipated.

For our *rayon textile filament* in Europe, we foresee a further decline in demand from lining fabric producers.

To prevent losses on falling shipments it will be unavoidable to adjust our production capacity accordingly.

American Enka's *rayon staple* has for years been finding a ready market in the non-wovens industry. In 1977, a high absorbency staple fiber (*Absorbit®*) intended for sanitary uses was added to the line of specialty staples. Price drops for other categories of staple, particularly cotton, once more initiated keen competition in sales of rayon staple for textile uses.

### Carpets, home furnishings and household textiles

The general picture for carpets in Western Europe was one of stagnancy as far as growth was concerned; a continuing preference for superior qualities was typically discernible in a trend toward higher pile weights. Enka's shipments of *nylon carpet filament and staple* registered a slight increase over the previous year, and the company succeeded in retaining its share of the market. Prices were too low to cover costs, however. Constant attention is being given to the development of specialties. At this stage, we enjoy the benefits of the early introduction of our *EnkaStat®* antistatic nylon filament, now that addition of antistatic properties to carpet yarns is common practice. With regard to nylon staple we have also advanced to the point where static has been substantially eliminated in carpets made of this staple.

In the United States, the development of the market was not unsatisfactory, in spite of heavy price competition for nylon carpet staple induced by overcapacity. American Enka benefited by firm demand for nylon carpet filament, especially its *Phase 7®* specialty yarn. The excellent reception of this yarn justifies further conversion of plant capacity to this type of carpet filament.

To serve the sheer curtain market, which is always quick to respond to changes in fashion, Enka has available a wide choice of *polyester yarns* meeting high standards in regard to quality and processability. *Diolen® GV*, a textured filament type, was especially valuable in utilizing opportunities created by higher demand for sheer curtains.

### Industrial uses

The continued favorable development of the Western European automotive industry (both autos and trucks), had a positive effect on shipments of our tire reinforcing materials. About two-thirds of our industrial fiber output – *rayon, polyamide, polyester* and *steel* – is being used by the tire industry.

Viscose preparation in the Arnhem and Obernburg plants will be modernized. The decision reflects confidence in the future of our *Cordenka®* rayon tire yarns.

In view of the firm steel cord market, we will endeavor temporarily to compensate for the loss in production caused by the closure of our plant in the Irish Republic by stretching the capacity of our steel cord plant in West Germany (Oberbruch).

Shipments for the other in-rubber uses (conveyor belts, hoses, V-belts, etc.) and for the industrial fabric sector were satisfactory. After the market weakness in the course of the second half of 1977, we expect another upturn this year.

Lower shipments to the rope industry as a result of the distressed situation of shipping were compensated for by higher purchases by the netting industry. We were able further to strengthen our position in sewing yarns – a market that is not without importance.

Sales of synthetic yarns for all industrial uses were under mounting pressure of severe price competition attributable to such factors as imports which were often priced so low as to suggest dumping.

We will gain an important foothold in the Brazilian market for industrial fibers as the COBAFI facility for the manufacture of nylon reinforcing materials goes on stream in 1978.

### Research and development

After further screening and selection, R&D activities for textile uses are now directed at three major objectives: cost reduction through new and improved production techniques; improvement of aesthetic properties ("natural look"); and development of special filament and staple types.

In the field of industrial fibers our research has scored successes in the development of fibers and fiber products (*Enkamat®*, *Stabilenka®*, *Hypofors®*) for use in agriculture, road building, hydraulic works, and other civil engineering projects. We continue to give a high priority to broadening the scope of application and to further optimization of our specialty fibers for industrial fabrics, conveyor belts and sewing threads. A significant improvement was realized in process control and product know-how concerning steel cord. For the new aromatic polyamide high-modulus fiber (*Arenka®*) developed by us, a pilot plant was taken into use which will enable us to explore a wide variety of potential uses.



*COBAFI Companhia Bahiana de Fibras S.A., a 45% Akzo participation, will commence operations in its nylon tire-reinforcing materials facility at Salvador (Brazil) in the middle of 1978.*

## Chemical products

in Hfl million	1977	1976	1975
sales: salt and heavy chemicals	1,776	1,722	1,428
specialty chemicals	1,146	1,061	824
coatings	974	941	836
total	3,896	3,724	3,088
operating income	137	182	80
operating income, as percentage of sales	3.5	4.9	2.6

### Salt and heavy chemicals

This product group includes:

salt, chlorine, caustic soda, soda ash, and vinyl chloride; chloroacetic acid and derivatives, chlorinated hydrocarbons, and crop protection chemicals;

acetic acid, acetyl and butyl chemicals; methanol and derivatives.

It also includes industrial chemicals produced by Akzo Chemie, such as fatty acids, vegetable oils, fluorine compounds, phenol compounds, sulfuric acid, carbon disulfide, and other sulfur compounds.

Akzo Zout Chemie's strong position in northwest Europe is threatened by two unfavorable developments.

Especially as a result of the rapid growth of energy prices, costs in our Dutch electrolysis plants increase at a faster rate than those of our competitors in surrounding countries. Energy costs make up a considerable part of the production cost of our electrolysis products. The higher prices in the Netherlands annually reduce earnings to the tune of several tens of millions of guilders. We keep making urgent pleas for a price policy for natural gas and electricity that will end this unfair situation.

A second unfavorable trend is the growing competition from East bloc countries, especially for salt and soda ash. If the policy of the European authorities does not change, an increasing number of products will be offered by these countries at prices that are based on other viewpoints than those that would be decisive in a free market economy.

The market for salt in Western Europe was fairly stable, also with regard to price level. Our shipments of evaporated salt to the electrolysis industry stagnated owing to the depressed economic situation. Akzo Zout Chemie expects to be able to maintain its market position in this field. Shipments of solar salt from the International Salt (Akzona) plant in the Netherlands Antilles and from CIRNE in Brazil were on a high level. International Salt's market position in the United States showed a further improvement, notably in its principal market, highway salt.

After a recovery in demand for vinyl chloride and polyvinyl chloride in 1976, there was again a downward tendency in the first half of 1977. In Western Europe almost 30 percent of chlorine output is destined for VC/PVC production, so that chlor-alkali products felt the impact of this trend. The price level of vinyl chloride and chlor-alkali products came under high pressure.

In the short term, we do not foresee a significant improvement in the market situation for these products, although the possibility of action being taken over the unduly high prices of energy for our Dutch plants cannot

be dismissed altogether. For the longer term the outlook for both chlor-alkali products and VC/PVC is considered positive. Early in 1977, a decision was taken to expand the VC production capacity in Rotterdam by 125,000 metric tons to 475,000 metric tons per annum (investment Hfl 60 million). This expansion will help bring forward a decision about an increase of our electrolysis capacity.

Owing to price erosion, the results for some of our petrochemicals have shown such a decline that rationalization measures are imperative.

Early in 1978, production of vinyl acetate was terminated because of the obsolete manufacturing process and the small scale of the operation. However, Akzo Zout Chemie will continue to supply this product, relying on third parties for the conversion of its raw material acetic acid into vinyl acetate.

Thanks to a reasonable consumption growth in various fields of application, including herbicides, the market position of monochloroacetic acid showed an improvement, but results were not yet satisfactory.

The growth of the market for methanol and its derivatives (Methanol Chemie Nederland, a 50/50 joint venture with DSM) was slight in the past year while, for the time



By mid-1978, Delamine B.V., a company jointly owned by Toyo Soda Manufacturing (Japan), Noordelijke Ontwikkelingsmaatschappij and Akzo Zout Chemie (35%), will bring on stream its Delfzijl plant for the production of ethylene diamine and related polyamines.

being, imports into Western Europe from the United States and East bloc countries prohibited price improvements. Nevertheless, MCN could strengthen its position in methanol, formaldehyde, and urea formaldehyde adhesives. In terms of size and raw materials situation, our competitive position in Europe may be considered satisfactory, especially when in 1978 the second methanol plant with an annual capacity of 350,000 metric tons comes on stream. However, imports from new producing countries outside Europe could come to exercise a disturbing influence.

For most of Akzo Chemie's industrial chemicals the market situation was also characterized by excess capacities and pressure on prices. All the same, income from *sulfuric acid, silicates, fluorine compounds, phenol com-*

*pounds, sulfo products, and carbon disulfide* was satisfactory.

In the field of separation of metals from fluids, research efforts over the past years have led to the development of advanced techniques. The necessity of reducing the amount of mercury in the effluents of mercury electrolysis plants resulted in the development of an ion exchanger (*Imac® TMR*), for which licenses were granted to various industries. In another recent technique, utilizing a fluid bed electrolysis cell, the metal is removed through deposition on tiny metal spheres which move freely in the liquid and which together form the cathode. The cell also opens up new perspectives for use in metallurgical extraction processes.

## Specialty chemicals

This product group comprises the products of Akzo Chemie, with the exception of the industrial chemicals included under salt and heavy chemicals, and also comprises the products of Armak (Akzona).

The principal products are:

**process chemicals and additives, such as organic peroxides, rubber chemicals, fillers, and PVC stabilizers for industries engaged in the manufacture and fabrication of plastics and elastomers;**

**organic chemicals, such as fatty acid esters, nitrogen derivatives, raw materials for the detergent industry, sequestering agents, disinfectants, gluconates, and paper chemicals; catalysts for the petroleum, petrochemical and chemical industries.**

The market situation for Akzo Chemie's specialty chemicals showed hardly any improvement over 1976. In view of the unfavorable economic conditions it was not possible to obtain market acceptance for the price increases necessary to achieve a reasonable return on investment.

Armak (Akzona) benefited from the economic recovery in the United States and was able to realize price increases for various specialty chemicals. For comparable Armak and Akzo Chemie specialties, the ratio of operating income to sales was significantly higher in the United States than in Western Europe.

Notably in Europe and Japan, and to a lesser extent in the United States, reduced growth of industries producing and processing plastics and elastomers has resulted in increasing pressure on prices. Akzo Chemie's Plastics and Elastomers group, which comprises major products such as organic peroxides, stabilizers and rubber chemi-

cals, also felt the effects of this squeeze. Since rises in costs could for the most part not be offset by price increases, even greater emphasis was laid on improvements in efficiency.

The strategically important product group *organic peroxides* was further strengthened through addition of a production facility at Mons (Belgium), which supplies organic peroxides to polymer-producing and polymer-processing industries. This plant uses a new, fully continuous process technology developed by our Research. Satisfactory solutions were found for a number of ecological problems.

On the basis of Akzo Chemie's know-how, Armak operates two production plants for organic peroxides, which have meanwhile captured an attractive share of the American market.

The further introduction of our non-polluting *Stanclere® Estertin stabilizers* for the PVC-processing industry proceeds according to expectation. Expansion of production is slated, and the first licenses have been granted.

One application of *EC-black* is as an additive to material for cables; this special *carbon black* affords the required conductivity properties. Sales developed satisfactorily, and consequently a decision was made further to expand production capacity.

In the field of *rubber chemicals* Akzo Chemie put on stream a new plant for the production of *organic rubber accelerators* at Dordrecht; the old Amersfoort plant was simultaneously shut down. Work is being carried out on an extension of the product range. Our process development sector is working on a new patented method for the manufacture of *rubber antioxidants* invented by our Research.



Akzo Chemie's organic chemicals and Armak's industrial chemicals mainly comprise *surfactants*, which are for the greater part supplied to the detergents industry. Our world position in this field will be strengthened by the coming on stream in 1978 of a plant for the production of fatty acid amines and quaternary ammonium compounds at Mons (Belgium), in which the Belgian Nationale Investeringsmaatschappij (NIM) has a 50% participation. This plant, which calls for a capital expenditure of almost Hfl 100 million and which will have an end-product capacity of 15,000 metric tons per annum, will enable us to play a role in supplying the basic material for laundry softeners on the European continent.

Together with the cationic, non-ionic and anionic surfactants, our *sequestering agents*, such as *Dissolvine*<sup>®</sup> (EDTA) and *gluconates*, our *fatty acid esters* and *amides*, as well as our *sodium aluminum silicate (NAS)*, used as a substitute for phosphates, permit us to offer a broad range of products to the detergents industry.

Since no legislation has so far been enacted relative to the replacement of phosphates in detergents, there has been some delay in the realization of our *NAS* project. Nevertheless, we expect a breakthrough in the foreseeable future.

The commercial introduction of our *Cyclopal*<sup>®</sup> polyurethane-based *paper size* made satisfactory progress; accordingly, a decision was taken to build a production plant with a capacity of 5,000 metric tons per annum at our Cologne site.

At end-1977 a pilot plant for the production of *synthetic fatty acids* on the basis of alpha-olefins came on stream. It utilizes a process developed and patented by us, which yields fatty acids with special properties that render them suitable for such applications as internal PVC lubricant, general lubricants and waxes.



Akzo Chemie will expand production capacity for FCC (molecular sieve) catalysts used in the cracking of crude oil to boost the share of lighter fractions, such as gasoline and naphtha. The photo shows the catalyst applications research laboratory at the Amsterdam-Noord site.

Production capacity of *cracking catalysts* in Amsterdam will be expanded to meet the growing need in Europe for the lighter petroleum fractions, such as gasoline and raw materials for the chemical industry. We expect an increasing demand for our *desulfurization catalysts* as existing environmental standards in regard to sulfur content gain in practical importance with a shift back to fuel oil. The scarcity of some metals used in these catalysts makes their recovery from spent catalysts remunerative.

## Coatings

This product group comprises paints, stains, synthetic resins, and adhesives for:

**industrial markets, e.g. the road and rail vehicles, aircraft, metal products, wood products, and furniture industries;**

**trade markets, e.g. auto refinishing, house building, road marking, shipbuilding and maintenance, and general construction;**

**the do-it-yourself (DIY) market.**

As a result of reorganization measures taken over the past years, results were better than in 1976, notably in the Netherlands. Insufficient recovery of higher costs in Western Europe was most evident in France, where our products were subject to stringent price controls. In West Germany, and particularly in the Netherlands, the situa-

tion was slightly more favorable.

Outside Europe our operations in northern Africa, Brazil and Argentina continued their satisfactory development. In Brazil and Argentina, we succeeded in gaining the custom of nearly all automobile manufacturers.

A new system was developed to meet the changing demand for colors; named the Acoat Color Codification System, it utilizes color measurement and computer programs to define colors in terms of hue, lightness and saturation. On the basis of this system a new range of more than 600 colors was evolved which can be supplied from point-of-sale color mixing systems to customers in the *trade market* and the *DIY market*. For a further explanation of this color system, reference is made to page 34.



On the basis of the new color codification system, the "2021" color range was developed and launched in the European market. The range comprises well over 600 fine colors in high gloss, satin and matt for use by both painting contractors and home handymen.

For the metal-products industry and the *automotive industry* we now have available advanced paint systems. Our water-thinnable primers and chassis paints for automobiles have secured us a position of technological leadership. Certain large customers in France, West Germany and elsewhere have modified their existing coating lines to make them suitable for our water-thinnable paints. High-solids products are increasingly being used to coat such items as agricultural machinery and auto bodies.

In view of the growing use of plastics in automobiles, we developed a number of special paints, which we

introduced in the year under review.

Licenses for automotive finishes were granted to a few U.S. paint producers. Cooperation with the Spanish paint producer Ivanow S.A. was intensified, notably in this product area.

In the sector of *automotive refinishes* we strengthened our market position. One of the strategies employed was a more direct approach to customers having higher-than-average growth rates. We were able to increase exports significantly, because of the high technological standard of our products.

In the area of *coil coatings* our line of products was enlarged as a result of several technological innovations. The automotive industry's growing interest in corrosion control is a key factor in the favorable development of Dacral, a joint venture with Diamond Shamrock (United States).

Our solvent-free coatings for use on steel and concrete in transport vehicles and storage areas for foods and beverages, and for use in drinking water systems, fully satisfy official health requirements in the major European countries.

New *synthetic resin compounds* developed by us for medium-solids and high-solids coatings intended largely for industrial uses strengthened and broadened our position. Patent applications were filed for acrylate resin and polyester resin compounds.

There is evidence of growing interest in electron beam curing, which is one of our specialties. Indeed, progress was made in the entire field of coatings for radiation curing.

For protection of steel structures, both below and above water level, we developed a blast-coating process. We also developed an anti-fouling system based on the controlled leaching of organo-tin compounds.

A unique computer program was devised which correlates properties and structures of polycondensates. It appreciably reduces the time needed for calculations. We have licensed a Japanese company to use this program.

A computerized system enables us to test our formulations against EEC standards for toxicity and safety.

## Pharmaceuticals, consumer products and miscellaneous products

in Hfl million	1977	1976	1975
sales: pharmaceuticals	1,095	1,071	971
consumer products	605	789	779
miscellaneous products	1,239	1,362	1,172
total	2,939	3,222	2,922
operating income	212	265	229
operating income, as percentage of sales	7.2	8.2	7.8

### Pharmaceuticals

This product group comprises:

ethical drugs, such as anabolics, oral contraceptives, corticosteroids, sex hormones, diagnostics, and psychotropics; hospital supplies, such as plasma fractions, infusion liquids, sera, diagnostics, medical equipment, and medical single use products; non-prescription drugs, such as vitamin preparations, pain killers, cough syrups, sweetening agents, dietary products, and diagnostics; raw materials for the pharmaceutical industry, such as steroids, biochemicals, alkaloids, and polypeptides; veterinary products, such as poultry vaccines, other vaccines, and hormone preparations; crop protection products, such as fungicides, herbicides, and insecticides.

After the satisfactory development of the product group over the preceding years, 1977 was a disappointing year for Akzo Pharma, and indeed for the whole pharmaceutical industry. Sales remained at the 1976 level, while operating income showed a decline.

This situation is first of all due to the community's constant concern with the cost of health care. Though this concern is quite understandable, it is too much concentrated on the pharmaceutical industry. As a consequence, price adjustments necessary to meet inflationary rises in cost are too few in number and too long in the making. In addition, sales volumes have been almost stagnant, notably in northwest Europe.

Another factor of a structural nature is the increasing strictness of the requirements for health authority approval to be met by new drugs, even by products that have already been approved in other countries. This not only increasingly delays introduction, but also progressively raises the cost of introduction.

Finally, further depreciations of foreign currencies relative to the Dutch guilder have again had a distinctly adverse effect on earnings.

#### Ethical drugs

The developments outlined above had their impact on various product categories, but especially on sales of our *ethical drugs* (Organon).

The acquisition of a majority interest in R.E.T.I., a company specialized in drugs for cardiovascular diseases and gastric and intestinal disorders, considerably strengthens Organon's position on the French market. In addition, the research contributions rendered by the French organization will help broaden the therapeutical areas covered by Organon, thus leading to a more balanced range of products.

Another addition to the line of products, viz *psycho-*

*tropics (antidepressants)*, developed in the Organon laboratories, is beginning to bear fruit. The first product in this line (Org. GB 94) has been approved by the health authorities in all major Western European countries, with the exception of the Netherlands.

Introduction of two new preparations in the field of sex hormones has further improved Organon's traditionally strong position in this field.

#### Hospital supplies

For Organon Teknika, 1977 was a successful year, despite the increasingly strong position of the Dutch guildier, which notably handicapped exports of *infusion liquids*. The restrictive policies pursued by many authorities in regard to hospital expenditure had an adverse influence on sales of *medical equipment*.

The product range was extended through introduction of several new products, including:

- *EchoBioVisor*, an ultrasonic apparatus for abdominal examination;
- *Neurotrace*<sup>®</sup>, an ultrasonic apparatus for so-called midline determinations in neurology;
- *Echomatic*<sup>®</sup>, a simple "Single Element" ultrasonic apparatus for heart examination.

The international organization was further expanded to include some countries in northern Africa and in the Middle East.

#### Non-prescription drugs

In the year under review, Chefaro's business abroad was prosperous. The strengthening of our recently established international operations, in particular in the United Kingdom and West Germany, especially contributed to this success. In the Netherlands, however, where Chefaro is a market leader, the company felt the impact of a negative general trend in important market segments.

Preparations for the supply of a pregnancy test in the United States were successfully completed.

#### Raw materials for the pharmaceutical industry

In the year under review, Diosynth was confronted with falling sales revenues for some major products. Nevertheless, earnings were satisfactory, thanks to higher efficiency and slightly lower prices for some purchased raw materials.

In the *alkaloids* sector, where the expansion of extraction capacity for poppy capsules was completed, normal production and sales volumes were achieved. The future raw materials supply is a matter of some concern.

The *biochemicals* sector was hit by a sharp drop in prices of *heparin* (blood anticoagulant). Production and



*In September, Akzo Pharma staged another Open House at Oss for nearly 3,000 company employees, retirees and relatives.*

sales in this sector were on a reasonable level.

In the sector of *pharmaco-chemical basic products* the outlook for the raw materials supply brightened consider-

ably through the development of a number of alternative materials. However, due to a stagnancy in demand, selling prices came under severe strain.

#### **Veterinary products**

Intervet, which recorded satisfactory results over 1977, discovered a new virus vaccine to protect poultry against Newcastle disease. This vaccine, *Clone 30<sup>®</sup>*, is expected to find large-scale application in poultry farming.

#### **Crop protection products**

The development of AAgrunol remained unsatisfactory, despite efforts to curb losses through the adoption of very stringent efficiency measures. It must be concluded that AAgrunol has no viability as an independent producer of *crop protection products*. Three reasons for this are apparent: the decreasing volume growth in the limited market area covered by AAgrunol; the lack of a phytopharmaceutical research function of adequate size; and the environmental problems facing the company, which call for capital investments.

The financial support the authorities were prepared to give was insufficient to justify a positive decision as to these investments.

In an attempt to restore viability for most of AAgrunol's business, extensive negotiations for the sale of AAgrunol were entered into with a major phytopharmaceutical company, which has a strong research and development capability.

## Consumer products

This product group includes:

detergents and cleaning products;

health and body-care products, such as fragrances and cosmetics;

foodstuffs, such as oils and fats, sauces, soups, preserves,

party snacks, and various food specialties.

Our activities are largely oriented toward the production and, particularly, the marketing of branded consumer articles in the west and northwest of Europe. In this context, staying ahead of changes in consumer habits and distribution patterns is one of the most important policy goals – perhaps even *the* most important.

In the year under review, we sold the remainder of our interests in paper manufacture, thus ending the serious losses we were sustaining in this sector. This transaction explains why sales were substantially lower than in 1976.

The *detergents and cleaning products* sector recorded satisfactory results but encountered sharper competition, particularly in the Scandinavian countries. Higher volume sales of our *Biotex*<sup>®</sup> and *Dobbelman*<sup>®</sup> detergents in the Netherlands and Belgium bolstered the market position.

Otarès (Enschede), specializing in institutional and industrial cleaning, offers consultancy services and undertakes the design of complete cleaning plans; the company was able to capture a fair share of the substantially increased demand for this type of service. In Belgium, Otarès acquired the Pronet company in the year under review, thus expanding interests in that country and strengthening its organization in the Benelux.

In the sector of *health and body-care products*, Rector (producer of the *Roosvicee*<sup>®</sup> and *Zwitsal*<sup>®</sup> brands) performed well.

The Boldoot facilities were relocated from Amsterdam to Apeldoorn. We expect that new impulses will be forthcoming for the further development of this almost 200-year-old company.

The sales companies in this product sector in Belgium, Finland and Norway progressed satisfactorily.

The situation for aerosol cans, in which the controversial fluorochloro-hydrocarbon gases are employed, continues to be difficult for Aerofako (Apeldoorn). Our plans for the wider use of an alternative propellant may offer fresh prospects.

The streamlining of our activities in the *foodstuffs* sector was continued. Moves in 1977 included the shutdown of the refinery for oils and fats at Koog and concentration of all manufacturing operations at the Vlaardingse site. In the Wilco cannery at Assen, which



*Zwitsal*<sup>®</sup> baby shampoo is also popular with adults.

was operating at a loss, the production of dried vegetables and potatoes, and of canned preserves, was discontinued. Cuts were also made in the Wilco catering department, whose earnings performance was weak. The full benefits of these moves will first be reaped in 1978.

The range of Duyvis brand products was further expanded in 1977 through the successful marketing of some new items, but margins for existing products were squeezed as a result of keen competition.

Sales revenues for oils and fats were also disappointing, resulting in lower earnings for the sector of foodstuffs in 1977.

Progress for Mayolande S.A. in France was satisfactory. Higher market shares were realized for the *Bénénuts*<sup>®</sup> (nuts) and *Bénédicta*<sup>®</sup> (sauces, oil, mustard, vinegar) brands. Here, too, margins were depressed, as a result of government price controls.

For consumer products, research and development is to a large extent market oriented. The replacement of phosphates in detergents to meet environmental standards is demanding great efforts from us, as from the entire detergents industry.

Stricter government regulations often translate into a tightening of the requirements our products have to satisfy in the countries concerned.

## Miscellaneous products

Miscellaneous products include:

plastics, films, adhesive tape, and cellulose-based industrial colloids;

technical products, such as wire and cable for electrical and electronic end-uses, machinery and equipment for the man-made fiber and plastics industries, special pumps, and hydraulic equipment;

leather, non-wovens, shammies, and sponges;

dialysis membranes.

In cooperation with the Swedish packaging company PLM, Akzo Plastics (Enka) completed the development of a plastic bottle for carbonated beverages on the basis of our *Arnite*<sup>®</sup> thermoplastic polyester. This bottle (*Strongpac*<sup>®</sup>) will be put on the market in 1978.

The same material was used in the development of a plastic can for soft drinks. At the end of 1977, this can was introduced on a small scale.

In the field of *thermoplastic elastomers* – products combining properties of plastics and rubbers – we introduced *Arnitel*<sup>®</sup> for use in such items as high pressure hoses for liquids.

Growth in the market for *industrial colloids* stagnated. In the second half of 1977, however, an upswing occurred in the demand for our drilling mud additives; in the year under review two specialties were added to this line of products. *Peridur*<sup>®</sup>, an ore pelletizing agent, meets with growing appreciation from steel producers.

In its international markets, Barmag Barmer Maschinenfabrik (Enka) suffered an appreciable setback due to the man-made fiber and textile industries' reluctance to invest. Over the past few years, Barmag's position has been strengthened through a policy aimed at improvements and innovations in its line of products, through internationalization of activities (new operations in the United States, Brazil and Switzerland), and through a successful extension of its range of products with *hydraulic equipment*, and *special pumps* and *assemblies* for the automotive industry. For 1978, the demand for Barmag products is expected to show a revival, notably for *textile machinery* in the United States.

Brand-Rex (Akzona), while still predominantly a *wire and cable* producer, has diversified into the manufacture of sophisticated products and systems for the computer and other industries. In most product sectors, there was a considerable increase in business activity compared with 1976. The results of the European operation at Glenrothes in Scotland, in which British Enkalon has a 60 percent participation, were also satisfactory. Its production capacity will be expanded.

For the greater part of the year Armira (Akzona) had to

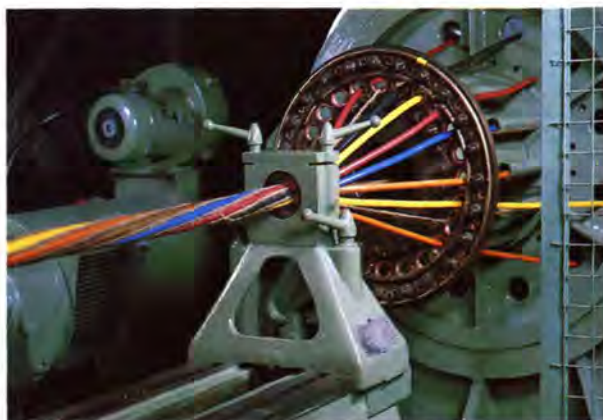
cope with depressed conditions in the *leather* market, while shipments were further reduced because of a prolonged strike at a major shoe-leather customer. The last quarter of 1977 registered a distinct improvement.

The Colbond product group of Enka had a favorable year thanks to a satisfactory development of sales of synthetic *non-wovens*. *Colback*<sup>®</sup>, a high-grade backing material for tufted carpets, has also acquired a good market position as a backing material for floor coverings in automobiles.

*Colbond*<sup>®</sup>, a semi-manufacture for various technical products, is used with increasing success as a reinforcing layer in bituminous composition roofing.

Expansion of production capacity is under way.

Enka's line of *dialysis membranes* again showed a favorable development, which was mainly due to the success of the new *Cuprophane*<sup>®</sup> hollow fibers. Production capacity for hollow fibers will be stepped up. Efforts will concentrate on development and testing of new membranes, both for artificial kidneys and for other artificial organs.



Brand-Rex Ltd (Scotland), an affiliate of British Enkalon and Akzona, is a supplier of specialty cable types. Pictured is a stage in the assembly of a multicore cable on the planetary cabler.

## Operations by region

### General

The geographical pattern of sales, invested capital and personnel strengths of consolidated companies in 1977 and the shifts therein relative to 1976 are shown in the tables below.

The Hfl 65 million decrease in operating income to Hfl 240 million originated almost entirely in our establishments in the Common Market. Operating income for man-made fibers in the EEC countries remained in the loss category, although some improvement was achieved relative to 1976. In the other product groups the aggregate results showed a decrease.

The improvement in operating income in North America was significantly smaller than expected because another downturn in the U.S. man-made fiber market materialized in the second half of the year.

Expenditures for property, plant and equipment remained on a low level in 1977. For the EEC countries they were slightly higher than in 1976.

in Hfl million and in % of sales	1977		1976		operating income	
					1976	1975
EEC countries	83	1.1	146	2.0	(187)	(2.7)
rest of Europe	(2)	(0.4)	16	2.2	10	1.4
total Europe	81	1.0	162	2.0	(177)	(2.4)
North America	87	4.1	53	2.5	103	5.4
rest of the world	72	16.3	90	19.9	57	16.5
total	240	2.3	305	2.8	(17)	(0.2)

in Hfl million and in %	1977		1976		expenditures for property, plant and equipment	
					1976	1975
EEC countries	291	71	259	62	481	65
rest of Europe	11	3	36	9	76	10
total Europe	302	74	295	71	557	75
North America	87	21	103	25	134	18
rest of the world	20	5	15	4	54	7
total	409	100	413	100	745	100

in Hfl million and in %	sales by area of destination			
	1977		1976	
the Netherlands	1,284	12	1,295	12
West Germany	1,932	19	2,056	19
other EEC countries	2,143	21	2,198	21
total EEC countries	5,359	52	5,549	52
rest of Europe	1,473	14	1,646	15
total Europe	6,832	66	7,195	67
North America	2,334	22	2,292	21
rest of the world	1,267	12	1,263	12
total	10,433	100	10,750	100

in Hfl million and in %	sales by area of origin			
	1977		1976	
the Netherlands	3,585	35	3,706	35
West Germany	2,658	25	2,727	25
other EEC countries	1,055	10	1,003	9
total EEC countries	7,298	70	7,436	69
rest of Europe	561	5	712	7
total Europe	7,859	75	8,148	76
North America	2,133	21	2,147	20
rest of the world	441	4	455	4
total	10,433	100	10,750	100

in Hfl million and in %	invested capital			
	Dec. 31, 1977		Dec. 31, 1976	
the Netherlands	2,156	36	2,497	39
West Germany	1,653	28	1,588	25
other EEC countries	393	7	262	4
total EEC countries	4,202	71	4,347	68
rest of Europe	263	4	403	6
total Europe	4,465	75	4,750	74
North America	1,289	22	1,423	22
rest of the world	199	3	221	4
total	5,953	100	6,394	100

in numbers and in %	employees			
	Dec. 31, 1977		Dec. 31, 1976	
the Netherlands	25,400	30	27,600	31
West Germany	21,800	26	23,800	26
other EEC countries	10,000	12	11,000	12
total EEC countries	57,200	68	62,400	69
rest of Europe	6,300	7	7,600	8
total Europe	63,500	75	70,000	77
North America	15,300	18	15,500	17
rest of the world	5,600	7	5,600	6
total	84,400	100	91,100	100

The following table illustrates the size and geographical distribution of operations of the Group's non-consolidated companies (participation 50% or less).

in Hfl million/ numbers	sales*		invested capital**		employees**	
	1977	1976	1977	1976	1977	1976
EEC countries	840	1,160	570	550	4,100	6,700
rest of Europe	210	220	140	170	800	700
total Europe	1,050	1,380	710	720	4,900	7,400
North America	50	50	10	10	100	100
rest of the world	690	700	860	650	10,400	9,400
total	1,790	2,130	1,580	1,380	15,400	16,900

Sales of these companies in 1977 broke down into 43% for man-made fibers, 39% for chemical products, and 18% for other products.

The decrease in Europe mainly relates to Fabelta (Belgium), which was no longer included in the 1977 figures. The increase in invested capital and number of employees of non-consolidated companies in the "rest of the world" is largely attributable to the projects under construction of COBAFI and Nichemtex.

Overall, the consolidated and non-consolidated companies present the following picture of sales, invested capital and number of employees:

in Hfl million/ numbers	sales*		invested capital**		employees**	
	1977	1976	1977	1976	1977	1976
EEC countries	8,138	8,596	4,772	4,897	61,300	69,100
rest of Europe	771	932	403	573	7,100	8,300
total Europe	8,909	9,528	5,175	5,470	68,400	77,400
North America	2,183	2,197	1,299	1,433	15,400	15,600
rest of the world	1,131	1,155	1,059	871	16,000	15,000
total	12,223	12,880	7,533	7,774	99,800	108,000

#### Intra-Group deliveries

No changes were made in the rules governing the commercial relations between Group companies, as set forth in our 1976 annual report. The essence of these rules is that the terms and conditions for the supply of goods or services by one Group unit to another should be negotiated at arm's length. International deliveries between companies of the same division are made in accordance with standard procedures that take due account of the tax, currency and pricing regulations in force in the countries concerned.

#### Europe

Our European operations are mainly located in *the Netherlands* and *West Germany*. Both countries are characterized by an open economy and a strong currency.

A large portion of the output of these operations is exported to other countries. This is especially true of our Dutch companies: about two-thirds of output is exported. The depreciation of most currencies relative to

the guilder has increasingly complicated the export position of the Dutch companies over the last few years. Since there are no signs of early drastic change in the structure of exchange rates, this situation will continue.

In our man-made fiber companies the job situation was under heavy pressure from the industry's structural problems. In efforts to meet these problems, manufacturing capacity for several products had to be curtailed.

In *France*, our acquisition of a majority interest in R.E.T.I. is expected to strengthen our pharmaceutical involvement in France, and to broaden significantly the base of our far-flung pharmaceutical business. One means by which the French government seeks to curb inflation is very strict price controls, which have seriously eroded the margins of several of our products.

In *Spain*, our companies, and notably La Seda de Barcelona, were hit by the economic recession, the devaluation of the peseta, and the government's steps to halt inflation. Cost reduction programs have been started and further action is under study.

In the *United Kingdom*, the inflation rate has been substantially reduced; one of the effects of this reduction has been a lowering of interest rates. British Enkalon's financial structure was improved with the issue of additional shares to Akzo N.V. in the amount of £ 2.5 million. Our participation in the company is now up to 72%.

Our relations with state trading nations showed a further favorable development in the year under review. For one thing, this was due to the overall agreements we concluded with several *countries in the East bloc*.

#### North America

Fuel supply inadequacies during the harsh winter of 1976/77, the new slump in the market for man-made fibers and the extensive damage caused by the flooding on November 6, 1977, of the Enka plant at Enka, N.C., were factors leading to disappointing results for Akzona in 1977.

To strengthen its profitability, American Enka will mainly concentrate on specialties. The company aims to realize a healthy balance of specialties and bulk products in 1978.

ArmaK profited by the rise in the market for specialty chemicals; the new facilities for the production of catalysts and initiators (peroxides) operated at full capacity.

International Salt developed favorably largely as a result of the severe winters of the last few years. The sale of Pfeiffer's Foods to third parties substantially reduced the company's interests in the foods sector.

Organon Inc. went through the preliminaries for the introduction of EIA (Enzyme Immuno Assay) systems; chemical testing of an *antidepressant (GB 94)* has begun. Further introduction of single use thermometers (*Tempa-DOT®*) progressed satisfactorily.

#### Rest of the world

In *Latin America*, the earnings total of the man-made fiber operations was about on the 1976 level. Enka de Colombia (Akzo participation 49%) experienced another good year and will expand polyester textile filament capacity. Enkador (49%) emerged from the start-up phase. In Argentina, Hilanderías Olmos (40%) remains under government supervision. Both Polyenka (51%) in

\* by area of origin

\*\* at December 31





Salt from International Salt's Detroit mine is shipped in barges from Detroit to ports on the Great Lakes.



Shinto priest leads "Kikoshiki" ceremony preparatory to the start of work on a monochloroacetic acid plant of Denak K.K. at Omi (Japan). Denak is a 50/50 joint venture of Denki Kagaku Kogyo and Akzo Zout Chemie.

Brazil and Fibras Químicas (40%) in Mexico chalked up quite creditable results given the recessionary developments in those countries. COBAFI (45%) is scheduled to commence production of nylon yarns and fabrics for auto tires in 1978.

Our chemical interests in Latin America are for the most part based in Brazil. CIRNE solar salt company (99%) and Montesano coatings company (100%) both had a good year. CIRNE is taking up the raising of shrimp; initial results are encouraging.

Our other interests in the rest of the world are mainly located in Africa and in Japan. In a number of north and west African countries our coatings companies, owned jointly with local partners, have an attractive share of the growing market. In Nigeria, Nichemtex Industries (29%), producers of textiles and textile raw materials, brought on stream a facility for the production of polyester staple fibers. Work was begun on the construction of a produc-

tion unit for polyester textile filament yarns.

Century Enka (39%), an Indian-based producer of man-made fibers, made satisfactory progress, despite a strike which halted production. The polyamide textile filament capacity expansion will be completed in the first half of 1978.

In Japan, where we have chemical and pharmaceutical interests, the scope of operations was broadened in joint projects with Japanese companies. These projects relate to monochloroacetic acid, for which a new plant is being built with Denki Kagaku Kogyo, and to surfactants for the detergents industry, in which field we cooperate with Lion Fat & Oil.

Arnhem, March 29, 1978

the board of management

# Management

March, 1978

Akzo N.V. is the Group's holding company with direct and indirect participations in a number of companies. Together they constitute the Akzo group.

## 32 Board of management of Akzo N.V.

The board of management is the highest executive body in the Akzo group.

The executive committee is a part of the board of management and is composed of the president and the three deputy presidents, viz G. Kraijenhoff, and A.G. van den Bos, H.J. Schlange-Schöninghen and J.A. Wolhoff.

It is the business of the executive committee to set the course of the Group as a whole and to direct its operations. In principle, this does not entail direct operational or functional tasks and responsibilities. However, there does exist a division of work among the members, which is also based on geographical policy aspects.

Three members of the board of management bear the responsibility for a number of functional areas.

H. Kramers	research and development, engineering, environmental and safety affairs, patents
H.J. Kruisinga	financial, accounting and fiscal policies, automation affairs, internal auditing
A.A. Loudon	social policy, public affairs, organization, legal affairs, insurance, pensions

The following board members are in charge of operational units of the Group (product divisions):

H. van Doodewaerd	Akzo Consumenten Produkten
A. van Driel	Akzo Coatings
J. Veldman	Akzo Pharma
H.J.J. van der Werf	Akzo Zout Chemie
H.G. Zempelin	Enka

M.D. Westermann, president of Akzo Chemie, will be nominated for appointment to the Akzo board of management as a member.

The secretary of the board of management is A.H.M. Wentholt.

Acting as adviser to the board of management is W.K.N. Schmelzer, specifically in relation to international affairs and issues of a general social nature.

## Central staff departments

The management of the Akzo group is assisted by a number of staff departments based at Arnhem. These departments report to the members of the board of management charged with functional control; departments marked with an asterisk (\*) report to the executive committee.

### Officers

M.W. Arts	Internal Auditing
S. Bergsma	Financial Affairs
Mrs. M.A. van Damme-van Weele	Chemical Development*
A.M. van Haastrecht	Organization
T. Herrema	Personnel Affairs; Public Affairs
C. Hoek	Legal Affairs
H.S. Jongepier	Environmental and Safety Affairs
J.K.G. Meijnen	Insurance Affairs
H.W. Muzerie	Group Development*
O.H. Nijman	Fiscal Affairs
R.J. Ovezall	Accounting and Management Information
P.J.S.Th. Stehouwer	Research and Development
T.M. Tieleman	Economic Affairs and Planning*
A.W. Zijlker	Computer Affairs

### Other staff officers

B. Klaverstijn	Information
E.W. Meier	International Relations

### Akzo Engineering

J.R. Eppenga

**Managements of divisions in which Akzo N.V. holds an interest of 95% or more**
*Enka*

H.G. Zempelin                    president  
 J.R. Hutter                        deputy president  
 H.G. Karus  
 H. Stöhr  
 G. Tückmantel  
 J. Verhaar

A. Bendziula  
 D. Sorgdrager

A distinct unit of Enka is

*Enka International*

H.G. Karus                        president  
 G.G. Cerutti  
 S. Minnema  
 A.F.J.C. Zillikens

*Akzo Zout Chemie*

H.J.J. van der Werf            president  
 J.H. Dijkema  
 G.H.W. Meeder

*Akzo Chemie*

M.D. Westermann            president  
 J.C.P. van Oosterom

M.E. Hartman  
 D.B. Kagenaar  
 P.W. Pfeiffer  
 H.A. Praetorius

*Akzo Coatings*

A. van Driel                      president  
 R. de Bonneval  
 O. Daum  
 C.P.B. Littooy  
 W.L.W. Ludekens  
 C. Zaal

*Akzo Pharma*

J. Veldman                        president  
 J.H.H. Florax  
 C.P. Spoel

B.H. van Dommelen  
 H.M. Schut  
 F.L. Vekemans  
 A.G. Vermeeren

*Akzo Consumenten Produkten*

H. van Doodewaerd            president  
 W.P. Boerma  
 M.A. Hoolboom  
 P.B. van Hulst  
 H.B. Jacobs  
 A.M. van der Linden  
 J.E.H. Sikkink

**Managements of national organizations**
*Akzo Nederland*

W.J. Wolff                         president

*Akzo België*

C. Vlug                             president

*Akzo Ltda, Brazil*

J.M. Hessels                      president

*Mercator Internationaal, Japan*

T.A. Townsend                  managing director

## The broad spectrum of Akzo Coatings

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Say paint, and you say color. Colors in an almost endless variety that we of Akzo Coatings make. Some five thousand of them in automotive refinishes. Over six hundred in house paints and Do-It-Yourself (DIY) paints. And that is only counting the standard colors whose recipes are known and which are either available from stock or can be rapidly prepared by means of the color mixing machine or in the plants' color matching departments. Add to this the colors made to measure for a single customer, for a single project, sometimes in several

thousands of liters and sometimes in only a few hundred.

And let us not forget the rich spectrum of artists' colors we produce for creative people, both young and old.

All in all many thousands of colors.

Paint is color; paint is also change in color - in the least time and almost always at the lowest cost.

But paint is more; it is also protection. Protection of wood, iron, steel, and other metals; of brick, of concrete, of plastics. Paint is the skin of things.

In this section we will highlight the exciting aspects of color, and particularly tell the story of how we gained a systematic grip on the seemingly endless variation of colors in terms of hue, saturation and lightness. This is a subject over which we feel legitimate pride, because after years of study we have developed what we think is a convenient and objective system, which considerably simplifies in-house communication about colors and aids our customers in selecting colors.

To start with, however, we will present an outline of the entire paint market and of Akzo Coatings' position in this market.

### The paint market

No precise figure is available for world paint consumption, but presumably it is somewhere between 16 and 18 million metric tons per annum. The Common Market accounts for roughly a quarter of this figure, the East bloc likewise, and the United States possibly a bit more. This leaves a quarter for all other countries together.

It is not surprising that per capita consumption in the developing countries is much lower than in the more advanced economies, but differences between industrialized countries can also be large. Thus, annual consumption in the Netherlands is approximately 12.5 kg. This is low in comparison with West Germany with its highly developed industry (just think of the automotive industry), where consumption is approximately 20 kg; and it is likewise low in comparison with Sweden and Norway with their many wooden houses, where it is well over 20 kg. In the United States, where both features are in evidence, per capita paint consumption is also in excess of 20 kg; in Japan, on the other hand, it is only about 11 kg.

In the industrialized countries, there are on the whole no significant differences between consumption and production; this also holds good for major exporters like the Netherlands and West Germany, which have substantial imports as well. It is true, however, that the ratio of exports to production is nowhere higher than in the Netherlands.

Prior to the Second World War the paint industry was, in outlook and methods, a trade rather than a true industry. Laboratories were rare, and manufacturing operations were simple and highly labor-intensive. After 1945, however, there have been a good many changes. Research and development became increasingly important. As a consequence, a few paint companies who were leaders in this respect grew rapidly, mergers were effected to share the heavy burden of research and, eventually, the major chemical companies began to be interested in the paint industry.

In the last few years the big paint groups have all, or

nearly all, been incorporated in the chemical industry. A new era has thus been ushered in.

Yet there are still a number of medium-sized paint producers and a multitude of small to very small ones (more than one thousand in the Common Market area alone). With few exceptions, they operate within a limited geographical area and almost all of them are specialized in paints for house painting contractors or for small-scale industry. For large industries, such as auto manufacturing, they lack adequate research backing, while for the market of automotive refinishes and DIY paints they also lack the requisite distribution system.

### Position of Akzo Coatings

What is Akzo Coatings' position in this market?

As a result of the merger in 1969/70 of the Sikkens (the Netherlands), Lesonal (West Germany) and Astral (France) paint groups, all having their affiliates, and as a result of later internationalization, Akzo Coatings now embraces 28 manufacturing operations in 14 countries. In all of these countries Akzo Coatings is among the major companies, and is a regular supplier to nearly all local auto manufacturers. With regard to auto refinishes, which are also being exported in quantity, we have a position of leadership in many countries. House paints and DIY paints are further important items in our range of products. In the area of industrial coatings, we concentrate on a number of specialized categories of customers who demand compliance with high standards.

With the support of a strong research function, Akzo Coatings is in the forefront of developments in the field of paints. Over 800 people are employed in our laboratories – that is to say, more than 10% of the total work force of 8,000 for whom paint is their livelihood. Aggregate 1977 sales of consolidated and non-consolidated companies stood at more than Hfl 1,000 million.

Some of Akzo Coatings' principal brand and company names are:

Netherlands	<i>Sikkens, Alpha, Flexa, Valspar, Ceta-bever, Talens, Synthese (synthetic resins);</i>
West Germany	<i>Lesonal, Sikkens;</i>
Belgium	<i>Sikkens, Astral;</i>
France	<i>Astral, Lefranc, Sikkens;</i>
Italy	<i>Vercolac, Sikkens, Linvea;</i>
Spain	<i>Ivanow;</i>
Brazil	<i>Montesano;</i>
Argentina	<i>Miluz;</i>
Africa	<i>Astral, Lefranc.</i>

The high volume of laboratory work on paints is explained by the fact that paints are required to do so many different jobs. The standards for the paint a home handyman uses on a wall are totally unlike the ones for a finish supplied to an auto manufacturer. Airplane coatings are vastly different from washing machine coatings. These and many other uses each make their own specific demands. Added to this there is the variation in drying methods (in the air, by stoving, by various irradiation techniques, etc.) and ways of applying the paint (by brush, various types of spraying units, rolls, immersion, etc.). The result is a great abundance of possibilities, from which in each individual case the optimum solution must be selected.

In the last few years the call for non-polluting and energy-saving products has added to the complexity. Paint manufacture has long ceased to be a matter of blending and mixing a limited number of raw materials, as it used to be prior to the Second World War. The number of raw materials has been expanded dramatically and synthetic resins, in particular, are so prominent today that a group such as Akzo Coatings could not exist without synthetic resin research.

Such research is, in fact, undertaken at several places in the group. Our Synthese facility also supplies synthetic resins to non-captive users; one of its specialties is resins for the printing ink industry.

Our research used to be largely supporting, involving frequent contacts with production and customers, but in late years it has increasingly acquired a more fundamental orientation. There is close cooperation with Akzo Corporate Research. Such cooperation with a large group of scientists provides Akzo Coatings' research function with new and refreshing stimuli.

This has produced (and will produce) new patented paint systems in an industry that, until the Second World War, relied substantially on manual skills and traditional know-how.

Total research costs expressed as a percentage of sales are over 4%.

The differences in job to be done, method of application and market served are reflected in sales approach. The following table contrasts two totally different marketing situations, namely for automotive coatings and for DIY paints.

	automotive industry	DIY outlets
type of paint	to customer's specifications	standard
technological demands (research support)	very high	moderate
advertising cost	very low	high
distribution cost	low	high
labor cost	low	fairly high
customers	a few very big ones	many small ones

### Progress fairly steady

Thanks to its diversified structure in terms of markets and products, and to its wide geographical distribution (both in Europe and elsewhere), Akzo Coatings has achieved a fair measure of stability in its development.

Since 1970, consolidated sales increased an average 9% annually; 1 percentage point of this increase was accounted for by new majority participations.

Although paint consumption is going up, the average rate of growth in the industrialized countries has been modest for a considerable time. In the Common Market, which is far and away the most important market for our coatings, the annual rate of consumption growth ordinarily does not exceed 2 to 3% on an average.

Price competition in the paint industry is keen, especially for product classes that require little or no specific know-how.

If Akzo Coatings is to retain and consolidate its position as a leading producer of coatings, especially in Western Europe, its efforts need to be concentrated on the following objectives:

- Continued rationalization of production and distribution. A fine example in this area are the benefits arising for our paints group from the new color codification system (discussed in the next section).
- A flexible marketing approach that adjusts smoothly to changed distribution patterns and that, in a situation of diminished growth, seeks to tap the potential of customer categories with higher than average growth.
- Development of new or improved paint systems, on the basis of the supporting and innovative contributions of our research, working in close cooperation with Akzo Corporate Research. Primarily concerned with such aspects of coating materials as color, hiding power, and durability, our research today is further expected to afford solutions for market needs in regard to paint systems, such as solvent-free, high-solids and water-thinnable coatings, which combine low environmental impact with high durability.

Akzo Coatings' performance in these areas justifies confidence in its ability to realize a further balanced development of its activities.

### Color range and color definition

As mentioned earlier, we shall devote the next few pages to a discussion of the complex matter of color ranges and, especially, color codification.

In January 1978, a new color range comprising 620 colors was introduced for Europe. Named "2021", it is intended for DIY and house paints, in both high and satin gloss, as well as for wall paints. At a later stage, it will also be used for automotive and other finishes.

This color range is based on trends in what is known as the color market and on current preferences of color users. Its individual colors were coded under the ACC system (for Acoat Color Codification), which was launched at the same time.

The ACC system is a scientific framework permitting definition of specific color ranges designed on the basis of artistic and commercial insights. As a result the 620 colors of the "2021" range do not form a haphazard mixture but a definite system in which anyone can learn to find his way.

The ACC system was developed by our own experts and is the result of several years of study. Every color is assigned a place in the system and is designated by a letter and figure code. The code is helpful in looking for variations on, or contrasts with, a given color. Unambiguous communication about color is possible on the basis of this system.

The system arranges colors by three key characteristics, namely hue, saturation and lightness. It is therefore three-dimensional and can be represented by a spatial model. This model has the form of a cylinder (fig. 1).

The key characteristics of colors, which will be discussed below, are illustrated by means of the pictures on page 38. However, these pictures are not always capable of visualizing all the color variations to be dealt with.

### Hue

Hue is the characteristic that places the color in the spectrum: the continuum of red through orange, yellow, green and blue to dark blue, as in the rainbow. In between dark blue and red, the violet and purple shades are to be found that are not a part of the spectrum; they complete the circle, from red to red. This is why the ACC system arranges the colors by hue in a circle.

The circle (fig. 2) is divided into 24 segments that are each designated by a letter. Each segment is subdivided into 10 zones indexed 0 through 9.

In reality, of course, colors shade off into one another. It is not as if the spectrum, on passing a given code (say H7), suddenly changes color. For practical purposes, however, a division into 240 segments already has a high degree of refinement. Internally, Akzo Coatings employs an even more refined system in which each of the 240 subsegments is divided into a further 10 zones; the gradations are then so slight that they are hardly perceptible.

### Saturation

The visual perception of a color is not determined by hue alone: saturation and lightness also play a part.

A color may be grayer or more intense. The more intense a color is, the more it "hits your eye". Intensity corresponds with degree of saturation.

To illustrate this concept, let us take a color of segment F6 – a color in the yellow area. If we cut a wedge from the cylinder at this place, we get a view of the inside of the segment (fig. 3). Outward from the axis of the cylinder the color increases in intensity, until it reaches maximum saturation on the outside of the cylinder. The degree of saturation is accordingly defined by the distance to the axis of the cylinder and expressed as a number on a scale from 00 through 99. The higher the number, the greater the intensity. In point of fact, saturation also increases by imperceptible degrees, and again the internal code is more refined in having a third digit.

As one approaches the axis of the cylinder, the color as it were fades from the color. On the axis, therefore, we find the "colors" that have no observable hue, namely white, all shades of gray, and black.

Colors in the various segments that have the same distance to the neutral color axis agree in saturation: they are of equal intensity.

### Lightness

A color can vary from light to dark. This is the third key characteristic in the ACC system: lightness. Lightness, too, is stated by means of color codes from 00 through 99. Black, the minimum lightness, is coded 00; at the other extreme of the scale is white, coded 99.

On the wedge F6 that we removed from the cylinder the lightness scale runs from top to bottom. The point where the cylinder axis intersects the base is perfectly black; the point where the axis intersects the top is perfectly white. The axis itself holds the shades of gray: mixtures of white and black. The degree of lightness inside a segment differs with height. A horizontal slice from the cylinder therefore contains colors of like lightness but different hue (varying with place on the circumference of the circle) and different intensity (varying with distance to the axis).

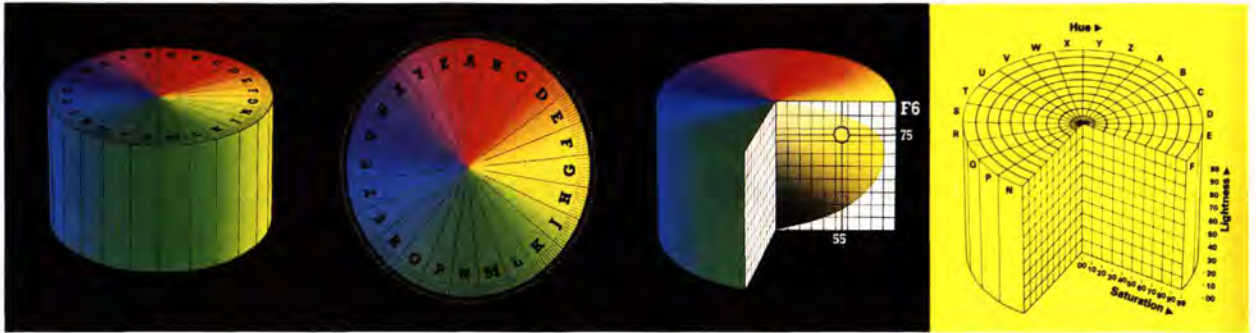


fig. 1

fig. 2

fig. 3

fig. 4

### Coding

Based on its place in the system every color is assigned its own code, e.g. L6.50.80. This is a color in the green area (L6) of medium saturation (50) and high lightness (80). An attractive feature of the system is that the code label itself yields information on the sort of color it describes. Thus code A0 designates a shade of red that is closer to the Z-area than to the B-area; it is therefore a shade of red that tends toward the blue. A little further on one finds, for instance, B4; this is still in the red area, but the color now tends more to the yellow: it is an orange-tinted red. In this way the code can be a guide through the color circle. Within a given color area, it further helps locate colors of a higher or lower saturation or lightness (fig. 4).

Neutral colors (the grays on the cylinder axis) have no discernible hue and obviously cannot be coded for this factor. The problem is solved by assigning to them the letter combination ON. A further consequence of neutrality is that the degree of saturation is nil: 00. A shade of gray halfway between black and white is therefore labeled ON.00.50.

Virtually neutral colors in which it is nevertheless possible to discern a trace of real color are coded with the letter of the segment plus the letter N. Saturation in such a case is very low: 02. Thus code TN.02.80 defines a very light gray with a suggestion of blue.

It should be noted that not every codable color can be realized. For example, a color with a very high lightness (near-white) cannot also have a high saturation. A code such as A6.95.95 does not have reference to an existing color: such places in the system are vacant. Not the entire cylinder is filled with color, only a more or less oval solid inside it, the ends of which coincide with the black point and the white point (fig. 3).

### Selecting colors with the ACC system

The ACC system was developed with two ends in view: first, to define colors and facilitate discussion within our internal organization (Laboratory, Production, Sales) and, secondly, to help our customers (architects, painting contractors, home handymen) find their way about the world of colors.

The recommended procedure in coordinating colors is first to select a specific area from the color circle. Once that choice has been made (say F6, yellow, or L0, green) it is possible, while staying within that color, to make combinations differing in saturation, or in lightness, or in both. If only saturation is varied, or only lightness, the colors selected will be fairly close to one another. If, on the other hand, both saturation and lightness are varied, the colors may come to be far apart. Yet the combinations will always produce the tone-on-tone effect, because the limits of the color segment are at no time exceeded.

That they are not exceeded is a natural consequence of the choice of a specific code (F6, L0, or whatever the starting point was). Especially when saturation or lightness is low, it can be difficult to judge the precise color on the basis of a small sample. On large areas, however, deviations are plain enough. When due care is taken to ensure that the code for hue is the same, mismatches are impossible.

If it is desired to make a combination of colors from several segments instead of tone-on-tone, the code is also helpful. Maximum contrast of hue is obtained by choosing from segments that are directly opposite in the color circle, say D and R. For a lower contrast, colors should be selected that are not so far apart. In exploiting variations in hue, the tension generated by the contrast can be kept down through selection of colors possessing the same saturation and lightness. Contrarily, the tension is heightened when saturation or lightness, or both, are also varied.



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## Colorimetry and visual impression

Color systemization is nothing new. In the course of time dozens of systems have been designed in an attempt, attended with varying success, to classify colors and give them labels. Some of the better-known systems are Ostwald's, Munsell's, DIN, and RAL. Nearly all color systems are three-dimensional; for their spatial representation spheres, cones, cubes or other, less regular, solids are used.

Why, then, did Akzo Coatings not adopt one of the existing systems, instead of developing a new one? Because we made two demands of the new system: first, the place any color has in it, and therefore the code, must be capable of being objectively established by measurement, and secondly the code must be acceptable in visual terms. In other words: the result of the physical measurement should agree with people's color perception. None of the existing systems fulfills these conditions. The much-used Munsell system arranges the colors by visual interpretation but has insufficient support of objective measurement. Other systems offer an objective classification of colors which, however, it is difficult for the human eye to recognize; thus colors in such a system may visually have the same degree of saturation, yet be coded quite differently.

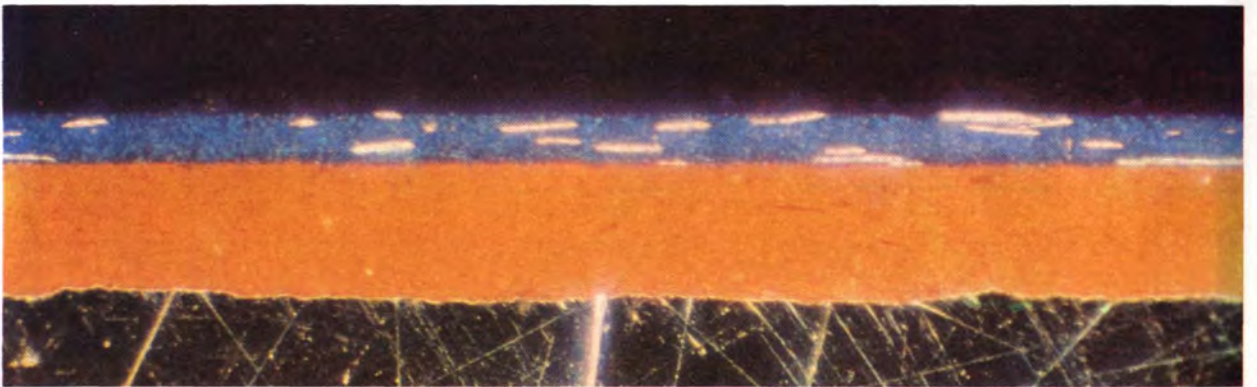
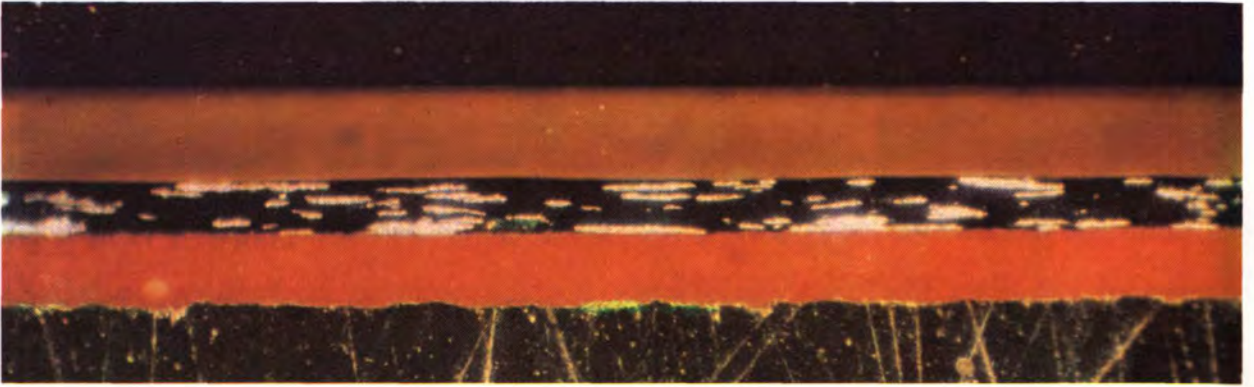
This is how the Acoat Color Codification system came into

being. The system is based, for one thing, on objective colorimetric procedures laid down in generally accepted standards and, for another, on a method developed by our own experts for the correction of colorimetric data so that the code assigned to a color is felt to be in accordance with what is perceived. This is not a matter of arbitrary judgement but of a precise conversion defined in strict formulas. To facilitate conversion a computer program was developed. Since measurement and calculation procedures are fully standardized, all Akzo Coatings laboratories are able at any time to assign any color its exact place in the system.

### Universality

The system's precision makes it easier in all respects to keep a firm grasp on the subject of color, which is so important to a paint industry. Communication about color is less liable to misunderstandings, records are easier to keep. Production-wise, recipes can now be filed with reference to the ACC code; this should help reduce the number of occasions when a recipe for a specific color has to be reinvented. Duplication of effort is thus less likely.

These benefits arise from the fact that the ACC system is universal – that is to say, not confined to a given product. Not even to paints: anything that has color can be defined and classified by means of the ACC system.



*Akzo Coatings developed a two-layer system for metallic-type auto refinishes. The metallic coat, which dries physically, is covered by a clear acrylic base layer. Because of its "closed" nature after curing, this two-component product retains its full gloss. The two photos were taken by means of an electron microscope and are a good illustration of the structures of the two-layer system (upper photo) and of the single layer system (lower photo).*

*Layers are identified from top to bottom.*

*Upper photo: air, acrylic base colorless, acrylic base MM metallic, primer, metal.*

*Lower photo: air, acrylic base MM metallic, primer, metal.*

### Principles of consolidation

The consolidated financial statements include Akzo N.V. and all companies in which Akzo N.V. or any of its majority subsidiaries has an interest, directly or indirectly, of more than 50% of the outstanding voting stock. 100% of the assets, the liabilities and the results of the consolidated companies are included. Minority interest in Group equity and in Group income (loss) is shown separately.

The principal affiliated companies are listed on page 60 and following. A list of names and registered offices of affiliates, drawn up in conformity with article 2:320, paragraph 2, and using paragraph 3, subpara a, of the Dutch Civil Code, has been filed at the Trade Registry of Arnhem.

### Principles of valuation and determination of income

The valuation principles for property, plant and equipment, investments in non-consolidated companies, other non-current assets, inventories, securities included in cash and marketable securities, and provisions are stated separately in the notes to the consolidated balance sheet.

Receivables, cash and liabilities are stated at face amounts, less such provisions for receivables as are deemed necessary. The parts of long-term receivables and long-term debt becoming due within one year are included under short-term receivables and other current liabilities, respectively.

Discount on borrowings is included under prepaid expenses and is charged against income over the period elapsing until maturity of the borrowings.

Preparation and start-up expenses of large investment projects are capitalized\* and charged against income, in five equal annual installments, after the facilities concerned have been put into service.

Other intangible assets, which include exploitation rights, are not capitalized; they are charged against operating income.

Purchased goodwill is charged directly against Group equity.

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In the consolidated balance sheet, amounts in foreign currencies have been translated into guilders at rates virtually equal to the rates of exchange in force at year's end, except for the U.S. dollar convertible debentures, whose valuation in guilders is based on a rate of U.S. \$ 1 = Hfl 3.60. In the consolidated statement of income, foreign currencies have been translated into guilders at rates of exchange fixed for each quarter as typical of the rates then applicable.

Foreign exchange differences are included in operating income, except for foreign exchange differences resulting from translation into guilders, at changed exchange rates, of stockholders' equities of companies outside the Netherlands; the latter differences are directly added to, or deducted from, Group equity.

### Effect of price rises on Group equity and income

The principles of valuation and determination of income used in the consolidated financial statements shown on pages 42 through 49 are based on historical cost. The effect of price rises on Group equity and income is shown on pages 50 and 51.

### Net income (loss) per share of common stock

Net income per share of common stock is calculated by dividing net income (less the part thereof distributed in the form of dividends on priority and cumulative preferred stock and the bonuses to the members of the supervisory council) by the number of shares of common stock outstanding at December 31.

Net loss per share of common stock is calculated by dividing net loss by the number of shares of common stock outstanding at December 31.

\* For a better insight into the Group's business, these expenses were capitalized for the first time in the 1977 financial statements. This added Hfl 15 million to 1977 net income and Hfl 22 million to stockholders' equity at December 31, 1977. Capitalizations in 1977 almost entirely concern investment projects of non-consolidated companies.

## Consolidated balance sheet of the Akzo group

after allocation of loss; see notes on pages 45 through 48

42 in Hfl million	December 31, 1977	December 31, 1976
<b>non-current assets</b>		
property, plant and equipment	3,576.4	3,904.0
investments in non-consolidated companies	321.1	288.0
other non-current assets	<u>147.9</u>	<u>162.5</u>
	4,045.4	4,354.5
<b>current assets</b>		
inventories	1,920.4	1,949.1
short-term receivables	1,882.3	1,787.4
prepaid expenses	59.7	58.7
cash and marketable securities	<u>579.9</u>	<u>610.6</u>
	4,442.3	4,405.8
<b>total assets</b>	<b>8,487.7</b>	<b>8,760.3</b>
<b>Group equity</b>		
Akzo N.V. stockholders' equity	2,324.6	2,628.1
minority interest in Group equity	<u>414.6</u>	<u>485.6</u>
	2,739.2	3,113.7
<b>long-term liabilities</b>		
provisions	1,038.6	942.6
long-term debt	<u>2,496.1</u>	<u>2,625.7</u>
	3,534.7	3,568.3
<b>current liabilities</b>		
bank borrowings and overdrafts	347.3	310.0
other current liabilities	<u>1,866.5</u>	<u>1,768.3</u>
	2,213.8	2,078.3
<b>total Group equity and liabilities</b>	<b>8,487.7</b>	<b>8,760.3</b>

# Consolidated statement of income of the Akzo group

see notes on pages 48 and 49

in Hfl million	1977	1976	43
sales	10,433.2	10,749.8	
operating costs			
salaries, wages and social charges	(3,276.9)	(3,277.2)	
depreciation	(493.9)	(533.1)	
other costs	<u>(6,422.7)</u>	<u>(6,634.7)</u>	
	<u>(10,193.5)</u>	<u>(10,445.0)</u>	
operating income	239.7	304.8	
interest	<u>(245.2)</u>	<u>(249.4)</u>	
	(5.5)	55.4	
taxes on operating income less interest	<u>(64.9)</u>	<u>(58.5)</u>	
	(70.4)	(3.1)	
equity in earnings of non-consolidated companies	<u>34.7</u>	<u>24.2</u>	
Group income (loss) before extraordinary items	(35.7)	21.1	
extraordinary items	<u>(122.4)</u>	<u>(166.9)</u>	
Group income (loss)	(158.1)	(145.8)	
of which minority interest	(8.4)	(7.0)	
Akzo N.V. net income (loss)	(166.5)	(152.8)	
net income (loss) before extraordinary items	(51.9)	5.8	
extraordinary items	(122.4)	(166.9)	
of which minority interest	<u>7.8</u>	<u>8.3</u>	
	<u>(114.6)</u>	<u>(158.6)</u>	
Akzo N.V. net income (loss)	(166.5)	(152.8)	
net income (loss) before extraordinary items, per share of common stock, par value Hfl 20 per share, in Hfl	(1.75)	0.20	
net income (loss) per share of common stock, par value Hfl 20 per share, in Hfl	(5.63)	(5.16)	

# Consolidated statement of changes in financial position of the Akzo group

see notes on page 49

44	in Hfl million	1977	1976
	working capital (excess of current assets over current liabilities) at January 1	2,327	2,441
	<b>source of funds</b>		
	Group income (loss)	(158)	(146)
	charges to income not requiring funds:		
	depreciation	494	533
	disposal of property, plant and equipment*	90	151
	provisions	62	(51)
	retained earnings of non-consolidated companies	(6)	(4)
	sundries	57	20
		<u>697</u>	<u>649</u>
	funds from operations	539	503
	disposal of participations	36	40
	borrowings	289	496
	issuance of stock by Group companies	2	1
		<u>327</u>	<u>537</u>
		866	1,040
	<b>application of funds</b>		
	expenditures for property, plant and equipment	409	413
	new participations	33	11
	working capital of new participations	(24)	(3)
		9	8
	investments in non-consolidated companies	51	42
	other non-current assets	(12)	41
		<u>457</u>	<u>504</u>
	repayment of borrowings	408	446
	dividends paid to minority stockholders of Group companies	20	18
	miscellaneous	80	186
		<u>965</u>	<u>1,154</u>
	working capital at December 31	2,228	2,327
	changes in current assets:		
	inventories	(29)	(164)
	short-term receivables	95	(118)
	prepaid expenses	1	8
	cash and marketable securities	(31)	72
		<u>36</u>	<u>(202)</u>
	changes in current liabilities:		
	bank overdrafts	37	2
	other current liabilities	98	(90)
		<u>135</u>	<u>(88)</u>
	change in working capital	<u>(99)</u>	<u>(114)</u>

\* including change in provision for additional write-downs

# Notes to the consolidated financial statements of the Akzo group

## Consolidated balance sheet

### Changes in consolidated companies

Edet AB, Sweden, and Ferenka Ltd, Irish Republic, were no longer consolidated in the balance sheet at December 31, 1977, while R.E.T.I. S.A., France, was included in this balance sheet. There were no other material changes in consolidation in 1977.

### Property, plant and equipment

Land is stated at cost with a revaluation, however, at January 1,

1969, of approximately Hfl 70 million for land acquired long ago. Other property, plant and equipment are stated at cost, less depreciation. Depreciation is calculated by the straight-line method based on estimated life. In cases where the book value calculated in this way exceeded the value to the business, additional write-offs were made. Furthermore, a provision of Hfl 105 million was deducted from the book value to cover additional write-downs, especially in the man-made fiber sector. The table below shows the changes in 1977.

45

in Hfl million	total	land	buildings	plant equip- ment and machinery	means of transport	assets not used in the production process
<b>cost of acquisition</b>						
situation at December 31, 1976	9,770.7	220.3	2,001.3	7,187.5	120.0	241.6
acquisition and disposal of consolidated companies	(229.4)	(0.1)	(33.8)	(178.7)	(5.7)	(11.1)
capital expenditures	409.0	2.2	47.2	342.6	14.4	2.6
disposals	(346.9)	(6.7)	(23.8)	(256.7)	(18.5)	(41.2)
foreign exchange differences	(152.7)	(2.6)	(40.0)	(109.3)	(1.9)	1.1
other changes	52.3	0.1	(0.3)	(18.4)	0.7	70.2
situation at December 31, 1977	9,503.0	213.2	1,950.6	6,967.0	109.0	263.2
<b>book value</b>						
situation at December 31, 1976	3,979.0*	220.3	1,125.6	2,521.1	39.1	72.9
acquisition and disposal of consolidated companies	(74.1)	(0.1)	(5.4)	(63.0)	(1.1)	(4.5)
capital expenditures	409.0	2.2	47.2	342.6	14.4	2.6
disposals	(59.7)	(6.7)	(15.8)	(25.0)	(4.7)	(7.5)
depreciation	(493.9)		(65.5)	(406.1)	(12.7)	(9.6)
foreign exchange differences	(104.8)	(2.6)	(28.7)	(73.6)	(0.8)	0.9
other changes	25.9	0.1	10.4	(1.2)	0.4	16.2
	3,681.4	213.2	1,067.8	2,294.8	34.6	71.0
provision for additional write-downs	(105.0)					
situation at December 31, 1977	3,576.4					

projects under construction, included in cost of acquisition and book value:

at December 31, 1976  
at December 31, 1977

254.4  
234.1

purchase commitments (not included in consolidated balance sheet):

at December 31, 1976  
at December 31, 1977

128.4  
143.7

\* before deduction of the provision for additional write-downs in the amount of Hfl 75 million

**Investments in non-consolidated companies**

This item includes the non-consolidated companies and the loans to these companies. Investments in non-consolidated companies are stated at the amount of Akzo's share in stockholders' equity, less provisions in the amount of Hfl 6 million (December 31, 1976: Hfl 7 million).

The calculation of stockholders' equity has been based as much as possible on the Akzo principles of valuation.

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
raw materials and supplies	622.5	653.6
work in process	463.3	467.2
finished goods	834.6	828.3
	1,920.4	1,949.1

**Short-term receivables**

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
trade receivables	1,766.9	1,716.1
receivables from non-consolidated companies	76.9	42.4
other receivables	322.9	301.9
	2,166.7	2,060.4
of which discounted	284.4	273.0
	1,882.3	1,787.4

46

in Hfl million	
situation at December 31, 1976	263.7
changes in participation equity in 1977 earnings	48.4
dividends received	43.9
foreign exchange differences	(38.1)
other changes	(26.2)
	9.8
situation at December 31, 1977	301.5
loans at December 31, 1977 (at December 31, 1976: 24.3)	19.6
	321.1

**Other non-current assets**

This item includes mainly long-term receivables (less Hfl 35 million for discounted receivables) and other assets that are not directly realizable. The latter are stated at cost or estimated value, whichever was lower.

**Inventories**

Inventories are stated at the lower of cost or net realizable value. The cost of inventories has been accounted for using the FIFO formula. Provisions have been made for obsolescence and other risks.

In the valuation of inventories, profits arising as a result of transactions between consolidated companies have been eliminated.

**Prepaid expenses**

This item includes Hfl 10 million in respect of discount on borrowings (at December 31, 1976: Hfl 11 million).

**Cash and marketable securities**

With few exceptions, securities included in this item are listed on stock exchanges. They are stated at cost or market value, whichever was lower.

The securities include 83,750 shares of Akzo N.V. common stock, which are stated at market value at December 31, 1977.

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
securities	43.0	61.7
short-term investments	379.0	397.5
cash on hand and in banks	157.9	151.4
	579.9	610.6

**Group equity**

in Hfl million	capital stock	capital surplus, paid in	other reserves	stockholders' equity	minority interest	Group equity
situation at December 31, 1976	592.7	658.0	1,377.4*	2,628.1	485.6	3,113.7
issuance of stock of Group companies to third parties					1.7	1.7
goodwill resulting from acquisitions of companies			(12.3)	(12.3)	0.1	(12.2)
1977 Group loss			(166.5)	(166.5)	8.4	(158.1)
dividends paid to minority stockholders of Group companies					(19.8)	(19.8)
change in exchange rates			(90.9)	(90.9)	(40.6)	(131.5)
other changes			(33.8)	(33.8)	(20.8)	(54.6)**
situation at December 31, 1977	592.7	658.0	1,073.9	2,324.6	414.6	2,739.2

At least Hfl 210 million of the capital surplus, paid in (at December 31, 1976: Hfl 210 million) can be considered free from income tax within the meaning of the Dutch 1964 Income Tax Law (Wet op de Inkomstenbelasting 1964).

\* sum of retained earnings in the amount of Hfl 1,369.6 million and other reserves in the amount of Hfl 7.8 million

\*\* other changes include additions in the amount of Hfl 60 million to provisions for deferred taxes due to changed rates of taxation



## Provisions

This item comprises provisions which do not refer to specific assets.

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
deferred taxes	372.4	336.3
pension rights	313.3	298.5
other provisions	352.9	307.8
	1,038.6	942.6

### Provisions for deferred taxes

This item comprises the tax liabilities, less the part expected to be settled in 1978. These liabilities have not been discounted to present value.

See also the notes to Group equity (page 46) and to taxes on income (page 49).

### Provisions in respect of pension rights

With due observance of the statutory regulations and customs in the countries concerned, most Group companies have arranged appropriate pension schemes for their employees.

The present value of the ensuing liabilities is largely covered by:

- provisions, in the aggregate amount of Hfl 313 million, made by Group companies in their balance sheets;
- the funds accumulated in independent pension funds through payment of contributions.

The present value of the pension benefits not yet covered is approximately Hfl 195 million (at December 31, 1976: approximately Hfl 190 million).

### Other provisions

This item includes provisions for liabilities whose extent cannot be ascertained with accuracy, and provisions for various operating risks. The amounts of the provisions are fixed in relation to the liabilities and risks concerned.

The principal provisions are for rationalization of activities and total Hfl 173 million (1976: Hfl 162 million). Hfl 138 million of this amount relates to actions completed or currently being implemented and Hfl 35 million to actions under preparation.

## Long-term debt

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
convertible debentures	252.0	252.0
other debentures	599.5	595.6
private borrowings	1,691.8	1,840.3
installment buying and leasing arrangements	49.8	51.7
other long-term debts	196.7	207.5
	2,789.8	2,947.1
current portion of long-term debt	293.7	321.4
	2,496.1	2,625.7

Private borrowings and other long-term debts have been secured to an aggregate amount of Hfl 391 million (at December 31, 1976: Hfl 411 million) by means of mortgages, etc. The average interest rate of the debentures and private borrowings is 7.9% (1976: 7.9%).

The aggregate maturities of the other debentures and private borrowings are as follows:

in 1978	Hfl 219 million
during the years 1979 through 1983	Hfl 1,179 million
during the years 1984 through 1988	Hfl 611 million
after 1988	Hfl 282 million
	<u>Hfl 2,291 million</u>

The breakdown by country of the other debentures and private borrowings is shown in the following table.

in Hfl million	situation at		situation at	
	Dec. 31, 1976	increase	decrease*	Dec. 31, 1977
Group companies in:				
the Netherlands	1,458.1	86.5	188.9	1,355.7
West Germany	257.8	20.1	49.0	228.9
United States	461.2	70.7	97.5	434.4
other countries	258.8	75.5	62.0	272.3
	2,435.9	252.8	397.4	2,291.3

\* including the effect of changes in exchange rates

### Convertible debentures

in Hfl million

U.S. \$ 70 million principal amount of 4<sup>3</sup>/<sub>4</sub>% debentures Akzo N.V. 1969 convertible into Akzo N.V. common stock. These debentures mature not later than 1989.

The conversion price is Hfl 127.10 per share of Hfl 20 par value, based on an exchange rate of U.S. \$ 1 = Hfl 3.60. The valuation of these debentures in guilders is based on the same exchange rate. Repayment at par occurs in 10 equal annual installments, which will become due in the years 1980 through 1989. Full or partial repayment before maturity is permitted.

This borrowing includes the debentures held available for exchange of the remaining 4<sup>3</sup>/<sub>4</sub>% convertible debentures Zout-Organon B.V. of U.S. \$ 1,000 each; 63 of these debentures have not been exchanged.

252.0

### Other debentures

in Hfl million

Currently outstanding principal amount of 4<sup>1</sup>/<sub>2</sub>% debentures Akzo N.V. 1962. These debentures are payable in 13 equal annual installments, the first of which became due on July 1, 1968.

Redemption before maturity is permitted.

4.1

Sfr 50 million principal amount of 5<sup>1</sup>/<sub>2</sub>% debentures Akzo N.V. 1967. These debentures are payable in 5 equal annual installments, the first of which will become due on July 31, 1978.

Redemption before maturity is permitted.

56.9

Sfr 60 million principal amount of 6<sup>3</sup>/<sub>4</sub>% debentures Akzo N.V. 1970. These debentures are payable in 6 equal annual installments, the first of which will become due on September 15, 1980.

Redemption before maturity is permitted.

68.2

to be carried forward

129.2

carried forward

Currently outstanding principal amount of 11<sup>1</sup>/<sub>4</sub>% debentures Akzo N.V. 1974. These debentures are payable in 10 approximately equal annual installments, the first of which became due on November 1, 1975.

Redemption before maturity is not permitted.

Sfr 60 million principal amount of 7<sup>3</sup>/<sub>4</sub>% debentures Akzo N.V. 1975. These debentures will be repaid in 7 annual installments of Sfr 2 million each in the years 1979 through 1985 and in 4 annual installments of Sfr 4 million each in the years 1986 through 1989. The remaining principal amount will be payable at May 9, 1990.

Redemption before maturity is permitted as from May 9, 1981.

Hfl 125 million principal amount 9<sup>1</sup>/<sub>4</sub>% debentures Akzo N.V. 1976. These debentures are payable in 5 approximately equal annual installments, the first of which will become due on July 15, 1982.

Redemption before maturity is not permitted.

Profit-sharing employee debentures Akzo N.V.

Total other debentures Akzo N.V.

Currently outstanding principal amount of 6% debentures Koninklijke Zout-Ketjen 1965. These debentures are payable in 10 equal annual installments, the first of which became due on December 1, 1971.

Redemption before maturity is permitted through 1979.

Currently outstanding principal amount of 4<sup>1</sup>/<sub>2</sub>% debentures Akzo Pharma B.V. 1961. These debentures are payable in 15 annual installments of Hfl 1 million each, in the years 1967 through 1981.

Redemption before maturity is permitted.

Other debentures issued by consolidated companies

#### Other current liabilities

in Hfl million	Dec. 31, 1977	Dec. 31, 1976
suppliers	701.0	703.5
non-consolidated companies	36.1	25.0
taxes on income*	22.8	37.4
current portion of long-term debt	293.7	321.4
pensions	3.1	3.5
other liabilities and accrued charges	809.8	677.5
	1,866.5	1,768.3

\* less tax receivables of Hfl 16 million (at December 31, 1976: Hfl 25 million)

#### Liabilities not shown in the balance sheet

With regard to non-consolidated companies and third parties, guarantees were given and liabilities contracted to an aggregate

129.2 amount of Hfl 345 million (at December 31, 1976: Hfl 351 million), of which Hfl 222 million (at December 31, 1976: Hfl 235 million) direct by Akzo N.V.

In respect of leasehold, rent, etc., liabilities have been contracted for a number of years to an amount of approximately Hfl 30 million (at December 31, 1976: approximately Hfl 30 million) per year.

52.5

#### Consolidated statement of income

##### Sales

This item includes the total of amounts invoiced to third parties in respect of goods supplied and services rendered, less sales taxes and excise duties.

in Hfl million	1977	1976
man-made fibers	3,598	3,804
chemical products	3,896	3,724
pharmaceuticals, consumer products and miscellaneous products	2,939	3,222
	10,433	10,750

##### Depreciation

in Hfl million	1977	1976
buildings	65.5	67.8
plant equipment and machinery	406.1	443.4
means of transport	12.7	15.8
assets not used in the production process	9.6	6.1
	493.9	533.1

For the method of calculation of depreciation, see page 45.

##### Operating income (loss)

in Hfl million	1977	1976
man-made fibers	(109)	(142)
chemical products	137	182
pharmaceuticals, consumer products and miscellaneous products	212	265
	240	305

Due to exchange losses on long-term borrowings in foreign currencies, operating income was reduced approximately Hfl 44 million in 1977 and approximately Hfl 6 million in 1976.

##### Interest

in Hfl million	1977	1976
interest paid	302.3	310.0
interest received, including income from securities, etc.	57.1	60.6
	245.2	249.4

## Taxes on income

The taxes on earnings included in this item comprise current and deferred tax liabilities. From the losses incurred, taxes have been deducted to the extent that they can be offset against taxes charged to income in previous years. As a consequence, no deduction for taxes could be made in respect of losses in the amount of approximately Hfl 310 million (1976: Hfl 250 million, and 1975: Hfl 290 million).

The taxes included in the statement of income break down as follows:

in Hfl million	1977	1976
taxes on operating income less interest	64.9	58.5
taxes on equity in earnings of non-consolidated companies	11.6	12.5
taxes included in extraordinary items	(14.1)	(1.1)
	62.4	69.9

## Equity in earnings of non-consolidated companies

Under this heading are included the Group's equity in earnings of non-consolidated companies and interest received on loans granted to these companies, taking into account taxes on these items.

## Extraordinary items

This item comprises important but isolated gains and losses not relating to normal operations; the taxes concerned have been taken into account.

See also the note to taxes on income.

in Hfl million	1977	1976
extraordinary gains	5.2	34.1
extraordinary losses	(127.6)	(201.0)
	(122.4)	(166.9)

The principal extraordinary losses in 1977 relate to the costs of the shutdown of the Ferenka steel cord plant in the Irish Republic and of the flooding of Akzona's manufacturing complex at Enka, North Carolina.

They further include an addition of Hfl 65 million to provisions to meet expenses for rationalization of activities and to cover additional write-downs of property, plant and equipment. Of this amount, Hfl 30 million has been deducted from the book value of property, plant and equipment, while Hfl 35 million has been added to other provisions.

## Consolidated statement of changes in financial position

In addition to the items specifically recognized under source of funds and application of funds, the changes in non-current assets, Group equity and long-term liabilities comprise:

- the effect of consolidation or de-consolidation of existing interests as a result of changes in participation;
- valuation differences arising from translation into guilders of the 1976 and 1977 year-end balance sheet amounts of foreign companies at the rates of exchange in force at December 31 of the years concerned.

The effect of these factors on working capital is accounted for in the item "miscellaneous". In 1977 and 1976, it reduced working capital by Hfl 63 million and Hfl 138 million, respectively.

The statement separately shows funds relating to new participations and disposal of participations.

## Effect of price rises on Group equity and income

50 Because of continued inflation in virtually all countries, the current value of property, plant and equipment and of investments in non-consolidated companies, included in non-current assets, is higher than is shown in the consolidated balance sheet. Hence, Group equity is correspondingly higher.

Operating income and net income are lower if operating costs are determined in relation to current prices. As no generally accepted method is available to show the effects of price rises on Group equity and income, we have calculated these effects in the manner set forth on page 51.

### Condensed consolidated balance sheet

in Hfl million	December 31, 1977		December 31, 1976	
	on the basis of historical cost	on the basis of current value	on the basis of historical cost	on the basis of current value
non-current assets	4,046	5,176	4,354	5,564
current assets	<u>4,442</u>	<u>4,442</u>	<u>4,406</u>	<u>4,406</u>
total assets	8,488	9,618	8,760	9,970
Akzo N.V. stockholders' equity	2,325	2,870	2,628	3,193
minority interest	<u>414</u>	<u>499</u>	<u>486</u>	<u>571</u>
Group equity	2,739	3,369	3,114	3,764
liabilities	<u>5,749</u>	<u>6,249</u>	<u>5,646</u>	<u>6,206</u>
total Group equity and liabilities	8,488	9,618	8,760	9,970

Current value has been calculated at 1977 and 1976 prices, respectively.

### Changes in stockholders' equity

in Hfl million	1977	1976
stockholders' equity on a current-value basis at January 1	3,193	3,585
net loss before extraordinary items	(126)	(125)
goodwill resulting from acquisition of companies	(12)	(4)
increase in value of inventories	17	56
restatement of provisions for deferred taxes	(59)	-
other changes	<u>(143)</u>	<u>(319)</u>
	(323)	(392)
stockholders' equity on a current-value basis at December 31	2,870	3,193

Other changes comprise the extraordinary items, the revaluation of non-current assets, and the effect of changes in exchange rates. On balance, other changes are negative because of high extraordinary losses, because of the valuation at lower value to the business of property, plant and equipment in the man-made fiber sector, and because of depreciations of many foreign currencies against the guilder.

Operating income and Akzo N.V. net income (loss) before extraordinary items	1977		1976	
	operating income	net income (loss) before extraor- dinary items	operating income	net income (loss) before extraor- dinary items
in Hfl million				
income (loss) on the basis of historical cost	240	(52)	305	6
difference between current cost and historical cost in respect of:				
inventories	(36)	(17)	(83)	(56)
depreciation on property, plant and equipment, and equity in earnings of non-consolidated companies	(100)	(57)	(145)	(75)
income (loss) at 1977 and 1976 prices, respectively	104	(126)	77	(125)
<b>Financial ratios</b>				
	on the basis of historical cost	1977 on the basis of current value	on the basis of historical cost	1976 on the basis of current value
Group equity : liabilities	0.48	0.54	0.55	0.61
stockholders' equity per share of common stock, par value Hfl 20 per share, in Hfl	78.52	96.95	88.78	107.87
net income (loss) before extraordinary items:				
per share of common stock, par value Hfl 20 per share, in Hfl	(1.75)	(4.26)	0.20	(4.22)
as percentage of stockholders' equity	(2.2)	(4.4)	0.2	(3.9)
operating income as percentage of sales	2.3	1.0	2.8	0.7

#### Method of calculation

##### Non-current assets

The current value of land has generally been approximated on the basis of appraisals.

To calculate the current value of buildings, machinery and equipment, indexes from external sources in the principal countries of establishment were used. Additionally, a decrease in value as a result of technological advances was taken into account; this decrease was estimated at an average of 1% annually for buildings and of 2% annually for machinery and equipment.

In cases where the current value thus calculated exceeded the value to the business, the latter value was used. As a consequence, buildings, machinery and equipment in Europe for the production of man-made fibers (notably textile fibers) were not revalued at December 31, 1977.

The current values in foreign currencies have been translated into guilders at rates virtually equal to the rates of exchange in force at year's end.

For non-consolidated companies, an overall revaluation was made on the basis of the estimated current value of their property, plant and equipment.

##### Current assets

For inventories, no revaluation was made, as the value shown in the consolidated balance sheet does not differ materially from the current value of inventories.

##### Stockholders' equity

Stockholders' equity on a current-value basis has been determined by adding to stockholders' equity as shown in the consolidated balance sheet, the amount of the revaluation of non-current assets, less the relevant deferred taxes, calculated at an average rate of 50%, and after deduction of minority interest.

##### Operating income

Operating income at current prices has been calculated by deducting from the operating income shown in the consolidated statement of income:

- the inventory profits relating to the normal inventory level;
- the increase in the amount of depreciation, if depreciation is calculated on the current value of property, plant and equipment.

##### Net income

Net income (loss) before extraordinary items, at current prices, has been calculated by adjusting the net income (loss) before extraordinary items shown in the consolidated statement of income so as to take account of:

- the aforementioned inventory profits and the increase in depreciation, less the relevant taxes and minority interest;
- the effect of the increase in depreciation on property, plant and equipment on equity in earnings of non-consolidated companies.

# Akzo N.V. balance sheet

after allocation of loss; see notes on page 54

52 in Hfl million	December 31, 1977	December 31, 1976
affiliated companies		
consolidated companies	2,623.6	2,859.6
non-consolidated companies	44.4	99.5
loans to affiliated companies	<u>1,347.7</u>	<u>865.8</u>
	4,015.7	3,824.9
short-term receivables and prepaid expenses		
receivables from affiliated companies	38.1	200.3
other receivables	15.3	52.2
prepaid expenses	<u>13.7</u>	<u>15.6</u>
	67.1	268.1
cash and marketable securities		
marketable securities	2.1	2.4
short-term investments	296.0	337.7
cash on hand and in banks	<u>16.8</u>	<u>37.3</u>
	314.9	377.4
<b>total assets</b>	<b>4,397.7</b>	<b>4,470.4</b>
stockholders' equity		
common stock	591.9	591.9
cumulative preferred stock	0.8	0.8
priority stock	0.0	0.0
capital stock	<u>592.7</u>	<u>592.7</u>
capital surplus, paid in	658.0	658.0
other reserves	<u>1,073.9</u>	<u>1,377.4*</u>
	2,324.6	2,628.1
borrowings		
convertible debentures	252.0	252.0
other debentures	378.0	365.0
private borrowings	830.7	890.8
borrowings from affiliated companies	<u>456.2</u>	<u>224.9</u>
	1,916.9	1,732.7
current liabilities		
amounts due to affiliated companies	38.4	60.9
other liabilities and accrued charges	<u>117.8</u>	<u>48.7</u>
	156.2	109.6
<b>total stockholders' equity and debts</b>	<b>4,397.7</b>	<b>4,470.4</b>

\* sum of retained earnings in the amount of Hfl 1,369.6 million and other reserves in the amount of Hfl 7.8 million

# Akzo N.V. statement of income

see notes on page 54

in Hfl million	1977	1976	53
net income (loss) before extraordinary items	(51.9)	5.8	
extraordinary items	<u>(114.6)</u>	<u>(158.6)</u>	
net income (loss)	(166.5)	(152.8)	

The 1977 net loss has been charged against reserves.

Arnhem, March 29, 1978

the board of management:

G. Kraijenhoff  
A.G. van den Bos  
H.J. Schlange-Schöningen  
J.A. Wolhoff  
H. van Doodewaerd  
A. van Driel  
H. Kramers  
H.J. Kruisinga  
A.A. Loudon  
J. Veldman  
H.J.J. van der Werf  
H.G. Zempelin

the supervisory council:

J.R.M. van den Brink  
Y. Scholten  
S.C. Bakkenist  
P.M.H. van Boven  
H.L. Merkle  
K. Schudel-van Zwanenberg  
W.F.G.L. Starrenburg  
F.H. Ulrich  
L. Vaubel  
J. de Vries  
O. Wolff von Amerongen

# Notes to Akzo N.V. balance sheet and statement of income

## 54 General

The investments in affiliated companies, as well as the other assets and liabilities, have been valued, and income has been determined, in accordance with the principles of valuation and determination of income mentioned on page 41. Thus stockholders' equity and net income (loss) are equal to stockholders' equity and net income (loss) as shown in the consolidated financial statements on pages 42 and 43.

### Non-consolidated companies

in Hfl million

situation at December 31, 1976	99.5
changes in participation	(44.9)
equity in 1977 earnings	9.7
dividends received	(4.6)
foreign exchange differences	(5.9)
other changes	(9.4)
<hr/>	
situation at December 31, 1977	44.4

### Capital stock

Authorized capital stock of Akzo N.V. is Hfl 1,030,048,000 and consists of 48 shares of priority stock, par value Hfl 1,000 per share; 30,000 shares of cumulative preferred stock, par value Hfl 1,000 per share; and 50 million shares of common stock, par value Hfl 20 per share.

Outstanding capital stock consists of 48 shares of priority stock, 760 shares of cumulative preferred stock, and 29,593,586 shares of common stock (of which 81,832 shares of common stock are held by the company).

The priority stock is held by "Akzostichting" (Akzo Foundation), which is controlled by the members of the supervisory council and the board of management. The meeting of holders of priority stock has the right to draw up binding lists of nominees for appointment to the supervisory council and the board of management.

The accrued and unpaid dividends on the priority and cumulative preferred stock for the years 1975 through 1977 total Hfl 145,440.

### Borrowings

For information on the convertible and other debentures, see the notes to the consolidated financial statements (pages 47 and 48). Interest on private borrowings averages 8.7% (1976: 8.7%).

The repayment schedule for the private borrowings is as follows:

in 1978	Hfl 75 million
during the years 1979 through 1983	Hfl 508 million
during the years 1984 through 1988	Hfl 229 million
after 1988	Hfl 19 million
	<hr/>
	Hfl 831 million

Borrowings from affiliated companies have no fixed repayment schedule.

### Remuneration of supervisory council

For 1977, the members of the supervisory council were paid a total of Hfl 215,625 (1976: Hfl 239,792), which consisted entirely of fixed remuneration.

All members receive a remuneration.

At end-1977, the council numbered 11 members (end-1976: 12).

## Auditors' report

We have examined the foregoing 1977 financial statements of Akzo N.V., Arnhem. For the purpose of our examination we also have made use of the reports of other independent auditors with respect to a number of subsidiaries.

In our opinion, these financial statements present fairly the financial position of Akzo N.V. at December 31, 1977, and the results of operations for the year then ended.

Arnhem, March 29, 1978

Klynveld Kraayenhof & Co.



## Nine-year financial review

The figures set forth below are based on historical cost;  
for figures based on current value, see page 57

consolidated balance sheet at year's end	1977	1976	1975	1974	1973*	1972*	1971	1970*	1969	55
in Hfl million										
property, plant and equipment	3,577	3,904	4,396	4,322	4,235	4,250	4,274	4,280	3,745	
investments in non-consolidated companies	321	288	307	285	282	341	335	306	315	
other non-current assets	148	162	125	175	155	130	140	143	124	
non-current assets	4,046	4,354	4,828	4,782	4,672	4,721	4,749	4,729	4,184	
inventories	1,920	1,949	2,113	2,562	1,641	1,615	1,664	1,581	1,458	
short-term receivables	1,882	1,787	1,906	1,831	1,954	1,728	1,590	1,563	1,369	
prepaid expenses	60	59	51	56	52	54	56	61	38	
cash and marketable securities	580	611	539	524	840	645	616	493	656	
current assets	4,442	4,406	4,609	4,973	4,487	4,042	3,926	3,698	3,521	
total assets	8,488	8,760	9,437	9,755	9,159	8,763	8,675	8,427	7,705	
capital stock	593	593	593	593	562	542	542	521	514	
capital surplus, paid in	658	658	658	658	689	710	710	730	703	
other reserves**	1,074	1,377	1,733	2,223	2,036	1,813	1,740	1,867	1,764	
stockholders' equity	2,325	2,628	2,984	3,474	3,287	3,065	2,992	3,118	2,981	
minority interest in Group equity	414	486	541	565	573	570	610	536	503	
Group equity	2,739	3,114	3,525	4,039	3,860	3,635	3,602	3,654	3,484	
provisions	1,039	942	1,052	958	991	809	725	857	809	
long-term debt	2,496	2,626	2,693	2,124	2,047	2,407	2,402	2,198	1,729	
long-term liabilities	3,535	3,568	3,745	3,082	3,038	3,216	3,127	3,055	2,538	
bank borrowings and overdrafts	347	310	308	410	162	223	273	270	237	
other current liabilities	1,867	1,768	1,859	2,224	2,099	1,689	1,673	1,448	1,446	
current liabilities	2,214	2,078	2,167	2,634	2,261	1,912	1,946	1,718	1,683	
total Group equity and liabilities	8,488	8,760	9,437	9,755	9,159	8,763	8,675	8,427	7,705	
invested capital***:										
of consolidated companies	5,953	6,394	6,963	6,836	6,616	6,510	6,394	6,403	5,707	
in non-consolidated companies	321	288	307	285	282	341	335	306	315	
total	6,274	6,682	7,270	7,121	6,898	6,851	6,729	6,709	6,022	
property, plant and equipment										
capital expenditures	409	413	745	799	549	555	943	1,035	742	
depreciation	494	533	519	531	540	527	526	472	397	
ratios										
sales : invested capital	1.75	1.68	1.40	1.57	1.42	1.26	1.26	1.13	1.12	
Group equity : liabilities	0.48	0.55	0.60	0.71	0.73	0.71	0.71	0.77	0.83	
Group equity : non-current assets	0.68	0.72	0.73	0.84	0.83	0.77	0.76	0.77	0.83	
current assets : current liabilities	2.01	2.12	2.13	1.89	1.98	2.11	2.02	2.15	2.09	
development of stockholders' equity, 1969-1977 (in Hfl million)	1969-1977	1977	1976	1975	1969-1974					
stockholders' equity at January 1	2,519	2,628	2,984	3,474	2,519					
issuance of stock, including capital surplus	405				405					
stock dividends	208				208					
retained earnings	297	(166)	(153)	(440)	1,056					
goodwill resulting from acquisitions of companies	(427)	(12)	(4)	(27)	(384)					
change in exchange rates	(596)	(91)	(213)	(48)	(244)					
other changes	(81)	(34)	14	25	(86)					
stockholders' equity at December 31	2,325	2,325	2,628	2,984	3,474					

\* based on cash dividend

\*\*\* Group equity plus long-term liabilities

\*\* sum of retained earnings and other reserves

## consolidated statement of income

	1977	1976	1975	1974	1973	1972	1971	1970	1969
in Hfl million									
sales	10,433	10,750	9,717	10,761	9,418	8,235	8,056	7,249	6,366
salaries, wages and social charges	(3,277)	(3,277)	(3,109)	(3,144)	(2,764)	(2,478)	(2,354)	(2,073)	(1,670)
depreciation	(494)	(533)	(519)	(531)	(540)	(527)	(526)	(472)	(397)
other costs	(6,422)	(6,635)	(6,106)	(6,314)	(5,350)	(4,645)	(4,535)	(4,064)	(3,498)
operating income (loss)	240	305	(17)	772	764	585	641	640	801
interest	(245)	(249)	(234)	(147)	(147)	(172)	(165)	(112)	(61)
taxes on operating income less interest	(65)	(59)	58	(226)	(283)	(181)	(238)	(259)	(375)
equity in earnings of non-consolidated companies	34	24	13	42	42	29	23	31	28
Group income (loss) before extraordinary items	(36)	21	(180)	441	376	261	261	300	393
extraordinary items	(122)	(167)	(253)	8	(3)	7	4	19	(5)
Group income (loss)	(158)	(146)	(433)	449	373	268	265	319	388
of which minority interest	(8)	(7)	(7)	(69)	(82)	(51)	(56)	(58)	(64)
net income (loss)	(166)	(153)	(440)	380	291	217	209	261	324
profit available for allocation	—	—	—	210	241	188	184	241	308
distributed income	—	—	—	118	107*	97*	98	104*	102
common stock, in thousands of shares of Hfl 20 par value	29,594	29,594	29,594	29,594	28,062	26,989	26,989	25,958	25,590
number of employees	84,400	91,100	98,200	105,400	105,800	101,000	104,500	100,800	100,300
per share of common stock, par value Hfl 20 per share, in Hfl									
net income (loss) before extraordinary items	(1.75)	0.20	(6.53)	12.55	10.48	7.70	7.62	9.22	12.80
net income (loss) after extraordinary items	(5.63)	(5.16)	(14.86)	12.83	10.37	8.02	7.72	10.01	12.65
profit available for allocation	—	—	—	7.08	8.59	6.94	6.81	9.24	12.02
dividend	—	—	—	4.00	3.80	3.60	3.60	4.00	4.00
of which, at stockholder's option, in common stock					2.60	2.40		2.80	
number of shares entitling holder to one new share					18	25		25	
stockholders' equity	78.52	88.78	100.80	117.36	117.08	113.49	110.78	120.06	116.40
ratios									
operating income (loss) as percentage of sales	2.3	2.8	(0.2)	7.2	8.1	7.1	8.0	8.8	12.6
personnel costs as percentage of sales	31.4	30.5	32.0	29.2	29.3	30.1	29.2	28.6	26.2
net income (loss) before extraordinary items, as percentage of stockholders' equity	(2.2)	0.2	(6.5)	10.7	9.0	6.8	6.9	7.7	11.0
net income (loss) after extraordinary items, as percentage of stockholders' equity	(7.2)	(5.8)	(14.7)	10.9	8.9	7.1	7.0	8.4	10.9

\* of which Hfl 35 million (1973), Hfl 33 million (1972) and Hfl 32 million (1970) in cash

<b>consolidated statement of changes in financial position</b>	1977	1976	1975	1974	57
<i>in Hfl million</i>					
working capital (excess of current assets over current liabilities) at January 1	2,327	2,441	2,339	2,226	
<b>source of funds</b>					
funds from operations	539	503	370	1,024	
borrowings	289	496	826	422	
funds retained through payment of Akzo N.V. final 1973 dividend in stock				72	
miscellaneous	38	41	17	20	
	<u>866</u>	<u>1,040</u>	<u>1,213</u>	<u>1,538</u>	
<b>application of funds</b>					
expenditures for property, plant and equipment	409	413	745	799	
new participations	9	8	44	41	
investments in non-consolidated companies	51	42	48	24	
other non-current assets	(12)	41	(43)	20	
repayment of borrowings	408	446	277	306	
dividends paid to stockholders of Akzo N.V.	—	—	—	118	
miscellaneous	100	204	40	117	
	<u>965</u>	<u>1,154</u>	<u>1,111</u>	<u>1,425</u>	
working capital at December 31	2,228	2,327	2,441	2,339	
<b>changes in current assets:</b>					
inventories	(29)	(164)	(449)	921	
short-term receivables	95	(118)	74	(123)	
prepaid expenses	1	8	(5)	4	
cash and marketable securities	(31)	72	15	(316)	
	<u>36</u>	<u>(202)</u>	<u>(365)</u>	<u>486</u>	
<b>changes in current liabilities:</b>					
bank overdrafts	37	2	(102)	248	
other current liabilities	98	(90)	(365)	125	
	<u>135</u>	<u>(88)</u>	<u>(467)</u>	<u>373</u>	
change in working capital	<u>(99)</u>	<u>(114)</u>	<u>102</u>	<u>113</u>	
<b>figures on a current-value basis</b>					
Group equity, in Hfl million	3,369	3,764	4,225	4,559	
stockholders' equity, in Hfl million	2,870	3,193	3,585	3,928	
Group equity : liabilities	0.54	0.61	0.64	0.74	
stockholders' equity, per share of common stock of Hfl 20, in Hfl	96.95	107.87	121.14	132.73	
<b>operating income (loss)</b>					
in Hfl million	104	77	(315)	402	
as percentage of sales	1.0	0.7	(3.2)	3.7	
<b>net income (loss) before extraordinary items</b>					
in Hfl million	(126)	(125)	(342)	211	
per share of common stock of Hfl 20, in Hfl	(4.26)	(4.22)	(11.56)	7.13	
as percentage of stockholders' equity	(4.4)	(3.9)	(9.5)	5.4	

58	main product group statistics*	1977	1976	1975	1974	1973	1972	1971	1970	1969
	in Hfl million									
	<i>man-made fibers</i>									
	sales to third parties									
	textile uses	2,592	2,834	2,880	3,386	3,497	3,060	3,069	2,851	2,746
	industrial uses	1,006	970	827	1,142	901	738	771	710	580
	total	<u>3,598</u>	<u>3,804</u>	<u>3,707</u>	<u>4,528</u>	<u>4,398</u>	<u>3,798</u>	<u>3,840</u>	<u>3,561</u>	<u>3,326</u>
	operating income (loss)	(109)	(142)	(326)	223	390	231	371	325	549
	as percentage of sales	(3.0)	(3.7)	(8.8)	4.9	8.9	6.1	9.7	9.1	16.5
	<i>chemical products</i>									
	sales to third parties									
	salt and heavy chemicals	1,776	1,722	1,428	1,653	1,204	1,147	1,030	973	627
	specialty chemicals	1,146	1,061	824	991	753	645	622	403	315
	coatings	974	941	836	772	638	575	535	524	340
	total	<u>3,896</u>	<u>3,724</u>	<u>3,088</u>	<u>3,416</u>	<u>2,595</u>	<u>2,367</u>	<u>2,187</u>	<u>1,900</u>	<u>1,282</u>
	operating income	137	182	80	317	168	172	136	201	152
	as percentage of sales	3.5	4.9	2.6	9.3	6.5	7.3	6.2	10.6	11.9
	<i>pharmaceuticals, consumer products and miscellaneous products</i>									
	sales to third parties									
	pharmaceuticals	1,095	1,071	971	819	706	624	579	471	374
	consumer products	605	789	779	679	539	490	502	596	747
	miscellaneous products	1,239	1,362	1,172	1,319	1,180	956	948	721	637
	total	<u>2,939</u>	<u>3,222</u>	<u>2,922</u>	<u>2,817</u>	<u>2,425</u>	<u>2,070</u>	<u>2,029</u>	<u>1,788</u>	<u>1,758</u>
	operating income	212	265	229	232	206	182	134	114	100
	as percentage of sales	7.2	8.2	7.8	8.2	8.5	8.8	6.6	6.4	5.7

\* consolidated companies

geographical statistics*	1977	1976	1975	1974	1973
in Hfl million					
<i>EEC countries</i>					
sales by area of destination					
the Netherlands	1,284	1,295	1,218	1,302	1,126
West Germany	1,932	2,056	1,939	2,115	1,925
other EEC countries	2,143	2,198	2,020	2,229	1,904
total	5,359	5,549	5,177	5,646	4,955
sales by area of origin					
the Netherlands	3,585	3,706	3,237	3,554	2,903
West Germany	2,658	2,727	2,547	2,819	2,520
other EEC countries	1,055	1,003	994	1,124	1,093
total	7,298	7,436	6,778	7,497	6,516
invested capital					
the Netherlands	2,156	2,497	2,417	2,268	2,235
West Germany	1,653	1,588	1,761	1,856	1,811
other EEC countries	393	262	503	595	593
total	4,202	4,347	4,681	4,719	4,639
number of employees					
the Netherlands	25,400	27,600	29,700	30,600	29,700
West Germany	21,800	23,800	26,000	28,800	28,500
other EEC countries	10,000	11,000	13,400	14,700	14,400
total	57,200	62,400	69,100	74,100	72,600
<i>rest of Europe</i>					
sales by area of destination	1,473	1,646	1,432	1,531	1,302
sales by area of origin	561	712	685	691	617
invested capital	263	403	500	475	438
number of employees	6,300	7,600	7,800	8,100	8,200
<i>North America</i>					
sales by area of destination	2,334	2,292	2,018	2,318	2,182
sales by area of origin	2,133	2,147	1,909	2,163	2,008
invested capital	1,289	1,423	1,543	1,392	1,326
number of employees	15,300	15,500	16,100	17,100	20,100
<i>rest of the world</i>					
sales by area of destination	1,267	1,263	1,090	1,266	979
sales by area of origin	441	455	345	410	277
invested capital	199	221	239	250	213
number of employees	5,600	5,600	5,200	6,100	4,900

\* consolidated companies

# Principal companies of the Akzo group

December 31, 1977

60 Percentages of participation are only stated for companies in which Akzo N.V. holds a direct and/or indirect interest of less than 95% in voting stock.

<p><b>Enka, Wuppertal</b></p> <p><i>man-made fibers, plastics, machinery, non-wovens, film, dialysis membranes, various industrial products</i></p> <p>Enka B.V., Arnhem          Akzo Plastics B.V., Arnhem          Enka AG, Wuppertal          Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep          with establishments in Switzerland, U.S.A. and Brazil<sup>a</sup>          Italenka S.p.A., Milan</p> <p>72 - British Enkalon Ltd, Leicester          43<sup>b</sup> - Brand-Rex Ltd, Glenrothes          93 - Erste Österr. Glanzstoff-Fabrik AG, Vienna          58 - La Seda de Barcelona S.A., Barcelona          45 - Cyanenka S.A., Prat de Llobregat          40 - Fibras Químicas S.A., Monterrey          40 - Petroquímica Sudamericana S.A., Buenos Aires          40 - Hilanderías Olmos S.A., Buenos Aires          40 - Hilanderías Beccar S.A., Buenos Aires          51 - Polyenka S.A., Indústria Química e Têxtil, São Paulo          45 - COBAFI Companhia Bahiana de Fibras S.A., Rio de Janeiro          49 - Enka de Colombia S.A., Medellín          49 - Enkador S.A., Quito          39 - Century Enka Ltd, Calcutta          29 - Nichemtex Industries Ltd, Lagos</p> <p><b>Akzo Zout Chemie, Hengelo (O)</b></p> <p><i>salt, chlorine, alkali products, petrochemicals</i></p> <p>Akzo Zout Chemie Nederland B.V., Hengelo          Ned. Soda-industrie B.V., Delfzijl          Zoutchemie Botlek B.V., Rotterdam</p> <p>50 - Methanol Chemie Ned. v.o.f., Delfzijl          35 - Delamine B.V., Delfzijl          Norddeutsche Salinen GmbH, Stade</p> <p>50 - Elektro-Chemie Ibbenb. GmbH, Ibbenbüren          Konezo, div. of Akzo België N.V., Brussels</p> <p>50 - Dansk Salt I/S, PR Mariager          Companhia Industrial do Rio Grande do Norte (CIRNE), Macau</p> <p>50 - Denak K.K., Tokyo          42 - Holland Electro Chemical Industries (Pty) Ltd, Johannesburg</p>	<p><b>W. Germany</b></p> <p>Netherlands          Netherlands          W. Germany          W. Germany          Italy          U.K.          U.K.          Austria          Spain          Spain          Mexico          Argentina          Argentina          Argentina          Brazil          Brazil          Colombia          Ecuador          India          Nigeria</p> <p><b>Netherlands</b></p> <p>Netherlands          Netherlands          Netherlands          Netherlands          W. Germany          W. Germany          Belgium          Belgium          Denmark          Brazil          Japan          South Africa</p>
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<p><b>Akzo Chemie, Amersfoort</b></p> <p><i>process chemicals and additives for industries producing and processing plastics and elastomers; organic chemicals, industrial chemicals</i></p> <p>Akzo Chemie Nederland B.V., Amersfoort</p> <p>60 - Ketjen Carbon B.V., Rotterdam          50 - Cyanamid-Ketjen Katalysator B.V., Amsterdam          Akzo Chemie GmbH, Düren          Woermann Chemische Baustoffe GmbH, Salzkotten</p> <p>67 - Carbosulf Chemische Werke GmbH, Cologne          67 - Rhodanid Chemie GmbH, Cologne          Akzo Chemie, division of Akzo België N.V., Mons</p> <p>50 - Stikstofderivaten N.V., Mons          Akzo Chemie France S.à.r.l., Compiègne          Akzo Chemie Italia S.p.A., Arese          Akzo Chemie U.K. Ltd, London          Interstab Chemicals Inc., N. Brunswick, New Jersey</p> <p>50 - Nippon Ketjen K.K., Tokyo          50 - Kayaku Noury K.K., Tokyo          50 - Japan Interstab K.K., Tokyo          50 - Lion Akzo Co. K.K., Tokyo          50 - Akulu Chemicals (Pty) Ltd, Isithebe</p> <p><b>Akzo Coatings, Amstelveen</b></p> <p><i>paints, stains, synthetic resins, adhesives</i></p> <p>Sikkens B.V., Sassenheim          Kon. Talens B.V., Apeldoorn          Kunsttharsfabr. Synthese B.V., Bergen op Zoom          Deutsche Akzo Coatings GmbH, Stuttgart with establishment in Austria          Akzo Coatings Belgium N.V., Ternat          Astral S.A., Paris          with establishments in Morocco<sup>a</sup>, Tunisia<sup>a</sup>, Senegal<sup>a</sup>, Ivory Coast<sup>a</sup> and Cameroun<sup>a</sup></p> <p>48 - Dacral S.A., Paris          Akzo Coatings Italia S.p.A., Mornago</p> <p>29 - Ivanow S.A., Barcelona          49 - Miluz S.A.I.C.I.F., Buenos Aires          Companhia de Tintas e Vernizes R. Montesano S.A., São Paulo</p> <p>55 - Metropolitan Paint Factory Ltd, Bangkok</p>	<p><b>Netherlands</b></p> <p>Netherlands          Netherlands          Netherlands          W. Germany          W. Germany          W. Germany          Belgium          Belgium          France          Italy          U.K.          U.S.A.          Japan          Japan          Japan          Japan          South Africa</p> <p><b>Netherlands</b></p> <p>Netherlands          Netherlands          Netherlands          Netherlands          W. Germany          W. Germany          Belgium          France          France          Italy          Spain          Argentina          Brazil          Thailand</p>
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<sup>a</sup> participation less than 95%

<sup>b</sup> affiliate of British Enkalon Ltd (60%) and Brand-Rex Co. (40%); total participation of Akzo N.V.: 69%

**Akzo Pharma, Oss****Netherlands**64 – **Akzona Inc., Asheville, North Carolina****U.S.A.***ethical drugs*

(Organon International B.V., Oss),

*hospital supplies and equipment*

(Organon Teknika B.V., Oss),

*non-prescription drugs*

(Chefaro International B.V., Rotterdam),

*raw materials for the pharmaceutical industry*

(Diosynth B.V., Oss),

*veterinary products*

(Intervet International B.V., Boxmeer),

*crop protection products*

(AAgrunol B.V., Groningen)

Sales offices or production plants of one or more of the above companies are established in:

- the Netherlands, West Germany, Belgium, France, Italy, United Kingdom, Republic of Ireland, Denmark, Norway, Sweden, Finland, Switzerland, Spain, Portugal, Greece, Turkey
- Mexico, Argentina, Brazil, Colombia, Ecuador, Venezuela
- Lebanon, Iran<sup>a</sup>, India<sup>a</sup>, Thailand, Indonesia, Philippines, Hong Kong, Japan<sup>a</sup>
- Australia, New Zealand
- Morocco, Zaire, South Africa<sup>a</sup>

**Akzo Consumenten Produkten, The Hague****Netherlands***detergents and cleaning products, health and body-care products, foodstuffs*

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|------|---|-------------|
|      | Kortman & Schulte B.V., Dordrecht                       | Netherlands |
|      | Otarès B.V., Enschede                                   | Netherlands |
| 50 – | Grada Produkten B.V., Amsterdam                         | Netherlands |
|      | Recter B.V., Veenendaal                                 | Netherlands |
|      | Aerofako B.V., Apeldoorn                                | Netherlands |
|      | Kon. Eau de Colognefabriek J.C. Boldoot B.V., Apeldoorn | Netherlands |
|      | Kon. Fabr. T. Duyvis Jz. B.V., Zaanstad                 | Netherlands |
|      | Kortman, division of Akzo België N.V., Brussels         | Belgium     |
| 50 – | Mayolande S.A., Seclin                                  | France      |
|      | A/S Blumøller, Odense                                   | Denmark     |
|      | Tomten A/S, Sandvika                                    | Norway      |

*man-made fibers, salt, specialty chemicals, pharmaceuticals, wire and cable products, leather, foodstuffs, various industrial products*

American Enka Co., Enka, North Carolina

U.S.A.

Armak Co., Chicago, Illinois

U.S.A.

with establishment in Canada

Armira Corp., Sheboygan, Wisconsin

U.S.A.

Brand-Rex Co., Willimantic, Connecticut

U.S.A.

with establishments in United Kingdom<sup>b</sup> and Canada

International Salt Co., Clarks Summit, Pennsylvania

U.S.A.

with establishments in Canada and the Netherlands Antilles

Organon Inc., West Orange, New Jersey

U.S.A.

with establishment in Canada

**Other companies**

- |      |  |             |
|------|--|-------------|
| 33 – | Silenka B.V., Hoogezand (glass fibers)   | Netherlands |
| 19 – | N.V. Verenigde Instrumentenfabrieken Enraf-Nonius, Delft (medical equipment, etc.) | Netherlands |
|      | Akzo Engineering B.V., Arnhem  | Netherlands |
|      | Feldmühle A.G., Rorschach (adhesive tape)  | Switzerland |

