Investor–Handout

Workshop on Bayer's Polymer/Chemical Business Segment

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Polymers/Chemicals workshop

Business group representatives:

Dr. Jürgen Ick, Head of Rubber BG

Dr. Hans-Joachim Kaiser, Head of Polyurethanes BG

Dr. Ulrich Koemm, Head of Coatings & Colorants BG

Dr. Richard Pott, Head of Specialty Products BG

Dr. Martin Wienkenhöver, Head of Basic and Fine Chemicals BG

Dr. Gottfried Zaby, Head of Plastics BG

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Rubber:
Solid Rubber as major business pillar

Total 1999 sales: € 1,857 million + 2 %

by

business unit

	% ms[a]	#
Solid Rubber 63%	13%	①
Rubber Chemicals 15%	18%	②
PolymerLatex[b] 10%	n.a.[d]	n.a.
Rhein Chemie 12%	n.a.	n.a.

region[c]

a) volume sold
b) 50:50 JV with Degussa-Hüls AG
c) by market
d) extremely fragmented market with very small players

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Rubber:
Main products and fields of application

● Solid Rubber: 1.13 million t p.a. ≙ 13% of ww capacity	
– General purpose: BR, SBR 550,000 t p.a. following capacity expansions in Orange and Port Jérôme in ´99	tires
– Special purpose: (X) IIR; CR, NBR, EPDM 580,000 t p.a.	(halogenated) butyl-rubber for “Innerliners” in tires; automotive, electrical and mechanical engineering, construction
– Specialties: Therban HNBR (hydrogenated nitrile rubber), EVM 3,600 t p.a. (+ 3,000 t p.a. from 2000)	heavy duty, heat resistant parts
● Rubber chemicals: – Antioxidants Vulkanox® 30,000 t p.a. – Accelerators Vulkacit®: 24,000 t p.a.	tires, automotive, electrical, shoe, construction, chemical industries
● PolymerLatex: – X-SBR Latex, SBR Latex – Special Latices: CR, NBR, P-SBR, SA	paper, carpets, construction, shoes, tire cords
● Rhein Chemie: – predispersed chemicals and special products, processing agents, waxes for protection against light and ozone	tires, automotive, electrical, construction industries

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Rubber: Tire and automotive industries drive Bayer's rubber business

- Tire and automotive industries generate ≈ 60% of Bayer revenues, not only driven by production of new cars but by replacement of tires (≙ 2/3 of tire market)
- Rubber benefits from Bayer´s good backward integration with most chemical raw materials
- Passing on of higher raw material prices ⇒ currently rising selling prices
- World scale plants in compliance with critical success factor **cost leadership** (commodity character of many rubber businesses)
- Clear # 1 position in the synthetic rubber market :
  8 producers ⇒ 54% market share
- Enhanced revenues in Asia the world's fastest growing market (+ 3.5% in 2000)

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Rubber: Extension of leading position through profitability improvement and new capacities

- Solid Rubber
  - strengthening of global # 1 position in synthetic rubber via capacity expansion (ie. BR/SSBR + 100.000 t p.a.)
  - development of innovative applications of specialties (Therban)
  - cost reduction: closing of NBR production plant in Lev in 2002 and production concentration in EU at La Wantzenau
- Rubber Chemicals
  - strengthening of global # 2 position via capacity expansion: New World scale plant for Vulkanox® HS (15.000 t p.a.)
- Polymer Latex
  - finalization of consolidation of latex production sites
  - cost reduction program in acrylic latices
- Rhein Chemie
  - improve market position in Asia, US and LA, i.e. new plant in China (10.000 t p.a.)
    acquisition of assets of Elastochem Inc. (specialized in the development and production of customized multiple-ingredient dispersions of rubber chemicals)

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Rubber: Acceleration of business dynamic in 2000 through innovations and a growing economy

New developments:

- Improve tire properties to achieve a reduction in fuel consumption with (better wet grip, less abrasion) new rubber grades
- Extension of “intelligent” testing methods to forecast properties of finished rubber articles at early stage of development
- New rubber chemical Vulcuren®, which reduces customer's costs through the use of more efficient machinery usage

Outlook 2000:

- Global rubber consumption + 2,5%
- Global automobile production + 1%
- Acceleration of business growth in Asia to 3.5% p.a.
- Stagnation of raw material prices on high level
- Strong US$
- Sales + 6%
- Earnings on 1999 level

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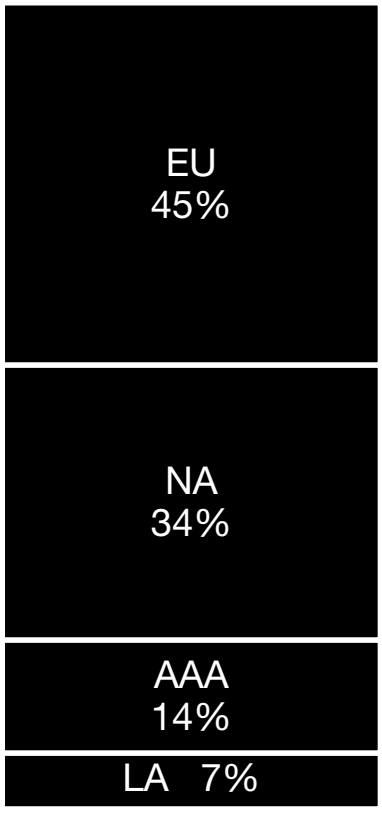
Polyurethanes:
Top market position in most PU-units

Total 1999 sales: € 2,175 million + 5 %

by

business unit	% ms	#
Integral skin foam and Elastomers 24%	25%	①
Flexible foams 24%	14%	③
Construction 23%	26%	①
Automotives 15%	24%	①
Technical Insulation 14%	25%	①

region[a)]



a) point of sales

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Polyurethanes: Lyondell's polyols business complements portfolio

raw material	capacities in 1,000 t		application, customer industry
TDI	EU	160	mainly for flexible foam production furniture, mattresses, elastomers
	NAFTA	230 *	
	ROW	30	
	Total	**420**	
MDI	EU	370	construction, automotive, technical insulations (i.e. refrigerators), appliance industry, wood binders
	NAFTA	310	
	ROW	120	
	Total	**800**	
Polyols		*Lyondell*	reaction partner for MDI, TDI and other diisocyanates for the production of polyurethanes Polyols largely influence the properties of finished PU
		Bayer	
	EU	*230*	
		270	
	NAFTA	*390*	
		130	
	ROW	*80*	
		30	
	Total	***700*** **	
		430	

* including new TDI plant in Baytown, Texas, U.S.
** to be acquired

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Polyurethanes: Solid business platform guarantees long-term growth

- Critical success factors
  - complete supplier
    - Lyondell deal provides full range of PU raw materials, including technical service and R & D
  - production know-how, application technology
    - customer-tailored PU products/systems (combination of raw materials plus application know how)
  - worldwide production and R & D presence
- Market development
  - strong volume growth (p.a. in % through 2010)

raw material	TDI	MDI	Polyols		PU total
	4%	6–7%	5%		
regions	NAFTA 3–4%	EU 2–3%	AAA 10%	LA 3–5%	4–5%

  - prices for PU-raw materials under pressure
  - still regional price structures
  - high market entry barriers for new raw material producers
  - customer globalization and concentration, i.e. purchasing groups
- Bayer's position as a supplier on the world market:
  - clear # 1 for MDI, TDI
  - strong # 2 for polyols following Lyondell deal

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Polyurethanes: Enhancement of leading position through operational efficiency, expansion and innovations

- continuous expansion of cost competitive PU raw material capacities
- establish business in growing markets and new applications through strong local partners; system houses
- TDI
  - increase market share (volume)
  - reduction of production costs via world scale production sites and site consolidation
- MDI
  - defend #1 position
- Polyols
  - product portfolio and site consolidation
  - implementation of IMPACT-technology to complement our own cost efficient technologies
- global product management and improved logistics, supply-chain management
- R&D: new technologies and innovative products, i.e. PU with improved material properties (better flame resistance, improved thermal insolation, part weight reduction)
- cooperation with Lyondell in PO-production (technology, plants)

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Polyurethanes: Strong demand for TDI and MDI as growth drivers for underlying business in 2000

- Further recovery in Asia, continuation on high level in Latin America as well as stable development in key regions EU, NAFTA
- Sales boost from Lyondell acquisition and selling price increases resulting from accelerating demand and global TDI shortage
- OPE impacted by Lyondell integration costs of approx. 50% of total in 2000 and by higher raw material prices

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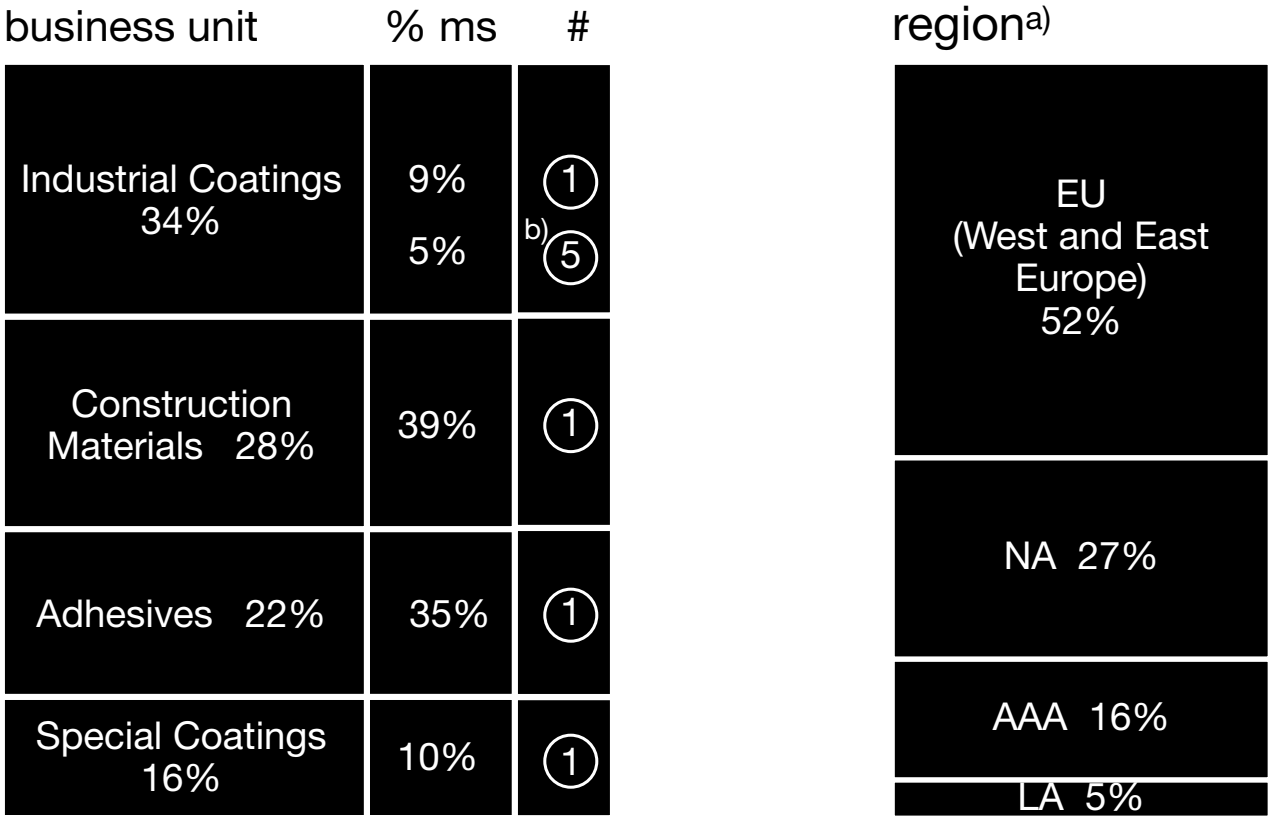
Coatings & Colorants: Bayer is the leading supplier of coating and adhesive raw materials

Total 1999 sales: € 1,729 million + 11 %

by



a) by market
b) colorants

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Coatings & Colorants: Major products and application fields

Industrial Coatings	'99 sales in € million	Δ%	
● Desmodur N	264	(+ 6%)	PU systems for automotive OEM and refinishing, plastic coating
● org. Pigments and Dyes	120	(+1%)	automotive effect-coating plastic coloration
● Desmodur L	74	(+3%)	wood/furniture coating
Adhesive			
● PU-adhesive raw material	151	(+14%)	shoes, packaging industrial sealants
Construction Materials			
● Iron oxides	325	(+8%)	colors and coatings coloration of mortar and concrete

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Coatings & Colorants: Successful with highly profitable product lines in a strong, competitive market

- Secure position in a competitive and **heterogeneous market**
  - Oligopolistic (HDI, aliphatic polyisocyanates)
  - Fragmental (coreactants for polyisocyanates, waterborne resins)

- Compliance with the major critical success factors:
  - **Technology leadership** with strategic products (aliphatic polyisocyanates, PU raw materials for adhesives, iron oxide pigments)
  - **Technical marketing:** extensive technological expertise organized in market-oriented competence centers guarantees product innovation and strengthens long-term customer relationship
  - **Large-scale production** at best cost and **quality** of key intermediates (i.e. HDI, aromatic isocyanates)
  - **Worldwide presence**

- Above market (≈ 3% p.a.) **volume growth of 4–5% p.a.** due to new product lines with focus on innovative technologies (high solids, waterborne resins).

- All operations based on standardized feedstock available worldwide

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Coatings & Colorants: Growth strategy based on innovation and expansion

- Maintain technology leadership via innovative solutions; Research expenditure: 4% p.a.
- Capital expenditure of around 5% p.a. to
  - expand market share with focus on Asia, new production units
- Implementation of e-commerce as a portal for key accounts and additional distribution system

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Coatings & Colorants: Ongoing sales dynamic through 2000

- Volume-driven sales increase of 6 - 7%
  - Lyondell products complement portfolio at weak spots, i.e. polyethers
  - new capacities of HDI (additional 30,000 t p.a. plant under construction, to go on stream ’02)
    aliphatic isocyanates (new plant in China, 8,000 t p.a.)
    polyurethane dispersions (new plants: 5,000 t p.a. in NA, 10,000 t p.a. in Asia)
  - overall accelerating economic environment and further recovery in Asia
- Maintenance of high level operating margin
- Research focus on
  - waterborne resins, high-performance powder systems, new org. dyes and pigments, new continuous-production technology for org. pigments, solvent-free PU coating systems and PU adhesive raw materials
- Capital expenditures mainly for HDI, PU dispersions and iron oxide capacity expansion

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Specialty Products: Revenues evenly balanced over all business units

Total 1999 sales €: 1,149 million + 3 %

by

business unit	% ms[a)]	#[a)]
Leather 26%	14%	1
Textile Auxiliaries 22%	4%	4
Paper 20%	9%	3
Polymer Additives 14%	4%	3
Material Protection 9%	9%	2
Ion Exchange 9%	17%	3

region[b)]

a) based on 1998 figures
b) point of sales

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Specialty Products: Product portfolio benefits from broad application spectrum

Major product families	Applications
● optical brighteners	paper, textiles, detergents
● tanning salts and tanning agents	leather
● leather chemicals	leather
● textile auxiliaries	textiles
● ion exchange resins	water treatment, consumer, chemicals and environmental protection
● plasticizers	polymers
● flame retardants	polymers
● biocides	wood protection, personal care, industrial preservation

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Specialty Products: Business less vulnerable to single-customer industry cycles

- heterogeneous customer structure
  - textile, leather markets fragmented
  - paper market highly concentrated, oligopolistic
- ongoing concentration process with customers and competitors
- diversified product portfolio and broad application field
- customer-tailored products and solutions
- continuous price pressure as a long-term tendency
- business growth shift from NA, EU towards Asia
- growth dynamic of 1–3% annually

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Specialty Products: Business growth based on exploitation of internal potential

- redirection of resources into growth market Asia
- gain market share in Asia in paper chemicals and polymer additives, textile processing and leather chemicals
- optimization of capacity utilization of multi-purpose plants
- further concentration on key accounts
- internal growth based on R&D of around 2.5% p.a. midterm with focus on
  - innovative process technology
  - new dyes for inkjet printing
  - flame protectants for textiles
  - bactericides for industrial preservation
  - enzyme-based textile auxiliaries

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Specialty Products: Favorable prospects for 2000

- Sales growth slightly above market average driven by volume increase
- profit increase higher than sales growth
- new business opportunities through e-commerce projects

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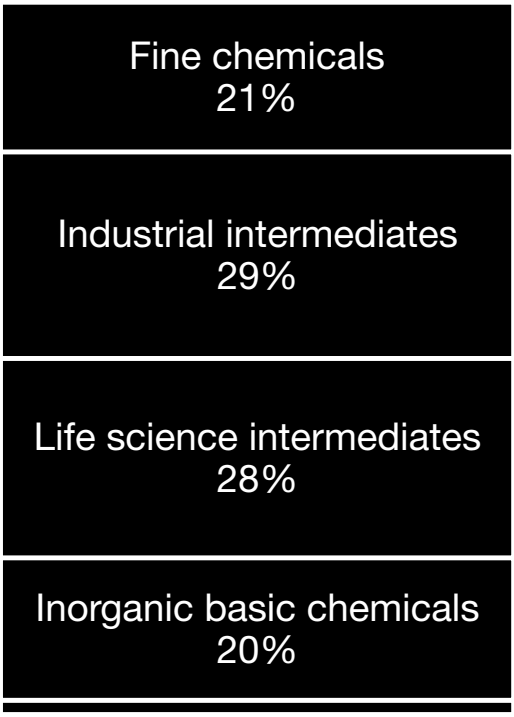
Basic & Fine Chemicals: Sales impacted by stagnating EU market and weak herbicide business worldwide

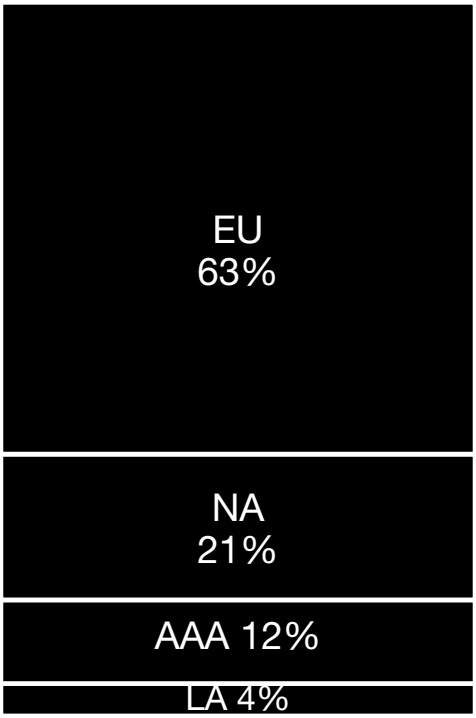
Total 1999 sales: € 884 million – 6 %

by

business unit



region[a)]



a) point of sales

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Basic & Fine Chemicals: Sustained growth and increased profitability by focusing on growing products

Growing products:

- **Life science intermediates:** increase due to Avelox and new contracts with external pharmaceutical companies
- **Biodegradable products:** polyamino acids, chelating agents, i.e. for detergents
- **Products for photovoltaics and electronic chemicals:** strong demand by photovoltaic and chip (electronic) industry
- **Polyols:** trimethylolnepropane, hexandiole, i.e. for coatings industry
- **Nitro toluenes, toluidines:** highly dependent on herbicide development

Declining products:

- **Dyestuff intermediates:** strong competition induced by increasing Asian capacities

Growing customer services

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Basic & Fine Chemicals: Low cyclical nature due to variety of customer industries

- Strong growth in life science intermediate segments (pharma, agro, animal health); one of the leading suppliers of active ingredient intermediates
- electronic chemicals: low volume but high-value products
- functional polymers: biodegradable alternative to polyacrylates
- inorganic basic chemicals: regional business, key industries: chemicals, construction and paper
- technology leadership in the area of basic chemicals
- key strength in research, process development, pilotation and introduction into manufacturing scale
- Short-term supply of chemicals from a few kg to multi-ton quantities without further investments
- experience in managing isomers produced within the “aromatics network”

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Basic & Fine Chemicals: Business strategy concentrates on organic growth

- Ongoing **portfolio management** with focus on core activities oriented around customer demand:
  - products; i.e. dyestuff intermediates are non-core
  - services; key account management
  - existing and future assets and technology (capital expenditure/ divestiture)
- **Globalization** by capital expenditures **in fixed assets**
  - EU, NA: multipurpose capacities (fine chemicals)
  - AA: capacities (fine chemicals, industrial intermediates)
- Diversification of **technology and R&D focus**
  - Synthesis of chiral compounds (i.e. by biotechnology, chiral chromatography)
  - Synthesis by organometallic reactions i.e. hydride reductions
  - Establishment of more facilities for c-GMP production
  - Chlorine production with oxygen-depolarized cathodes
- Organic growth vs growth through acquisitions
- Risc-sharing through strategic alliances

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Basic & Fine Chemicals: Turnaround of top line development in 2000

- 8% increase in external sales driven by revitalization Asia and strong demand for active ingredient intermediates
- Expansion of key account management, i.e. in the field of custom manufacturing
- Establishing of e-commerce → acquisition of shares (ChemMatch, ChemConnect)

  aim: – cost reduction in procurement

  – increase in business
- Strong focus on value generation (value-based management)
- Ongoing price pressure for commodity products
- Situation with dyestuff intermediates remains difficult

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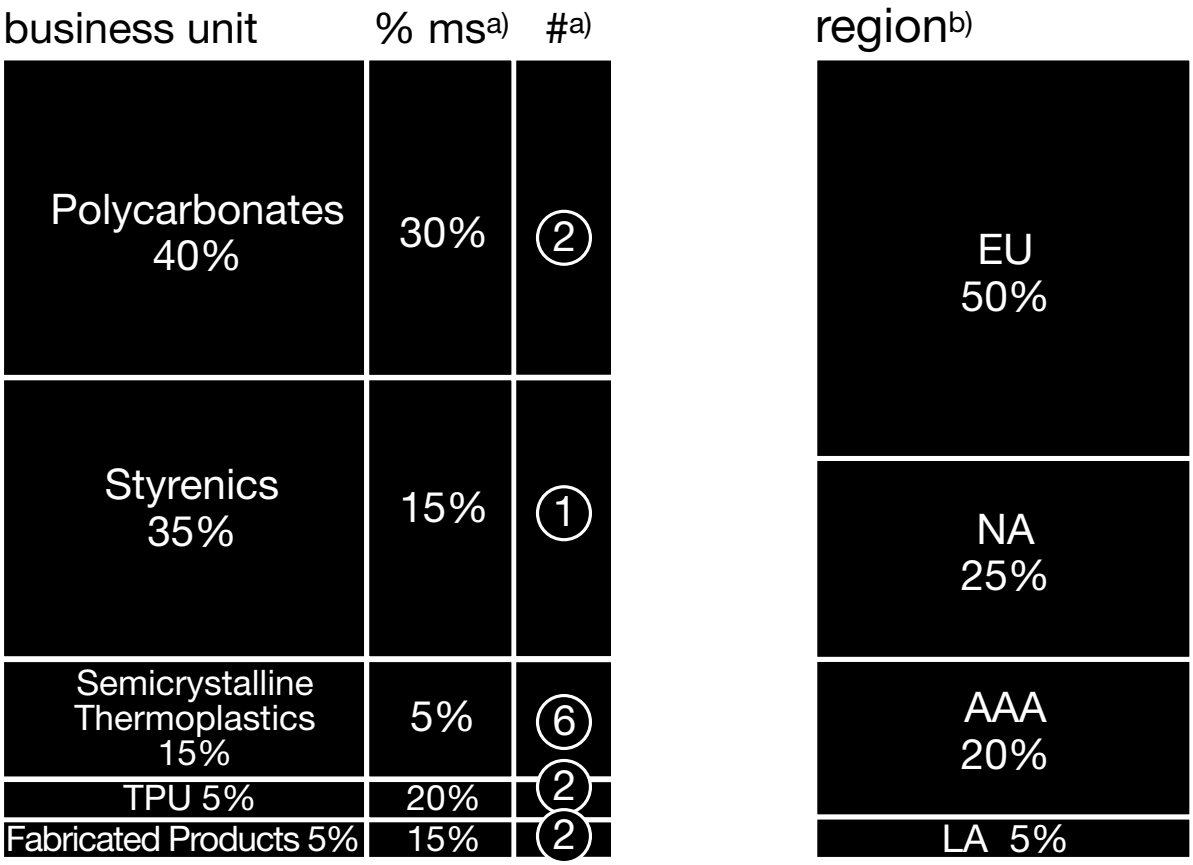
Plastics:
Double-digit sales increase in 1999

Total 1999 sales: € 2.770 million + 10.6 %
by



a) world
b) point of sales

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Plastics: Capacity expansions for our major products are on the way

Major products	**Capacities in 1,000 t p.a.**		**Applications**
	1999	2002 e	
Polycarbonates (Makrolon®)	550	800	automotive, construction, optical media, medical, information technology
Styrenics (Novodur®, Lustran®, Bayblend®)	750	850	automotive, information technology, household
Polyamid (Durethan®)	100	130	automotive, electrical/electronics, tools, household
PBT (Pocan®)	30	>30	automotive, electrical/electronics, tools
TPU (Desmopan®, Texin®)	50	>50	shoe, electrical, construction, automotive
Sheet & film (Makrolon®)	60	90	construction, communication (signage)

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Plastics: Electro/electronics industry as major growth driver

- Leading position in styrenics (ABS, SAN, Bayblend) yields competitive advantage in terms of production costs, marketing synergies and product know-how
- Polycarbonate business benefits from new technologies and application fields driven especially by high-tech electronics industry, i.e. Digital Versatile Disc (DVD)
- Due to extensive product and process know-how, experience and financial strength to expand capacities, Bayer grows well above market rate
- Price declines in 1999 were offset by strong volume growth
- Automotive, electronics and electrical industries account for two thirds of Bayer's plastics business

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Plastics: Realization of internal and external opportunities to strengthen business

- Realization of cost synergy potential for styrenics business (production site consolidation and implementation of process efficiency program) to improve profitability
- Ongoing portfolio management (shift to high-margin/high-growth products)
- Supply chain management
- aggressive growth of our PC business (focus: Far East)
- Active strategic alliances and M&A activities
  - Aquisition of DSM PC sheet business (Sheffield, Axxis) in 1999
  - Aquisition of Laserlite sheet business in 1999
  - JV (Bayer majority) with Röhm to align and strengthen PC sheet activities in EU
  - Swap agreement with Honeywell established local PA 6 resin supply in the US
- R&D expenditures of ≈3% with focus on applications (scratch-resistant surfaces, optical media, plastics/metal hybrid materials for automotive applications) and key processes (Bayer PC melt process to go on stream in 2000)

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Plastics:
2000 and beyond

- Growth above market average based on
  - new applications
  - new markets (segment and geographical)
  - branding
  - e-business initiatives
- Optimization of cost and capital employed
  - world-scale facilities
  - technology leadership in products and processes
  - supply chain management (logistics, e-commerce)

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