



Have it your way

Akzo Nobel Functional Chemicals
Ethylene Amines, Ethanolamines, Glycols



CONTENTS

CHEMISTRY WITH A PERSONAL TOUCH	3
FROM LIPSTICK TO KITCHEN ROLLS, PAINT TO PHARMACEUTICALS	4
CHEMISTRY CAN BE A CHALLENGING BUSINESS. MAINTAINING AN EFFICIENT SUPPLY CHAIN IS EVEN MORE CHALLENGING	5
RESPONSIBLE CARE ALL THE WAY	6
QUALITY: THE WAY WE THINK, THE WAY WE WORK	8
A RELIABLE, LONG-TERM PARTNER	10

CHEMISTRY WITH A PERSONAL TOUCH



Akzo Nobel is an acknowledged world leader in the production of ethylene amines. This leading position has been achieved through the highest levels of research, know-how, process plant design and quality control. And the increasingly important ability to listen.

Our ability to listen means that we do everything to make sure that customers get the chemicals they want, when they want them,

and where they want them. Doing this means operating and maintaining an efficient supply chain; a supply chain offering close-to-the-customer service, with very short lead times, from order to delivery, in all parts of the world.

This way of doing things – listening, consulting, and working together with customers to achieve the desired results – is what we call “Chemistry with a personal touch”.

FROM LIPSTICK TO KITCHEN ROLLS, PAINT TO PHARMACEUTICALS



Our homes and workplaces are filled with products that have been manufactured with the help of ethylene amines, ethanolamines and glycols. So much so, that it is virtually impossible to get through the day without benefiting from these performance enhancers.

In this way, Akzo Nobel ethylene amines, ethanolamines and glycols help customers to manufacture products that restore the health of humans, pets and farm animals, make our clothes cleaner and more comfortable after washing, ensure the quality of the food on our tables, add wet strength to kitchen rolls, clean incinerator emissions, provide the required characteristics for our cosmetics and toiletries, enhance the performance of our vehicle engines and tyres, prevent car radiators from freezing, and retain the integrity of the road surfaces we drive on.



Akzo Nobel's ethylene amines, ethanolamines and glycols can transform the properties of end products. They can make them softer, firmer or more pliable, make them adhere better or stop them from coagulating, help them to retain a thicker consistency, make them foam in a controlled fashion or keep them free-flowing.

Ethylene amines, ethanolamines and glycols are, in fact, essential building blocks, so-called additives, in the manufacture of everything from detergents, paints, glues, lubricating oils, fuel oils, antifreeze, cutting fluids and household drain cleaners to medicines, make-up, soaps, cleaning agents, concrete, asphalt, pulp and paper. In short, they play a significant part in improving daily life for countless millions around the world.

CHEMISTRY CAN BE A CHALLENGING BUSINESS. MAINTAINING AN EFFICIENT SUPPLY CHAIN IS EVEN MORE CHALLENGING

In the seventies, our R&D chemists developed new routes for producing ethanolamines and ethylene amines. We refined and further developed this technology until it was clear from the calculations and projections that it would provide far more efficient production of ethanolamines and ethylene amines. We also found that it would generate important benefits in product quality and manufacturing economy, as well as substantial environmental gains. At that point we went ahead and built a brand new, purpose-designed plant. The patented technology covers three important processes:

1. Monoethanolamine reaction from ethylene oxide and anhydrous ammonia.
2. Ethylene amines formation from monoethanolamine and anhydrous ammonia.
3. Ethylene amines separation out of a water and amine mixture.

The ethylene oxide used in the first process is obtained from ethylene and oxygen in a reaction that also produces glycols.

Since that pioneering start back in the seventies, these processes have been further refined to provide even greater economies and even purer products under a regime of strict environmental consideration.

High service level

Although it may sound self-evident, the value of products to users is a function of their availability. Because customers' own manufacturing operations are so heavily dependent on reliable supplies and punctual deliveries, we have set up a comprehensive supply chain organisation to ensure that we and our products are always



close to our customers. So wherever you are, we are there, ready to deliver, quickly and punctually.

This commitment to supply chain management has helped us to move on from our early pioneering lead in ethanolamines and ethylene amines into our present position as a world leader in the field. Like our customers, we know that in today's world, whatever the end product, wherever the location, a high level of service and availability are vital to success.

RESPONSIBLE CARE ALL THE WAY

Health, Safety, Environment

As a member of a large multinational group, we know that every aspect of our company's activities affects our staff, customers, host community and the environment. Because of this, our commitment stretches beyond selling products. Our aim is to do everything to ensure that our activities are not only a source of general benefit, but have the least possible adverse influence on Health, Safety and the Environment (HSE). In a word, we are determined to conduct our activities in a socially responsible manner.



Product Stewardship

In order to help us to address all HSE matters throughout the whole supply chain of our products, we have adopted the principles of the chemical industry's Responsible Care initiative, which includes Product Stewardship as one of its Management Practices.

Product Stewardship focuses on the impact of a product throughout its entire life-cycle – raw materials and energy consumption, emissions to air, ground and water, toxicity, worker safety, and waste disposal. It is, therefore, a matter of

policy that our products must be managed and used safely every step of the way from their development and manufacture, packing and distribution to their employment and ultimate disposal.

Dantes

As a member of the EU life project Dantes, we systematically approach environmental issues by using a number of different assessment tools such as Life Cycle Assessment, Environmental Risk Assessment, Life Cycle Cost and Environmental Performance Indicators. For more information see www.dantes.info.

Knowledge sharing

Furthermore, we are voluntary participants in the High Production Volume (HPV) Challenge Programme, in which Akzo Nobel, together with other manufacturers, compiles a complete data set of the baseline health and environmental effects of ethylene amine products that are manufactured in high volumes.

Safety data sheets

In addition to safety data sheets containing information on properties, handling, precautions, and first-aid procedures, we offer an *Ethylenes Best Practices Manual* giving more detailed recommendations on the proper use and handling of ethylene amine products. Our Product Stewardship officers are also available to accompany our sales people on visits to customers. Life Cycle Assessment documentation on our products is available on request. We have been certificated in accordance with the ISO 14001 Environmental Management System since 1999.



Open communication

As a member of the Responsible Care Discussion Group, we are committed to constantly seeking ways of further improving our HSE performance, and of maintaining open communication about our goals and progress with the public and all other interested parties.

Our policy

In our view, consideration for people and the environment is a prerequisite for our long-term success. We comply with environmental laws and regulations as a matter of course.

Working environment: Human health and safety are paramount to all other considerations.

Process development: We shall continue to develop our processes, in order to improve our environmental performance.

External environment: We shall reduce emissions, waste, and the consumption of resources throughout all aspects of our activities, with extra focus on the emissions and energy consumption of our processes.

Product Stewardship: We shall make every effort to improve the total environmental performance of our products. This work shall be carried out in close liaison with our suppliers and customers.

Environmental goals: We formulate our environmental goals for each financial year in consultation with representatives from all levels of management and staff. The results are communicated to all concerned.

Responsibility of the individual: All employees, both as individuals and members of our team, are responsible for the health, safety and environmental aspects of their work, and are expected to make an active contribution towards improvements in these areas. Our joint efforts and commitment are pre-requisites for our success.

QUALITY: THE WAY WE THINK,
THE WAY WE WORK





At Akzo Nobel, quality goes far beyond products, procedures and services. We see quality as a manifestation of our attitude to responsible and structured work, open communication – both internal and external – and transparency. It is equally a reflection of our willingness to listen, learn, and respond to the world about us. This philosophy – which determines the way we think and work – is expressed in our Quality Policy as follows:

- Our continued success depends on Total Quality throughout the company.
- We aim to always do the right thing in the right way.
- We shall always fulfil agreements made with customers – both external and internal.
- We shall be aware of our customers' expectations and make every effort to meet them.
- We shall improve our Total Quality. This work shall be carried out in close liaison with our suppliers and customers. Our Management System is an important tool in this process.
- We encourage ingenuity and creativity in a continuous process of improvement, in which people can learn from each other and stimulate that process. This requires an organisation that is positive towards change.
- All our employees, both as individuals and as members of our team, are responsible for the Total Quality of their work, and shall participate actively in making improvements. Our joint efforts and commitment are prerequisites for our success.

A RELIABLE, LONG-TERM PARTNER



Akzo Nobel is a large multinational group. The ethylene amine, ethanolamine and glycol operations of Akzo Nobel Functional Chemicals are located in Stenungsund, Sweden. The unit is responsible for the development, production and marketing of ethylene amines, ethanolamines and glycols. A significant amount of production is also carried out in Leverkusen, Germany, enabling us to offer a full range of ethylene amines and to guarantee even greater security of supply.

Our plant and processes have been designed to produce high-quality products at low cost and with exceptionally low emissions to the environment. Our production processes and manufacturing facilities are subject to continu-

ous review and upgrading in support of our ongoing efforts to further improve our products and lessen their environmental impact. Most of our production is based on our own proprietary technology. We are, of course, certificated in accordance with ISO 9001 (Quality Assurance) and ISO 14001 (Environmental Management).

The widely varied industries that use our products are dependent on reliable supplies of these high-quality chemical building blocks. The development of efficient supply chain management means that, in almost all cases, a single phone call is all that is required to secure punctual delivery.



Akzo Nobel Functional Chemicals
Ethylene Amines, Ethanolamines, Glycols



AKZO NOBEL

Akzo Nobel Functional Chemicals AB, Ethylene Amines, SE-444 85 Stenungsund, Sweden
Phone: +46 303 850 00, Fax: +46 303 815 56
info.ethy@akzonobel-chemicals.com www.ethyleneamines.com