

## High-performance absorbance

### Superabsorbents “Made in Krefeld” – a quarter century of success

- The technological secret behind disposable diapers celebrates an anniversary
- Absorbs up to 500 times its weight in liquids
- Scientists working on more innovations

Fewer sleepless nights for millions of children and their parents, fewer tears, and more convenience – these are the “dry facts” achieved by a special chemical product: superabsorbent polymers, the technological secret behind the worldwide success of disposable diapers.

For the past 25 years, superabsorbents have been manufactured on an industrial scale at a plant in Krefeld, Germany. The small granules can absorb up to 500 times their own weight in liquid to form a gel that, unlike a sponge, retains moisture even under pressure, for example the weight of the baby wearing a disposable diaper. This quality makes superabsorbent polymers a popular choice for a wide range of hygiene articles such as baby diapers as well as feminine hygiene and incontinence products. Evonik is one of the world’s largest producers of superabsorbent polymers, with Krefeld as primary source of superabsorbents for Europe.

The first large-scale production plant for superabsorbent polymers in Krefeld went into operation in 1986. This ushered in the international breakthrough for FAVOR® brand superabsorbents. Research into superabsorbent polymers had begun in Krefeld in the 1970s. Today, FAVOR® superabsorbents are used in more than 40 billion diapers every year. Weighing in at about 40 grams, modern diapers are less than half the size and much thinner than those of the 1980s, which weighed more than 100 grams – a real sign of progress. And the research continues. Although a typical diaper is worn only for a few hours, it is expected to fulfill high expectations. That’s why ongoing innovation is a high priority for FAVOR® superabsorbents. In close collaboration with leading manufacturers of hygiene articles, researchers, and technicians at the Evonik laboratories are constantly working to develop new and even better superabsorbent polymers and develop the trends of tomorrow.

November 28, 2011

#### Contact person economic press

**Ruben Thiel**  
Corporate Press  
Phone +49 201 177-4299  
Fax +49 201 177-3030  
ruben.thiel@evonik.com

#### Contact person specialized press

**Claudia Uhlendorf**  
Communications Consumer Specialties  
Phone +49 201 173-1410  
Fax +49 201 173-1838  
claudia.uhlendorf@evonik.com

**Evonik Industries AG**  
Rellinghauser Strasse 1-11  
45128 Essen  
Germany  
www.evonik.com

**Chairman of the Supervisory Board**  
Wilhelm Bonse-Geuking  
**Executive Board**  
Dr. Klaus Engel, Chairman  
Dr. Wolfgang Colberg,  
Dr. Thomas Haeberle, Thomas Wessel,  
Patrik Wohlhauser, Dr. Dahai Yu

Registered Office: Essen  
Register Court: Essen Local Court  
Commercial Registry B 19474  
VAT ID no. DE 811160003

The current trend is toward less cellulose. The goal is ultra-thin hygiene products that are more comfortable to wear, require less packaging and create less waste. To achieve this, the liquid retention capacity of the polymers must be further increased, for example, or the distribution of moisture must be adapted to meet the precise specifications of the customer even better. Current research is likely to lead to superabsorbents capable of retaining even more liquid, so diapers can be considerably thinner. That means manufacturers need far fewer raw materials, resulting in simplified manufacturing processes and savings on production and transport costs. It is conceivable that diapers will soon look just like normal underwear.

In 1987, a year after the plant in Krefeld opened, a second facility went into operation in Greensboro, North Carolina. Additional facilities followed in 1992 and 1999 in Krefeld, 1993 and 2000 in Greensboro. A plant in Garyville, Louisiana was added in 1996 and one in Rheinmünster, Germany in 2006. In 2011, Evonik entered into a joint venture with Saudi Acrylic Acid Company (SAAC) to manufacture superabsorbent polymers in Saudi Arabia. The facility is scheduled to produce 80,000 tons per year beginning at the end of 2013 and represents an important step for Evonik in the growing Middle East market.

Text and images available to download at [www.evonik.com/krefeld](http://www.evonik.com/krefeld).

#### **Company information**

Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals. Its activities focus on the key megatrends health, nutrition, resource efficiency and globalization. In 2010 about 80 percent of the Group's chemicals sales came from activities where it ranks among the market leaders. Evonik benefits specifically from its innovative prowess and integrated technology platforms.

Evonik is active in over 100 countries around the world. In fiscal 2010 more than 34,000 employees generated sales of around €13.3 billion and an operating profit (EBITDA) of about €2.4 billion.

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