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**Fiestel, 13 April 2005**

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## **New certification and guidelines mark the way for new levels of safety in landfill engineering!**

Geosynthetics are a firmly-established and indispensable feature of landfill engineering, fulfilling various functions and already integrated into a variety of regulations. For more than 30 years, the NAUE group has been among the leading producers of geosynthetics, particularly for applications in landfill engineering, hydraulic engineering, tunnel and civil engineering projects.

At the IFAT 2005, NAUE will again be demonstrating both new and proven system solutions for landfill engineering.

- Bentofix<sup>®</sup> Geosynthetic Clay Liners (GCLs) for sealing, certified for long-term service by BAM – the German Federal Institution for Material Research and Testing
- Carbofol<sup>®</sup> geomembranes likewise approved for sealing application by BAM
- Combigrid<sup>®</sup> geogrid composite for reinforcement, filtration and separation applications
- Secudrän<sup>®</sup> drainage systems for drainage and protection purposes meet BAM guidelines
- Secugrid<sup>®</sup> geogrids for soil reinforcement
- Secutex<sup>®</sup> nonwoven geotextile for separation, filtration and protection applications

The geomembranes made by NAUE were one of the first products to be awarded a BAM approval. And this approval is looked on as standard for landfill engineering in Germany. In October 2003, the BAM published further guidelines: "Proof of suitability of geosynthetic drainage elements for use in landfill caps". These guidelines make comprehensive requirements of geosynthetic drainage elements, the raw materials and components used to produce them and additionally on the supporting documents for geosynthetic drainage elements. In accordance with the above mentioned guideline for the Secudrän<sup>®</sup> R201Z WD601Z R201Z product, NAUE applied for the relevant suitability certificate from BAM in January 2004, and received the same dated as from September 1st 2004. In particular, the requirement set forth by the Landfill Ordinance under which "the responsible authority [...] at the request of the operator, (can) permit

deviations in layer thickness and permeability coefficient for the drainage layer as it is proven that the hydraulic performance of the Secudrän drainage layer and the stability of the recultivation layer are assured."

Bentofix® the geosynthetic clay liner (GCL) is another product which is used in landfills. NAUE was awarded the relevant approval for various types of Bentofix® for landfill classification 1 by the DIBt – German Institute for Structural Engineering in 1997/1998. Obligations were introduced in the certification which required proof to be furnished of permanent internal long-term shear strength within the five-year approval period. It is known that this requirement was fulfilled by NAUE. However, in 1998 DIBt discontinued its activities related to geosynthetic clay liners in landfill applications. In order to be prepared for the time when the approval expires, an evaluation of Bentofix® regarding its continuous long-term shear strength was conducted by BAM. In a joint research project, which was open to participation of other Geosynthetic Clay Liner manufacturers, a test procedure for Geosynthetic Clay Liners was developed based on existing experiment models derived from BAM approval procedures for structured synthetic sealing liners. On December 15<sup>th</sup> 2003, NAUE received an appraisal from BAM about the long-term shear strength of the Bentofix® B 4000 Geosynthetic Clay Liner. This appraisal certifies that Bentofix® B 4000 Geosynthetic Clay Liners, based on the widely promulgated Arrhenius extrapolation, met the minimum functional lifetime rating of 200 years at 15°C ambient temperature.

NAUE products ensure safe design and construction work. Our team would be pleased to inform you about approvals for the landfill engineering. Visit us at the IFAT in Hall B2, booth 226!

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