

unger



Trenchless Technology

UFAFLOW HD 25





Trenchless drilling

Improve Performance, Safety, and Environmental Impact in Horizontal Directional Drilling (HDD)

UFAFLOW HD 25 is an innovative horizontal directional drilling solution formulated with renewable resources. UFAFLOW HD 25 provides exceptional drilling performance and significantly reduces the use of additives in clay/silt soil.

UFAFLOW HD 25 improves performance and production capacity and reduces the cost significantly. Tests show that UFAFLOW HD 25 provides continuous drilling and reduces maintenance in consolidated clay and silt layers. The low viscosity generated by UFAFLOW HD 25 contributes to less wear and tear on the drilling equipment, less adhesion and less need for cleaning.

This information is based upon Unger Fabrikker's experience and knowledge in this field. The information is only a guide for application of the products and Unger Fabrikker give no guarantee for the results from the application of the product, which lies outside Unger Fabrikker's control. Unger Fabrikker's responsibility and guarantee in selling this products are covered at all times by the relevant general sales conditions.

Safe, Clean, Functional

Safer and Easier Working Conditions

UFAFLOW HD 25 is formulated with a strong emphasis on operator well-being and safety. The product is designed to ease and minimize operator handling. This improves working conditions and increases productivity.



Key Benefits of UFAFLOW HD 25 in Horizontal Directional Drilling

Performance

- ✓ Cost-effective and sustainable technology.
- ✓ Improved drilling performance in clay/silt conditions.
- ✓ Increased drilling efficiency with limited pressure build-up.
- ✓ Extended lifespan of drilling equipment by cleaning, lubricating, and maintaining low-pressure drilling.
- ✓ Optional automatic inline dosage.

Sustainability

- ✓ Reduced carbon emission by more than 7 times compared to standard (bentonite technology).
- ✓ ZERO emission of harmful chemicals to the environment.
- ✓ Process automation and HSE improvement for operators.
- ✓ No harmful chemical components, UFAFLOW HD 25 is not classified as a dangerous chemical on the EU/BASTA list.

Application Horizontal Directional Drilling

Trenchless technology, also known as no-dig or non-excavation technology, encompasses methods for installing, repairing, or replacing underground utilities and infrastructure without the need for traditional open-cut excavation trenches.

Some unique physical and geological environments with a particular soil require optimal fluid/gel strengths and filtration control to achieve successful horizontal drilling. The soil also requires the optimization of different drilling fluid properties due to unconsolidated sand, reactive clay, gravel, and rock that often occur in the environment. Therefore, it is important to combine and optimize additives to remove solids effectively during drilling.

The UFAFLOW HD 25 innovation takes trenchless technology to the next sustainability level. The product can significantly improve the cost efficiency and environmental footprint in particularly clay/silt areas. With a focus on the environment and health, UFAFLOW HD 25 will be able to reduce carbon emission, workload, and handling for the operators and it will have a positive impact on transportation, logistics, and costs.

UFAFLOW HD 25 has been developed and tested for an optional automatic inline dosage process with a dosage pump direct to the drill-rigg inlet on the process water pipeline. This technology will make the dosage process even safer, more sustainable, and more efficient than the traditional and manual process.

The rheological properties of traditional additives used in horizontal drilling are typically thixotropic. UFAFLOW HD 25 is an additive that has a Newtonian behavior and can be used with or without traditional additives. In clay and silt soils, UFAFLOW HD 25 can be used alone. In more coarse and gravel deposits, it can be added together with traditional additives to improve the viscosity and the performance of the drilling fluid.



Foto: Typical injection pump

Performance

UFAFLOW HD 25 is a water-based drilling additive based on environmentally friendly anionic surfactants, that reduces viscosity of poorly permeable masses such as silt and clay. It is used as a wetting agent, with easier control of rheology and filtration properties. The product contributes to efficient transport of cuttings from the drill pipe. The product lowers the surface tension in aqueous solutions, increases wettability of clay, silt and sand during drilling operation. It is an excellent emulsifier which can be used anytime in the drilling operation to improve emulsification and reduce torque.

Rheological properties of traditional additives for horizontal drilling are shear thinning (fig 1) and thixotropic (fig 2) UFAFLOW HD 25 has a Newtonian behavior (fig1) and it can be added with or without traditional additives (fig 2). In clay and silt soils, UFAFLOW HD 25 can be added alone. In the case of deposits of coarse sand and gravel, it can be added together with traditional additives to further improve the viscosity (fig 2), that will improve the drilling capacity.

Recommended dosage of UFAFLOW HD 25 is from 0.125 % to 0.5 % in water

Product Properties

Product	Properties		
	Rheology	Viscosity η (eta) mPa.s	Surface tension (mN/m)
UFAFLOW HD 25	Newtonian	1,14	34.0
Bentonite W*	Shear thinning/ Tixotropic	32,6	75.0

* Reference Typical Benchmark technology; Bentonite sourced from central Europe

- Wetting
- Ease of handling
- Low surface tension
- Low viscosity, Newtonian behaviour
- Low dosage
- Low emission



Viscosity behaviour of UFAFLOW HD 25 and convential additives

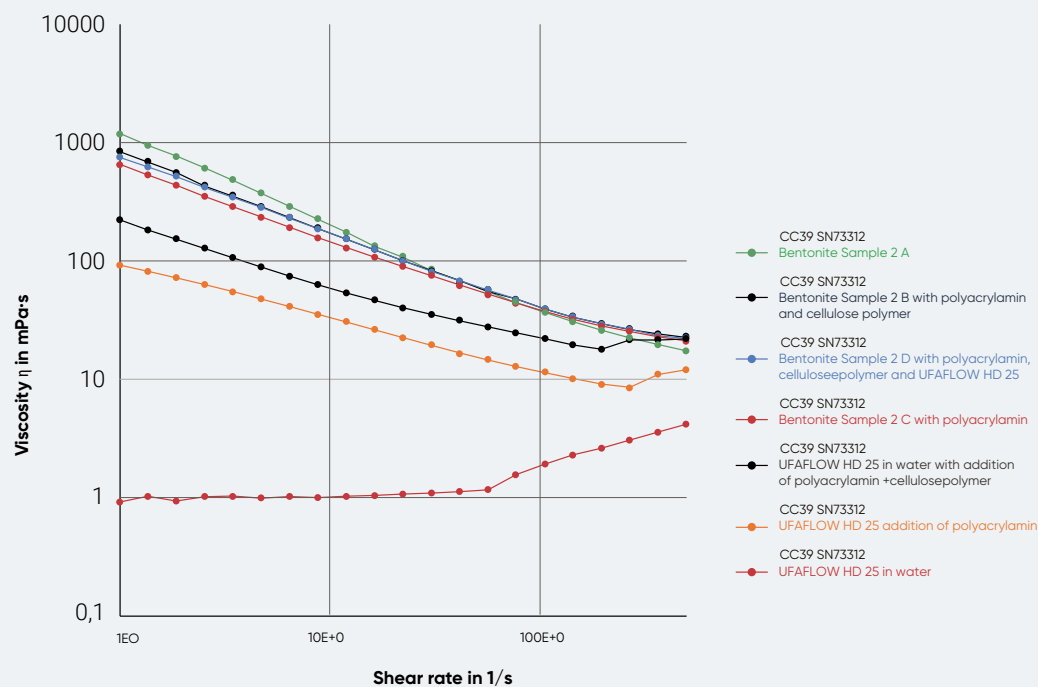


Figure 1:
Viscosity (mPa.s) at different shear rate(1/s) Shear thinning liquid with Bentonite and additives and Newtonian behaviour with UFAFLOW HD 25

Thixotropic behaviour of UFAFLOW HD and convential additives

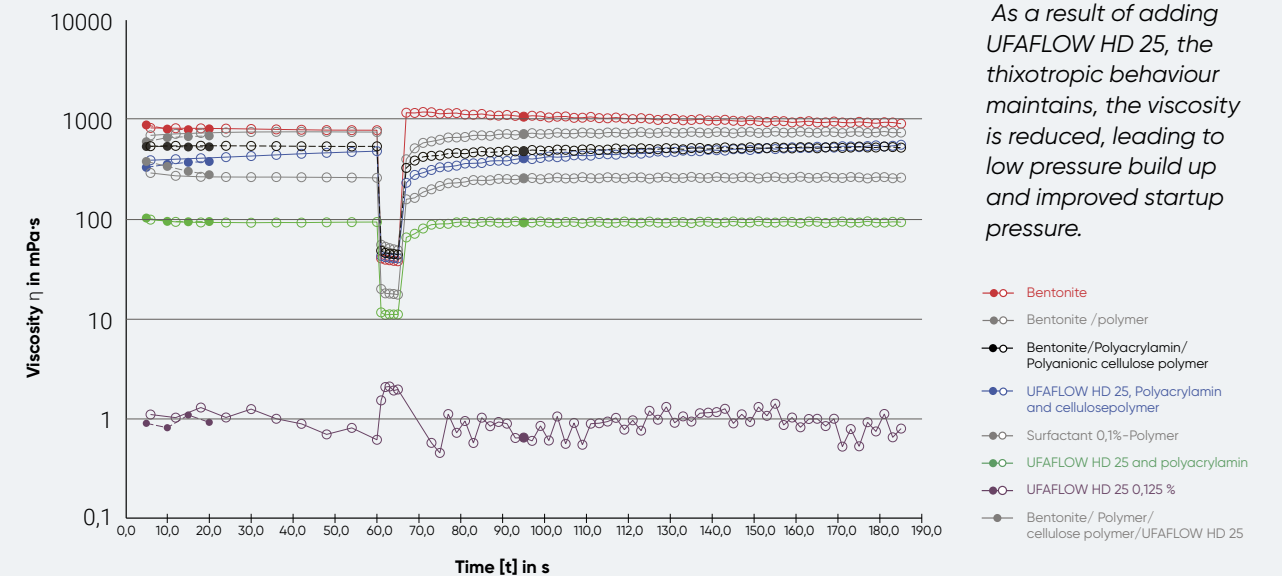


Figure 2:
The figure shows the thixotropic behaviour of traditional additives. As a result of adding UFAFLOW HD 25, the thixotropic behaviour maintains, the viscosity is reduced, leading to low pressure build up and improved startup pressure.

Sustainability

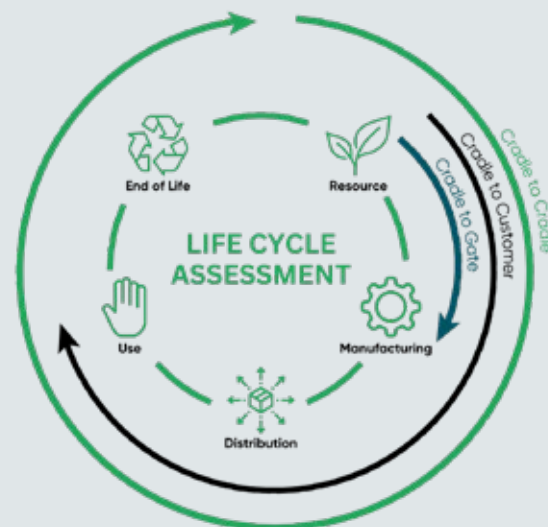
Product Carbon Footprint

Product	LCA*	
	Kg/CO ₂ eq./1000kg	Kg/CO ₂ eq./hour**
UFAFLOW HD 25	1.375	5.95
Bentonite W***	10.08	36.036

* Life cycle analysis - Cradle to gate, ISO standard 14040 and 14044

** Example of typical horizontal drilling application in clay/silt areas: 3600 liters of water per hour containing either 1,8 % Bentonite or 0,125% UFAFLOW HD 25

*** Reference Typical Benchmark technology; Bentonite sourced from central Europe



Sustainability is central in our culture, being a key element in our strategy for future development and growth.

Unger have defined three focus areas; climate footprint, respect for the human being and innovative and environmentally friendly solutions – then chosen five from the United Nations sustainable development goals to give extra attention across these focus areas. Unger pursue solutions and products that are climate-friendly, maintain biodiversity and showing a transparent value chain.

Unger firmly believe that the successful use of a product in any application derives from a comprehensive and mutual understanding of the possibilities in the technology offered, the purpose of the end-use as well as total transparency within our sustainable efforts. Therefore, we offer a life cycle analysis (LCA) on all the products in our portfolio upon request.





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**Pure
Nordic
Quality**

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