Začasno poročilo o intervenciji ELME v Krnici zaradi mulja v potoku

Opis stanja na dan 12. 2. 2025

Na področju vodnega sistema Radovna v bližini vodnega zajetja v Krnici so bila opažena razlitja mulju podobne snovi. Snov je bila razlita v struge potoka in na travnike (slika 1).

Po neurandih informacijah naj bi šlo za odpadni material, ki nastaja pri podvrtavanju Radovne v Spodnjih Gorjah.
Po neurandih informacijah, naj bi pri podvrtavanju struge za lažje vrtanje uporabljali snov »TEQGEL HD®«. Gre za bentonit s primešanimi polimeri. Bentonit je naravnega izvora, glina, kateri je primešano do 2 % polimerov. V varnostmen listu piše, da je izdelek mineralnega izvora in da je potrebno preprečiti njegovo odlaganje v okolje. Varnsotni listi in specifikacije so priloženi temu dokumentu kot prilogi 1 in 2.

Na dan obiska ELME na kraju dogodka, 11. 2. 2025, smo iz struge potoka, kjer je bil razlit mulj odvzeli vzorec za nadaljne analize z namenom identifikacije snovi. Nakraju smo pomerili pH vrednost mulja in z ramansko spektrometrijo poskušali določiti sestavo snovi. pH je bil 10 (alkalna vrednost), ramanska analiza pa je pokazala nizko prisotnost organskih molekul. V laboratoriju se bojo izvedle še analize kemijske sestave in prisotnosti nevarnih kovin.

V naravo odloženi mulj nastaja kot odpadek pri gradbenem delu podvrtavanje Radovne in je zato odpadek, ki ga je potrebno odstranit in odložit na primerna odlagališča skladno z zakonodajo.
Ko se mulj pomeša z večjo količino vode nastane suspenzija, ki se zelo počasi bistri, kar potencialno predstavlja nevarnost za vodne organizme.

Mnenje ELME o onesnaženju in ogroženosti okolja:

- Mulj - gradbeni odpadek je nestrokovno odložen na vodovarstveno področje, zato priporočamo, da se ga iz lokacij odstrani.
- Tak gradbeni odpadek je potrebno odstranit in odložit skladno z veljavno zakonodajo.
- Priporočamo, da se o nepravilnem odlaganju obvestijo ustrezne inšpekcijske službe.
- Ker gre za področje vodnega zajetja, priporočamo izredne meritve kakovosti pitne vode.

Slika 1: Prikaz razlitega mulja na različnih lokacijah na VS Radovna v Krnici

Poročilo sestavili:
dr. Tea Zuliani, operativni vodja ELME za kemijo, vodja ELME intervencije
Barbara Kapun, članica ELME

PRODUCT INFORMATION

TEQGEL HD®

TEQGEL HD is a special one sack bentonite polymer formulation for use in horizontal directional drilling and other trenchless applications. **TEQGEL HD** is developed to provide suprior drilling fluid qualities. This cost effective material is mixing very easily, therefore is ideal for drilling operations where high yielding and fast mixing bentonite is required. **TEQGEL HD** provides wellbore stability, water loss control and helps reducing torque and drag in long horizontal, large diameter wells. **TEQGEL HD** is non toxic and enviromental safe.

APPLICATIONS

- Horizontal Directional Drilling
- Oilfield
- Microtunnelling
- Water Well Drilling
- Mineral Exploration
- Slurry Wall Technology

FUNCTIONS

- low solids content drilling fluid
- high reological parameters for effective cutting transport and hole cleaning
- Viscosifier and water loss control
- Torque and drag reducing
- improves borehole stability for easy well instalation
- rapid suspending gelstructure

ADVANTAGES

- high rate of drilling penetration
- makes obvious more mud with the same viscosity than other standard drilling bentonites
- highly effective viscosifier and stabiliser in low consolidated, porous formations
- fragile non progressive gel strengh
- minimize drilling problems such as stuck pipes, bit balling, mud losses
- sealing lost circulation, permeability zones
- low water loss level
- excellent carrying capacity at low annular velocities
- easy build and modify rheology in water base mud
- low pressure drops in drilling systems
- low torque and drag in long horizontal wellbores
- provides lubricity and stability in water sensitive formations
- high thermal stability
- compatible with wide range of drilling polymers
- easy to handle one sack system
- dispersed easily with high shear
- non fermenting
- easy to clean in shale shakers and hydrocyclones
- extremely high content of montmorrillonit
- Transportation and storage costs are reduced due to lower treatment requirements as compared to other bentonite systems.

GELTEQ e.K.
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Fon: +49(0)5723-9085457, Fax: +49(0)5723-9087431, m.wiedermann@gelteq.de

LIMITATIONS

Thermal stability	100 °C
Range of pH solution	7 – 12
Calcium content	1000 mg/l
Chloride content	2000 mg/l

In case of high content of chlorides, Magnesium or calcium in makeup water, please consult with your supplier. Increasing concentration and chemical treatment is possible.

TYPICAL PROPPERTIES

Appearance	beige powder
Bulk density	0,9 t/m³
Moisture	9 – 10 %

TYPICAL RHEOLOLICAL PARAMETERS

Fresh water 20 °C, after 1 hour
Fann Rheometer

Kg/m³	**30**	**35**	**40**	**45**
PV (cP)	8	11	13	15
YP (lbs/100ft²)	20	31	44	66
Gel 1	15	19	23	28
Gel 2	20	24	30	35
FV (s/1000ml)	45	55	70	100

PV – plastic viscosity
YP – yield point
FV – funnel viscosity

RECOMMENDED CONCENTRATION	**Kg/m³**
Rock, clay	25 – 28
Sand	28 – 35
Fine gravel	35 – 40
Coarse gravel, mud losses	> 40

TREATMENT

TEQGEL HD should be added through the hopper with Venturi jet and circulate until the material is dispersed.
Do not overdose.

TRANSPORTATION

Not classified as dangerous in the meaning of transport regulations.

TOXICITY AND HANDLING

TEQGEL HD is a safe non toxic product and has excellent environmental acceptance.
Handling as an industrial chemical, wearing protective equipment.
Observe the precautions as described in Material Safety Data Sheet.
Product has Hygienic Attest issued by HuK Umweltlabor GmbH and National Institute of Hygiene in Warsaw

Product is accepted for all drilling Operations without any restrictions.

PACKING AND STORAGE

TEQGEL HD is packed in 25 kg multiwall paper sacks at 40 pieces on pallet
or in 650 kg Big Bags on pallet.

Store in a dry location away from sources of heat or ignition, and minimize dust.

DISPOSAL

Dispose in accordance with local Standards. Contact waste disposal service.

The before mentioned data meet the present state of our knowledge and experience. For warranty and responsibility are our General Terms and Conditions valid.
BESTBORE is registered trade mark of HEADS Polska.

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HEADS Sp. z o.o.
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tel. +48 12 2690568, fax +48 12 2692588

Date of issued: 2016-01-01
Print date: 2017-03-21

MATERIAL SAFETY DATA SHEET

1. Identification of the substance and of the company.

1.1. Identification of the substance.
Commercial product name: TEQGEL HD

1.2. Application.
Base for the drilling fluid in Horizontal Directional Drilling and Microtunneling

1.3. Company.

HEADS Sp. z o.o.
ul. Piastowska 21, 30-065 Kraków
tel. : +48 12 269 05 68
fax : +48 12 269 25 88

1.4. Emergency information: +48 12 2690568.

2. Hazards identification.

Classification of the substance or mixture

Threats	Classification compatible with directive 1999/45/EC
from physical features :	unclassified
to human:	unclassified
to environment :	unclassified

Marking elements:
Symbol, warnings sign: NOT APPLICABLE
Hazards statements: NOT APPLICABLE
Phrasess of conditions for safe use: NOT APPLICABLE
Other hazards:
Avoid inhalation of product dust, non toxic product. Product forms slippery surface when combined with water.

3. Composition/ Information of ingredients.

Sodium bentonite. Mineral origin product.

Substance	CAS-Number	Percentage	Classification compatible with Directive 67/548/EWG		Classification compatible with Regulation nr 1272/2008 (CLP)	
			Threats symbol	Phrase R	Threats class	Phrase H
Bentonite	1302-78-9	98-99%	-	-	-	-
Silica, crystalline, Cristobalite	14808-60-7	1-2%	Xn	R48/20	STOT RE 2	H373

The Full Text for all R-Phrases are Displayed in Section 16

4. First aid measures.

Inhalation:
Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues
Skin:
Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing..
Eyes:
Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
Ingestion:
Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Get medical attention if any discomfort continues.
Medical advice:
Seek medical advice if in discomfort.

5. Fire-Fighting measures.

Extinguishing media:
Water spray, dry powder, foam.
Extinguishing media to avoid:
Not known
Special exposure hazard in fire:
Product forms slippery surface when combined with water.
Special protective equipment for fire fighters:
None.

6. Accidental release.

Personal precautions:
Do not breathe dust. Avoid creating dust and aerosols. Local exhaust ventilation required. Use appropriate protective equipment (see MSDS Section 8).
Environmental precautions :
Mineral origin product. Avoid drop into the environment.
Cleaning methods /disposal :
Take up uncontaminated material and pass for further processing or mechanical sweep-up of material and dispose of in accordance with local standards.
Additional advice:
Avoid dust formation

7. Handling and storage.

Handling:
Avoid creating dust and aerosols. Local exhaust ventilation required. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect. Avoid skin and eye contact. Wash hands before eating and working. Do not smoke.
Storage:
Keep container tightly closed and in dry area. No restrictions on common storage.

8. Personal protection.

EXPOSURE GUIDELINES

Substance	Std.	TWA- 8 hrs	STEL
QUARTZ, CRYSTALLINE SILICA	WEL	4 mg/m^3 (Total dust)	1mg/m^3 (Respirable dust)

WEL = Workplace Exposure Limit.

Personal protective equipment:

Respiratory protection
Dust mask in case of inadequate ventilation.
Hand protection
Protective gloves.
Eye protection
Safety goggles.
Skin and body protection
No Special requirements, regular uniform.

9. Physical and Chemicals properties.

- form: **powder**
- colour**: gray**
- odour: **odourless**
- pH: **9 -10 in water solution @ 30 g/l (20ºC)**
- boiling temp: **n.a.**
- melting temp: **over 1000 ºC**
- flash point: **n.a.**
- ignition temperature: **n.a**
- auto flammability: **non-inflammable.**
- explosive properties: **n.a.**
- vapour pressure: **n.a.**
- bulk density: **n.a.**
- water solubility: **insoluble**
- viscosity: **see technical data**
- fire number: **n.a**
- oxidizing properties: **n.a**

10. Stability and reactivity.

Reactivity:
Product is not reactive.
Stability:
Product stable in recommended storage conditions. Product is hygroscopic.
Materials to avoid:
None known.
Conditions to avoid:
Avoid water contact during storage.
Information about decomposition:
No decompositions if stored and applied as directed.

11. Toxicological information.

Acute oral toxicity:
Crystalline silica: LD50: 500mg/kg (orally, rat)
Bentonite. LD50: 35mg/kg (intravenously**,** rat)
Skin:
May be slightly irritating to skin.
Eyes:
May be slightly irritating to eyes.
Inhalation:
May cause irritation to the respiratory system if the dust is inhaled.
Ingestion:
Low toxic product.

12. Ecological information.

Toxicity
Water environment / solid / Land environment:
Bentonite: LC50: 19000mg/l (96h, fish, *Oncorhynchus mykiss*)
Degradability: Mineral origin product. The organic part of the product is not biologically degradable.
Bioaccumulative: Bioconcentration factor (BCF): no data.

13. Disposal considerations.

Recommendation:
Do not remove into drains. Dispose in accordance with local standards. Contact waste disposal services.
Contaminated packaging:
Can be re-used after emptying and cleaning

14. Transport information.

Land transport: Not classified as dangerous in the meaning of transport regulations.
Sea transport: Not classified as dangerous in the meaning of transport regulations.
Air transport: Not classified as dangerous in the meaning of transport regulations.

15. Regulatory information.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
Regulation (EC) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC also amending Directives (EC) no 1907/2006
Act of 25th February 2011 on chemical substances and mixture (Polish Official Journal of Laws 2011,No 63 item 322).
Act of 24th August 1991, on fire protection (Polish Official Journal of Laws 2009, No 178 item 1380)
Act of 28th October 2002 on transportation dangerous materials (Polish Official Journal 2002,No 199 item 1671).
Decree of the Minister of Health of 20th April 2012 on labeling of hazardous substances and mixtures, and certain mixtures (Polish Official Journal of Laws from 2012 No. 0 item 445).
Decree of the Minister of Health of 30th December 2004 on the criteria and ways of classification of chemical substances and preparations (Polish Official Journal of Laws from 2005 No. 11 item 86).
Decree of the Minister of Health of 2th February 2011 in the test and measurement of harmful factors in the work environment (Polish Official Journal of Laws from 2011 No. 33 item 166).
Decree of the Minister of Labour and Social Policy of 26th September 1997 on general rules health and safety (Polish Official. Journal of Laws 2008 no. 108 item 690).
Decree of the Minister of Economy of 21th December 2005 on the basic requirements for plant protection individual (Polish Official. Journal of Laws 2005 no. 259 item 2173).

16. Other information.

Abbreviations and acronyms used in the safety data sheet:
N.A. = Not Applicable
N.D. = No Data available
LC50 Lethal Concentration of the chemical that kills 50% of the test animals.
LD50 Lethal Dose is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals
TWA time-weighted average
STEL short-term exposure limits

RISK PHRASES
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
H373: May cause damage to organs through prolonged or repeated exposure
SAFETY PHRASES
Not classified

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