

REQUEST FOR PROPOSALS NO. 21-031

Dewatering Polymer for Greater Nanaimo Pollution Control Centre

Issued: Friday, May 14, 2021

Addendum #1 – Questions and Answers

This addendum shall be read in conjunction with and considered as an integral part of the Request for Proposals. Revisions supersede the information contained in the original Request for Proposals. No consideration will be allowed for any extras due to any Proponent not being familiar with the contents of this Addendum. All other terms and conditions remain the same.

Questions and Answers

This following is a compilation of questions received from possible proponents up to 3:00 pm on Friday, May 14, 2021, and the answers to these questions

(1) Question

Could you please provide additional information on the current polymer used for dewatering and the dose rate?

Response

The current dewatering polymer used at GNPCC is Wes-Floc 6816 A. The Safety Datasheet for this polymer is attached.

The current dosage is approximately 21kg per dry tonne (estimated).

Safety Data Sheet

Wes-Floc 6816 A

Date of Issue: March 1 2021

Version 1.1

Date of Last Revision: March 1 2021

1. Identification

Product identifier

Product name : **Wes-Floc 6816A**

Alternate names : None.

Other means of identification

Chemical name : Cationic polyacrylamide co-polymer.

Chemical family : Organic polymer.

Recommended use of the chemical and restrictions on use

Recommended use : Chemical flocculant for municipal and industrial applications.

Uses advised against : No known restrictions against use.

Initial supplier identifier

Company : Waterhouse Environmental Services Corporation,
400 601 West Broadway,
Vancouver,
British Columbia,
V5Z 4C2,
CANADA.

Telephone : +1 888 921 3317.

Email : information@waterhousechemicals.com.

Emergency telephone number

CANUTEC : +1 613 996 6666.

2. Hazard Identification

Classification of the product

Hazard class	Category	Hazard statement
Acute aquatic toxicity	Category 2	H 401 – Toxic to aquatic life.

Label elements

Hazard symbols :



Signal word :

Warning.

Precautionary statements : **Prevention**

P 210	Keep away from open flame and other ignition sources.
P242	Use only non-sparking tools.
P 243	Take precautionary measures against static discharge.
P 273	Avoid release to the environment.
P 284	In case of inadequate ventilation, wear respiratory protection.

Response

P301+P330+P331+P313	IF SWALLOWED : Rinse mouth. Do NOT induce vomiting. Get medical attention.
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P302+P362+P352+P314

IF ON SKIN : Take off contaminated clothing. Wash with plenty of water and soap. Get medical attention if you feel unwell.

P304+P340+P314

IF INHALED : Remove person to fresh air and keep comfortable for breathing. Get medical attention if you feel unwell.

P305+P351+P314

IF IN EYES : Rinse cautiously with water for several minutes. Get medical attention if you feel unwell.

Storage

P 232

Protect from moisture.

P 235

Keep cool.

P 402

Store in a dry place.

P 405 + P 233

Store locked up. Keep container tightly closed.

Disposal

P 501

Dispose of contents and containers in accordance with local, regional, national, and international regulation.

Hazards not otherwise classified (HNOC)

Spills of this product will produce extremely slippery surfaces when wetted.
May form combustible dust concentrations in the air.

Other non-GHS classifications

HMIS Rating

Health	1
Flammability	1
Reactivity	0
PPE	B

NEPA Rating

Health	1
Flammability	1
Reactivity	0
Special	

3. Composition / Information on Ingredients

Composition of product

Concentration. (W/W%)	CAS Number	Chemical Identity
< 2.5%	124-04-9	Adipic acid
< 2.5%	5329-14-6	Sulfamic acid

4. First-Aid Measures

Description of necessary first-aid measures

Ingestion :	Rinse mouth and drink plenty of water. Check breathing and pulse. Place the casualty in the recovery position, cover, and keep warm. Loosen tight clothing such as collar, tie, belt, or waistband. Get medical attention, or call Poison Control if necessary. Do NOT induce vomiting or give anything by mouth if the casualty is unconscious or having convulsions.
Skin contact :	Remove any contaminated clothing and shoes. Wash exposed skin thoroughly with soap and water 15 – 20 minutes. Seek medical attention if irritation develops and persists.
Inhalation :	If breathing difficulties occur after inhalation of dust, keep the patient calm, remove to fresh air and seek medical attention.
Eye contact :	Flush with water for at least 15 minutes with eyelids held open. Lift upper and lower eye lids to ensure all chemical is completely removed. Consult an eye specialist if eye irritation persists.

Most important symptoms and effects

Symptoms include possible eye and skin irritation and central nervous system depression. The most important symptoms and effects are described in Section 2 : "Hazard Identification" and Section 11 : "Toxicological Information". Further important symptoms are not known.

Indication of any immediate medical attention and special treatment needed

Treat according to individual response to, and location of, exposure.
There are no known specific antidotes or contraindications.

5. Fire-Fighting Measures

Extinguishing media

Extinguish fire using dry powder, carbon dioxide, or foam.

If water is used, restrict pedestrian and vehicular traffic in the area because this product is extremely slippery when wetted. If possible, avoid high pressure media which may cause the formation of a combustible dust concentration in the air.

Specific hazards arising from the product

Fire-fighting hazards : Nitrogen oxides (NO_x), carbon oxides (CO_x), and hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

Other hazards : This product is extremely slippery when wet.
Dusty conditions may ignite explosively in the presence of an ignition source and cause a flash fire.

Special protective actions for fire-fighters

Wear a self-contained breathing apparatus.

Further information

Evacuate non-emergency personnel from the area.

Dispose of contaminated extinguishing water in accordance with local, regional, national, and international regulations.

6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Personal precautions : Avoid dispersal of dust in the air, such as clearing dust surfaces with compressed air. Dust in sufficient concentration may result in an explosive mixture in air. Eliminate open flame and any other sources of ignition. The use of non-sparking tools is recommended. Avoid walking through any spilt product or areas where slip hazard may exist; this product becomes extremely slippery when wetted. Handle in accordance with good industrial hygiene and safety practices.

Protective equipment : Wear adequate personal protective equipment (See Section 8 : "Exposure Controls/ Personal Protection").

Emergency procedures : Prevent further leakage or spillage if safe to do so.
Keep people away from spill/leak until clean-up is completed.

Environmental Precautions

Do not flush into drains, surface water, or groundwater.
Contain contaminated water/firefighting water.

Methods and material for containment and cleanup

Small spills :	Clean up by sweeping or vacuum. Do not flush with water as it will cause a slip hazard. Keep the product in a suitable, closed container for disposal.
Large spills :	Clean up by sweeping or shoveling. Do not flush with water as it will cause a slip hazard. Contain with a dust binding inert absorbent material. Keep the product in a suitable, closed container for disposal.
Residue :	Soak up any residue using an inert absorbent material After clean-up, flush away any trace material with water. Use a common salt, such as sodium chloride, to aid in the removal of residue.

Further information

Use of non-sparking tools is recommend for clean-up and whenever working with dry powder polymers.

7. Handling and Storage**Precautions for safe handling**

General precautions :	Avoid contact with skin and eyes. Avoid breathing dust. Breathing must be protected without local exhaust ventilation. Avoid application of product where slip hazard may exist. When using the product, do not eat, drink, smoke, or use tobacco. Wash hands before breaks and at the end of the workday.
Fire and explosion precautions :	Avoid dust formation. Routine housekeeping should be instituted to prevent accumulation of dusts on surfaces. Provide adequate precautions for static discharge, such as electrical bonding and grounding. Eliminate open flame and any other sources of ignition. Dry powders may build up static electrical charges during transfer and mixing. Refer to "NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids (2013 Edition)" for further information on safe-handling.

Conditions for safe storage including any incompatibilities

Store closed in the original container in a cool, dry place.
Avoid wet, damp, or humid conditions.
Avoid temperature extremes and ignition sources. Protect from temperatures above 60° C.
Store away from strong oxidizing agents.

8. Exposure Controls / Personal Protection

Control parameters

Any component not listed has no established occupational exposure limits.

Component name	Regulation	Exposure Limit
Adipic acid	OSHA (8-hour TWA)	5 mg/m ³
	OSHA (15 minutes)	15 mg/m ³
	ACGIH (8-hour TWA)	5 mg/m ³
	NIOSH (10-hour TWA)	Not established.

Appropriate engineering controls

Ensure adequate ventilation. Avoid the formation and deposition of dust. It is recommended that all dust control equipment involved in the handling of this product either contain explosion relief vents, contain an explosion suppression system, or is used in an oxygen deficient environment. Ensure that dust-handling systems, such as exhaust dusts, dust collectors, vessels, and processing equipment, are designed in a manner to prevent the escape of dust into the work area. Use only appropriately classified electrical equipment and powered industrial trucks.

Individual protection measures

Eye and face protection :	Do not wear contact lenses. Use splash resistant chemical goggles or face shield. Maintain an eye wash fountain in the handling area.
Skin protection :	Wear chemical resistant PVC or other protective material gloves and boots. If splashing or repeated contact with the product is likely, wear a chemical resistant apron or protective suit.
Respiratory protection :	No personal protective equipment normally required. If working powder concentrations are more than 10 mg/m ³ , then a NIOSH-certified (or equivalent) organic vapour/particulate respirator is recommended.
General safety and hygiene measures :	Handle in accordance with good industrial hygiene. Ensure adequate ventilation. Wearing of closed work clothes is recommended. Wear protective clothing as necessary to minimize contact with the product. When using the product, do not eat, drink, smoke, or use tobacco. Wash hands before breaks and at the end of the workday.

9. Physical and Chemical Properties

All properties listed below are at 20°C and 101.3 kPa unless otherwise stated

Appearance	Off-white powder.
Odour	None.

Odour threshold	No data available.
pH	2.5 – 4.5 at 5 g/l
Melting point/freezing point	>100° C.
Initial boiling point and boiling range	No data available. Product decomposes.
Flash point	Not applicable. Product is a solid.
Evaporation rate	Product is a non-volatile solid.
Flammability (solid, gas)	Not flammable.
Lower explosive limit	Not applicable. Product is a solid.
Upper explosive limit	Not applicable. Product is a solid.
Vapour pressure	Not applicable. Product is a solid.
Vapour density	Not applicable. Product is a solid.
Bulk density	0.68 g/cm ³
Solubility	Soluble in water and polar solvents.
Partition coefficient (n-octanol/water)	-2
Auto-ignition temperature	Not applicable. Product is a solid.
Decomposition temperature	> 200°C
Brookfield Viscosity (Dilute)	660 mPa.s (cps) at 5.0 g/l 330 mPa.s (cps) at 2.5 g/l 150 mPa.s (cps) at 1.0 g/l
Explosive properties	Kst = 0 (Non-flammable to ignition sources < 2.5 kJ)
Oxidizing properties	No data available.
Minimum ignition energy	2 – 5 kJ

10. Stability and Reactivity

Reactivity

No hazardous reactions are anticipated if the product is stored and handled as indicated.
No known corrosive effect on metals.
Not fire-propagating.

Chemical stability

Stable at normal temperatures and pressure.

Stable if stored and handled as indicated.

Possibility of hazardous reactions

This product does not undergo hazardous polymerization.
Oxidizing agents may cause exothermic reactions.
Buildup of fine dust may lead to a risk of dust explosions, but the product does not present a dust explosion risk as supplied.

Conditions to avoid

Avoid extreme temperatures, humidity, dust formation, and electrostatic discharge.

Incompatible materials

Incompatible with strong acids, strong bases and strong oxidizing agents.

Hazardous decomposition products

Thermal decomposition may produce nitrogen oxides (NO_x), carbon oxides (CO_x), ammonia and hydrogen cyanide (hydrocyanic acid) in an oxygen deficient atmosphere.
No hazardous decomposition products under normal usage, if stored and handled as indicated.

11. Toxicological Information**Information on acute toxicological effects**

Wes-Floc 6816 A

Acute oral toxicity :

Value :	LD50/oral/rat > 5000 mg/kg.
Method :	OECD Guideline 401.
Assessment :	No known acute oral effects.

Acute dermal toxicity :

Value :	LD50/dermal/rat > 5000 mg/kg
Method :	OECD Guideline 402.
Assessment :	No known acute dermal effects.

Acute inhalation toxicity :

Value:	No data available.
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Skin irritation/corrosion :

Species :	Rabbit.
Method :	OECD Guideline 404.
Assessment :	Not irritating to skin.

Serious eye damage/irritation :

Species : Rabbit.
Method : OECD Guideline 405.
Assessment : Not irritating to eyes.

Respiratory or skin sensitisation :

Method : Derived from the components of the product.
Assessment : No suspicion of skin or respiratory sensitisation.

Aspiration hazard :

Method : Derived from the properties of the product.
Assessment : No suspicion of aspiration hazard.

Single target organ toxicity – single exposure :

Method : Derived from the components of the product.
Assessment : None known

Information on chronic toxicological effects

Wes-Floc 6816 A

Repeated dose toxicity :

Method : Derived from the components of the product.
Assessment : No suspicion of adverse health effects from repeated dose.

Germ cell mutagenicity :

Method : OECD Guideline 476.
Assessment : Not mutagenic.

Carcinogenicity :

Method : Derived from the components of the product.
Assessment : No suspicion of being carcinogenic.

Reproductive toxicity :

Method : Derived from the components of the product.
Assessment : No suspicion of being toxic for reproduction.

Teratogenicity :

Method : Derived from the components of the product.
Assessment : No suspicion of being toxic for reproduction.

Single target organ toxicity – repeated exposure :

Method : Derived from the components of the product.
Assessment : None known.

Primary routes of exposure

Primary routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact.
Routes for entry for gases include inhalation and eye contact.
Skin contact may be a route of entry for liquefied gases.

Symptoms of exposure

Symptoms include possible eye and skin irritation and central nervous system depression.
The most important symptoms and effects are described in this section and Section 2 : "Hazard Identification"
Further symptoms are not known.

12. Ecological Information

Information on acute ecological effects

Wes-Floc 6816 A

Acute toxicity to fish :

Value : LC50/*Danio rerio*/96 hours = 5 – 10 mg/l
LC50/fish/96 hours = 1 – 10 mg/l
Method : OECD Guideline 203.
Assessment : Toxic to fish.

Acute toxicity to invertebrates :

Value : EC50/*Daphnia magna*/48 hours = 20 – 50 mg/l
Method : OECD Guideline 202.
Assessment : Harmful to invertebrates.

Acute toxicity to algae :

Value : No data available.
Algal inhibition tests are not appropriate. The flocculation characteristics of the product interfere directly in the test medium preventing homogenous distribution which invalidates the test.

Acute toxicity to aquatic plants :

Value : No data available.

Information on chronic ecological effects

Wes-Floc 6816 A

Chronic toxicity to fish :

Value : No data available.

Chronic toxicity to invertebrates :

Value : No data available.

Chronic toxicity to algae :

Value : No data available.

Chronic toxicity to aquatic plants :

Value : No data available.

Persistence and degradability

Wes-Floc 6816 A

Degradation : Readily biodegradable.

Hydrolysis : At pHs > 6, the polymer degrades more than 70% in 28 days.
The hydrolysis products are not harmful to aquatic organisms.

Adipic acid

Degradation : Readily biodegradable.

Hydrolysis : Does not hydrolyse.

Photolysis : Primary degradation half-life (indirect photolysis) = 2.9 days

Sulfamic acid

Degradation : Not applicable. Sulfamic acid is inorganic.

Hydrolysis : Does not hydrolyse.

Bioaccumulative potential

Wes-Floc 6616 A

Partition coefficient (Log power) : < 0

Adipic acid

Partition coefficient (Log power) : 0.093 at 25°C and pH of 3.3

Sulfamic acid

Partition coefficient (Log power) : -4.34 at 20°C

Mobility in soil

Wes-Floc 6816 A

Adsorption to solid soil phase is expected due the properties of the product.

Other adverse effects

No other adverse effects are known.

Summary of ecological information

This product is toxic to fish and harmful to invertebrates and some algae.

The acute effects are due to the cationic charge of the polymer, but irreversible adsorption onto suspended and dissolved matter mitigates aquatic toxicity by a factor of 10 – 100 with 5 – 10 mg/l DOC in the water according to the US EPA "Dirty Water Test."

The product is not biologically available so accumulation in organisms is not to be expected.

There is currently no data available on the chronic effects of this product.

While it is not expected that this product has significant ecological effects, it is recommended this product not be discharged into the environment.

13. Disposal Considerations**Disposal methods**

Dispose of in accordance with local, regional, national, and international regulations.

Containers that cannot be cleaned should be disposed of in the same manner as the contents.

Crushing or puncturing the contaminated containers is recommended to prevent unauthorized use of it.

Uncontaminated containers can be reused.

Do not dispose of into drains, surface water, or groundwater.

14. Transport Information**Land transport (TDG)**

Not classified as a dangerous good under transport regulations.

Sea transport (IMDG)

Not classified as a dangerous good under transport regulations.

Air transport (IATA)

Not classified as a dangerous good under transport regulations.

15. Regulatory Information**Safety, health, and environmental regulations specific for the product**

Domestic Substances List (DSL) :	All components of this product are either listed on the inventory or are exempt from listing.
Ingredient Disclosure List (IDL) :	No components listed on the WHMIS ingredient disclosure list.

16. Other Information**SDS prepared by :**

Waterhouse Environmental Services Corporations.

Version number :

1.1

Date of issue :

March 1 2021

Date of last revision :

March 1 2021

Notice to readers :

This information is supplied in accordance with Canada's Hazardous Products Regulations (HPR) SOR/2015-17 and the U.S. Hazard Communication Standard (HCS).
The information provided in this Safety Data Sheet is correct to the best of our knowledge at the date of publication, but we cannot guarantee that the hazards listed are the only hazards that exist.
No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof is made, and Waterhouse Environmental Services Corporation assumes no responsibility.

END OF DATA SHEET
