



Gel Flocculant Treatment System: Environmental Calculations

Project:

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Overview

This sheet provides site specific assurance data for the "carry-over" of key elements to the environment from water treatment using gel flocculant blocks. Calculations are derived from an estimated flow / treatment rate, forecast or known volumes of gel flocculant and compared against a worst case scenario release rate. Worst case degradation rates are known from years of site trials, experience and technical review. Carry over rates are compared to the most relevant Environmental Quality Standards (EQS). The approach is highly conservative, with worst case scenarios being adopted. Carry Over Rates are prior to dilution within the receiving waterbody, nor do they take account of binding / capture within the subsequent methods of silt capture.

Site Data

Number of Gel Flocculant Blocks / Mats in system		Flow Rate	
Type	No.	Total Discharge Rate (L / min)	1,600
360	10	Hours run per day	24
494	10	Discharge per day (Litres)	2,304,000
394	0	Days until replacement of Blocks	30
398	0	Discharge in litres per set of blocks	69,120,000
Total	20		
Number of Floc Mats in system			10

Aluminium

No. of Gel Flocculant (494)	Forced Mixing Degradation of Blocks in days (Pipe Reactor, typically >80 days)								Passive mixing degradation of blocks in days (drainage ditch/ drain/ culvert)					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140
1	0.003	0.002	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.007	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
3	0.010	0.005	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
4	0.014	0.007	0.005	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001
5	0.017	0.009	0.006	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
6	0.021	0.010	0.007	0.005	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001
7	0.024	0.012	0.008	0.006	0.005	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002
8	0.027	0.014	0.009	0.007	0.005	0.005	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002
9	0.031	0.015	0.010	0.008	0.006	0.005	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002

Acrylamide

No. of Gel Flocculant blocks in	Forced Mixing Degradation of Blocks in days (Pipe Reactor, typically >80 days)								Passive mixing degradation of blocks in days (drainage ditch/ drain/ culvert)					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140
20	0.214	0.107	0.071	0.053	0.043	0.036	0.031	0.027	0.024	0.021	0.019	0.018	0.016	0.015

Polyelectrolyte

No. of Gel Flocculant blocks in	Forced Mixing Degradation of Blocks in days (Pipe Reactor, typically >80 days)								Passive mixing degradation of blocks in days (drainage ditch/ drain/ culvert)					
	10	20	30	40	50	60	70	80	90	100	110	120	130	140
20	0.881	0.441	0.294	0.220	0.176	0.147	0.126	0.110	0.098	0.088	0.080	0.073	0.068	0.063

Project Specific Comparison: Carry Over Levels v Environmental Quality Standards

Discharge carry over aspect	EQS Value		Standard	Project Discharge Value	% below EQS
Aluminium	0.2	mg/l	Drinking Water Standard	0.011	1649.87%
Acrylamide	0.1	ug/l	Drinking Water Standard	0.071	28.74%
Polyelectrolyte	7.5	mg/l	Waste Water Treatment Standa	0.294	2453.69%





SUMMARY / NOTES:

Terms

The use of flocculants on construction sites requires permission from the environmental regulator.

Proceeding with deployment of a flocculant without regulatory permission is not advised.

Every construction site is different and whilst frog environmental provide site-specific proposals, frog environmental is not 'in control' of the construction site or any portion thereof at any time.

frog environmental do not accept design liability for the efficacy of water treatment systems that are developed in conjunction with the customer.

The quality and quantity of water discharged from site remains the sole responsibility of the customer at all times. Please refer to our full terms and conditions