High efficiency products for wastewater treatment plants

SIFLOC

CROMOGENIA UNITS
YOUR SPECIALIST FOR SPECIALTIES
DIVISIÓN SIDASA

- Primary sedimentation.
- Secondary sedimentation.
- Sludge thickening.
- Sludge flotation.
- Sludge dewatering in: centrifuges, belt press, plate press, vacuum filter and drainage tables

As in Municipal wastewater treatment, Sifloc polyelectrolyte are applied in a wide type of industrial waste treatments like:

- Chemical industry
- Dairy industry
- Leather industry
- Pharmaceutical industry
- Textile industry, etc

Other industrial effluents usually treated by conventional processes; all of them

could be improved by the use of selected Sifloc products. The advantage of use of the correct Sifloc type includes:

Advantages

1. Flocculants cost reduction.
2. High flocculation speed and high flow of treatment.
3. Increase of the sludge concentration and high load concentration
4. Better process stability.
5. Mayor predictable results.

In some situations we can manage special treatments call “impossible before”..

High efficiency products for wastewater treatment plants

DESCRIPTION

The range of Sifloc flocculants are specially designed to the solid - liquid separation in Municipality and industrial wastewater processes.

The wide range of products are the results of the intensive development and field experience for more than 10 year. The high volume of products comes from the diverse optimal selection in any single application.

Types of Products

Sifloc polyelectrolyte are based in high molecular weight water soluble polymers of polymers and copolymers of acrylamide. Polyelectrolyte range available on this series cover a wide range of ionic charges and molecular weight to obtain an efficient flocculation in diverse substrates.

The Sifloc polyelectrolyte series is supply on three different physical types:

- Solid products: In powder/grain or micro beads
- Liquid dispersion: Oil based dispersion at very high concentration
- Liquid emulsion: High concentration inverse emulsion.
- Aqueous solutions: water soluble preparation for instant dilution.

The Sifloc range obtain the best technical economical advantage on the following processes:

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PRODUCT RANGE

On the attached table are located the physicochemical properties and the more common applications, the single the technical processing data are available for each product.

FULL RANGE OF SIFLOC POLILECTROLITES

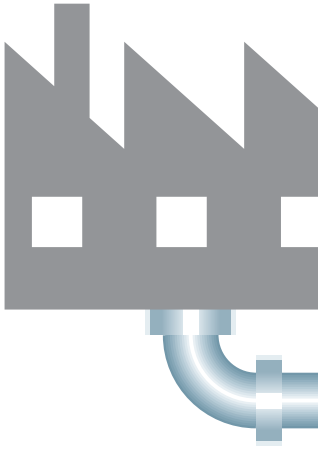
PRODUCT	ASPECT	ACTIVITY	IONIC CHARGE	M. WEIGHT	pH RANGE	APPLICATION
			Cationic			
Sifloc 13230	dispersion	50		ultra - high	4 - 9	DP,C,FT
Sifloc 5040L	powder	100		medium	4 - 9	DP,C,FP,FB,FT
Sifloc 5040	powder	100		very high	4 - 9	DP,C,FT
Sifloc 5050	powder	100		ultra - high	4 - 9	C,FT
Sifloc 13740	dispersion	50		very high	4 - 10	DP,C, FP,FT
Sifloc 13940	dispersion	50		very high	4 - 10	C
Sifloc 5070	powder	100		high	4 - 9	DP,C, FP,FB
Sifloc 5070L	powder	100		medium	4 - 9	DP,C, FP,FB
Sifloc 13755	dispersion	50		very high	4 - 10	DP,C,FT
Sifloc 13955	dispersion	50		very high	4 - 10	C
Sifloc 13775	dispersion	50		very high	4 - 10	DP,C,FT
Sifloc 13960	dispersion	50		very high	4 -10	C
Sifloc 1075	emulsion	40		high	4 - 9	C,FT,E
Sifloc 2080	emulsion	40		ultra - high	4 - 10	C,FT,E
Sifloc 5080L	powder	100		medium	4 - 9	C,FB,FT,E
Sifloc 5080	powder	100		high	4 - 9	C,FB,FT,E
Sifloc 13780	dispersion	50		high	4 - 10	C,FT,E
Sifloc 13980	dispersion	50		ultra - high	4 - 10	C,E
Sifloc 3090	emulsion	40		very high	4 - 9	C,FT,E
Sifloc 2099	emulsion	40		very high	4 - 9	C,FT,E
Sifloc CM 150	solution	20		ultra - high	4 - 12	DP
Sifloc N51	powder	100	Non ionic	high	1 - 9	DP
Sifloc 11100 Acida	powder	100		very high	1 - 9	DP
Sifloc 105CL	dispersion	50	Anionic	high	3 - 12	DP
Sifloc 105	emulsion	40		ultra - high	3 - 12	DP
Sifloc 11407BF	powder	100		medium	3 - 12	DP
Sifloc 713 Neutra	powder	100		very high	3 - 12	DP
Sifloc 11345	powder	100		medium	3 - 12	DP
Sifloc 520	powder	100		high	3 - 12	DP
Sifloc 110	emulsion	40		very high	3 - 12	DP
Sifloc 330	powder	100		high	3 - 12	DP
Sifloc 530	powder	100		high	3 - 12	DP
Sidafloc 200	solution	10		medium	3 - 12	DP
Sifloc 630	powder	100		ultra - high	3 - 12	DP
Sifloc 120	emulsion	40		very high	3 - 12	DP
Sifloc 130	emulsion	40		very high	3 - 12	DP
Sifloc 110CL	dispersion	100		medium	3 - 12	DP
Sifloc 720I	powder	100		very high	3 - 12	DP
Sifloc 540	powder	100		high	3 - 12	DP
Sifloc 11567	powder	100		ultra - high	3 - 12	DP
Sifloc 11656	powder	100		very high	3 - 12	DP
Sifloc 350	powder	100		medium	3 - 12	DP
Sifloc 360	powder	100		high	3 - 12	DP
Sifloc 11767	powder	100		ultra - high	3 - 12	DP
Sifloc 150	emulsion	40		very high	3 - 12	DP
Sifloc 11514	powder	100		very high	3 - 12	DP
Sifloc 120CL	dispersion	100		high	3 - 12	DP
Sifloc 760	powder	100		medium	3 - 12	DP

Cationic charge level increase

Cationic charge increase

The pH values represent the optimal typical range. In some other situations products can work out of the values.

DP - Primary Sedimentation, C - Centrifuges, FB - Belt Press, FP -Press Filter, FT - Flotation, E - Thickening



PRODUCT SELECTION

The optimal product selection in any single application must be based in the result according to the test in the laboratory with the substrate to be treated and described as follows.

	Application in field	Type of laboratory test
1	Sedimentation	Jar test
2	Sludge thickening	Cylinder test and centrifuge test
3	Sludge flotation	Cylinder flotation test
4	Sludge dewatering:	
	Centrifuge	Beaker centrifuge test
	Belt press	Drainage test under pressure
	Vacuum filter	Drainage test under vacuum
	Drainage table	Free drainage test

The different methods procedures are available on request

APPLICATION OF SIFLOC PRODUCTS

Preparation of laboratory solutions

Solid products:

In 200ml dry bottle add 0,5gr. of Sifloc adding 3ml. of methanol, ethanol o any other pure alcohol like a wetting agent. Add 97ml. of water (below 40ºC). Close the bottle and shake strongly during 2 initial minutes and following the agitation periodically during 30-60 minutes until the total dissolution.

The procedure achieve a dilution at 0,5% of the product. Before the final application of the product in the laboratory the product must dilute a 0,5 - 0,2% concentration.

LDP dispersion and inverse emulsions:

Add 1gr. of Sifloc product and 99 ml of water in a beaker with agitation. Maintain the high speed agitation during the first 2 minutes and afterwards follows the medium speed mixing during 20 -30 minutes to achieve a 1% concentrated product.

For final application in the laboratory test must be diluted at 0,1 - 0,3%

Water based products:

Add 10gr of Sifloc in a beaker and add 90ml of water mixing to obtain a homogeneous dilution ready to use. The product can be immediately used or previously diluted 5 - 10 times in water.

Preparation of solutions in plant:

The makeup of Sifloc polyelectrolyte in plant can be done manually or by automatic preparation systems. The election depends of the quantity of product to be prepare, for example, manually if it's one per day and automatic when the quantity to be prepared is considerable. Cromogenia supply a wide range of automatic makeup units for Sifloc in liquid and powder form.

The installation of the automatic makeup units provides sensible improvements in reduction of dedicated staff and amortize the cost quickly.

The preparation of the product manually in plant is following described.

Sifloc products in powder or bead are produced under particle size control to achieve the optimal to improve the makeup time and dissolving properties.
However, the addition of our polymers without a correct mixing can produce very difficult re-dissolution lumps. To improve the initial wetting process, Cromogenia provides of venturi system. The equipment is a simple but very efficient disperser to use the vacuum of the inlet water to achieve a homogeneous solution of Sifloc solid grade and reducing substantially the effort and the preparation time.

To the equipment, the Venturi is install in a preparation tank. In the tank must be a powerful mixer installed to mix the water energetically but not so much to break the molecule of polymer in the preparation.
Cover with water 1/3 - 1/2 parts of the tanker, with the valve opened and connected in to the venturi, adjust the top screw till maximum vacuum to add the required in to the funnel.
The speed of the water across the body of the venturi make the polymer flows quickly to the end of the venturi and wetting with water any single particle free of lumps in to the preparation tanker.
Fill the tanker till the maximum level of capacity maintaining the mixer 30 - 60 minutes for the correct preparation. 0,5% is the maximum concentration recommended.
The liquid preparations , oil LDP or inverse emulsions are simply prepared adding the quantity of polymer, in weight or volume, manually or with a dosing pump from the preparation tanker. The correct mixer must be also installed in the tanker for the good mix with water. The maximum concentration for oil LDP and emulsions are 1% and 5 - 10% for water dissolution.
The preparations in laboratory and plant prepared at the recommended concentrations maintain the efficiency during 2 - 3 day. After this period, and depending to the storage conditions, could be sensible to loose of efficiency.
Concentration to be applied
In industrial plant, the concentration of the preparation depends of the type of application and the final use of the product.
In laboratory is sensible to prepare always an standard concentration of preparation to be added to the substrate.
The recommendation for powder product is 0,05 - 0,1%; 0,1 - 0,2% for the emulsion and LDP products and finally 0,5 - 1% for solution products.
In plant these concentrations can be applied. In some cases it's possible to increase the concentration but it's important to be sure of the correct distribution of the polymer in the substrate.

The dilution of concentrated preparations of polymer in plant are also possible by dilution in line or by separate dilution storage tanks.
Addition process
The dose of the final dilution in the system is very important. The general recommendations to be observed are as follow:

1. Use a local mixing point to dose.
2. Add the polymer and the substrate to be sure a complete mix with all the substrate.
3. Apply the product on the closer to the desired flocculation to ensure this flocculation.
4. Avoid the excess of turbulence and the possible break of the floc just in the formation step.

The recommended dosification pump are by positive and constant dose like helicoidally, piston or gear pumps. The centrifuge pump are not recommended and flocculants can affected by the shear, specially high molecular weight ones.

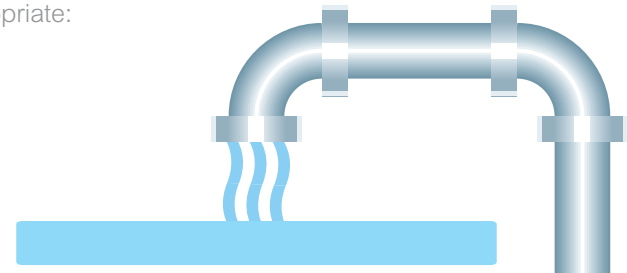
ECTROLITES
GH EFFICIENCY

The dosification of the product must be done by calibrating the dosing pump o installing the proper automatic control flow meters.

Doses

The recommended dose vary according to the substrate, type of application and polyelectrolyte to dosify.
Like a general recommendations, the following doses can be appropriate:

- **Sedimentation:** 0,5 - 5 mg / liter .
- **Sludge thickening:** 2 - 4Kg / ton of dry solids.
- **Sludge flotation:** 2 - 4Kg / ton of dry solids.
- **Sludge dewatering:** 2 - 8kg / ton of dry solids.



These values related about active polymer. The dose for liquid products are higher and according to the active contain in every product.

STORAGE

The Sifloc solid grades are supply in powder and bead. These products must be storage in dry, cold place and in the same package to avoid the moisture. Under these conditions the products can be stable during more than 2 years.
The liquid products, the LDP dispersions, inverse emulsions and solutions are supply to be dosified by dosing pumps o manually from the container. These products must be storage in cold places and avoiding the extreme temperatures. Under the correct conditions of stock these products can be stables between 1 - 2 years. The details of each product are available in separate technical processing data.

PACKAGE

The solid Sifloc are supplied in 25kg. bags and palletized in 500, 750, 900 and 1000kg. The big bag are available upon request.
The liquid are supplied in 25kg, 250kg. drum and 1000kg. IBC container.

TECHNICAL SERVICE

Our Environmental department offers to new customers the technical - commercial staff specialized in the selection in potable laboratory or industrial trial to determinate the best product for each application.
These includes test for selection of the products, planning and start up of industrial trials, supply of equipment for test and periodicals supervision of the results.

HEALTH AND SAFETY

All the Sifloc range are low toxicity products and don't represent any specific problem on the periodical use.
The details of manipulation of every single product are available in separate MSDS information.

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