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PERFORMANCE CHEMICALS FOR WASTEWATER TREATMENT

- 1. Polymer Flocculants**
- 2. Aminoalkyl Methacrylate Monomers**

IMPORTANT :

Before handling these products, refer to the current Material Safety Data Sheet for recommended protective equipment, and detailed precautionary and hazards information.

SANYO CHEMICAL PRODUCT OUTLINE

1. Polymer Flocculants

SANFLOC and SANQUICK products are agents that are essential for wastewater treatment. These products are water-soluble polymers and are offered in a wide range of molecular weights from a few million to twenty million with a lot of absorptive functional groups in their molecules. Therefore, these products promote separation and dewatering of wastewater by flocculating fine suspended solids floating in wastewater and forming big floc particles.

1-1. Typical Properties

Product Name	Appearance (20 ± 5°C)	Ionicity	Cationic Charge Density *	Anionic Charge Density *	pH Range for Effective Use	Features	Main Applications
SANFLOC CH-019P	White powder	Cationic	100	–	3 – 10	Effective in dewatering when beltpress filters are used.	Dewatering of sludge: promoting dewatering organic sludge generated from treatment of municipal wastewater (sewage and night soil, etc.)
SANFLOC C-009P				–			
SANFLOC CH-509P			50	–			
SANFLOC CH-799P			20	–			
SANQUICK C-95EM	Opaque white liquid		95	–			
SANFLOC CE-708P	White powder	Cationic	80	–	3 – 10	Effective in dewatering when centrifugal extractors and screw-press dewatering equipment are used.	
SANFLOC CE-6870P			70	–			
SANFLOC CE-695P			40	–			
SANFLOC CE-683P			30	–			
SANFLOC CE-712P			20	–			
SANFLOC CE-701P			8	–			
SANFLOC R-339P	White powder	Amphoteric	30	35	3 – 7	Effective in dewatering when inorganic flocculant is used together.	
SANFLOC R-337P				35			
SANFLOC R-230P			27	33			
SANFLOC R-500P			25	15			
SANQUICK R-31EM	Opaque white to pale yellow liquid		30	10	3 – 6		
SANQUICK R-11EM			27	33	3 – 7		
SANFLOC AH-400P	White powder	Anionic	–	40	7 – 12	Can be also used for flocculation and sedimentation process.	Flocculation and sedimentation treatments: promoting sedimentation, filtration and clarification of industrial wastewater
SANFLOC AH-330P			–	30	6 – 12		
SANFLOC AH-200P			–	20			
SANFLOC AS-110P			–	10	5 – 12		
SANFLOC AS-510P			–	5			
SANFLOC NOP	White powder	Nonionic	–	–	3 – 10	Effective for acidic wastewater.	
SANFLOC N-500P			–	–			
SANFLOC N-520P			–	4			

* Calculation value

Note: The values described in this brochure are all representative.

1-2. Aqueous Solution Viscosity, Standard Concentration and Amount to be Used

Product Name	Viscosity of Aqueous Solution mPa · s (30°C)				Standard Concentration wt %	Standard Amount ppm	
	0.1 wt %	0.2 wt %	0.3 wt %	0.5 wt %		Flocculation and Sedimentation	Dewatering of Sludge
SANFLOC CH-019P	70	200	360	760	0.02 – 0.4	1 – 100	50 – 1,000
SANFLOC C-009P	80	160	380	820			
SANFLOC CH-509P	120	320	580	1,200			
SANFLOC CH-799P	180	500	900	1,900			
SANQUICK C-95EM	40	80	120	250	0.4 – 0.6		
SANFLOC CE-708P	70	200	380	850	0.02 – 0.4	1 – 100	50 – 1,000
SANFLOC CE-6870P	70	180	320	680			
SANFLOC CE-695P	130	350	650	1,300			
SANFLOC CE-683P	100	260	480	1,000			
SANFLOC CE-712P	110	300	540	1,150			
SANFLOC CE-701P	110	300	540	1,100			
SANFLOC R-339P	70	200	380	850	0.02 – 0.4	1 – 100	50 – 1,000
SANFLOC R-337P	70	200	380	850			
SANFLOC R-230P	100	250	450	900			
SANFLOC R-500P	50	150	300	750			
SANQUICK R-31EM	20	40	65	150	0.4 – 0.6		
SANQUICK R-11EM	100	140	180	280			
SANFLOC AH-400P	250	700	1,250	2,600	0.02 – 0.2	0.1 – 50	10 – 100
SANFLOC AH-330P	220	600	1,100	2,400			
SANFLOC AH-200P	200	550	1,000	2,200			
SANFLOC AS-110P	120	350	650	1,500			
SANFLOC AS-510P	70	230	460	1,100			
SANFLOC NOP	60	170	300	650	0.02 – 0.2	0.1 – 50	10 – 100
SANFLOC N-500P	20	80	180	500			
SANFLOC N-520P	40	140	280	700			

1-3. Examples of Applications

Applications		Ionicity of Polymer Flocculant	Cationic		Ampho- teric	Anionic			Nonionic
			I	II		I	II	III	
Sewage and night soil	Dewatering of activated sludge		B	A	A	-	-	-	-
	Flocculation and sedimentation treatment for activated sludge		A	B	B	-	-	-	-
Pulp and paper	Flocculation and sedimentation treatment for pulp and papermaking wastewater		B	-	-	-	A	A	A
	Dewatering of activated sludge		A	B	B	-	-	-	-
	Recovery of waste fibers in white water		B	-	-	-	A	A	A
Mining	Flocculation and sedimentation treatment for mineral deposits and mineral wastewater		-	-	-	A	A	A	A
	Flocculation and sedimentation treatment for limestone cleaning wastewater		-	-	-	A	A	B	-
Machinery and metal	Flocculation and sedimentation treatment for metal smelting and wastewater		-	-	-	B	A	A	A
	Flocculation and sedimentation treatment for wastewater in the plating industry		-	-	-	B	A	A	A
Con- struction	Treatment for ballast and quarrying wastewater		-	-	-	A	A	A	A
	Treatment for dredging wastewater		-	-	-	A	A	A	-
Ceramics	Treatment for cement and ready-mixed concrete manufacturing wastewater		-	-	-	B	A	B	B
	Treatment for clay and kaolin clay wastewater		-	-	-	B	A	A	B
Textiles and dyeing	Flocculation and sedimentation treatment for textile manufacturing wastewater		-	-	-	B	A	A	A
	Flocculation and sedimentation treatment for wool-dyeing wastewater		-	-	-	B	A	A	A
	Dewatering of activated sludge		B	A	A	-	-	-	-
Food	Flocculation and sedimentation treatment for fish and meat wastewater		-	-	-	B	A	A	B
	Flocculation and sedimentation treatment for rice washing water and starch manufacturing wastewater		-	-	-	B	A	A	B
	Dewatering of activated sludge		B	A	A	-	-	-	-
Chemicals	Flocculation and sedimentation treatment for wastewater in the paint industry		-	-	-	B	A	A	A
	Recovery of magnesium hydroxide		-	-	-	-	A	B	-
	Dewatering of activated sludge		B	A	A	-	-	-	-

Note: A, Most commonly effective; B, Commonly effective

Cationic I : SANFLOC CH-509P, CH-799P, CE-712P, CE-701P

Cationic II : SANFLOC CH-019P, C-009P, CE-708P, CE-6870P, CE-695P, CE-683P, SANQUICK C-95EM

Amphoteric: SANFLOC R-339P, R-337P, R-230P, R-500P, SANQUICK R-31EM, R-11EM

Anionic I : SANFLOC AH-400P, AH-330P

Anionic II : SANFLOC AH-200P

Anionic III : SANFLOC AS-110P, AS-510P

Nonionic: SANFLOC NOP, N-500P, N-520P

2. Aminoalkyl Methacrylate Monomers

METHACRYLATE products are aminoalkyl methacrylate monomers having double bonds, and either tertiary amino groups or quaternary ammonium groups in their molecules. These products are used as raw materials for polymer flocculants.

Product Name	Chemical Name	Structural Formula	Appearance (Color *)	Q Value (e value)	Purity (water content) wt %	MEHQ ** Content ppm
METHACRYLATE DMA	2-(Dimethylamino) ethyl methacrylate	$\begin{array}{c} \text{CH}_2=\text{C} \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{C}-\text{O}-\text{CH}_2\text{CH}_2\text{N} \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{CH}_3 \end{array} \end{array} \\ \parallel \\ \text{O} \end{array}$ Molecular weight: 157	Colorless liquid (10)	0.68 (0.48)	99.8 (0.2)	1,000
METHACRYLATE DMC-80	Methacryloyl oxyethyl trimethyl ammonium chloride	$\begin{array}{c} \text{CH}_2=\text{C} \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{C}-\text{O}-\text{CH}_2\text{CH}_2\text{N}^+ \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{CH}_3 \end{array} \cdot \text{Cl}^- \\ \parallel \\ \text{O} \end{array}$ Molecular weight: 207.5	Pale yellow liquid (30)	1.49 (0.27)	78.5 (21.5)	2,000
METHACRYLATE DMB-60	Methacryloyl oxyethyl dimethylbenzyl ammonium chloride	$\begin{array}{c} \text{CH}_2=\text{C} \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{C}-\text{O}-\text{CH}_2\text{CH}_2\text{N}^+ \begin{array}{l} \nearrow \text{CH}_3 \\ \searrow \text{CH}_2\text{C}_6\text{H}_5 \end{array} \cdot \text{Cl}^- \\ \parallel \\ \text{O} \end{array}$ Molecular weight: 283.5	Pale yellow liquid (30)	–	59.0 (41.0)	290

* APHA

** Hydroquinone monomethyl ether (radical polymerization inhibitor)

PRODUCT LIST

1 PERFORMANCE CHEMICALS FOR SYNTHETIC RESIN & RUBBER INDUSTRIES AND PAINT, INK & PIGMENT INDUSTRIES

1. Curing Agents for Epoxy Resins and Epoxy Resin Enamels
2. Pigment Dispersants (Oligomer Type)
3. Emulsifiers for Emulsion Polymerization
4. Stabilizer for Emulsions and Latexes
5. Resin Modifiers
6. Internal Antistatic Agents
7. Mold Releasing Agents
8. Printing Ink Binders
9. Compounding Ingredients for Paints and Printing Inks
10. Polyurethane Coating Materials
11. Pigment Dispersants (Surfactant Type)
12. Defoaming Agents
13. Plasticizer for Polyurethane-Based Sealant

2 PERFORMANCE CHEMICALS FOR COSMETICS, PHARMACEUTICALS, DETERGENTS AND AGRICHEMICALS

Performance Chemicals for Cosmetics

1. Base Materials for Shampoos (Anionic Type)
2. Base Materials for Shampoos (Amphoteric Type)
3. Foam Stabilizers and Thickeners for Shampoos
4. Base Materials for Body Washes
5. Base Materials for Hair Conditioners
6. Compounding Ingredients for Cosmetics
7. Emulsifiers for Cosmetics

Performance Chemicals for Pharmaceuticals

1. Tablet Binders
2. Base Materials for Ointments
3. Coating Agents for Tablets
4. Germicides (Pharmaceutical Use)
5. Other Products for Pharmaceuticals

Performance Chemicals for Detergents

1. Base Materials for Detergents
2. Germicides (Industrial Use)
3. Additives for Detergents
4. Base Materials for Household Softeners
5. Industrial Defoaming Agents

Performance Chemicals for Agrichemicals

1. Emulsifiers for Emulsifiable Concentrates
2. Dispersants for Granule Preparations

3 PERFORMANCE CHEMICALS FOR POLYURETHANE AND POLYURETHANE-RELATED INDUSTRIES

1. Polyether Polyols for Flexible Slabstock Polyurethane Foams
2. Polyether Polyols for Automobile Hot Molded Seat Cushions
3. Polyether Polyols for Automobile High-Resilient Molded Seat Cushions
4. Polyether Polyols for Crushpad Foams
5. Polyether Polyols for Rigid Polyurethane Foams
6. Polyfunctional Polyols
7. Example of Polyurethane Foam System
8. Polyether Polyols for CASE
9. Prepolymers and Raw Materials for Polyurethane Elastomers
10. Base Materials for Synthetic Leathers
11. Water-Borne Polyurethanes for Textile Processing
12. Polyurethane Emulsions for Adhesives
13. Polyurethane Emulsions for Coatings

4 PERFORMANCE CHEMICALS FOR LUBRICANT INDUSTRIES AND MACHINERY & METAL PROCESSING INDUSTRIES

1. Lubricating Oil Additives
2. Base Materials for Polyalkylene Glycol-Type Lubricants
3. Base Materials for Water-Soluble Quenchants
4. Base Materials for Hydraulic Fluids
5. Materials for Brake Fluids
6. Rust Inhibitors
7. Water-Soluble Cutting Fluids
8. Emulsifiers for Metal Working Oils
9. Base Materials for Metal Cleaners

5 PERFORMANCE CHEMICALS FOR RESOURCE EXTRACTION AND MINING INDUSTRIES

1. Polymer Flocculants
2. Dewatering Accelerator
3. Cold Flow Improvers
4. Lubricity Improver
5. Dewaxing Aids

6 PERFORMANCE CHEMICALS FOR WASTEWATER TREATMENT

1. Polymer Flocculants
2. Aminoalkyl Methacrylate Monomers

8 PERFORMANCE CHEMICALS FOR CONSTRUCTION AND PUBLIC WORKS

1. Flooring Materials
2. Polyurethane for Architectural Paints
3. Water Sealants
4. Waterproofing Agents
5. Concrete Admixtures
6. Dispersant for Manufacturing Cement Boards by Extrusion Molding
7. Frothing Agent for Bubble Mortar
8. Mud Dispersants for Drilling
9. Waste Mud Solidification
10. Polymer Flocculants for Gravel Washing Wastewater Treatment
11. Binder for Ceramics

9 ADHESIVES AND ADHESIVE-RELATED PRODUCTS

1. Pressure-Sensitive Adhesives (Cohesive Agents)
2. Potting Resins for Artificial Kidneys (Hollow-Fiber Type)
3. Resins for Anti-Corrosion Paints for Automobiles (for Improving Adhesion of Paints to Electrodeposition Steel)
4. Binders for Fiber-Finishing Agents
5. Polyurethane Emulsion for Bonding Plastics, Cloth and Wood
6. Binders for Fiberglass
7. Curing Agents for Epoxy Resins

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