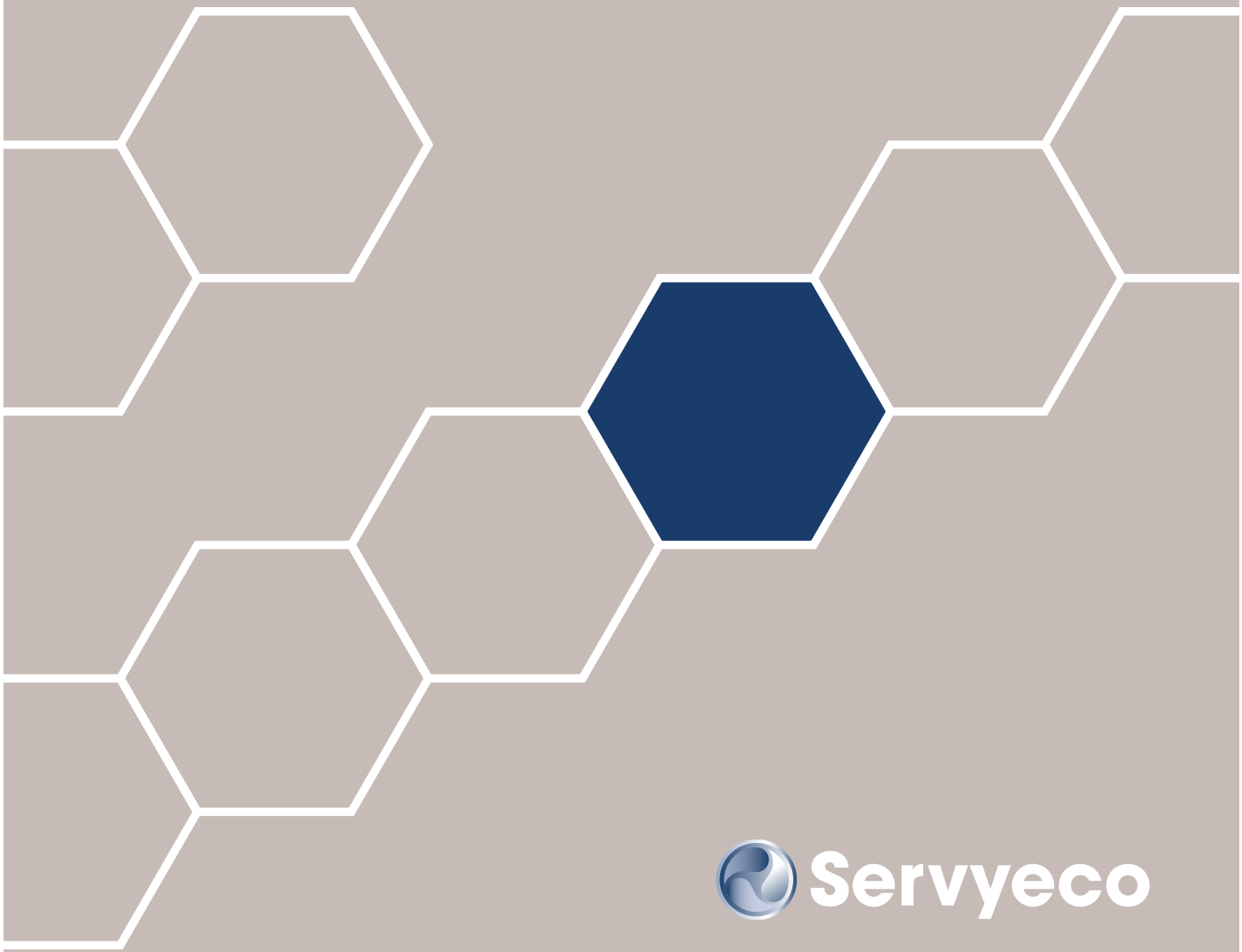
SYNTHETIC AND ORGANIC COAGULANTS FOR WASTEWATER TREATMENT



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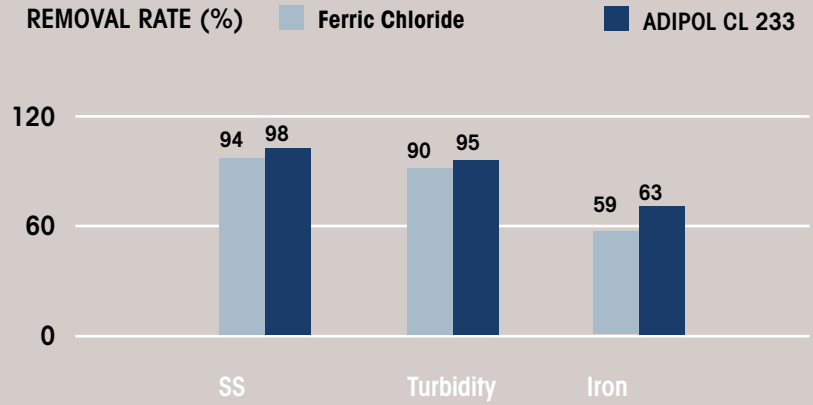
Food Sector - ADIPOL Series

Treatment: Physical - Chemical, Settling Coagulant: Poly Aluminum Chloride					
PARAMETER	**0**	**1**	**Reduction Rate**	**2**	**Reduction Rate**
pH (u pH)	7,9	7,6	-	8,0	-
Conductivity 20 ºC (µS/cm)	4540	4610	-	4570	-
Suspended Solids (mg/l)	772	43	94 %	18	98 %
Turbidity (NTU)	595	57,1	90 %	30,5	95 %
Iron (mg/l)	7,8	3,2	59 %	1,8	63 %
Chlorides (mg/l)	798	922	-	851	-

Coagulant
1.- 300 ppm
Ferric Chloride
2.- 20 ppm
ADIPOL CL 233

- When using ADIPOL Series, the conductivity is not modified.
- The amount of coagulant dosed is reduced down to 93%.
- The values of suspended solids and turbidity are reduced, even with lower dosage of organic coagulants.
- These compounds do not provide metals to the treated water. The sludge volume is drastically reduced.



Sectors

From the industrial customer to the local, from the small and medium-scale enterprise to a multinational, in the national and international market, we are able to provide customized solutions for each customer. Our main clients come from the following sectors:

Industry:
Automotive, metallurgy, paints, glass, ceramics, frits and glazes, sanitary, chemical, petrochemistry, pharmaceutical, food industries (livestock, processing of meat products, fish farms, preserves, mills, coffee products, ice cream, washing and processing of vegetables and fruits, frozen products,…) textile, energy (power plants, biodiesel producers, solar and thermal power plants,…), paper and paperboard, mining, natural stones, plastic recycling and waste management.
Public sector:
Treatment plants of urban waste water and treatment plants of water.

Coagulants

Synthetic

Description
These coagulants are liquid products with organic - inorganic character. These products exhibit greater coagulant efficiency than other inorganic coagulants like ferric chloride, aluminum sulphate or polyaluminum chloride.

Advantages

- They present improved efficiency, minimizing pH value variation and conductivity increment.
- Salts provided to the effluent are lower and the corrosion of the facilities with recycled water is avoided.
- They contain a strong biodegradable component, so that less toxic sludge is obtained.
- While not increasing the effluent conductivity and avoiding facilities corrosion, the maintenance cost is much lower than standard inorganic coagulants treatment.
- The higher coagulant efficiency allows reduced dosages compared to standard products, also decreasing the associated costs.
- Due to the more compact floc formation, the use of flocculants is greatly reduced or even completely eliminated.

PRODUCTS	ECOMIX RE 2	ECOMIX RE 5	ECOTEC H 01	ECOTEC H 04	SINTEC D 50	SINTEC D 100
ASPECT	Liquid Opalescent	Liquid Opalescent	Brown Liquid	Brown Liquid	Yellowish Liquid	Yellowish Liquid
DENSITY (g/cm3)	1,2 - 1,3	1,2 - 1,3	1,3 - 1,4	1,3 - 1,4	1,3 - 1,4	1,3 - 1,4
VISCOSITY (1%, µS/cm2)	2100 - 3800	2100 - 3800	5600 - 8400	5600 - 8400	5500 - 8500	5500 - 8500
PH (1%)	3,6 - 4,3	3,6 - 4,3	3,7 - 4,1	3,7 - 4,1	3,8 - 4,2	3,8 - 4,2
CATIONICITY	High	Very High	High	Very High	High	Very High

Organic

Description
The ADIPOL series consist in organic liquid chemicals which have a high coagulant efficiency mainly focused on its polymer structure and on the strength of the cationic charges. Additionally, inorganic coagulants dosage (ferric chloride, polyaluminum chloride, aluminum sulfate), is dramatically reduced or even avoided during the treatment.

Advantages
Very low doses of ADIPOL products generate settling velocity enhance and, consequently, the work flow could be augmented.

As a coagulant aid, the use of standard coagulants, flocculants and neutralizing agents is greatly reduced or even completely eliminated.

PRODUCTS	ADIPOL CL233	ADIPOL CL243	ADIPOL CL272	ADIPOL CL300
ASPECT	Colourless liquid	Yellowish liquid	Yellowish liquid	Yellowish liquid
DENSITY (g/cm3)	1,10 - 1,15	1,05 - 1,10	1,05 - 1,10	1,10 - 1,15
VISCOSITY (cP)	1000 - 4000	500 - 800	1000 - 3000	400 - 900
PH (20%)	4,0 - 6,0	5,0 - 7,0	5,0 - 7,0	4,0 - 7,0
Solids (%)	50	40	40	50
CATIONICITY	Very High	Very High	High	High

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Food Sector - ECOMIX Series

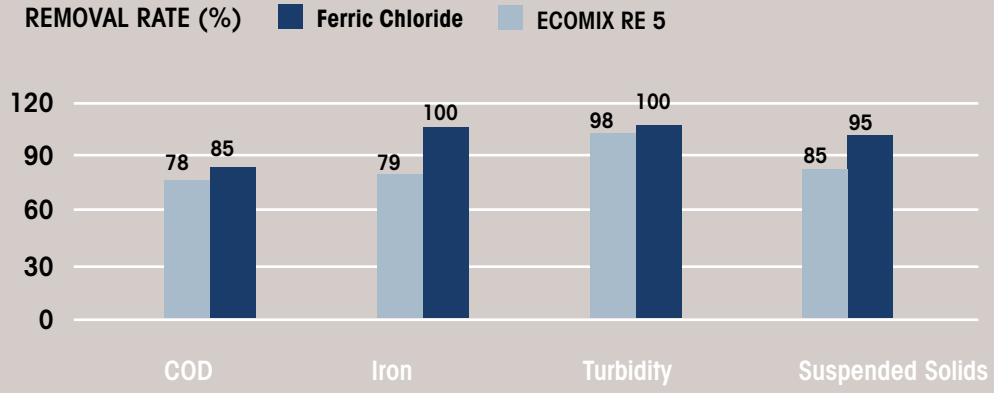
Treatment: Physical - Chemical, Flotation Coagulant: Ferric Chloride					
PARAMETER	**0**	**1**	**Reduction Rate**	**2**	**Reduction Rate**
pH (u pH)	9,2	8,0	-	8,5	-
Conductivity 20 ºC (µS/cm)	3330	4390	-	3350	-
Chemical Oxygen Demand (COD) (mg O_2/l)	1172	257	78 %	180	85 %
Iron (mg/l)	1,4	0,3	79 %	< 0,1	100 %
Turbidity (NTU)	> 1000	21	98 %	< 10	100 %
Suspended Solids (mg/l)	228	35	85 %	11	95 %

Coagulant
1.- 400 ppm Ferric Chlorid
2.- 200 ppm ECOMIX RE 5

pH Adjust
1.- 50 ppm Sodium Hydroxide
2.- 0 ppm

Flocculant
1.- 8 ppm ECOPOL CLR 65
2.- 6 ppm ECOPOL CLR 65

- When using ECOMIX RE 5 as coagulant, neutralizing agent was avoided. Accordingly, conductivity increase was minimized during the treatment.
- The amount of coagulant dosed is reduced down to **50%**.
- The values of suspended solids, iron, chemical oxygen demand and turbidity are drastically reduced, even with lower dosage of synthetic coagulants.



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Ceramic Sector - SINTEC Series

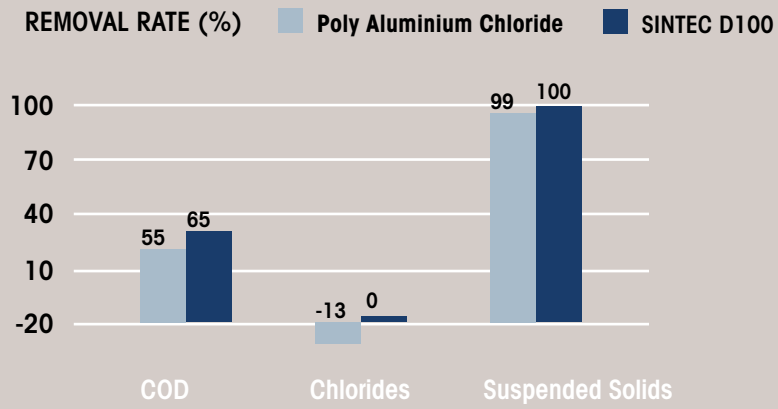
Treatment: Physical - Chemical, Settling Coagulant: Poly Aluminum Chloride					
PARAMETER	**0**	**1**	**Reduction Rate**	**2**	**Reduction Rate**
pH (u pH)	7,2	7,5	-	7,7	-
Conductivity 20 °C (µS/cm)	1750	1810	-	1638	-
Chemical Oxygen Demand (COD) (mg O_2/l)	276	124	55 %	96	65 %
Chlorides (mg/l)	302	340	-13 %	302	0 %
Suspended Solids (mg/l)	5960	40	99 %	20	99,7 %

Coagulant
1.- 200 ppm PAC
2.- 130 ppm SINTEC D100

pH Adjust
1.- 30 ppm Sodium Hydroxide
2.- 10 ppm Sodium Hydroxide

Flocculant
1.- 2 ppm ECOPOL AS 100
2.- 1,5 ppm ECOPOL AS 100

- When using SINTEC D100 as coagulant, neutralizing agent was almost avoided. Accordingly, conductivity increase was minimized during the treatment.
- The amount of coagulant dosed is reduced down to **33%**.
- The values of suspended solids and chemical oxygen demand are reduced, even with lower dosage of synthetic coagulants.



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