ROSUN

CHENGDU ROSUN DISINFECTION PHARMACEUTICAL CO., LTD.

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Chengdu Rosun Disinfection Pharmaceutical Co., Ltd.

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ROSUN

CHENGDU ROSUN DISINFECTION PHARMACEUTICAL CO., LTD.

Makes The Rivers And Earth Cleaner
Helps Billions Of People Be Healthier

WATER TREATMENT SPECIALIST

Range of Application

- Drinking Water
- Domestic Sewage
- Hospital Waste Water
- Circulating Water
- Swimming Pool

COMPANY PROFILE

Chengdu Rosun Disinfection Pharmaceutical Co., Ltd. was established in 2002, and has been committed to high-end environmental disinfection products and water treatment chemicals, and water treatment equipment R&D, production and sales, while providing environmental protection engineering design, construction, chemicals supply, equipment supply, professional maintenance. Products related to drinking water, domestic sewage, hospital waste water, industrial circulating water treatment and high-end disinfection care product areas.

ROSUN has an independent R&D center and high-quality scientific research personnel, has deep cooperation with West China School of Public Health, Sichuan provincial disease prevention and control center, School of Environment Tsinghua University, CNOOC Tianjin Chemical Research & Design Institute.

In the past 17 years, ROSUN gets totally 159 intellectual property, and has obtained the awards of National High-tech Technology Enterprise; Outstanding Innovation Award in Scientific and Technological Achievements of Enterprises and Eleventh Five-Year Plan Promotion Project of National Ministry of Construction.

The company has sales network all over the country. The products are exported to Russia, Thailand, Malaysia, Indonesia, Philippines, Pakistan, Morocco and other countries. It has become the first cross-sector enterprise in China that involves in disinfection and environmental protection.

HISTORY OF ROSUN

In 2002

On May 20, Chengdu Rosun Disinfection Pharmaceutical Co., Ltd. was officially founded.

In 2003

Was certified as "Designated Manufacturer of SARS Disinfectant" by SARS Control and Prevention Office, Sichuan Government.

Was awarded "Sichuan Enterprise with Outstanding Contributions to SARS Prevention and Treatment".

In 2005

Business scope expands to the R&D, production and sales of special agents for environmental pollution treatment, and adds the consultation service of environmental technologies.

Becomes the member of Sichuan Environmental Protection Industry Association.

Becomes the member of Shanghai Disinfection Association.

In 2006

Rosun Disinfectant Powder SE-1 is approved by Ministry of Health.

In 2007

Rosun Disinfectant Powder DW-1 for drinking water is approved by official document.

Becomes the member of Sichuan Province Urban Water Supply and Drainage Association.

In 2008

Was awarded the High-Tech Enterprise by Science and Technology Bureau of Sichuan and Finance Department of Sichuan.

In 2009

Finished preparing the disinfection and testing chapters of Chinese Rural Drinking Water Safety Science and Technology Progress by the Ministry of Water Resources of the People's Republic of China.

In 2010

Was rated as "Excellent Award of Enterprise Scientific and Technological Achievements Independent Innovation".

In 2011

Rosun Disinfectant Powder DW-1 was listed in Recommended Catalogue of 2011 Chengdu Local Famous Products.

Rosun Disinfectant Powder for hospital becomes the recommended products of Shanghai Disinfection Association.

In 2012

Participated in preparing some chapters in Volume I Progress of Modern Disinfection Science.

In 2013

"Potassium monopersulfate disinfectant powder for drinking water" project was listed as 2012 Promotion Project of Scientific and Technological Achievements in National Construction Industry.

Potassium Monopersulfate disinfectant powder for drinking water was listed as recommended technology of *Practical Technology for New Rural Construction.*

In 2014

Rosun Disinfectant Powder DW-1is officially listed in Catalogue of Drinking Water Disinfectant Non-new Products.

In 2015

Rosun Disinfectant Powder DW-1 is obtained NSF International certificate.

Fully expanded to municipal sewage and water plant business

In 2016

Becomes the Deputy Secretary-General Unit of China Membrane Industry Association Water Purification Professional Committee.

Was awarded as "Excellent Disinfection Enterprise" by Shanghai Disinfection Association.

In 2017

Business covers more than 2,000 municipal sewage treatment plants and drinking water plants.

In 2018

Joins hands with CNOOC Tianjin Chemical Research & Design Institute to develop, produce and sell a full range of agent for wastewater and drinking water treatment.

CERTIFICATES &APPLICATION GUIDE

ISO9001

ISO14001

SE-1 REACH TEST REPORT

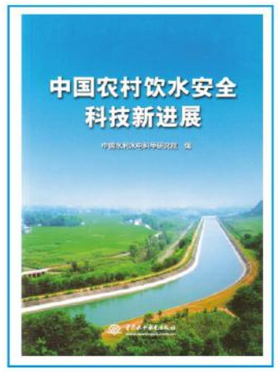
DW-1 REACH TEST REPORT

CSR-CU State Registration Certificate

DW-1 Product License Approval

NSF Certificate

Design Manual for Building Water Supply and Drainage 2nd Edition



New Progress in Drinking Water Safety Technology in Rural China

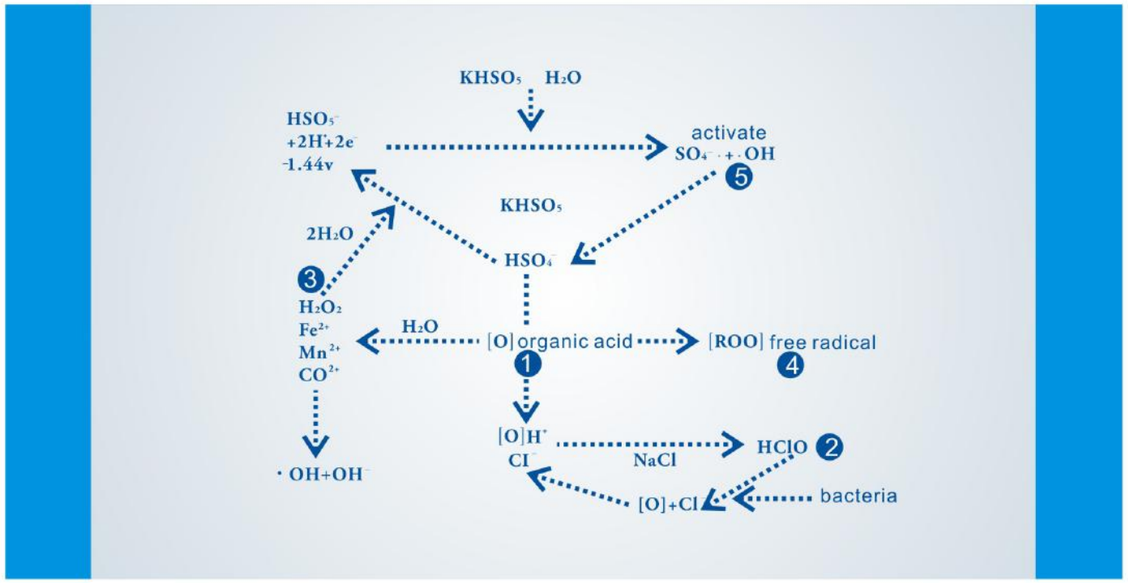
National Health and Family Planning Commission of P.R.C. list Potassium Monopersulfate Salt as a disinfectant for drinking water in 2014		
Number	**Name of main ingredients**	**Attribute**
1	Poly dimethyl diallyl ammonium chloride (PDADMAC)	Coagulation
2	Polyacrylamide (PAM)	Coagulation
3	Aluminum salt	Coagulation
4	Ferric salt	Coagulation
5	Calcium hydroxide	Coagulation aid, PH adjustment
6	Silicate	Coagulation aid, Scale inhibition
7	Potassium permanganate	Disinfection, Oxidation
8	Polyphosphates	Scale inhibition
9	Sodium hypochlorite, Calcium hypochlorite	Coagulation aid, Disinfection
10	**Potassium Monopersulfate (PMPS)**	Disinfection
11	Sodium dichloroisocyanurate (SDIC), Trichloroisocyanuric acid (TCCA) *	Disinfection
12	Chlorine dioxide	Oxidation, Disinfection
13	Hydrogen peroxide	Oxidation, Disinfection
14	Ammonium sulfate	Disinfection
15	Sulfite	Reduction

PRODUCT INFORMATION

In 1980, European and American countries have carried out research on disinfection products with Potassium Peroxymonosulfate as the main active ingredient. Since 2005, Rosun has organized an experts team concentrating on this study, adding synergistic ingredients, like stabilizer and assistant agent with Potassium Peroxymonosulfate, developed Rosun Disinfectant Powder with high efficiency and persistent bactericidal ability. Its active oxygen sterilization content is 10%-14%, while the similar product produced by DuPont of the United States is only 2%-4.5%. At present, the technology of Potassium Peroxymonosulfate disinfectant developed by Rosun has been at the forefront of the world.

Product name	Rosun Disinfectant Powder based on Potassium Monopersulfate
Appearance	Free flowing white powder
Main active ingredient	$KHSO_5$
Existing form	$2KHSO_5 \cdot KHSO_4 \cdot K_2SO_4$
Molecular weight	614.76
Active oxygen content	DW-1 (8%-13%)/SE-1 (10%-14%)/ICW-1(9%-11%)

CORE WORKING PRINCIPLE



ACTION MECHANISM

Rosun Disinfectant Powder is an advanced oxidation technology basing on sulfate radical [$SO_4^-\cdot$], using potassium monopersulfate compound powder ($2KHSO_5 \cdot KHSO_4 \cdot K_2SO_4$) as its active ingredient, by using high-energy activation technology to produce active oxygen [O] through the chain reaction after being dissolved in water, and to produce different kinds of high effective redox potentials, such as small molecule free radicals with high-energy and high-activity, new ecological oxygen atom, hydroxyl radical [·OH], sulphate radical [$SO_4^-\cdot$] thus to become a high-effective disinfectant.

STERILIZATION MECHANISM

1.Oxidation, under the influences of water solution, potassium monopersulfate will release active oxygen, directly carries on the oxidation reaction on microbial cell wall proteins;

2.Release free hydroxyl, disturbing microbial enzyme system to make the microbial protein molecules lose activity;

3.The compound contains sodium chloride, potassium monopersulfate can change chloride ion into chlorine gas to produce low concentration hypochlorous acid, oxidation and chlorination occurs at the same time to realize its effective bactericidal effect.

PRODUCT FEATURES

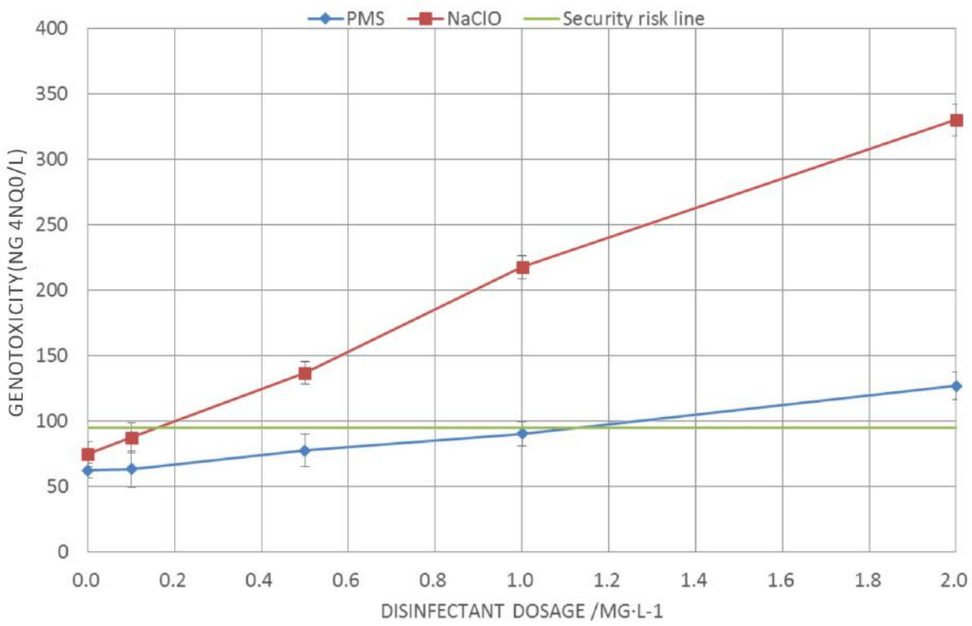
SAFE

Powder form, stable under normal temperature, easy to transport, storage and application, not belongs to explosive or poisonous product, period of validity is two years.

After used ROSUN disinfectant powder, the water quality standard fully meets the requirements of China's National Standard for Drinking Water Hygiene, genotoxicity is much lower than the safety risk line (10^{-6}), far lower than chlorine disinfection.

The following picture shows the genotoxicity of Potassium Peroxomonosulfate disinfectant powder based on the umu experiment in the School of Environment Tsinghua University on the "Study on the disinfection effect of Potassium Peroxymonosulfate composite powder for drinking water".

Changes in Genotoxicity of Raw Water After PMS Addition



ECO-FRIENDLY

The product main active ingredient is active free radical, will not produce much harmful by-products, will not cause environment pollution.

HIGH EFFICACY& PERSISTENT

1.Continuously produce a large amount of active ingredients.

When product dissolved in water, through cycle chain reaction, it will continuously produce Active Oxygen [O], Sulfate free radical [$SO_4^{\cdot-}$], hydroxyl free radical [·OH] which have strong oxidizing property, synergetic sterilization.

PRODUCT FEATURES

2.Active ingredients with high oxidation potential

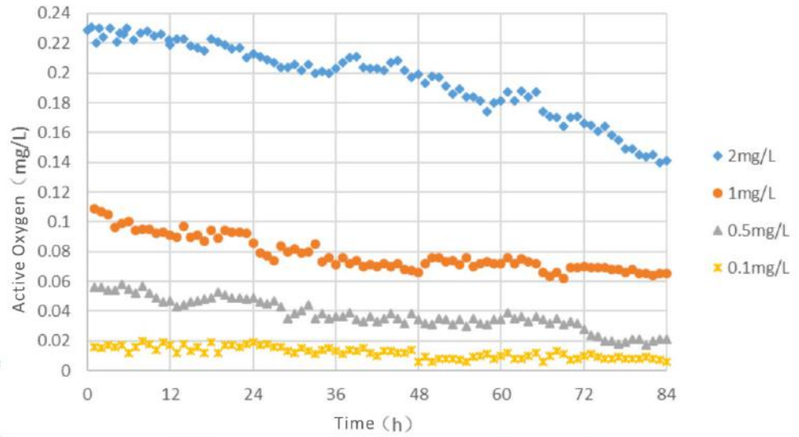
It can remove alga, oxidize and degrade the organic matter, pesticide residue, heavy metal, etc.

Active Ingredient	Oxidation Potential
F_2	3.06
·OH	2.80
$SO_4^{\cdot-}$	2.5-3.1
O_3	2.07
H_2O_2	1.77
HClO	1.63
ClO_2	1.50
Cl_2	1.36

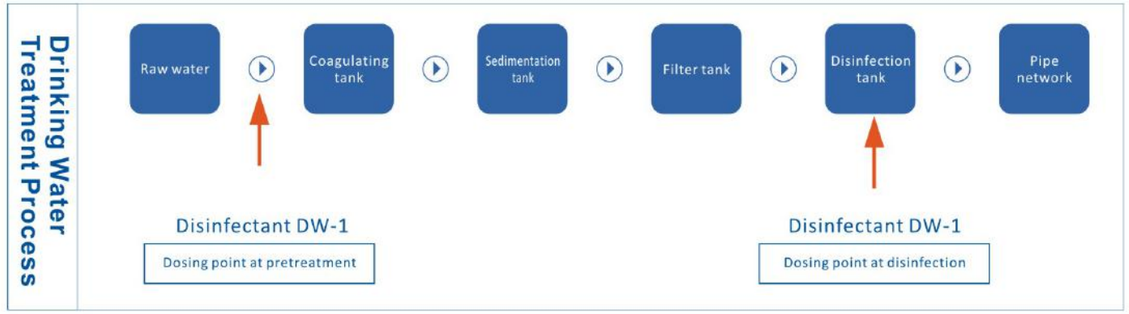
3.Persistent sterilization

The content of active oxygen in the disinfectant solution gradually decreases with time, and only decays by 50% after 84 hours, and the sterilization effect is long.

Changes of Active Oxygen in PMS solution



DISINFECTANT DW-1 FOR DRINKING WATER



1.PRETREATMENT

Before the conventional water treatment process, disinfectant DW-1 is added to the raw water, the powerful oxidation technology is used to efficiently decompose organic pollutants, remove algae and decompose algae toxins in the pretreatment stage, reduce the subsequent water treatment process pressure, and improve the water quality.

In the deep oxidation treatment process, disinfectant DW-1 can also be combined with activated carbon, membrane and ultraviolet light composite process.

The pretreatment recommended dosage is 0.5-2.0mg/L, the actual dosage is determined according to the water quality.

2.DISINFECTION

In the routine water disinfection, disinfectant DW-1 is widely used in tap water, secondary water supply, rural centralized water supply, drinking water bottle, bottle cap and filling equipment disinfection.

APPLICATION CASE

PRETREATMENT

Project name: Qingdao City Jimo Water Plant
Production capacity: 300,000 m^3/d
Dosage: 0.5mg/L
Daily disinfectant consumption: 150kg
Function: disinfection and algae removal at pretreatment
Solved problem: solved the impact of excessive algae on the treatment process

DISINFECTION

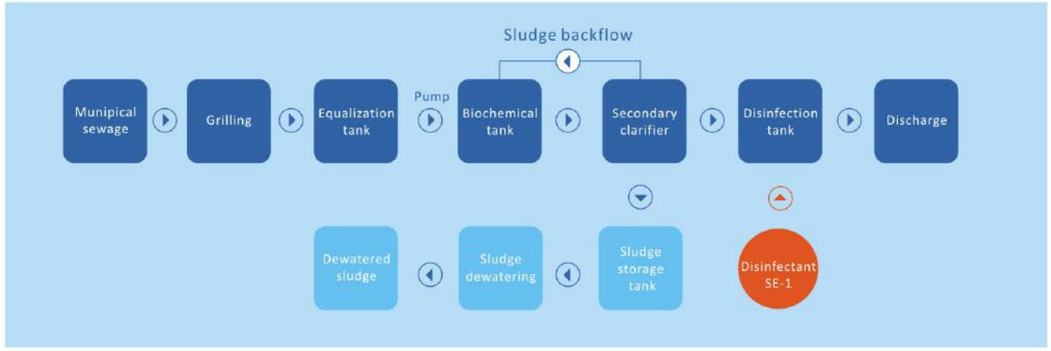
Project name: Huizhou City Wangli Water Plant
Production capacity: 20,000 m^3/d
Dosage: 0.4mg/L
Daily disinfectant consumption: 8kg
Function: disinfection
Previous disinfection method: Chlorine dioxide
Solved problem: solved the problem that chlorine dioxide is easy to corrode, unsafe, and produces a large amount of disinfection by-products

LIST OF PART OF CUSTOMERS

No.	Project location	Industry type	Capacity(m^3/day)	Operation time
1	Qingdao city,China	Tap water plant	100,000	2008.06
2	Qingdao city,China	Tap water plant	20,000	2009.08
3	Tianshui city,China	Tap water plant	20,000	2009.09
4	Qingdao city,China	Tap water plant	40,000	2010.09
5	Shangluo city,China	Tap water plant	15,000	2012.06
6	Yongzhou city,china	Tap water plant	30,000	2012.12
7	Ankang city,China	Tap water plant	8,000	2013.02
8	Linyi city,China	Tap water plant	40,000	2014.07
9	Leshan city,China	Tap water plant	30,000	2014.11
10	Yantai city,China	Tap water plant	50,000	2015.03
11	Shaoyang city,China	Tap water plant	40,000	2015.01
12	Fuzhou city,China	Tap water plant	24,000	2015.07
13	Philippines	Tap water plant	8,400	2013.12
14	Thailand	Tap water plant	3,500	2017.05
15	Thailand	Tap water plant	50,000	2017.11

DISINFECTANT SE-1 FOR SEWAGE AND WASTEWATER

MUNICIPAL SEWAGE TREATMENT PROCESS



USAGE

Disinfected Object	Preparation Method (product:water)	Contact Time (min)	Reference Dosage
Municipal sewage	1kg:50L	≥30	1-2g/m^3
Hospital wastewater		≥60	5-8g/m^3
Swimming pool		15-20	1-2 g/m^3
Solution preparation	Add water first, then add disinfectant in water, stir to dissolve before use.		
Remark	The actual dosage is determined according to the water quality.		


Municipal Sewage

Hospital Wastewater


Swimming Pool

APPLICATION CASE

CASE 1

Project name: Yan'an City Municipal Sewage Treatment Plant
Production capacity: 80,000 m^3/d
Dosage: 2mg/L
Daily disinfectant consumption: 160kg
Function: disinfection
Previous disinfection method: Chlorine dioxide
Solved problem: solved the problem that chlorine dioxide is easy to corrode, unsafe, and produces a large amount of disinfection by-products

CASE 2

Project name: Hanyuan County Municipal Sewage Treatment Plant
Production capacity: 20,000 m^3/d
Dosage: 2mg/L
Daily disinfectant consumption: 40kg
Function: combined with ultraviolet disinfection
Previous disinfection method: ultraviolet
Solved problem: solved the problem that disinfection effect is not up to standard by UV.

LIST OF PART OF CUSTOMERS

No.	Project location	Industry type	Capacity(m^3/day)	Operation time
1	Zhongshan city, China	Municipal sewage plant	70,000	2015.01
2	Zhongshan city, China	Municipal sewage plant	90,000	2016.01
3	Zhongshan city, China	Municipal sewage plant	60,000	2016.07
4	Nanchong city,China	Municipal sewage plant	40,000	2016.08
5	Changzhou city,China	Municipal sewage plant	50,000	2017.05
6	Chengdu city, China	Municipal sewage plant	80,000	2017.06
7	Chengdu city, China	Municipal sewage plant	40,000	2017.09
8	Chengdu city, China	Municipal sewage plant	40,000	2017.12
9	Zhuhai city,China	Municipal sewage plant	20,000	2017.12
10	Meshan city, China	Municipal sewage plant	20,000	2018.04
11	Meshan city, China	Municipal sewage plant	30,000	2018.07
12	Karamay city,China	Municipal sewage plant	50,000	2018.09
13	Zhongshan city, China	Textile printing and dyeing wastewater	10,000	2018.11
14	Karamay city,China	Municipal sewage plant	100,000	2019.01
15	Linhai city,China	Municipal sewage plant	100,000	2019.02

DISINFECTANT ICW-1 FOR CIRCULATING WATER

Disinfectant ICW-1 can replace the non-oxidation and oxidation fungicide like Isothiazolinone, Quaternary ammonium salt, Sodium hypochlorite. It can avoid the increase of COD in circulating water directly and avoid secondary pollution. Zinc Sulfate is added, it has corrosion inhibition effect to protect the system, meanwhile, also has good compatibility with common corrosion scale inhibitor and does not affect its performance in circulating water.

ADVANTAGES

- Kill intractable microbes

The standard electrode potential of Rosun ICW-1 is 1.82V, higher than chlorine, chlorine dioxide,sodium hypochlorite. So it can kill intractable microbes which traditional biocide and algicide can not control well, such as legionnella.

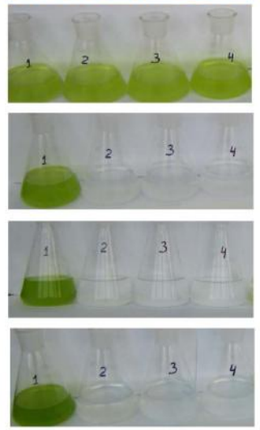
- Increase corrosion inhibition rate

Rosun disinfectant ICW-1 has corrosion inhibition ability not possessed by traditional fungicides and algicides.

- Keep the same microbiological control to reduce COD when the cooling system leaks

Due to environmental disturbances (eg pH, turbidity, organic matter), the bactericidal ability of traditional fungicides and algicides is reduced, but Rosun ICW-1 maintains the same biocidal effect under stressed water conditions. Therefore, when there is material leakage in industrial circulating water, ICW-1 will become one of the best choices for fungicides and algicides to kill microorganisms and remove algae.

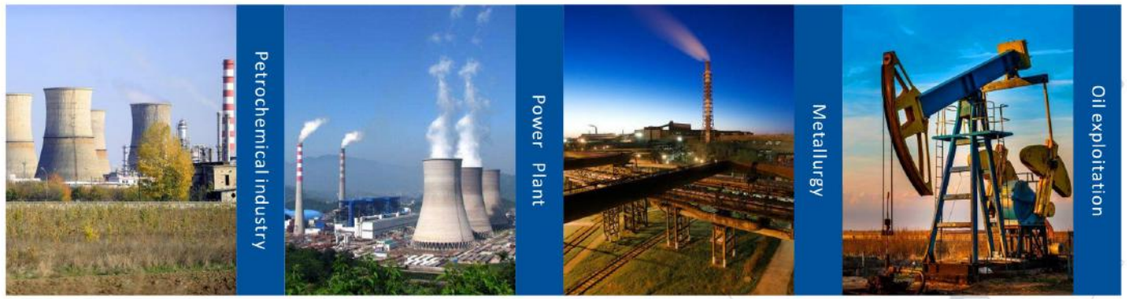
EFFECTS OF ROSUN ICW-1 ON GREEN ALGAE



cup 1---0ppm cup 2---30ppm cup 3---50ppm cup 4---100ppm

USAGE

Disinfected Object	Reference Dosage	Dosing Intervals	Dosing Method
Normal water quality	8-15g/m³	4-7days	Directly add into the water inlet of the pool or circulating water pump.
Material leakage	15-30g/m³	2days	
Remark	Material to avoid: reductant, acids, inflammable, organics, heavy metallic salt, cyanide, halide.		



APPLICATION CASE

Project location: Russia
Capacity: 13,050m³/day
Wastewater type: Circulating cooling water in oil refinery
Previous biocide and dosage: 200ppm Sodium hypochlorite
Current biocide and dosage: 25ppm Rosun Disinfectant ICW-1

Index	Raw Water(CFU)	ICW-1 Dosage	Test Result(CFU)	Standard(CFU)
Total E.Coli	16,545	25ppm	Not detected	<20
Thermotolerant coliform bacteria	13,600	25ppm	Not detected	<10

LIST OF PART OF CUSTOMERS

No.	Project location	Industry type	Capacity(m³/day)	Operation time
1	Karamay city,China	Fine chemical plant	120,000	2008.03
2	Beijing city,China	Petrochemical	240,000	2009.10
3	Leshan city,China	Synthetic ammonia plant	288,000	2010.05
4	Luzhou city, China	Power plant	72,000	2017.09
5	Leshan city,China	Gas station	2,400	2018.03
6	Thailand	Power plant	6,600	2018.06
7	Thailand	Power plant	12,800	2018.10
8	Russia	Oil refinery	13,050	2018.10

HIGH EFFICIENCY PHOSPHOROUS REMOVAL AGENT

ROSUN Phosphorous removal agent is a kind of high efficiency recombination phosphorous removal agent, it can solve the total phosphorous exceed the standard requirement in sewage and waste water plant.

The product has the characteristics of fast reaction speed, high removal efficiency and low concentration of addition. While reducing total phosphorus, it can also improve the sedimentation performance of activated sludge, reduce some COD and SS, and have synergistic effect on microorganisms.

PRODUCT FEATURES

- **Convenient**

For municipal sewage, it can directly add at the end of the biochemical tank, do not need to change the recent process.

- **High efficiency**

Widely pH range, low dosage, fast acting and the phosphorus removal rate can reach 100%.

- **Interaction efficacy**

Composite polymer formulation, not only has Phosphorus removal and flocculation efficacy, but also has synergism efficacy with biological treatment.

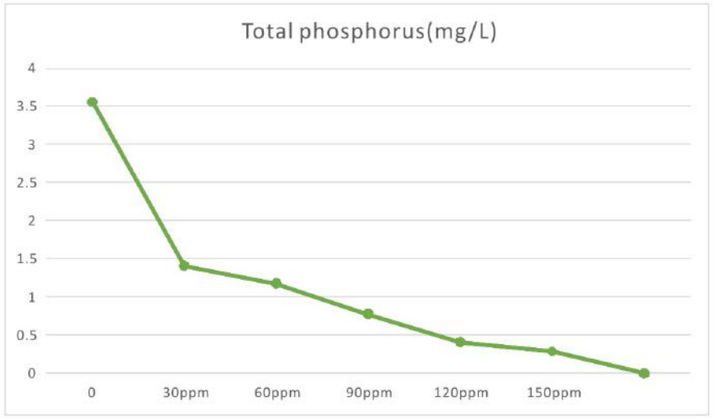
- **Synergistic efficacy**

Can increase the sludge settling speed in secondary sedimentation tank, and reduce some COD and turbidity. Clear effluent and lower sludge production, so it with lower overall treatment cost.

- **Eco-friendly**

Safe and eco-friendly, does not make secondary pollution.

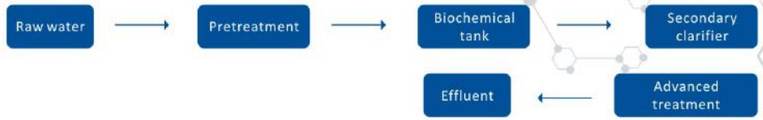
Total phosphorus removal rate test in Tianjin Wuqing wastewater treatment plant



APPLICATION

Domestic sewage and some industrial wastewater

Phosphorous removal agent dosing point



HIGH EFFICIENCY AMMONIA NITROGEN REMOVAL AGENT

ROSUN high efficiency ammonia nitrogen removal agent is a kind of recombination water purifier, it combined with complexing agent, catalyzer and other substance, can effectively remove the ammonia nitrogen in water, meanwhile can remove turbidity, color and COD. It can be used in wide range of pH and with excellent efficacy.

The product can be used for ammonia nitrogen removal, turbidity reducing, decolorization and COD removal in industrial wastewater, municipal sewage treatment and other fields.

PRODUCT FEATURES

- **Convenient**

For municipal sewage, it can directly add into disinfection tank, do not need to change the recent process.

- **High efficiency**

Compared with traditional ammonia nitrogen removal agent, lower dosage and better efficacy.

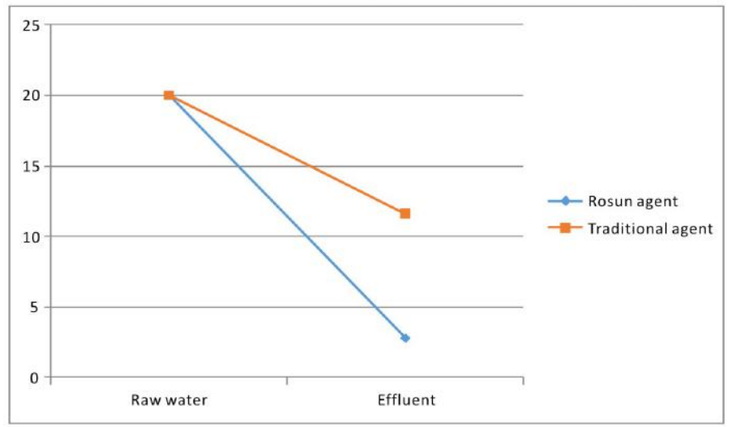
- **Synergistic efficacy**

Except remove ammonia nitrogen, it can reduce the turbidity, color and COD.

- **Eco-friendly**

Safe and eco-friendly, does not make secondary pollution.

Ammonia Nitrogen test in Ya'an Municipal Sewage Plant (dosage 100mg/L)



USAGE

The recommended dosage is 50~800ppm. The specific dodage should be determined according to the water quality conditions and treatment requirements.

The final dosage can be determined by the lab. Test and on-site use results depending on the purpose of the treatment. The solid product should be dissolved in a 1-2% solution. Since the product contains oxidizing components, it should not be added in excess to avoid negative effects on water. If the dosage is excessive, it can be counteracted by adding an appropriate amount of reducing substance such as reducing iron salt.