



**Johnson
Screens**

A brand of
Aqseptence Group

Chemical Rehabilitation for Water Systems

Nu-Well® chemicals are environmentally safe and effective in improving well efficiencies

Over time, water-well screens can accumulate a buildup of biofilm or mineral encrustations, resulting in degradation of well production. Johnson Screens' brand of Nu-Well products can help clear blockages and restore well efficiency – keeping a well at peak efficiency and extending its life.



Technical support and design assistance

- Well redevelopment options
- Pumping test analysis
- Well troubleshooting
- Chemical and bacterial analysis
- Approved for potable water systems
- Well maintenance program guidelines

**Apply safely, easily,
conveniently**

A number of Nu-Well products are NSF approved for use in potable water wells and other water filtering facilities.

Lower cost of well operation

Nu-Well chemicals can lower the overall cost of well operation. The pump of a highly efficient well requires less power to maintain a high output of water. Also, a pump that is efficient has less wear, thus lowering maintenance requirements. A well that requires less power and maintenance, costs less to operate.

Nu-Well 100

Pelletized Acid

Description

- Dry, pelletized acid that sinks in water for cleaning wells
- Cleans calcium and magnesium carbonate scale, iron deposits and moderate biological growth
- Contains color indicator to allow visual monitoring of pH during treatment
- Can be poured directly into the well without dangerous splashing vapors, as with hydrochloric acid
- Easy to use and transport
- NSF certified for potable water well use

Application

Nu-Well 100 pelletized acid is formulated for pouring directly into the well. While it may be dissolved and pumped into the well as a liquid, the pellet form rapidly falls through the water column, providing concentrated acid cleaning power at the bottom of the well. The sinking pellets are ideal for wells with short to moderate lengths of screen at the bottom. Agitation of the acid into the blocked area will greatly enhance cleaning. The acid solution should remain in contact for a period of 12 to 24 hours, depending on the nature of the blockage. The table provides recommended dosages for general well cleaning. The amount of acid consumed will depend on the degree of mineral scaling in the well.

Physical properties, shipping and handling

Appearance: Yellow-brown pellet

Density: Approximately 70 lb./ft.³

Solubility: Approximately 20% by weight @ 68°F (20°C)
(approximately 1 lb./gal. of water)

- Nu-Well 100 pelletized acid is a strong acid-base and should not be stored with strong alkaline materials or oxidizers
- Dust respirators and goggles should be worn where the possibility of dust or mist exists
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by common carrier, DOT Label CORROSIVE
- Additional physical and handling data are available on the product SDS
- Available in 4.5, 9, 45 and 70 lb. containers
- Decomposes at 390° F (200°C)



Standard Dosage Recommended Quantities per 5 ft. Screen Length

Screen Diameter (in.)	Number of 1 gal. jars (9 lb.)
2	1/2
3	1
4	2
5	3
6	4
8	5

Discharge the acid solution from the well, neutralize on the surface and dispose in accordance with the appropriate regulations.

Nu-Well 110

Granular Acid



Dosage Guide

Nominal Well Size		Standard Dosage	
in.	(mm)	lbs./ft.	(Kg/m)
2	51	0.07	0.10
3	76	0.15	0.23
4	102	0.27	0.41
5	127	0.43	0.63
6	152	0.61	0.91
8	203	1.10	1.60
10	254	1.70	2.50
12	305	2.50	3.60
14	356	3.30	5.00
16	406	4.40	6.50
18	457	5.50	8.20
20	508	6.80	10.10
22	559	8.20	12.30
24	610	9.80	14.60
26	660	11.50	17.10
30	762	15.30	22.80
34	864	19.70	29.30
36	914	22.10	32.80

Example

Treat 12 in. well, 180 ft. TD, SWL = 40 ft.

Step 1 Static height = (180 ft. - 40 ft.) = 140 ft.

Step 2 Amount acid = 140 ft. x 2.5 lb./ft. = 350 lbs.

Step 3 Mix 350 lbs. Nu-Well 110 granular acid with water and apply.*

* Better results can be achieved when the total treatment volume of chemical solution is 1.5 to 2 times the static well volume (allowing for penetration into surrounding formation).

Description

- Dry granular acid blend for cleaning residential, irrigation, commercial and municipal water wells
- Cleans calcium & magnesium carbonate scale, moderate iron deposits
- Contains inhibitor to protect metal surfaces and penetrants to clean deep into filter pack and formation
- Contains color indicator to allow visual monitoring of pH during treatment
- Can be poured directly into well without dangerous splashing
- No vapors are released as is evident with hydrochloric acid
- Easy to use and handle
- NSF certified for potable water well use

Application

Nu-Well 110 Granular Acid is used in well cleaning operations as a granular product introduced at the well head or dissolved and pumped into the well as a liquid. The granular form can settle throughout the water column providing a simple application, however, for improved cleaning, it is recommended to pull the pump and treat the well as follows:

1. Nu-Well 110 Granular Acid should be mixed into a tank containing a volume of water and acid equal to 40% of the total treatment volume. The attached table provides the recommended dosage for general well cleaning. When possible, obtain information on construction and performance history and submit samples for laboratory analysis before application to determine if dosage modifications are warranted.
2. This mixture should be placed evenly across the well screens. Placement methods should assure contact with affected regions at the desired concentration. Agitation of the acid into the plugged area will greatly enhance the effectiveness of the cleaning.
3. The acid solution should remain in contact for a period of 12 to 48 hours, depending on the nature of the plugging. Product has limited use where heavy deposits of gypsum are suspected (add Nu-Well 310 BioAcid Dispersant in this situation).
4. Monitor pH often during treatment and keep below 3.0 for effective cleaning. If pH rises above 3.0 add additional acid solution of approximately 20% of original dose. The amount of acid consumed will depend on the degree of mineral scaling.
5. Discharge the acid solution from the well, neutralize on the surface and dispose in accordance with the appropriate regulations.

Physical Properties, Shipping and Handling

Appearance: Yellow-white crystalline powder

Density: Approximately 80 lb./ft.³

Solubility: Approximately 20% by weight @ 68°F (20°C)
(approximately 1 lb./gal. of water)

- Nu-Well 110 Granular Acid is a strong acid-base and should not be stored with strong alkaline material or oxidizers
- Dust respirators and goggles should be worn where the possibility of dust or mist exists
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by common carrier, DOT Label CORROSIVE
- Additional physical and handling data are available on the product SDS
- Available in 50 and 80 lb. containers
- Decomposes at 390° F (200°C)

Nu-Well 120

Liquid Acid

Nu-Well 120 Liquid Acid is the optimal basic ingredient for many cleaning applications

This liquid food grade phosphoric mineral acid effectively removes common mineral deposits found in well, filter bed and water system equipment (iron, manganese, sulfates and carbonates).

A strong liquid acid for use in attacking stubborn mineral scale without risk to screens or casings, NW-120 is a chemically clean acid that won't harm the well structure. When combined with the NW-310, NW-120 offers passivation of corrosion impacted areas, aiding older well completions.

Nu-Well 120 Liquid Acid

1. Determine static height of well: $SH = TD - SWL$
2. From table, determine standard dosage value by diameter
3. Calculate volume of Nu-Well 120 liquid acid required:
 $SH \times \text{Dosage} = (\text{gal./l.}) \text{ Nu-Well 120}$

Physical properties, shipping and handling

Appearance: Clear colorless liquid, no odor

Density: 13.2 lbs./gal.

Solubility in water: 100% in water

Freeze point: 26°F (-3°C)

pH (as shipped): Aqueous approximately 1.00 to 2.00

- Nu-Well 120 liquid acid is a strong acid base and does not store well with strong alkaline materials or oxidizers
- Dust respirators and goggles should be worn where possibility of dust or mist exists
- Hazardous Class: 8, UNI 805, PGIII
- Can be shipped ground by common carrier DOT Label Corrosive
- Additional physical and handling data are available on the product SDS
- Available in 15 and 55 gal. containers

Example

Treat 12 in. well, 180 ft. TD, SWL = 40 ft.

Step 1

Static height = (180 ft. - 40 ft.) = 140 ft.

Step 2

Dosage Value = 0.5 gal./ft. (12 in. well)

Step 3

Volume of Nu-Well 120 liquid acid =
(140 ft. x 0.5 gal./ft.) = 70 gal.



Dosage Guide

Nominal Well Size		Standard Dosage	
in.	mm	gal./ft.	l/m
2	51	0.01	0.17
3	76	0.03	0.38
4	102	0.06	0.68
5	127	0.09	1.07
6	152	0.12	1.54
8	203	0.20	2.70
10	254	0.30	4.30
12	305	0.50	6.10
14	356	0.70	8.40
16	406	0.90	10.90
18	457	1.10	13.80
20	508	1.40	17.10
22	559	1.70	20.70
24	610	2.00	24.60
26	660	2.30	28.90
30	762	3.10	38.40
34	864	4.00	49.30
36	914	4.50	55.30

Nu-Well 220

Dispersant Polymer



Description

- Nu-Well 220 dispersant polymer uses liquid dispersant chemistry specifically designed to remove mud and clay from the well environment
- Successfully develops new wells without using phosphate
- Eliminates food source for bacteria (100 percent water soluble, readily flushed from well)
- Rehabilitates old wells plugged with clays, silts and fines
- NSF approved for potable water well use

Application

In new well systems, use Nu-Well 220 dispersant polymer as you would phosphates for drilling mud breakdown and well development. For optimal removal of bentonite drilling fluids, separately pre-treat the well with 1,500 ppm chlorine to break down the polymers that are included in most commercial bentonite products. Determine borehole volume, and apply Nu-Well 220 dispersant polymer at the rate of 1 gal. per 500 gal. of water. Vigorously agitate by mechanical means for several hours (approximately 1/2 hour per 20 ft. of intake). If left in the well overnight, agitate before pumping out. Allow a minimum of 6 to 8 hours contact time, downhole.

In older well systems use, Nu-Well 220 dispersant polymer to remove fine sands, mud and clays that have filled in the gravel pack and borehole. Use at a rate of 1 gal. per 300 gal. of water. Vigorously agitate (by mechanical means), allowing the solution to stand in the well overnight and repeat the agitation the next day, before pumping out. Allow a minimum of 6 to 8 hours contact time, downhole.

Physical properties, shipping and handling

Appearance: Clear, slight amber colored liquid

Density: 10.5 lbs./gal.

Specific Gravity: 1.27

pH (as shipped): 7.0

Freeze point: 20°F (-3°C)

Solubility: 100%

Use range: 0.002 to 0.5% by volume

- Not regulated as a hazardous material under 49CFR 172.101, RECRE, SARA and CERCLA; however, in storage or use, avoid contact with strong acids or alkaline-based products
- 1 gal. and 5 gal. containers can be shipped by UPS ground delivery
- Additional physical and handling data are available on the product SDS
- Nu-Well 220 dispersant polymer is available in 1, 5, 30 and 55 gal. containers

Note: Allowance for additional surface volume should be treated with an additional 1 gal. Nu-Well 220 per 500 gal. of surface system volume (2 l/m³ of surface system volume)

Dosage Guide

Nominal Well Size		gal./ft.		l/m	
in.	mm	New Well	Old Well	New Well	Old Well
2	51	0.0005	0.0009	0.0068	0.0111
3	76	0.0012	0.0020	0.0152	0.0251
4	102	0.0022	0.0036	0.0270	0.0446
5	127	0.0034	0.0056	0.0422	0.0697
6	152	0.0049	0.0081	0.0608	0.1003
8	203	0.0070	0.0110	0.0810	0.1340
10	254	0.0100	0.0170	0.1270	0.2090
12	305	0.0150	0.0240	0.1820	0.3010
14	356	0.0200	0.0330	0.2480	0.4100
16	406	0.0260	0.0430	0.3240	0.5350
18	457	0.0330	0.0550	0.4100	0.6770
20	508	0.0400	0.0700	0.5100	0.8400
22	559	0.0500	0.0800	0.6100	1.0100
24	610	0.0600	0.1000	0.7300	1.2000
26	660	0.0700	0.1100	0.8600	1.4100
30	762	0.0900	0.1500	1.1400	1.8800
34	864	0.1200	0.1900	1.1460	2.4200
36	914	0.1300	0.2200	1.1640	2.7100

Example

Old 12 in. well, total depth = 600 ft., SWL = 50 ft.

- Find dosage factor (old or new well)
- Multiply static height by dosage factor
- Mix and apply to well or circulating system

Step 1: Dosage factor = 0.024 gal./ft.

Step 2: 550 ft. x 0.024 gal./ft. = 13.2 gal.

Step 3: 13 gal. of Nu-Well 220 dispersant polymer needed

Nu-Well 310

Bioacid Dispersant

Description

Nu-Well 310 bioacid dispersant is a unique polymeric-acid chemistry that is the most effective product available for breaking down biofilm and dispersing mineral salts. Nu-Well 310 bioacid dispersant provides a considerable boost to any acid-cleaning operation, is readily biodegradable and may be used to treat potable water systems and related equipment. Maintains the acid reaction, holding minerals in suspension at pH levels of 3.0 and higher. Controls sludging by preventing re-precipitation or adhesion, for thorough removal of biological material during flushing.

- Dislodges biofilm masses associated with iron oxidizing, sulfate-reducing and more prevalent slime forming bacteria, which are not removed by mineral acids alone
- Sequesters iron and inhibits corrosion on metal surfaces. Iron sequestering allows the chemical solution to remove heavy accumulation of iron compounds, often the cause of fouling water systems
- Protects all forms of metal in the system and will not attack plastic, neoprene or other synthetic materials, eliminating the need for acid inhibitors
- Provides passivation of metals when used with phosphoric acid
- NSF approved for cleaning potable water wells, pipelines and filter systems



Application

Nu-Well 310 bioacid dispersant is designed for use with acid solutions to enhance the acid cleaning reaction and improve the overall cleaning. Standard dosage is 3 percent (1 to 2 percent for maintenance). Dosage of Nu-Well 310 bioacid dispersant can range from 0.5 to 5 percent (by weight) of treatment volume.

Optimal concentration depends on the type and severity of the fouling and degree of impaction on the wells efficiency. It is recommended that well construction and performance history be submitted, along with water samples for lab analysis, to properly determine dosage on large municipal and industrial wells.

1. Surface prepare a solution of water, acid and Nu-Well 310 bioacid dispersant equal to approximately 40 percent of the total static volume into a vessel of appropriate size. First add water, then acid, then Nu-Well 310 bioacid dispersant. **(Note: NEVER add water to acid! DO NOT mix Nu-Well 310 bioacid dispersant directly to commercial concentrations of liquid acid, as polymer destruction may occur.)**
2. Place the surface-solution evenly across the intake zone, ensuring contact with affected areas at the recommended concentration. Agitate the cleaning solution to enhance the effectiveness of cleaning
3. The solution should remain in contact for 18 to 48 hours, depending on the nature of the deposit. Monitor the pH and keep it below 3.0 during treatment. If additional acid is needed (to lower pH), add an amount equal to approximately 20 percent of the initial amount of acid applied
4. Discharge the acid solution from the well, neutralize at the surface and dispose in accordance with local regulations

Nu-Well 320

Biocaustic Dispersant

Description

Nu-Well 320 biocaustic dispersant is designed to enhance solubility of minerals and biological debris when used with caustic (alkaline) products for cleaning wells, potable water distribution lines or other structural systems. Water systems that are heavily fouled with bacteria are often cleaned with a strong caustic cleaner to help dissolve the biological matrix. While the caustic reaction effectively dissolves the polysaccharide exopolymer material (slime secreted by the bacteria), the high pH decreases the solubility of the mineral constituents, causing precipitation of mineral deposits in the area being cleaned.

For more information on Nu-Well 320, please visit www.jswaterwell.com

Dosage Guide

1. Determine static height of water in well
2. Multiply height by dosage factor
3. Mix Nu-Well 310 bioacid dispersant into acid solution, and apply to well

Nominal Well Size		Well Volume		Standard Dosage, 3%	
in.	mm	gal./ft.	l/m	gal./ft.	l/m
2	51	0.16	2	0.004	0.051
3	76	0.37	5	0.009	0.114
4	102	0.65	8	0.016	0.203
5	127	1.02	13	0.026	0.317
6	152	1.47	18	0.037	0.456
8	203	2.62	32	0.07	0.81
10	254	4.09	51	0.10	1.27
12	305	5.89	73	0.15	1.82
14	356	8.02	99	0.20	2.48
16	406	10.47	130	0.26	3.24
18	457	13.25	164	0.33	4.10
20	508	16.36	203	0.41	5.07
22	559	19.80	245	0.49	6.13
24	610	23.56	292	0.59	7.30
26	660	27.65	343	0.69	8.56
30	762	36.82	456	0.92	11.40
34	864	47.29	586	1.18	14.64
36	914	53.01	657	1.32	16.42

Example

12 in. well, total depth = 600 ft.,
SWL = 50 ft.

Step 1

Static height = (600 ft. - 50 ft.) = 550 ft.

Step 2

550 ft. x 0.15 gal./ft. = 82.5 gal.

Step 3

83 gal. Nu-Well 310 bioacid dispersant needed.*

* Better results can be achieved when the total treatment volume of chemical solution is 1.5 to 2 times the static well volume (allowing for penetration into surrounding formation)

***Note:** Standard dosage is for well rehabilitation. For routine maintenance, reduce dosage by 30 to 50 percent

Physical properties, shipping and handling

Appearance: Amber liquid

Density: 10 lbs./gal.

pH (as shipped): 2.0

Specific Gravity: 1.19

Freeze point: 26 °F (-3 °C)

Solubility (in water): 100%

Use range: 0.5 to 5% by volume

- Nu-Well 310 bioacid dispersant is an acid-based liquid. Avoid contact with strong alkaline materials or oxidizers. Use personal protective devices (PPD) and clothing, especially where the possibility of inhalation exists. Most acids and alkaline materials will not affect Nu-Well 310 bioacid dispersant at concentrations below 25 percent
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- 1 gal. and 5 gal. containers can be shipped by UPS ground delivery
- Additional physical and handling data are available on the product SDS
- Nu-Well 310 bioacid dispersant is available in 1, 5, 30 and 55 gal. containers
- Non-bioaccumulating

Dosage Guide

Nu-Well 400 Non-Ionic Surfactant

1. Determine static height of water in well
2. Find dosage factor for standard or heavy oil situation
3. Multiply static height x dosage factor
4. This is the amount needed to treat a well

Nominal Well Size		Gal./ft.		l/m	
in.	mm	Standard Dose	Heavy Oils	Standard Dose	Heavy Oils
2	51	0.0003	0.0006	0.0041	0.0081
3	76	0.0007	0.0014	0.0091	0.0182
4	102	0.0012	0.0024	0.0162	0.0324
5	127	0.0019	0.0038	0.0253	0.0507
6	152	0.0027	0.0055	0.0365	0.0730
8	203	0.0036	0.0073	0.0486	0.0973
10	254	0.0057	0.0114	0.0760	0.1520
12	305	0.0082	0.0164	0.1094	0.2189
14	356	0.0111	0.0223	0.1490	0.2979
16	406	0.0145	0.0291	0.1946	0.3892
18	457	0.0184	0.0368	0.2463	0.4925
20	508	0.023	0.045	0.304	0.608
22	559	0.027	0.055	0.368	0.736
24	610	0.033	0.065	0.438	0.876
26	660	0.038	0.077	0.514	1.028
30	762	0.051	0.102	0.684	1.368
34	864	0.066	0.161	0.879	1.757
36	914	0.074	0.147	0.985	1.970

Example

Old 12 in. well, total depth = 600 ft.,
SWL = 50 ft. with heavy accumulation
of turbine oil

Step 1

Height = (600 ft. - 50 ft.) = 550 ft.

Step 2

Dosage factor = 0.0164 gal./ft.

Step 3

550 ft. x 0.0164 gal./ft. = 9.0 gal.

Step 4

Add 9 gallons of Nu-Well 400 non-ionic
surfactant to the cleaning solution

Note: Allowance for additional surface volume should be treated with an additional 1 gal. of Nu-Well 400 per 1,000 gal. of surface system volume (1 l/m³ of surface system volume)

Nu-Well 410

Chlorine Enhancer

Description

- Used with hypochlorite to increase effectiveness of chlorination
- Maintains pH in well at 6.5 during chlorination, increasing hypochlorous acid
- Increases bacteriological activity by more than 100 times that of hypochlorite
- Contains a penetrant to allow deeper and more complete disinfection
- Controls calcium in hard water to increase the effectiveness of calcium hypochlorite
- NSF certified for potable water well use

Application

Nu-Well 410 is a unique chemistry that improves the biocidal capabilities of chlorine while increasing the treatment area and providing secondary cleaning - significantly enhancing traditional chlorination efforts. Nu-Well 410 is applied based on the water chemistry and chlorine concentrations, maximizing chlorine effectiveness, specific to your well.

Laboratory testing and field trials demonstrate that successful well chlorination is achieved with a chlorine concentration of 200 ppm. The following procedures are recommended for using Nu-Well 410 chlorine enhancer with chlorine concentrations of 200 ppm.

1. Determine the static volume, the amount of Nu-Well 410 chlorine enhancer and the amount of chlorine product necessary to treat the well according (Consideration should be given to increasing this volume by two to four times to allow sufficient disinfectant solution to reach all areas of the well and borehole that can harbor coliform bacteria or other contaminating organisms.)
2. In a tank on the surface, add the amount of Nu-Well 410 chlorine enhancer to water as estimated from dosage guide. Mix the solution; and measure the pH. The pH of the solution should be between 4.5 and 5 before adding the hypochlorite. All mixing should be done in a well-ventilated area. Caution: When chlorine is placed in an acid pH of 5.0 or lower, chlorine gas can be released. When the hypochlorite solution or powder is added, the pH will rise immediately, preventing any further chlorine release, but you should add the hypochlorite quickly and move away until the pH rises.
3. Place the chlorine solution in the well, evenly washing down the upper levels of the well before you place the solution throughout the water column
4. Agitate or surge the mixture to ensure good coverage. Let the solution stand in the well for 5 to 12 hours. Additional agitation before removal is beneficial.
Nu-Well 410 chlorine enhancer is buffered to hold the pH at the optimal level. However, if additional Nu-Well 410 chlorine enhancer is required, blend in a volume equal to 25 percent of the original mixed volume and add carefully so that the pH does not drop below 5.0, resulting in release of chlorine gas.
5. Pump the solution to the surface, neutralize using Nu-Well 500 Chlorout, and discharge in accordance with local rules and regulations.

Physical properties, shipping and handling

Appearance: Clear, light amber liquid

Density: 9.3 lbs./gal.

pH (as shipped): 2.4 - 3.4

Specific Gravity: 1.12

Freeze point: 26 °F (-3 °C)

Solubility (in water): 100%

Use range: 0.01 to 1% by volume

Volatility: Non-volatile

- This product is not considered dangerous and does not require special handling or disposal
- Avoid contact with strong acids or alkaline-based products
- Not regulated as a hazardous material under 49CFR 172.101, RECAR, SARA and CERCLA
- 1 gal. and 5 gal. containers can be shipped by UPS ground delivery
- Additional physical and handling data are available on the product SDS
- Nu-Well 410 chlorine enhancer is available in 1, 5, 30 and 55 gal.



Dosage Guide

Nu-Well 410 Chlorine Enhancer

1. Determine static height (TD - SWL).
2. Multiply amount of chlorine enhancer from table by static height
3. Determine amount of hypochlorite product from table
4. Surface batch = water + Nu-Well 410 chlorine enhancer + hypochlorite

Nominal Well Size (in.)	Well Volume (gal./ft.)	Amount of Nu-Well 410 (qt./ft.)	Amount of Chlorine Product		
			CaHypocl 65% (lb./ft.)	SodHyp 12% (gal./ft)	SodHyp 5% (gal./ft.)
2	0.16	0.0007	0.0004	0.0003	0.0006
3	0.37	0.0015	0.0010	0.0006	0.0014
4	0.65	0.0026	0.0017	0.0011	0.0025
5	1.02	0.0041	0.0027	0.0017	0.0039
6	1.47	0.0059	0.0038	0.0025	0.0056
8	2.62	0.010	0.007	0.004	0.010
10	1.09	0.016	0.011	0.007	0.016
12	5.89	0.024	0.015	0.010	0.022
14	8.02	0.032	0.021	0.014	0.030
16	10.47	0.042	0.027	0.018	0.040
18	13.25	0.053	0.034	0.023	0.050
20	16.36	0.07	0.043	0.028	0.062
22	19.80	0.08	0.051	0.034	0.075
24	23.56	0.09	0.061	0.040	0.090
26	27.65	0.11	0.072	0.047	0.105
28	32.07	0.13	0.083	0.055	0.122
30	36.82	0.15	0.096	0.063	0.140
32	41.89	0.17	0.109	0.071	0.159
34	47.29	0.19	0.123	0.080	0.180
36	53.01	0.21	0.138	0.090	0.201
40	65.45	0.26	0.170	0.11	0.249
46	86.56	0.35	0.225	0.147	0.329

Note: Amounts based on application of 200 ppm chlorine concentration into well water with alkalinity of 100 ppm.

Example

Disinfect a 16 in. well, TD = 300 ft, SWL = 50 ft. with calcium hypochlorite 65 percent active

Step 1

Static height = (300 ft. - 50 ft.) = 250 ft.

Step 2

Amount enhancer = 250 ft. x 0.042 qt./ft. = 11 qt.

Step 3

Amount hypochlorite = 250 ft. x 0.027 lb./ft. = 6.8 lbs.

Step 4

Batch: 250 ft. x 10.47 gal./ft.= 2,618 gal. water (2,618 gal. + 11 qt. + 6.8 lbs.)

If well water alkalinity or the recommended chlorine dosage level is greater than the standard values in the above table, adjust the amount of chlorine enhancer and the amount of hypochlorite concentrations as shown below

Nu-Well 410 Chlorine Enhancer

Hypochlorite

Amount above x (Alk/100)

Amount above x (recommended concentration/200)

Tip: Optimal results are obtained when the surface solution is two to four times the well volume, providing sufficient hypochlorite ions to disperse into the gravel pack and immediate surrounding formation where coliform organisms exist. For large wells, this may not be practical and multiple batches, with proportions of chemistry, may be required to achieve desired results

Nu-Well 500

Chlorout

Description

- Used to neutralize chlorine solutions before their disposal
- Safe to handle
- Concentrated crystal that is easy to dissolve for fast neutralization
- Easy to use

Application

Nu-Well 500 was designed to rapidly neutralize chlorine solutions following their removal from the well, prior to disposal. Nu-Well 500 acts immediately, reducing down-time and effectively neutralizing chlorine residuals.

Nu-Well 500 Chlorout is used on the surface, after the well or system discharge has been pumped into a tank or holding pond, as follows:

1. Measure the chlorine level in the water, and calculate the dosage of Nu-Well 500 Chlorout needed for neutralization, as indicated on the table
2. Mix Nu-Well 500 Chlorout with the chlorinated water. The chlorine levels will neutralize almost immediately. If dechlorinating a large volume, dissolve Nu-Well 500 Chlorout in 1 gal. of water for every pound of Nu-Well 500 Chlorout required. Some heat is generated upon dilution
3. Discharge to an approved outlet

Physical properties, shipping and handling

Appearance: White to opaque coarse crystal

Density: 10.0 lbs./gal.

pH (as shipped): 8.6 (7.5% solution)

Specific Gravity: 1.67

Freeze point: Not Applicable - solid

Solubility (in water): 33% at 32

Use range: 0.01 to 1% by volume

- This product is not considered dangerous and does not require special handling or disposal
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- 10 lbs. containers can be shipped by UPS ground delivery. 50 lbs. pails available
- Additional physical and handling data are available on the product SDS
- Nu-Well 500 Chlorout is available in 10 lb. containers and 50 lbs pails



Treatment Guide

Nu-Well 500 Chlorout

Chlorine Discharge (ppm)	Batch Volume to be Treated							
	gal.*				m ³ **			
	100	250	500	1000	1	2	4	5
20	0.02	0.05	0.10	0.20	0.02	0.05	0.10	0.12
40	0.04	0.10	0.20	0.40	0.05	0.10	0.19	0.24
60	0.06	0.15	0.30	0.60	0.07	0.14	0.29	0.36
80	0.08	0.20	0.40	0.80	0.10	0.19	0.38	0.48
100	0.10	0.25	0.50	1.00	0.12	0.24	0.48	0.60
120	0.12	0.30	0.60	1.20	0.14	0.29	0.57	0.71
140	0.14	0.35	0.70	1.40	0.17	0.33	0.67	0.83
160	0.16	0.40	0.80	1.60	0.19	0.38	0.76	0.95
180	0.18	0.45	0.90	1.80	0.21	0.43	0.86	1.07
200	0.20	0.50	1.00	2.00	0.24	0.48	0.95	1.19
250	0.25	0.63	1.25	2.50	0.30	0.60	1.19	1.49
300	0.30	0.75	1.50	3.00	0.36	0.71	1.43	1.79
350	0.35	0.88	1.75	3.50	0.42	0.83	1.67	2.08
400	0.40	1.00	2.00	4.00	0.48	0.95	1.90	2.38
450	0.45	1.13	2.25	4.50	0.54	1.07	2.14	2.68
500	0.50	1.25	2.50	5.00	0.60	1.19	2.38	2.98

*Values are lbs. of Nu-Well 500/batch

** Values are kg of Nu-Well 500/batch

NOTE: For best results, first dissolve Nu-Well 500 Chlorout in water; then add to the well discharge as a solution. (About 1 lb of Nu-Well 500 Chlorout to 1 gal of water) *1 m³ = 1,000 L

The above table shows the amount (lb or kg) of Nu-Well 500 Chlorout that is necessary to mix into various volumes of discharge water to neutralize a specific chlorine concentration level.

Example: To neutralize a 1,000- gal tank of well discharge with a chlorine concentration of 180 ppm, dissolve 1.8 lb of Nu-Well 500 Chlorout into approximately 2 gal. of water then add to the tank.

Example

Neutralize a 1,000 gal. tank of well discharge with a chlorine concentration of 180 ppm.

Step 1

Dissolve 1.8 lbs. of Nu-Well 500 Chlorout into approximately 2 gal. of water

Step 2

Add to the tank

Chemical application and compatibility – Nu-Well product application guide

Product	Remove Carbonate Scale	Remove Sulfate Scale	Remove Iron/Manganese Scale	Remove Biofilm	Remove Hydrocarbon	Drill Mud Break Down	Remove Clays and Bentonite	Buffer Chlorine	Neutralize Chlorine
Nu-Well 100 Pelletized Acid	Good	Fair	Fair	Poor	Poor	No	No	Fair	No
	VG with Nu-Well 310	VG with Nu-Well 310	VG with Nu-Well 310	G with Nu-Well 310	F - G with Nu-Well 310				
Nu-Well 110 Granular Acid	Good	Fair	Fair	Poor	Poor	No	No	Fair	No
	VG with Nu-Well 310	VG with Nu-Well 310	VG with Nu-Well 310	G with Nu-Well 310	F - G with Nu-Well 310				
Nu-Well 120 Liquid Acid	Good	Good	Good	Poor	Poor	No	No	Good	No
	VG with Nu-Well 310	VG with Nu-Well 310	VG with Nu-Well 310	VG with Nu-Well 310	G with Nu-Well 310				
Nu-Well 220 Clay Dispersant	No	No	No	No	No	Fair	Good	No	No
	VG with X								
Nu-Well 310 Bioacid Dispersant	Poor	Poor	Poor	Good	Poor	No	Fair	Good	No
	VG with Nu-Well 120	VG with Nu-Well 120	VG with Nu-Well 120	VG with Nu-Well 120	F with Nu-Well 120		G with Nu-Well 400		
Nu-Well 400 Non-ionic Surfactant	Add Surfactant to Nu-Well 100, Nu-Well 120, Nu-Well 310 or Nu-Well 320 to improve penetration of cleaning chemistry and hydrocarbon solubility.					No	No	No	No
Nu-Well 410 Chlorine Enhancer	No	No	Good	Fair	Fair - Good	No	No	VG	No
	Especially Iron Hydroxides								
Nu-Well 500 Chlorout	No	No	No	No	No	No	No	No	VG

VG = Very Good, G = Good, F = Fair, X = Commercial sodium or calcium hypochlorite up to 1,200 ppm to facilitate polyacrylamide breakdown

Compatibility Chart

Nu-Well product Compatibility Guide

Product	Nu-Well 100	Nu-Well 110	Nu-Well 120	Nu-Well 220	Nu-Well 310	Nu-Well 320	Nu-Well 400	Nu-Well 410	Nu-Well 500
Nu-Well 100 Pelletized Acid	--	Yes	Yes	No	Yes	No	Yes	No	No
Nu-Well 110 Granular Acid	Yes	--	Yes	No	Yes	No	Yes	No	No
Nu-Well 120 Liquid Acid	Yes	Yes	--	No	Yes	No	Yes	No	No
Nu-Well 220 Clay Dispersant	No	No	No	--	No	Yes	No	No	No
Nu-Well 310 Biocautistic Dispersant	Yes	Yes	Yes	No	--	No	Yes	Yes	No
Nu-Well 400 Non-ionic Surfactant	Yes	Yes	Yes	No	Yes	Yes	--	Yes	No
Nu-Well 410 Chlorine Enhancer	No	No	No	No	Yes	No	Yes	--	No
Nu Well 500 ChlorOut	No	--							

Chemical Cleaning, Disinfection & Decontamination of Water Wells



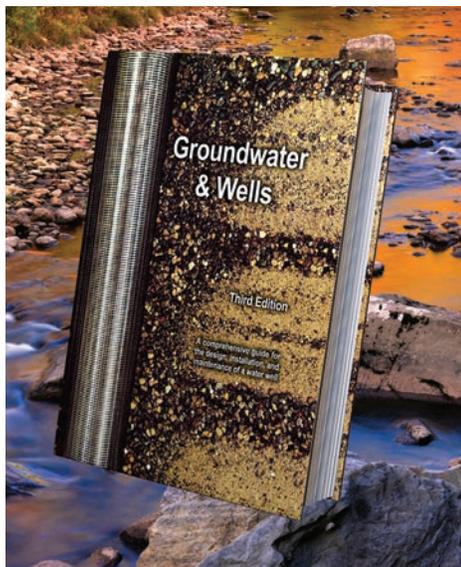
Chemical Cleaning, Disinfection & Decontamination of Water Wells book is a concise, complete assessment of the important role certain chemicals play in modern water treatment, water system construction and maintenance programs.

Included in this text are complete descriptions of chemicals frequently used in water supply applications. With a focus on effective and efficient use of chemicals, individually or in combination, to achieve better well rehabilitation, water system cleaning and water quality treatment.

Diagrams, formula mixer ratios and other technical data are included, along with proper handling techniques for each chemical and, where appropriate, clear warnings about possible hazards and the conditions that can cause them.

Chemical Cleaning, Disinfection & Decontamination of Water Wells book is in a convenient format for use on job sites, as well as classrooms and labs.

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