BoreSaver Ultra C – Instructions For Use – Contractors

Product Description

BoreSaver Ultra C is an acidic rehabilitation chemical designed to dissolve iron oxide deposits in potable groundwater bores, wells, pumps and pipes.

Scope

Through various chemical and bacterial processes, mineral deposits can cause clogging of groundwater screens, gravel packs, pumps, and pipes. To remove the clogging, **BoreSaver Ultra C** is added to the target treatment zone directly from the container and then agitated using standard well rehabilitation methods. This loosens and dissolves the clogging that can then be removed by bailing, airlifting, or pumping.

Safety

BoreSaver Ultra C contains natural and organic ingredients and is fully and rapidly biodegradable. Being an acidic cleaner, a pH test is a good indicator as to whether the system has been sufficiently purged. There are also finer tests available to clients who require them.

Applying The Product

BoreSaver Ultra C is supplied as a concentrate and can be used "as is" or mixed with water just prior to use if required.

In wells with up to 170' of water depth, the product can simply be tipped into the top of the casing. Subsequent surging, cycling, brushing etc of the well will do a good job of mixing the treatment solution into the target zones.

If the water depth is greater than 170' , we recommend using a tremmie system to place the product in the target zones. When we refer to a tremmie, we are describing a reel of pipe or hose with a pump attached that can place the treatment solution to a variety of depths in the well.

Where the pump is to be left in place and a cycling method of treatment used, simply start the pump running then tip the **BoreSaver Ultra C** into the top of the well. This will efficiently clean the pump, rising main and upper sections of the casing but not have any significant impact below the pump intake zone.

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Keys to successful well rehabilitation:

- Use the recommended amount of product.
- You should do two treatments or "phases" for a severe problem rather than increasing the treatment concentration beyond the recommended maximum.
- Get the product to the area that needs it i.e. wells with more than 170' of water depth it may be useful to use a tremmie to get product directly into the screens.
- Agitate the treatment solution thoroughly in the target zone.
- Leave in place for the recommended time.
- Purge the treatment solution to waste ensuring the top portion of the well has also been rinsed. The purge can be accelerated if required, please ask for details if this applies to you.
- Ensure all wastewater is disposed of in accordance with relevant Environment Agency protocols.

How Much To Use?

Maintenance dose rate is 2% by volume of **BoreSaver Ultra C** to the water volume in areas to be treated.

Strong dose rate is 5% by volume of **BoreSaver Ultra C** to the water volume in areas to be treated. This dose rate is reserved for sites with a very substantial clogging.

The table below is intended as a quick guide only. Please refer to the **Well Rehabilitation Analysis Checklist** and **Dosing Calculator** for more detailed product quantity selection.

Casing ID Internal Diameter	Maintenance		Strong	
	lb/foot	kg/m	lb/foot	kg/m
4"	0.12 lbs	0.13 kg	0.30 lbs	0.31 kg
6"	0.28 lbs	0.29 kg	0.70 lbs	0.72 kg
8"	0.44 lbs	0.51 kg	1.10 lbs	1.28 kg

To use this table simply look at the recommended amount of **BoreSaver Ultra C** required (2% or 5%) for the appropriate casing internal diameter. Multiply this amount by the water depth to be treated. i.e 30 ' water depth for a 4" ID well for a maintenance clean. 0.12 * 30 so we know we need 3.6 lb of product to do the job.

Mechanical Surging

Reversed flow through the screen into the formation can be accomplished through the use of mechanical devices such as surge block or surge plunger. They are operated up and down in the casing, similar to a piston in a cylinder. Surge devices are inexpensive, easy to use, and quite effective as development tools. They can be used for wells of any depth or diameter. *Circular 803, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: August 1988*

solution into the target zones.

If the water depth is greater than 170', we recommend using a tremmie system to place the product in the target zones. When we refer to a tremmie, we are describing a reel of pipe or hose with a pump attached that can place the treatment solution to a variety of depths in the well.

Where the pump is to be left in place and a cycling method of treatment used, simply start the pump running then tip the BoreSaver Ultra C into the top of the well. This will efficiently clean the pump, rising main and upper sections of the casing but not have any significant impact below the pump intake zone.

Safety

Treatment Method Overview

Keys to successful well rehabilitation:

You should do two treatments or "phases" for a severe problem rather than increasing the treatment concentration beyond the recommended maximum.

Get the product to the area that needs it i.e. wells with more than 170' of water depth it may be useful to use a tremmie to get product directly into the screens.

Agitate the treatment solution thoroughly in the target zone.

Leave in place for the recommended time.

Purge the treatment solution to waste ensuring the top portion of the well has also been rinsed. The purge can be accelerated if required, please ask for details if this applies to you.

Ensure all wastewater is disposed of in accordance with relevant Environment Agency protocols.

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How Much To Use?

Maintenance dose rate is 2% by volume of **BoreSaver Ultra C** to the water volume in areas to be treated.

Severe dose rate is 5% by volume of **BoreSaver Ultra C** to the water volume in areas to be treated. This dose rate is reserved for sites with a very substantial clogging.

The table below is intended as a quick guide only. Please refer to the **Well Rehabilitation Analysis Checklist** and **Dosing Calculator** for more detailed product quantity selection.

Casing ID Internal Diameter	Maintenance		Severe	
	lb/foot	kg/m	lb/foot	kg/m
4”	0.12 lbs	0.13 kg	0.30 lbs	0.31 kg
6”	0.28 lbs	0.29 kg	0.70 lbs	0.72 kg
8”	0.44 lbs	0.51 kg	1.10 lbs	1.28 kg

To use this table: simply look at the recommended amount of **BoreSaver Ultra C** required (2% or 5%) for the appropriate casing internal diameter.

Multiply this amount by the water depth to be treated. i.e 30 ‘water depth for a 4” ID well for a maintenance clean. 0.12 * 30 so we know we need 3.6 lb of product to do the job.

Handling-Safety- Storage

Skin Protection:

- Rubber or neoprene gloves as standard. Additional protection including impervious boots, apron, or coveralls should be used as needed in areas where there is a risk of unusual exposure to prevent skin or eye contact.

Eye Protection:

- Use chemical safety goggles and/or a full-face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Cautions

- Chlorine type chemicals react vigorously with acids such as contained in **BoreSaver Ultra C and IKL PRO**.

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Storage

- **BoreSaver Ultra C** is supplied in UN certified boxes and pails. Storage should be cool, dry, well-ventilated area out of direct sunlight. Check regularly for leaks.

Incompatibilities

- Acids are highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

Mechanical Surging

Reversed flow through the screen into the formation can be accomplished through the use of mechanical devices such as surge block or surge plunger. They are operated up and down in the casing, similar to a piston in a cylinder. Surge devices are inexpensive, easy to use, and quite effective as development tools. They can be used for wells of any depth or diameter. *Circular 803, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: August 1988*

Surging alternately forces water into and out of the formation through the well screen openings. A piston-like tool moves up and down in the well to create the surging action. The surging of the water through the well screen loosens the mud and fines in the borehole and draws them into the well to be removed by pumping or bailing. Surging is especially well suited to cable tool drilling type setups. While common for bridge or louvered well screens, surging is not very effective with very deep wells (over 200 feet) or those with multiple screens unless a special WBR (cable tool style) rig and tool set is used.

Surge Application Method

1. Pump must be removed.
2. Use down-hole camera to determine the extent of the fouling.
3. Start the brush/surge process
4. Bail any debris from the well.
5. Add **BoreSaver Ultra C** to the casing and screen.
6. Resume brush/surge
7. Leave the product to work in the screen for 12 to 48 hours
8. Purge 3 casing volumes or more until water runs clear (measure flow and drawdown at this time to calculate specific capacity (SC)).
9. Wastewater from the purge should be disposed of in accordance with Environment Agency protocols.
10. Inspect the well with a camera.
11. Repeat steps 3 to 7 if desired.
12. Test the water pH and as otherwise may be directed by any relevant authorities.
13. Install the pump.
14. Resume operations

Air Assisted Development

Airlift pumping forces compressed air through an air line to the bottom of the well. As the mass of air bubbles rise, they create a surging effect that carries water and fines out of the well. Air lift pumping is alternated with short periods of no pumping, which forces water out into the formation to help break up sand bridging around the screen. Well development is only effective if the water is deep enough in the well to get the surging action and the correct treatment chemicals are used.

The source of compressed air should be capable of evacuating 50 percent of the water column from the well once every minute. The recommended well development time for compressed air is four hours with cycling at two-minute intervals.
To ascertain the correct pressure divide the depth of water above the screen by 0.1593 (bar) eg 25 metres divided by 0.1593=156.9 kPa.

Air Application Method

1. Pump must be removed.
2. Use down-hole camera to determine the extent of the fouling.
3. Start the air surge process
4. Bail or airlift any excess debris from the well.
5. Add the **BoreSaver Ultra C**.
6. Resume air surging
7. Leave the product in place for between 12 to 48 hours
8. Purge a minimum of 3 casing volumes or until water runs clear (measure flow and drawdown at this time to calculate specific capacity (SC)).
9. Wastewater from the purge should be disposed of in accordance with Environment Agency protocols.
10. Perform a camera inspection.
11. Test the water pH and as directed by any relevant authorities.
12. Install pump.
13. Resume normal operations

On Site Disposal of Purge Water

- Purge waters contain the minerals dissolved into solution (the original "problem source"), carbon dioxide and some amount of residual acidity. Wastewater from the purge (including the chlorinated water) should be disposed of in accordance with Environment Agency protocols.

- Contain the first two well volumes of the purge water onsite in a holding pit or tank for pH correction.

- Adding sodium carbonate, sodium bicarbonate or sodium hydroxide until pH 7 is reached will correct the pH almost instantly.