

***FREYTECH*** *INC.*



**EBD Technology for Hard Water Treatment**  
[freytech.com](http://freytech.com)

# WHAT IS HARD WATER?

All of the water we consume has some degree of hardness. This is one of the parameters that is taken into account to determine the water quality.

Water hardness is the concentration of mineral compounds present in a given amount of water, particularly calcium and magnesium salts. Hard water contains a high concentration of dissolved minerals.

Water is naturally soft when it falls from the sky and becomes hard after coming into contact with the ground.

When rainwater falls on an area with porous rock such as limestone, the water soaks into the ground, and as it percolates, it picks up and dissolves particles and minerals (such as calcium and magnesium), thus becoming hard.

If the water falls on non-porous rocks like granite, the water cannot penetrate the soil and cannot pick up particles or minerals and therefore remains soft.

The problems arise when hard water reaches our homes for cooking, cleaning, washing or heating.

## Determination of water hardness

How “hard” the water is in a given location is calculated by taking the sum of the concentrations of calcium and magnesium in each liter of water and expressed in parts per million (PPM), thus providing a rating. Over time, the following scale has been established to rate and classify hard water:

PARTS PER MILLION	WATER HARDNESS
0 – 100 PPM	Very soft
101 – 300PPM	Moderately soft
301 – 500PPM	Moderately hard
501 above	Hard

According to international standards, the permissible limit of water hardness for human consumption is 500mg/l.

# Problems Caused By Hard Water

Billions of people around the world receive hard water through the mains water supply.

When hard water molecules are agitated (heated) in boilers, dishwashers and other appliances, the hardness multiplies exponentially.

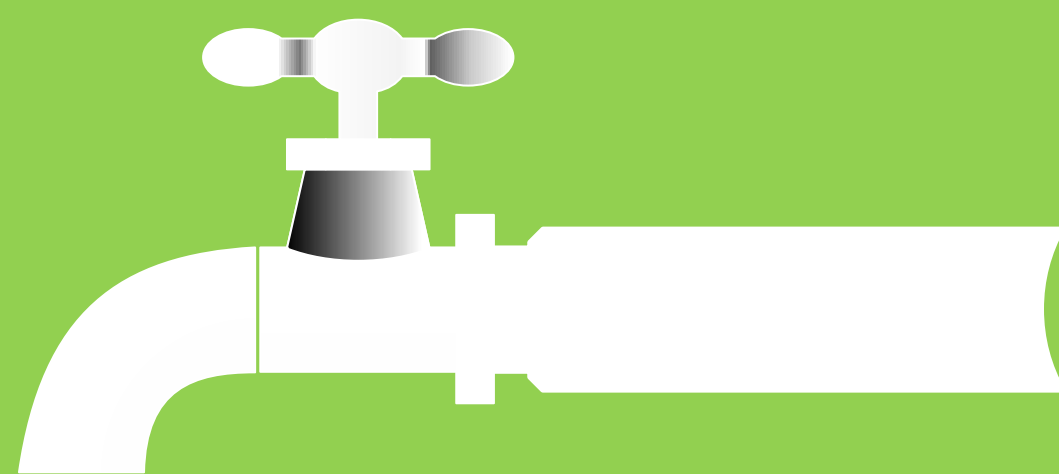
This causes various problems, such as blocked and damaged pipes and it decreases the efficiency and performance of appliances, including boilers / heaters.

Some of the most common problems generated by hard water:

- Clogged valves
- Blocked piping with reduced inner diameter
- Less efficient appliances
- Increase in gas and electricity consumption
- Lime concentration in faucets, pipes, etc.
- Damage to water heaters and pumps.



# Hard Water Treatment Using EBD



EBD Water Packs are installed on the outer surface of water pipes. The EBD unit does not come into physical contact with the water inside the pipe. Water hardness is reduced by up to 42%. No electricity, filters, chemicals, salt, or other consumables are required. Water hardness is reduced in real time on a continuous flow through basis. No batch treatment is required.



EBD technology for drip irrigation applications.

<https://youtu.be/BU49lyu7LJU> And <https://youtu.be/XsqA9zR3yzY>

EBD eliminates limescale / hard water problems in residential building

<https://youtu.be/dC33JWNC0Io>

EBD Water Packs permanently eliminates scale build up in piping for irrigation and residences.

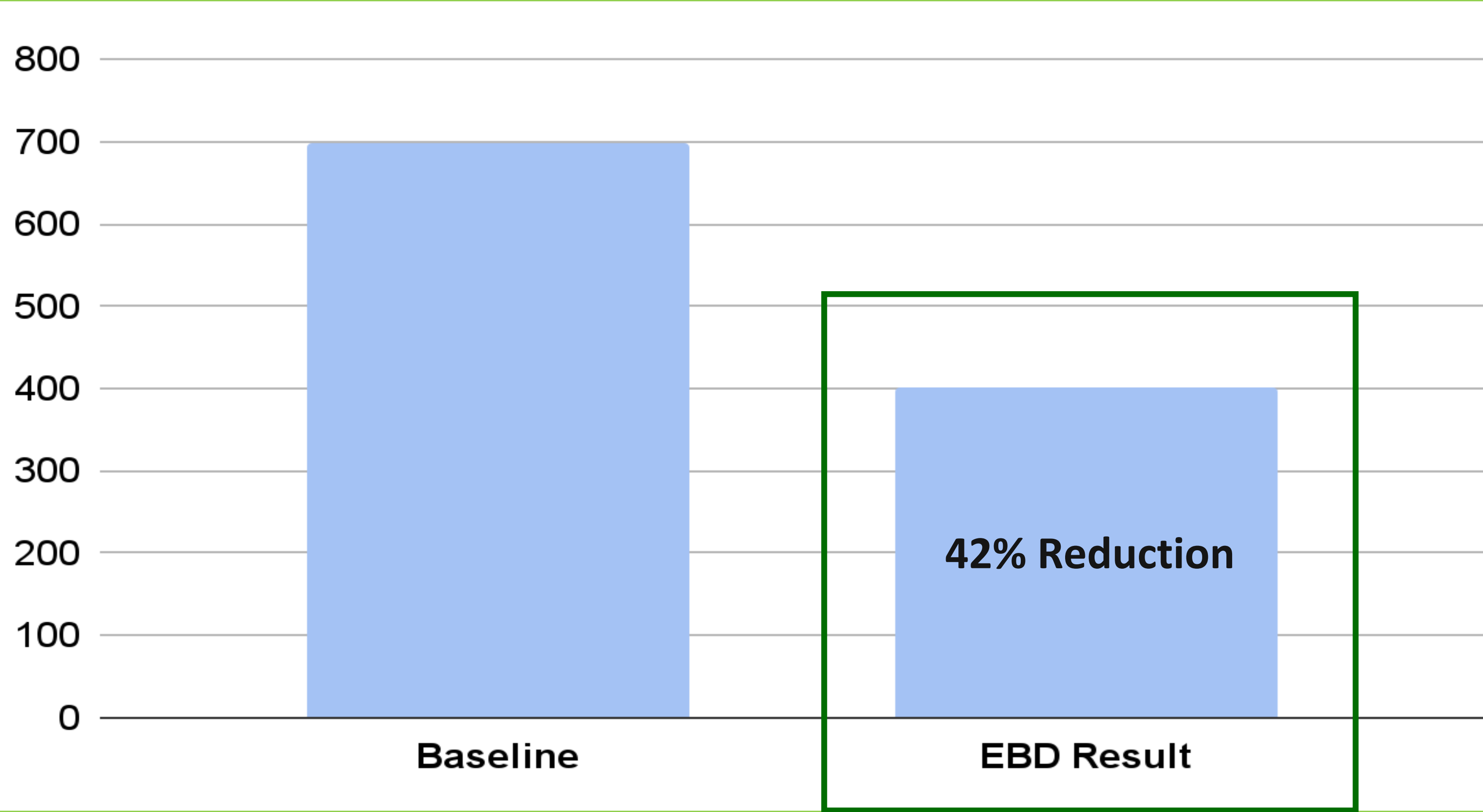
<https://youtu.be/dLq6hZRsHMY>





# WATER HARDNESS REDUCTION RESULT

	Baseline	EBD Result
Water hardness in PPM	698.6	401.9



## **COMMON QUESTIONS ABOUT EBD TO SOFTEN AND TREAT HARD WATER**

### **DOES THE EBD SYSTEM USE MAGNETS?**

**WE DO NOT USE MAGNETS. WE USE EARTH'S ENERGY FIELDS (POSITIVE [+] AND NEGATIVE [-] CHARGED PARTICLES) TO ESTABLISH THE OPTIMAL RESONANCE OF THE ATOMIC MATTER IN THE WATER AND ACTIVATE THE NATIVE MICROORGANISMS PRESENT IN THE WATER TO BIOREMEDIATE. THIS REDUCES THE HIGH MINERAL CONCENTRATIONS IN THE WATER AS WELL AS PATHOGENIC BACTERIA IN REAL TIME.**

### **SO, IT BREAKS THE LIMESCALE IN THE PIPES, BUT IS THERE STILL GOING TO BE LIME IN THE WATER?**

**THE HIGH CONCENTRATIONS OF MINERALS SUCH AS MANGANESE, IRON, CALCIUM, ETC. ARE GREATLY REDUCED IN REALTIME ON A CONTINUOUS BASIS 24/7. THE EBD UNIT'S SERVICE LIFE EXCEEDS 15 YEARS. NO SALT, NO COLLOIDAL SILVER, NO CHEMICALS, NO ELECTRICITY, NO CONSUMABLES, NO BACKFLUSH, AND NO MAINTENANCE REQUIRED.**

### **HOW MUCH POWER DOES IT REQUIRE AND HOW MUCH WATER CAN IT TREAT PER HOUR?**

**EBD DOES NOT REQUIRE ELECTRICITY OR ANY OTHER TYPE OF EXTERNAL POWER SOURCE. WE CAN TREAT ANY SIZE FLOW RATE. THERE IS NO LIMIT. EBD WATER PACKS WORK WITH ANY TYPE OF PIPE MATERIAL: COPPER, PVC, STEEL, HDPE, METAL, CONCRETE, POLYVINYL CHLORIDE, GRP, ETC.**

### **THE WATER SOFTENERS WE SEE ON THE MARKET THAT USE MAGNETS BREAK DOWN LIME, BUT AFTER 24 HOURS, THE LIMESCALE WILL REFORM AGAIN IN THE PIPES.**

**EBD DOES NOT USE MAGNETS. EBD BREAKS DOWN LIME ON A PERMANENT BASIS. LIME DOES NOT RETURN. IN FACT, EBD DISSOLVES, ELIMINATES AND BIOREMEDIATES LIME AND ALSO REMOVES THE LIME THAT HAS BUILT UP AS A SOLID SCALE ENCRUSTED ON THE INNER WALLS OF THE PIPES AND THE BOILERS. WITH EBD, THE SCALE IN THE PIPES AND BOILERS IS REMOVED OVER TIME.**

# THE NUMBER OF EBD UNITS REQUIRED DEPEND ON THE OUTER DIAMETER (OD) SIZE OF THE WATER PIPE.

PIPE OD DIAMETER IN MM	PIPE OD DIAMETER IN INCHES	NUMBER OF EBD WATER PACK UNITS REQUIRED*
Up to 25	Up to 1.25	1 Water Pack (S) (S=Small Unit)
25 to 90	1.25 – 3.5	1 Water Pack (L) (L=Large Unit)
100	4	2 Water Pack (L)
125	5	2 Water Pack (L)
150	6	3 Water Pack (L)
175	7	3 Water Pack (L)
200	8	4 Water Pack (L)
225	9	4 Water Pack (L)
250	10	4 Water Pack (L)
300	12	5 Water Pack (L)
350	14	5 Water Pack (L)
400	16	6 Water Pack (L)
450	18	6 Water Pack (L)
500	20	7 Water Pack (L)
550	22	7 Water Pack (L)
600	24	8 Water Pack (L)
650	26	8 Water Pack (L)
700	28	9 Water Pack (L)
750	30	9 Water Pack (L)
800	32	10 Water Pack (L)
850	34	10 Water Pack (L)
900	36	11 Water Pack (L)
For larger diameter piping - contact Freytech Inc. or your local Distributor.		
*For water over 80°C in temperature, install double (2x) the number of Water Packs.		



# INSTALLATION

