

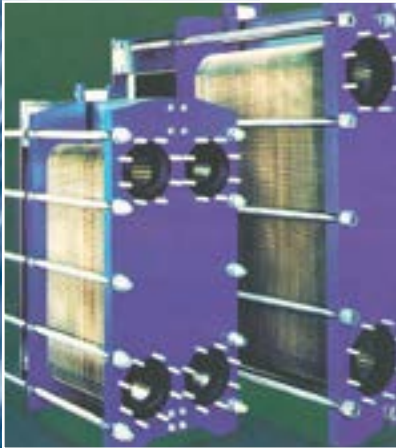
Manufactured Since 1942 by: Apex Engineering Products Corporation

RYDLYME

World's Leading Biodegradable Descaler

Heat Exchangers

RYDLYME dissolves water scale, lime, mud and rust deposits safely, quickly and effectively!



*the solution to your
water scale problems*

RYDLYME Cleaning of Heat Exchangers

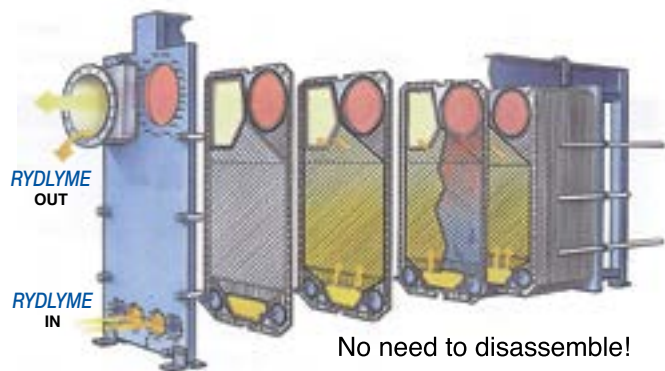
To obtain the quantity of **RYDLYME** needed to clean your heat exchanger, you will need to know the diameter and length first. Once you have that information, please refer to the chart for the quantity and circulation time (fig 1.1). The volume given in the reference chart depicts a 50% concentration, therefore the same amount of water will be required to flood the unit and circulate the solution. If you're cleaning a plate and frame, please consult the formula for figuring your volumes in the two boxes below (see fig 2.1 & fig 2.2). When isolating the water-side of the unit for cleaning, additional **RYDLYME** may be necessary if the isolation valves are located further than one foot from the actual supply and return ports of the exchanger. To account for this added volume, add in the piping volume from the exchanger to the valves to ensure the adequate amount of solution.

1. Isolate and drain the water-side of the exchanger to be cleaned.
2. Place a 1" ball valve between the isolation valves and the heat exchanger on both the supply and return.
3. Attach the **RYDLYME** pump and hoses so the **RYDLYME** will be pumped in the bottom or supply, and back out the top or return (see fig 3.1).
4. Begin pumping all the required **RYDLYME** into the exchanger. Once that is accomplished, begin to add water to complete the circulation. **Please note: The calcium deposit will take up volume within the heat exchanger, so you will not be able to add the same amount of water in the beginning.**
5. Continue circulating the solution for the recommended amount of time. As the circulation progresses and the product dissolves the deposits inside the unit, the volume will increase. To account for the increase in volume, please add water to the circulation vessel, as needed. If you begin adding a lot of water, please be aware, it is possible there is a leak in the system.
6. It is a good idea to periodically check the effectiveness of the solution while circulation is in progress. This can be accomplished by utilizing a pH meter and as long as the solution retains a low pH, the product is active. Should the circulating solution reach a pH of 5.5 to 7.0 before the recommended time is up, you will need to add more **RYDLYME** and possibly extend the circulation time.
7. Upon completion of the recommended circulation time, the solution may be purged to a normal sewer and flushed with water. This process is completed by placing the return hose in the drain and adding water to the circulation container until the discharge line runs clear.
8. The unit is ready to be returned to service.
9. The same instructions may be used for plate and frame type heat exchangers. For volumes, please follow noted formula.

Please note: If your situation dictates that you cannot take your heat exchanger off-line, please contact the manufacturer for on-line cleaning instructions.

SYSTEM VOLUME	CIRCULATING TIME
0 - 25 gallons.....	1 hour
25 - 50 gallons.....	2 hours
50 - 150 gallons.....	3 hours
150 - 300 gallons.....	4 hours
300 - 500 gallons.....	6 hours
500 - 800 gallons.....	8 hours

fig 2.1



Formulation for Determining Volume to Plate & Frame Heat Exchangers

1. Multiply the W x H x the thickness of the plate pack and that number is the total cubic inches.
2. Take the cubic inches and divide by 1728, and it is now converted to cubic feet.
3. Multiply the cubic feet by 7.5 and you now have the total gallons.
4. Divide the total gallons by 2 and you now have the volume inside the plates.
5. Divide the volume inside the plates by 2 and you now have the quantity of **RYDLYME** you will need to clean the exchanger.

Please note: Depending on the severity of the build-up, the application may require more **RYDLYME or an extended circulation time.**

fig 2.2



Quantities of **RYDLYME** to Clean Water Side of Shell & Tube Heat Exchangers

Length in Feet

Diameter in Inches	<i>Length in Feet</i>													
	4'	5'	6'	8'	10'	12'	16'	18'	20'	24'	30'	36'	40'	
4"	1	1	1	2	2	2	3	3	3	4	5	6	6	
5"	1	1	2	2	3	3	4	5	5	6	8	10	10	
6"	2	2	3	3	4	5	6	7	7	9	12	15	16	
8"	3	3	4	5	7	8	10	12	13	16	20	25	30	
10"	4	5	6	8	10	12	16	18	20	25	30	40	45	
12"	6	7	9	12	15	18	24	27	30	35	45	55	60	
16"	10	13	16	21	25	30	42	50	55	60	80	95	110	
20"	16	20	25	32	40	50	65	75	80	100	120	150	160	
24"	25	30	35	50	60	70	95	110	120	140	180	220	240	
30"	35	45	55	75	90	110	150	165	180	220	280	330	360	
36"	55	65	80	110	130	160	220	250	275	330	400	495	550	
40"	65	80	100	130	160	200	260	300	330	400	500	600	660	
44"	80	100	120	160	200	240	320	360	400	475	600	720	800	
48"	100	120	140	190	240	280	380	425	480	560	710	850	950	
50"	105	130	160	210	260	315	415	470	520	625	780	935	1040	
54"	120	150	180	240	300	360	480	540	600	715	895	1075	1195	
60"	150	185	220	295	370	445	590	665	740	885	1105	1325	1475	

*Gallons of **RYDLYME***

fig 1.1

- | | | | |
|--|--|--|--|
| = 1 Hour | = 3 Hours | = 5 Hours | = 7 Hours |
| = 2 Hours | = 4 Hours | = 6 Hours | = 8 Hours |

For every gallon of **RYDLYME recommended above,
one gallon of water must be added!**

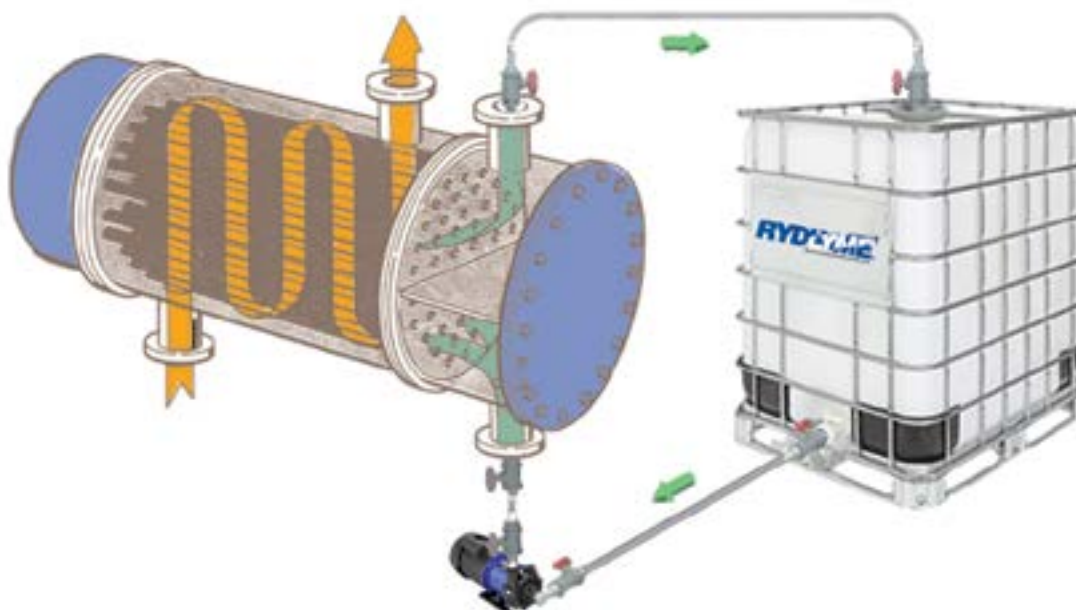


fig 3.1

Please note: Cooling water may be either tube side or shell side. **RYDLYME must be pumped in through the bottom and out through the top. Circulating container must be vented.**

As seen below, **RYDLYME** has been utilized to clean heat exchangers in a variety of different applications:

Petrochemical

- Chillers
- Crackers
- Reactors
- Scrubbers
- Gas Coolers
- Process Coolers
- Inter & After Coolers

Navy

- Reefers
- Evaporators
- Inter Coolers
- After Coolers
- Prairie Coolers
- Masker Coolers
- Lube Oil Coolers

Pulp & Paper

- Digesters
- Gas Coolers
- Evaporators
- Chemiwashers
- Liquor Coolers
- Inter & After Coolers

Steel Industry

- Hearth Coolers
- Furnace Coolers
- Bearing Coolers
- Feed Water Coolers
- Transformer Coolers
- Hydraulic Oil Coolers

Sugar Industry

- Pre-heaters
- Evaporators
- Primary Heaters
- Secondary Heaters

Power Generation

- Reactor Coolers
- Lube Oil Coolers
- Hydrogen Coolers
- Containment Fan Coolers



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