fondital

MADE IN ITALY

Garda

Aleternum®

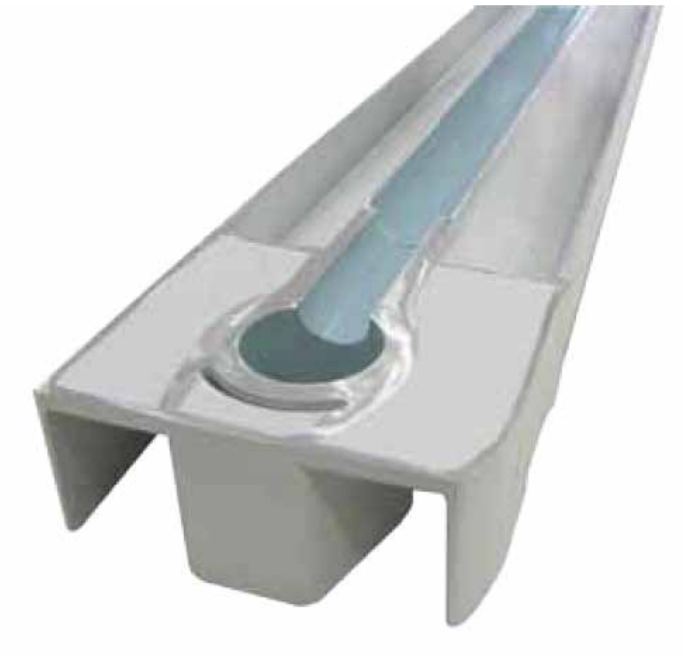
Extruded Radiators with Anticorrosion Treatment

Aleternum®

GB

Aleternum®: Anticorrosion T

Introduction



Aleternum® inner coating by **Fondital**

Corrosion is the main cause of malfunction in heating systems. In addition to degrading system components, corrosion can significantly reduce the efficiency of radiators over the years, which means increased fuel consumption and higher running costs.

For instance, in a heating system with cast-iron or steel radiators, corrosion can cause a build-up of sludge and dirt that will restrict the flow of water, reduce the heat output, and result in an unbalanced heat distribution.

In traditional aluminium radiators, corrosion leads to the formation of gas pockets that prevent the radiators from heating up evenly and can reduce their heat output.

To delay the onset of corrosion, **Fondital** has developed **Aleternum**®, the exclusive resin-based inner surface treatment to protect the internal water chamber.

Aleternum® by **Fondital** opens up a new era of total protection, safety and high output rates for heating systems.

Your heating system will remain as new as day one!

reatment for Radiators

What is corrosion?

✔ A chemico-physical interaction of metal with a moist environment. It can alter the properties of metal and can often impair the functionality of the metal, equipment or system affected.

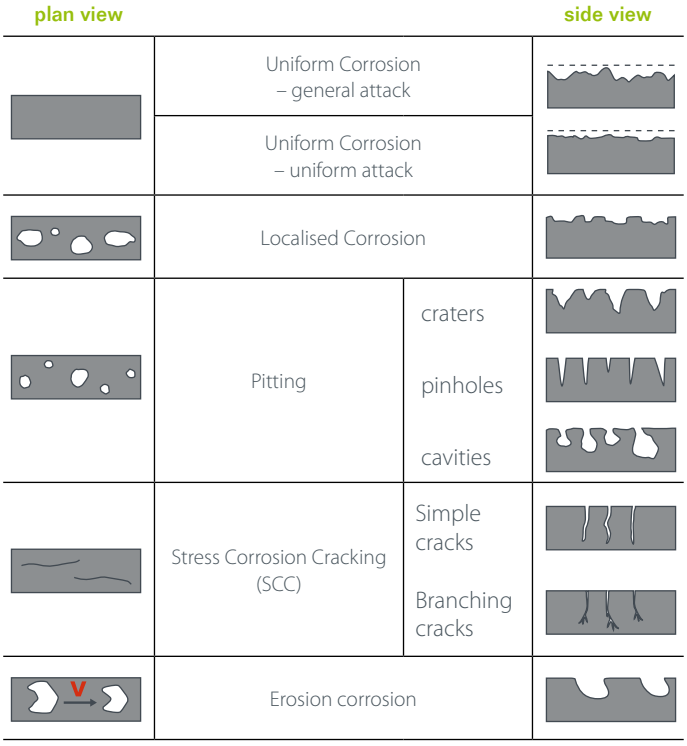
Metal + Water + Oxidizing Agent = Corrosion

The different forms of corrosion are defined according to the area of the metal affected by corrosion as follows:

✔ **general corrosion (or widespread corrosion):** when the entire surface area of the material is affected by corrosion;

✔ **uniform corrosion:** when corrosion affects the entire surface area of the material and causes the same degree of damage all over the surface;

✔ **localised corrosion:** corrosion affects only certain areas of the material; the area affected by corrosion may present different morphologies, such as pits, craters, cavities, pinholes, cracks, etc.



Aleternum®

TREATMENT

Garda Aleternum® Advantages

1) TOTAL ANTICORROSION TREATMENT

2) IDEAL FOR A WIDE RANGE OF PH VALUES

Conventional aluminium radiators require a pH value between 7 and 8.
Our new treatment eliminates this limit, meaning that Aleternum radiators can operate with a wider pH range than non-treated aluminium and steel radiators (attack occurs at pH values below 8).
Aleternum® by **Fondital** can be used in systems with high pH values with total peace of mind.

Conventional Aluminium Radiator

Radiator with Aleternum treatment

3) NO FORMATION OF HYDROGEN POCKETS (NO GAS)

4) CHLORIDE-RESISTANT

5) PREVENTS OBSTRUCTIONS AND RESULTING COLD SPOTS

6) LIGHTWEIGHT AND EASY TO INSTALL

7) CAN BE INSTALLED IN MIXED-METAL HEATING SYSTEMS

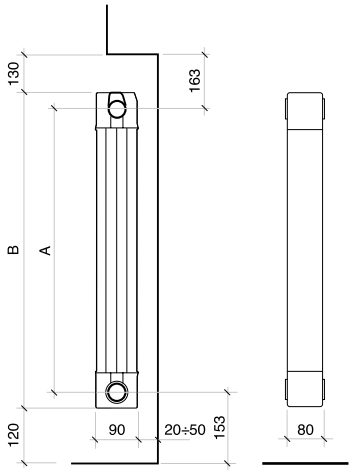
8) 20-YEAR WARRANTY

9) PATENT PENDING TECHNOLOGY

Garda S/90

Aleternum

Designed for contemporary living spaces, Garda S/90 offers smart, flexible solutions. Vertical design is the key to making the most of limited space. Available in seven models, it will fit perfectly in any home interior.



Technical specifications

Model	Depth	Height	Centre-to-centre	Width	Diameter	Water	Weight	Output	Exp.	Coeff.
	mm	(B) mm	(A) mm	mm	inches	litres/sect.	Kg/sect.	W/sect.	n	K_m
900	90	966	900	80	G1	0.43	1.96	182	1.3605	0.8886
1000	90	1066	1000	80	G1	0.47	2.20	195	1.3630	0.9426
1200	90	1266	1200	80	G1	0.55	2.50	223	1.3610	1.0864
1400	90	1466	1400	80	G1	0.62	2.80	250	1.3600	1.2227
1600	90	1666	1600	80	G1	0.70	3.00	275	1.3843	1.2260
1800	90	1866	1800	80	G1	0.78	3.40	300	1.3570	1.4846
2000	90	2066	2000	80	G1	0.86	3.80	324	1.3905	1.4083

Maximum operating pressure: 600 kPa (6 bar)
Characteristic equation of model $\Phi = K_m \Delta T^n$ (as per EN 442-1)
Stated heat output values at ΔT=50 K are in accordance with European Standard EN 442-2.

COLOUR: RAL 9010 White
PACKAGE: 3, 4, 5, 6-section batteries
SUPPLIED STANDARD WITH: Water diaphragm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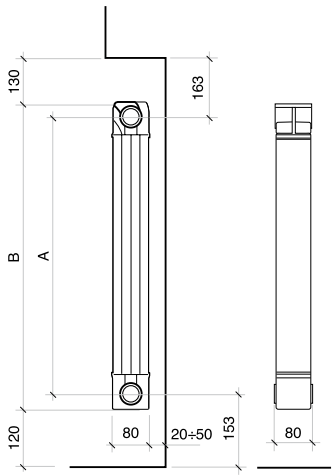
Aleternum®
TREATMENT

Garda DUAL 80

Aleternum

High heat output, maximum comfort and stylish design are the key characteristics of the Garda Dual 80 series, that will fit well with any interior. Available up to two metres in height, the products in this range can be combined with stylish valves and are available in different models to add an exclusive touch to any room.

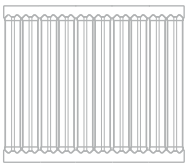


Technical specifications

Model	Depth	Height	Centre-to-centre	Width	Diameter	Water	Weight	Output	Exp.	Coeff.
	mm	(B) mm	(A) mm	mm	inches	litres/sect.	Kg/sect.	W/sect.	n	K_m
900	80	966	900	80	G1	0.47	1.88	175	1.3695	0.8217
1000	80	1066	1000	80	G1	0.52	2.00	189	1.3908	0.8198
1200	80	1266	1200	80	G1	0.60	2.32	215	1.3889	0.9391
1400	80	1466	1400	80	G1	0.70	2.61	241	1.3875	1.0585
1600	80	1666	1600	80	G1	0.79	2.91	266	1.3980	1.1213
1800	80	1866	1800	80	G1	0.88	3.22	288	1.3832	1.2864
2000	80	2066	2000	80	G1	0.96	3.56	310	1.3902	1.3473

Maximum operating pressure: 600 kPa (6 bar)
Characteristic equation of model $\Phi = K_m \Delta T^n$ (as per EN 442-1)
Stated heat output values at ΔT=50 K are in accordance with European Standard EN 442-2.

COLOUR: RAL 9010 White
PACKAGE: 3, 4, 5, 6-section batteries
SUPPLIED STANDARD WITH: Water diaphragm

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TREATMENT

Accessories

To complement its radiators, Fondital offers a complete range of accessories to meet any installation needs. Valves and lockshield valves are available in different design styles and finishes and will fit any type of pipes with 1/2" connection diameter, with straight or angle body pattern.

Valves and lockshield valves for extruded radiators

ALFA series valve 1/2" connection

Types	Colour White/Chrome	Colour Chrome	Colour Gold
Description	Part no.	Part no.	Part no.
Angle valve, iron pipe connection	3051	3052	3053
Straight valve, iron pipe connection	3061	3062	3063
Angle lockshield valve, iron pipe connection	3031	3032	3033
Straight lockshield valve, iron pipe connection	3041	3042	3043
Angle valve, copper/PE/multilayer pipe connection	3151	3152	3153
Straight valve, copper/PE/multilayer pipe connection	3161	3162	3163
Angle lockshield valve, copper/PE/multilayer pipe connection	3131	3132	3133
Straight lockshield valve, copper/PE/multilayer pipe connection	3141	3142	3143

Valves are supplied without fittings

BETA series valve 1/2" connection

Types	Colour White/Chrome	Colour Chrome
Description	Part no.	Part no.
Angle valve, iron pipe connection	3351	3352
Straight valve, iron pipe connection	3361	3362
Angle lockshield valve, iron pipe connection	3531	3532
Straight lockshield valve, iron pipe connection	3541	3542
Angle valve, copper/PE/multilayer pipe connection	3451	3452
Straight valve, copper/PE/multilayer pipe connection	3461	3462
Angle lockshield valve, copper/PE/multilayer pipe connection	3631	3632
Straight lockshield valve, copper/PE/multilayer pipe connection	3641	3642

Valves are supplied without fittings

GAMMA series valve 1/2" connection

Types	Colour White/Chrome	Colour Chrome
Description	Part no.	Part no.
Angle valve, iron pipe connection	4351	4352
Straight valve, iron pipe connection	4361	4362
Angle lockshield valve, iron pipe connection	4531	4532
Straight lockshield valve, iron pipe connection	4541	4542
Angle valve, copper/PE/multilayer pipe connection	4451	4452
Straight valve, copper/PE/multilayer pipe connection	4461	4462
Angle lockshield valve, copper/PE/multilayer pipe connection	4631	4632
Straight lockshield valve, copper/PE/multilayer pipe connection	4641	4642

Valves are supplied without fittings

Fittings for copper pipes for ALFA and BETA valves

Pipe size (Ø mm)	Colour Chrome	Colour Gold
	Part no.	Part no.
10	3812	3813
12	3812	3813
14	3812	3813
15	3812	3813

Fittings for polyethylene pipes for ALFA and BETA valves

Pipe size (Int. Ø - Ext. Ø)	Colour Chrome	Colour Gold
	Part no.	Part no.
12-16	3822	3823
13-18	3822	3823
14-18	3822	3823

Fittings for multilayer pipes for ALFA and BETA valves

Pipe size (Int. Ø - Ext. Ø)	Colour Chrome	Colour Gold
	Part no.	Part no.
10-14	3832	3833
12-16	3832	3833

Fittings for copper pipes for GAMMA valves

Pipe size (Ø mm)	Colour Chrome
	Part no.
10	4812
12	4812
14	4812
15	4812
16	4812

Fittings for polyethylene pipes for GAMMA valves

Pipe size (Int. Ø - Ext. Ø)	Colour Chrome
	Part no.
12-16	4822
13-18	4822
14-18	4822

Fittings for multilayer pipes for GAMMA valves

Pipe size (Int. Ø - Ext. Ø)	Colour Chrome
	Part no.
10-14	4832
12-16	4832

Radiator thermostat for BETA and GAMMA valves

Type	Colour White/Chrome
	Part no.
With liquid sensor	8480931

Accessories for all radiator models (continues on page 12)

A 1/1	Automatic air bleeding valve, chrome finish, G1", RH or LH
A 4/1	Blanking plug, G1", RH or LH
A 6/1	Adapter, RH or LH, G1" to G 3/8" - G 1/2" - G 3/4"
A 8/1	Valve hole plug, RH or LH, G1" to G 1/4" - G 1/8"
A 13	White touch-up spray paint
A 26/1	Nipple wrench
A 30/1	Rubber plug (water diaphragm)
A 33/1	Special 1" nipple for extruded radiators
A 40/2	Plastic wrench for plugs and adapters


A 1/1


A 4/1


A 6/1


A 8/1


A 13


A 26/1


A 30/1

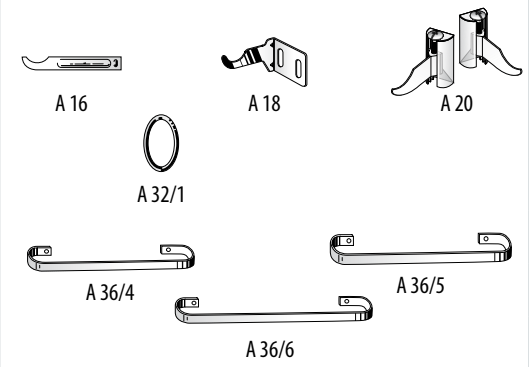

A 33/1


A 40/2

Model-specific accessories

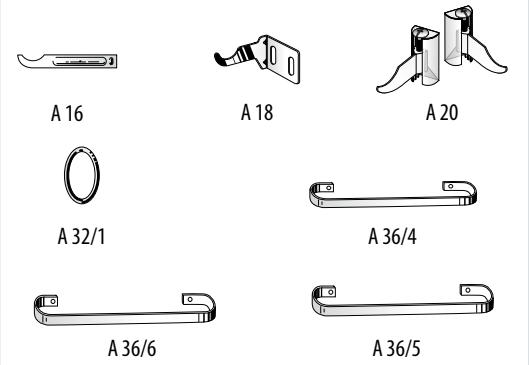
Garda S/90

A 16	Wall anchor brackets
A 18	Angle brackets, RH and LH
A 20	Kit with two adjustable coated brackets
A 32/1	O-ring seal for nipples, plugs and adapters for Garda Series
A 36/4	Towel rail for Garda S/90 4-section radiator, RAL 9010 white
A 36/5	Towel rail for Garda S/90 5-section radiator, RAL 9010 white
A 36/6	Towel rail for Garda S/90 6-section radiator, RAL 9010 white



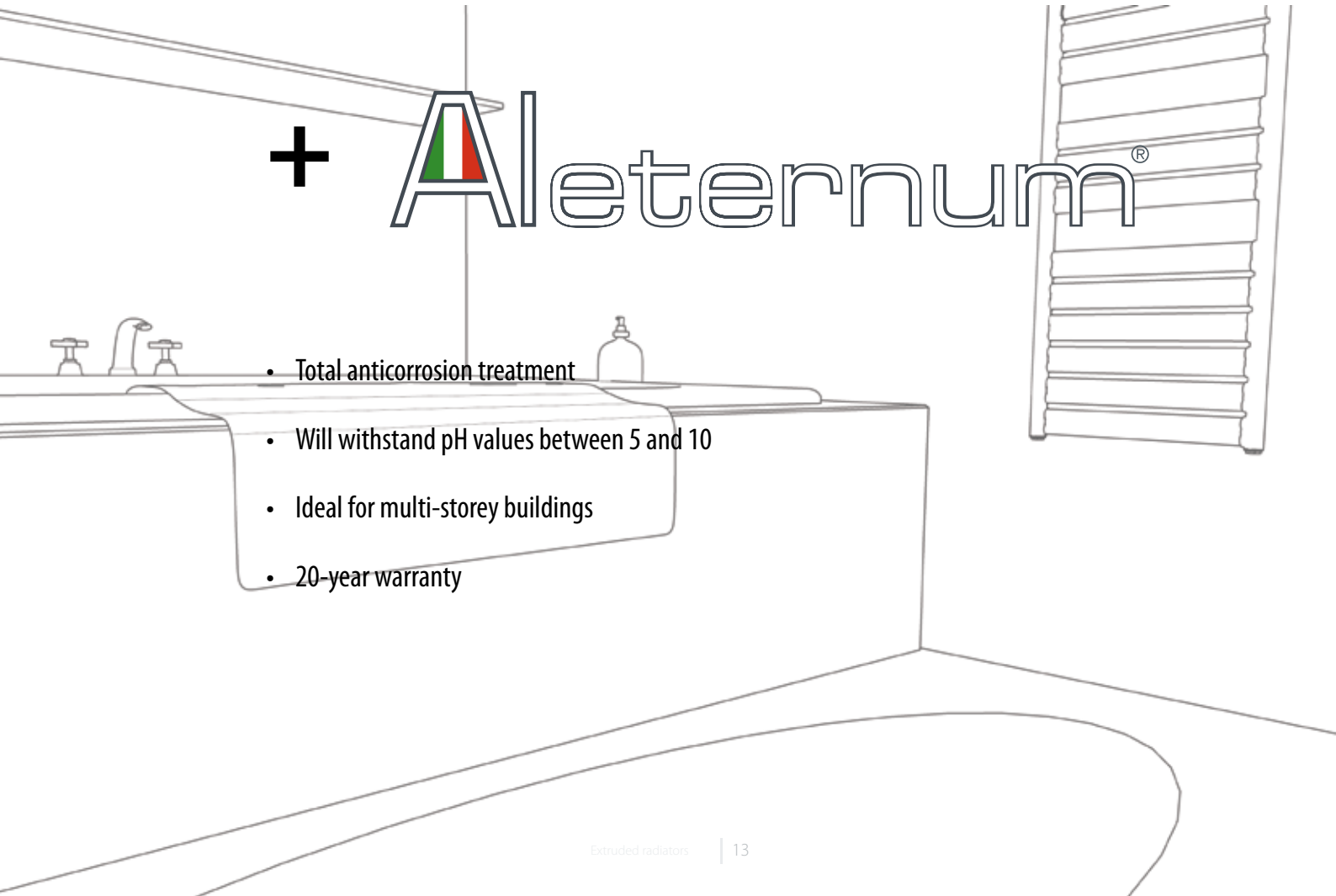
Garda Dual 80

A 16	Wall anchor bracket
A 18	Angle bracket, RH and LH
A 20	Kit with two adjustable coated brackets
A 32/1	O-ring seal for nipples, plugs and adapters for Garda Series
A 36/4	Towel rail for Garda Dual 80 4-section radiator, RAL 9010 white
A 36/5	Towel rail for Garda Dual 80 5-section radiator, RAL 9010 white
A 36/6	Towel rail for Garda Dual 80 6-section radiator, RAL 9010 white



fondital

- Climate comfort
- Saving on heating costs
- Low installation costs
- Space saving thanks to the possibility of under-window installation
- Ideal for combination with condensing boilers and alternative energy sources
- Just the right temperature in every single room
- Simple, high efficiency system
- Quick in reaching and maintaining the ideal temperature



+ Aleternum®

- Total anticorrosion treatment
- Will withstand pH values between 5 and 10
- Ideal for multi-storey buildings
- 20-year warranty

FAQ (Frequently asked questions) Aleternum

1	**What was the purpose of developing the Aleternum treatment? What specific needs does it address?**	Aleternum has been developed to answer the needs of an constantly evolving market. It is the only patented treatment that eliminates the risk of corrosion and enhances the advantages offered by aluminium radiators.
2	**Do Aleternum-treated radiators look like previous non-treated radiators?**	From a visional standpoint, radiators with this internal coating look exactly as conventional Fondital aluminium radiators. This means Aleternum radiators retain the advantages that traditionally make us stand apart from our competitors, such as anaphoresis and powder coating, two processes that have become a feature of Fondital products and make them unique in the industry for their level of excellence and quality in terms of technology and aesthetics.
3	**How do you tell a non-treated radiator from an Aleternum radiator?**	The difference lies inside the radiator. The water chamber is totally coated with a special resin that prevents the metal from getting in contact with the corrosive substances contained in the circulating water, avoiding the onset of corrosion.
4	**What is Aleternum treatment composed of?**	The coating is made of a resin that has been specifically developed and tested for the purpose.
5	**Do Aleternum radiators offer higher heat output than competitor products or previous models?**	Aleternum offers a higher price-to-heat output ratio than steel and bi-metal radiators manufactured by our competitors. Aleternum radiators provide the same heat output as equivalent non-treated Fondital models, and therefore offer the same superior performances compared to competitor products.
6	**What academic institutions have tested the patented Aleternum treatment?**	The Aleternum treatment is the result of a long collaboration with some of the most reputed European research institutes. The in-house R&D department has been working on this application for years and finally developed this innovative patented coating: Aleternum.
7	**Why is Aleternum described as ideal for multi-storey buildings?**	All Aleternum models can withstand very high pressures, up to 60 bar, and can operate faultlessly in multi-storey buildings. The Aleternum radiators retain the heat output and aesthetic characteristics of non-treated aluminium radiators. As a matter of fact, these appliances are the top of the range from a technical standpoint and, thanks to their high pressure resistance, they can be installed in buildings even over 100 storeys tall.
8	**Why are they ideal for mixed-metal CH systems?** **Does this mean previous radiators were not ideal for such applications?**	Aleternum radiators are protected from contact with possible residues produced by the corrosion of other metals in the heating system and can be installed in systems where different radiators, such as steel or cast-iron, were installed. Radiators without the Aleternum treatment are exposed to the risk of corrosion if installed in such systems.
10	**Does this mean Aleternum radiators can only be installed in highly corrosive environments?**	Aleternum was initially developed to meet the needs of those areas where water has very high pH values. However, these radiators are now offered as versatile top of the range products, which are ideal for any installation.

11	**Is Aleternum suitable for water with pH higher than 10?**	While pH levels will never exceed 10 in a residential heating system, Aleternum can still guarantee protection up to a pH of 11.
12	**What is the advantage of having the best price-to-heat output ratio?**	This means that the heat output needed to warm up a given room can be achieved at a lower overall price. Cost evaluation is based upon required heating performance instead of size, as different radiators, though having almost the same size, can have significantly different heat outputs.
13	**How does Aleternum prevent cold spot formation?**	Aleternum protects from corrosion. Without corrosion, no gases develop inside the system to impair the heat transfer between hot water and the radiator. Radiators heat up evenly at all times.
14	**Does this mean that conventional extruded radiators cannot withstand particularly corrosive water?**	Water quality has a strong impact on radiator service life.
15	**Can you provide more details about the fact that Aleternum aluminium radiators are more environmentally compatible than competitor products?**	Like all aluminium radiators, Aleternum can be defined as an ecological heating system for several different reasons: 1. Aluminium is 100% recyclable 2. The processes involved in the manufacture of aluminium radiators require less energy than the manufacturing processes used by our competitors to produce bi-metal or steel radiators. 3. Lightweight means lower transport and handling costs, resulting in less fuel consumption and less carbon oxide emissions released into the atmosphere
16	**Is the water chamber the same as before?**	The water chamber has the same shape as previous models and the inner corrosion-proof resin coating does not affect the size of the water chamber and the flow of water through the radiator.
17	**Are heat output rates the same as before?**	Aleternum maintains our high heat output rates; the internal protection does not affect heat performance in any way.
18	**What is the warranty coverage like?**	Aleternum is covered by a 20-year guarantee, as proof of the fact that Aleternum is the only radiator that can last forever.
19	**Can you explain how Aleternum radiators are manufactured?**	These appliances undergo a special treatment between the first and the second coating stages. The process is a patent pending technology.

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COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

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