



SWIMMING POOLS



YOUR ROOFING AND WATERPROOFING PARTNER

PVC POOL LINERS

PVC-P was first used for swimming-pools liners in 1977, since when there has been a continuous and rapid rise in its use; today it accounts for some 65% of the market. In fact, two out of three swimming pools made in Europe today are lined in PVC-P.

PVC-P liners have obvious advantages when compared with traditional systems. The choice of PVC-P allows the structure to be made in thinner, more streamlined concrete which has only a structural function, leaving the waterproofing to the PVC-P liner. This results in lower construction costs and quicker completion.

Costs are also reduced in the medium term because there is none of the maintenance that is necessary with painted or tiled surfaces.

Speed of installation, especially in comparison with traditional ceramic coatings, is another of the strengths of PVC-P liners, especially for public projects (water parks, public swimming pools, residential pools, pools with wave machines, etc.). The flexibility of this technology means that the lining can be used for free-form swimming-pools of even very complex shape, both skimmer and overflow edge types. PVC-P liners can be used either as the whole lining of the pool or combined with prefabricated structures with previously-waterproofed walls.



- *light blue*
- *sky blue*
- *aqua*
- *caribbean green*
- *sand*
- *white*
- *pearl grey*
- *dark grey*
- *anthracite black*
- *granito fiorentino*
- *marmorino rosa*

FLAGPOOL LINER

FLAGPOOL is a synthetic liner in PVC-P reinforced with polyester mesh, a liner specifically developed and manufactured for waterproofing, protecting and decorating NEWLY BUILT swimming pools or for RENOVATING existing pools. With FLAGPOOL you can choose any shape you like, with perfect aesthetic results.

THE MANUFACTURING PROCESS

FLAGPOOL is manufactured by a caste spread process.

This is a manufacturing process that creates waterproof liners in which the reinforcement becomes an integral part of the liner.

At room temperature, a spreading head lays a substrate of a mixture of liquid-viscous state products called "plastisol". This contains resins, plasticisers, stabilisers, pigments, etc. and determines the final characteristics of the PVC-P pool liner.

After gelation (a melting process), achieved by raising the temperature inside the ovens, the plastisol solidifies.

The spreading and gelation process is repeated on line four times in a row.

Thus, FLAGPOOL is composed of four differently formulated layers.

An internal reinforcement of polyester mesh, is inserted between the second and third layers. This manufacturing system establishes a molecular bond between the four layers creating a homogenous and flexible single-layer liner of considerable strength and 1.5 mm thick. This exclusive manufacturing process underlies the functional performance of FLAGPOOL.

THE 10 ADVANTAGES OF FLAGPOOL

1. *Any shape you like*

You can choose any size or shape of swimming-pool: from the traditional rectangle, to free-form shapes designed to reflect the environment.

Soft and flexible FLAGPOOL liner is so adaptable.

2. *A perfect aesthetic result*

Flagpool is simple to install and the welds between sheets are invisible.

You can choose from various colours: Aqua, Azure, White, Light Blue, Grey, Pearl Grey, Sand, Caribbean Green, Anthracite Black, in addition to the special finishings Marmorino Rosa and Granito Fiorentino.



3. Waterproof

Full waterproofing is assured by the FLAGPOOL liner thus protecting the basic structure of the pool. This allows the swimming-pool to remain full, avoiding continuous and expensive water changes.

4. Does not putrefy and resistant to microorganisms

FLAGPOOL does not succumb to molecular alteration. Its BIO-SHIELD formulation ensures total resistance to micro-organisms, fungi, bacteria and spores present in water (even if not frequently changed and with high external temperatures), preventing them from developing.

5. Insensitivity to the hot-cold cycles

A swimming pool liner is subject to a wide range of temperatures. With FLAGPOOL this is not a problem: alternating hot-cold cycles do not alter it in any way, thanks to its stability tested at temperatures from -40°C to $+80^{\circ}\text{C}$. This accommodates systems using spa water or suitably heated water. .

6. Colour fastness

The technology used for colouring FLAGPOOL liners guarantees long-lasting purity of colour.

7. UV rays resistance

As swimming pools are mainly located outdoors, it is essential that the lining should resist the action of ultraviolet rays.

Years of exposure to sunlight do not cause any degrading of FLAGPOOL liners, which pass even the strictest international tests.



8. Water treatment

The mainly chlorine-based products used for water treatment in PVC-P swimming pools do not damage a FLAGPOOL liner, if used according to instructions.

9. Water quality

Thanks to FLAGPOOL's qualities, fresh or sea water can be used without affecting the liner.

10. Damage resistance

FLAGPOOL is highly resistant to damage, thus affording protection from tearing caused by accidental shocks or heavy hailstorms

WARRANTY

To summarise, FLAGPOOL, a registered trademark of Flag S.p.A., comes with a 10 year warranty. Thousands of swimming pools lined with FLAGPOOL, in Italy and all over the world, testify to the quality of our liners.



CHEMICAL - PHYSICAL CHARACTERISTICS			
UNI EN ISO 9001 quality system - Treatment Bio-Shield against micro-organism attack			
Weight	Kg/m ²	1,8 ± 5%	DIN 53352
Tensile strenght	N/5 cm	≥ 1100	DIN 16726-5.6.1C-VI
Elongation at break	%	≥ 15	DIN 16726-5.6.1C-VI
Shrinkage after 6 hours at 80°C	%	≤ 0,5	DIN 53377
Puncture resistance	mm	≥ 800	DIN 16726-5.12
Cold bending		≤ -20°C	DIN 53361
Accelerated light ageing:		no cracking	DIN 16726-5.17
Resistance to micro-organism		no development	AFNOR NFX 41514 ASTM G 21-90
Resistance to hail on rigid support	m/s	≥ 23	SIA 280/9
Thermal ageing in air: mass loss after 56 days at 80°C	%	≤ 2,5	DIN 16726-5.13.3
Tear resistance	N	≥ 200	DIN 53363
Root resistance		no penetration	DIN 4062
PRODUCTION STANDARD: Rolls 160 cm wide, 25 m long and 1.5 mm thick			
ACCESSORIES: A wide range of accessories is available: please refer to our technical documentation			



LAYING INSTRUCTIONS

This document will provide brief instructions for installation. For further information on how to lay FLAGPOOL liners, please refer to the specific Technical Brochure "Installation procedures for FLAGPOOL swimming pool liner".

1. STORAGE

FLAGPOOL swimming pool liner is delivered in rolls, stacked on wooden pallets, protected and separated from each other by polystyrene templates and wrapped with transparent polyethylene sheets. They should be stored in a dry place and, if possible, rolls should be protected against humidity and weathering.

2. WELDING

The FLAGPOOL liner should be welded using a hot air gun (e.g. Leister).

To prevent air bubbles being created during hot air welding, the edges need to be clean and dry. The liners to be welded must overlap by 5 cm and be fixed by welding points every 15/20 cm (spot welding phase).

We then proceed to the real welding phase, inserting the nozzle between the two edges of the adjacent liners (inclined by approx. 45° with 40 mm nozzle and by approx. 35° with the 20 mm nozzle, to the weld line to be effected), using the special roller to exert at the same time a continuous pressure on the heated edges.

Welding speed is approx. 80 cm/minute at a temperature of approx. 450-500°C, which should be adjusted according to room temperature.

During welding, any deposits that form on the nozzle should be removed using the special metal brush.

2.1 Welding the PVC border

One of the first sections to be welded is the 9 mm PVC border, which is necessary for anchoring the PVC lining sheet to the vertical walls. Place the border over the whole length of the lining sheet. Start welding 5 cm from the outer border (see technical drawing) to prevent the liner from rolling up or distorting.

Once the roll is laid over the whole length, start welding the 5 cm border in PVC that was left unwelded at the beginning of the operation. The welding must be performed using hot air, on a clean, dry surface.

3. CHECKING THE WELDS

All welds must be checked. The mechanical test involves passing the rounded tip of a seam probe or screwdriver along all the welding lines.

An adequate pressure should be exerted in order to identify any defects in the welded seams. Once identified restore the weld using the Leister-type hot air gun and roller.

4. SEALING WITH LIQUID PVC

Sealing with liquid PVC ensures a better aesthetic appearance of the welds and total waterproofing. To prevent blockages or excessive dripping, regularly clean the pouring spout of the liquid PVC.

When sealing welds on vertical walls, liquid PVC obviously tends to percolate down and build up in the angle. To avoid this problem, sealing should be started from at least 5 cm from the bottom of the pool.

NOTE: Welding, checking and sealing should be carried out in the same working day.

5. PREPARING THE SITE

Inspect the structure and its surface, fix the trim for the accessories, install the anchoring system that is best suited to the swimming pool (profiles, sheet metal, etc.).

6. LAYING TECHNIQUES

a) Rectangular-shaped swimming pools

In case of "FLAT BOTTOM" pools, pools with "DIVING PIT" and "DIAMOND TIP-SHAPED" pools, the installation of the FLAGPOOL liner typically starts from the bottom of the pool. The liner will then be anchored to the vertical walls and finally welded to the bottom liner.

b) Irregularly shaped swimming pools

In this case, the FLAGPOOL liner should be laid starting from the vertical walls. The liner will be then laid on the bottom and finally welded on the vertical walls.

For more information about setting methods and building details, please refer to the specific FLAGPOOL documentation, or visit our web site www.flag.it.



www.flag.it



FLAG GROUP

Company Quality System Certificate UNI EN ISO 9001