



USER'S GUIDE

Pilar, November 2006.

INDEX

Introduction	Pag. 2
Choice of Material	Pag. 3
Before Installation	Pag.4
During Installation	Pag.6
After Installation	Pag.7
Maintenance	Pag.8
Shade Variation Index	Pag.9
Shade Variation and PEI	Pag.10
Ilva Calipers	Pag.12
Multisize Installation	Pag.14

□ INTRODUCTION

Ilva S.A. manufactures polished, natural and glazed porcelain tiles at its plant located at the Industrial Park Pilar, Provincia de Buenos Aires, Argentina.

Since **Ilva S.A.** started its activities in 1992 it stood out for the excellence of its products both from the technical and aesthetic point of view and became a world class company regarding technology and quality of products offered.

Ilva S.A. operates under the Quality Management System based on the ISO 9001 Standard since 1998.

Our experience in the market shows that as the ceramics industry develops it is necessary to incorporate new knowledge both for the purchase and for the installing and maintenance of ceramic floors and walls. The purpose of this Guide is to provide customers and sales agents with the necessary information in order to obtain the best results possible.

Be sure to contact us regarding any additional information you might need and visit our site on Internet www.ilva.com.ar or contact us via e-mail at info@ilva.com.ar or call to 54-2322-529000.

We hope You may find this Guide useful to achieve an entirely satisfactory installation.

□ CHOICE OF MATERIAL

- **Characteristics of porcelain tiles.** Porcelain stone has stood out from any other products existing in the market because of its extraordinary technical and aesthetic characteristics given by a complete vitrification.
 - ✓ High breaking strength
 - ✓ Minimum water absorption
 - ✓ Frost resistance
 - ✓ Resistance to chemical attack
 - ✓ High impact resistance
 - ✓ Stain resistance

Ilva S.A. manufactures two different kinds of porcelain tiles, glazed porcelain tiles and technical porcelain tiles.

The surface of glazed tiles is covered by a layer of glaze that provides the aesthetic look and technical characteristics.

Technical porcelain tiles, full body colored, keep the patterns all over their thickness allowing a wide range of aesthetic possibilities and three different finishes, natural, antiqued and polished.

- **Shade variation.** In order to resemble natural stones, products have been developed to show significant differences between tiles within the same shade lot. The level of color shade variation is the parameter which shows the variation which can be expected for a particular product. A scale from V1 to V4 is applied, the first showing minimal differences among tiles and the latter random color differences from tile to tile, so that one tile may have totally different colores from that on other tiles. A deep explanation on this subject can be read in the Color Shade Variation Guide included hereinafter.
- **Frost Resistance.** At present Ilva S.A. only manufactures porcelain stones and therefore all our tiles can be installed outside, including areas subject to extreme temperatures. It should be taken into account that as the trims have a high water absorption they should not be installed outside.
- **Wear resistance.** A scale called PEI which indicates the areas where a special model can be installed considering the traffic, has been established for the glazed products. This scale goes from 1 to 5 being the latter the strongest.

You can find the PEI index of all our products in a table included hereinafter.

Non-glazed porcelain stones are not included in this scale but they have a very high resistance because of their great hardness and their full colored body. Attention should be paid only to polished porcelain stones, avoiding abrasive environments which may cause loss of shine.

- **Slip Resistance.** Only Pietra Patagónica y Marmi Strutturato series are suitable for exterior horizontal surfaces. Polished tiles are not recommended for wet areas or areas where water may accumulate.
- **Possible differences between displays and material actually received by customer.** Tiles on display show the material customer can expect. Pattern, shade and movement can change as compared to displayed products.
- **Sizes obtained from cuts.** Both sizes 7"x7" and 7"x14" are obtained from cutting 14"x14" field tiles. Due to this, in all cases where material is not rectified, there might be small differences seen in the finishes of the edges between the edges cut and the original pressed edges. This is very important to evaluate before installing the tiles.

□ **BEFORE INSTALLATION**

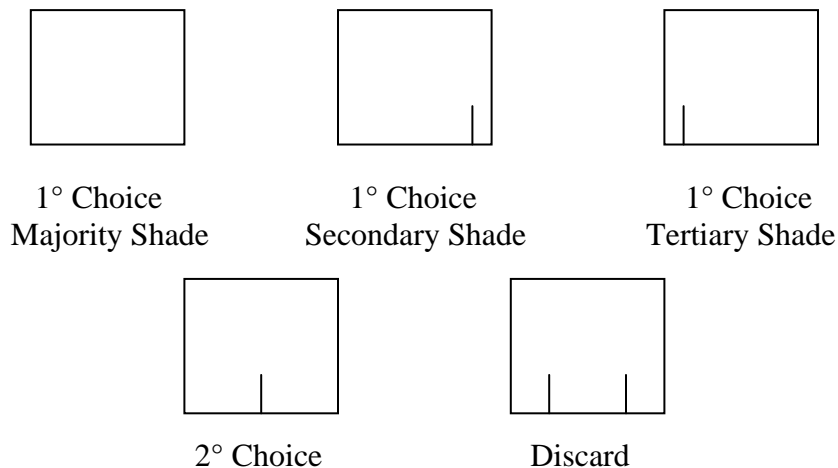
- **Caliper.** Ceramic tiles suffer important contractions during the firing process. As they are manufactured with natural raw materials such contractions are not constant and tiles of different sizes are obtained. For this reason material is divided into groups of established sizes which constitute the different calipers. You may find in the corresponding Annex the tables indicating the sizes of each caliper for each format.

If several models are to be combined it is very important to verify all of them have the same caliper as otherwise problems shall arise during installation.

Rectified products have only one caliper and they are identified on the cartons with the words "single caliper", "monocalibre", "s/c", "mc", or "..".

- **Shades.** Just like with sizes, tiles also change in pattern, color and movement. Such variations give rise to the different shades. With each new production run there appear new shades which are identified on the cartons with two numbers and two letters (i.e. 27AB). Such shades shall be similar to those obtained in previous productions but they shall never be equal, therefore it is necessary to buy all the material to be installed at the same moment and to make provisions for eventual substitutions to be made in the future (in the event of repairs in piping which may render floor breaking necessary).
- **Quality.** Quality of material is printed on cartons with a "1" or "PRI" for first choice and a "2" or "SEG" for the second choice. The selection of material is carried out in a visual way to determine its aesthetic aspect and in an electronic way to verify its dimensions and flatness. International standards establish as acceptable a percentage of defects up to 5 % in first choice materials.

- **Marks.** During sorting, material is divided into different choices (first, second and discard) and shades (majority, secondary and third). Such division is carried out by marking the tiles with crayons or stickers which are then detected by the packing machine. For this reason it is possible to find first quality materials with marks because they may have corresponded to a secondary or tertiary shade (majority shade is not marked). In order to avoid doubts on this subject marks have been identified as follows:



- **Control of information printed on cartons at the moment of receipt.** The above paragraphs state the importance of coincidence among grade, shade and caliper information printed on the cartons. Such control must be carried out when the material is received in order to avoid problems in future as no claims shall be accepted if the material has been already installed. If problems are observed do not accept the consignment and contact your supplier.
- **Control of the surface.** Be sure that You are pleased with the material to be installed and that it has no evident or visible defects. If such problems are detected do not start installing and contact your supplier immediately. No claims shall be accepted if material has been already installed. If tiles show color shade variation it is convenient to spread a 3 or 4 sqmt surface and to mix tiles of different boxes in order to make a correct evaluation.
- **Installation surface.** Be sure that ceramic material is installed on a levelled, flat and hard surface and that it is completely clean and dry.
- **Adhesive.** All our porcelain stones must be installed using adhesives indicated for very low absorption materials. Special adhesives, of latex modified type should be applied in outside installations and in areas subject to sharp temperature changes (under floor heating) to guarantee material adhesion and to absorb the expansion differences

between the substrate and the ceramic material. In order to have a better guidance you should contact adhesive manufacturers.

- **Grouts.** It is advisable to use flexible materials which should be able to absorb the expansion differences between your porcelain stone and the substrate. Due to the microporosity all materials have, it is possible that some grout materials, especially the strongly colored ones, present cleaning problems which get worse when there is a great contrast between the tiles and the grout. In order to avoid these eventual stainability problems we recommend to carry out tests by applying the grout on a piece of the material and using colors which are similar to those of the tiles. Before applying grout it is advisable to spread a thin wax coat over the surface of the tiles in order to make their cleaning easier. Wax should not be spread on porcelain stone's edges as it may render the adhesion of grout difficult. As with adhesives it is convenient to consult grout manufacturers.
- **Back side glaze.** Tiles have a white refractory glaze at the back side which is used to avoid the adhesion of the tiles to kiln's rollers during firing. Such glaze does not represent any problem for installation.

□ DURING INSTALLATION

- **Mixing Effect.** It is advisable to work at the same time with at least five cartons of porcelain stone in order to reproduce the aesthetic effect which was aimed for when the product was designed.
- **Previous Presentation.** Installing procedures similar to those of natural stones should be used in case of materials with color shade variations, i.e. to combine tile by tile and verify the aesthetic effect. It is important to point out that shade marks and the inscriptions on the back side of tiles do not suggest at all how the installation has to be done. Tiles should be installed in accordance with the above mentioned procedure. If anomalies are detected, installation should be stopped immediately and you should contact your supplier as no claims shall be accepted if material is already installed.
- **Joint.** Minimum joint recommended in each material carton should be respected, a 4 mm (1/6") grout is recommended for all glazed or unpolished tiles, both rectified and non rectified. For the polished tiles, a minimum joint of 2 mm (1/12") is recommended to hide the small defects on the installation surface. Your installer will know the proper procedure for the expansion joints. Joints should be filled one by one never spreading the grout on the surface of the stone, as this shall cause difficulties at cleaning, specially with series which have a textured surface.

- **Cuts.** Wet saws are generally used when cutting tiles. It should be taken into account that when materials with beveled edges are cut the new edges shall not have bevel. Eye protection should always be worn when cutting or drilling porcelain tiles.
- **Drills.** A diamond tip drill bit is used when drilling, one that is specifically designed for cutting through ceramic tile, marble, granite, stone or other dense materials using a drill with low speed. It is necessary to keep the tile and the drill permanently lubricated.
- **Adhesive.** Adhesive's open time stated by the manufacturer should be carefully respected as this is the main cause for the popping up of tiles. Depending on the kind of adhesive it is necessary to wait for drying during a determined period (in general 72 hours) before grouts are filled. Consult your adhesive supplier for this information.
- **Inscriptions with markers.** It is advisable to avoid the drawing of lines or inscriptions with markers in the front side of non glazed porcelain stones, as it may be difficult to clean. If necessary drawing shall be carried out on the back side of tiles.
- **Boxes should be kept in good conditions.** This is a fundamental requirement which must be fulfilled in order to be able to attend to eventual claims.
- **Proper care during installation.** In order to protect the surface of the tiles after installation, we recommend to put a protective cover (paper, cartons) over the tiles until the construction job is finished.

□ AFTER INSTALLATION

- **Initial Cleaning.** All grout and construction dirt should be removed from the surface of the tiles. In most cases, our tiles can be cleaned successfully by scrubbing the installation with hot water and a neutral detergent. If the grout material remains hydrochloric acid diluted at 10% or other products recommended by the grout manufacturers may be used, but work should be done carefully as, in general, this kind of products also affect grouts and marbles. Eye protection is recommended.

□ **MAINTENANCE**

- **Cleaning.** Cleaning of all Ilva floors and tiles, glazed, polished or natural, must be carried out by using water and floor detergents combined with disinfectants or perfumes if desired. To make cleaning easier, all spills should be cleaned as soon as possible. Allow the detergent to act on the soil load for a few minutes before cleaning. After removing all the detergent, rinse thoroughly with clean water.
 - **Waxes.** Waxes or top finishes are not recommended as they form a coating that deteriorates the floor aspect and entraps dirt making it more difficult to clean. If You wish to apply such products it is advisable to remove them from time to time with the products marketed by the same companies.
 - **Abrasives.** It is specially recommended to avoid the use of abrasives for the cleaning of polished porcelain stones. In order to keep their shine it is convenient to keep them free from abrasive dirt, such as sand. In public places it is convenient to put carpets for scraping sand off shoes at the entrance in order to avoid the carrying of abrasives from outside which may damage the surface of tiles.
 - **Stainability problems.** All materials, of every and any nature (natural stone, marble, granite, wood, metal, rubber, plastic, glazed and non-glazed ceramics) present a superficial microporosity. In Ilva products such microporosity is practically null, however polished porcelain stone is treated with a hydrorepellent sealer to minimize eventual stainability problems. Customer may repeat the procedure or apply the product over non-polished tiles mainly when the tiles are used in areas that are prone to excessive spills, such as printer's installations, or when light in color tiles are installed with dark colored grout or vice versa. A proper penetrating sealer which fills the pores making the tiles impervious to surface staining should be used. Ilva seals the polished tiles with the Fila MP 90 penetrating sealer made in Italy. Consult our technical department before carrying out such application.
- **Resistance to chemical attack.** Our tiles are resistant to strong acid and alkaline products except for the hidrofluoric acid which attacks all kind of glass or glaze. We specially recommend to avoid aplication of this acid or its salts and derivatives.

□ SHADE VARIATION INDEX

Manufacturers have directed their development efforts to make ceramic tiles that resemble natural stones and in many cases they have succeeded as it is difficult to distinguish between ceramic tiles and natural stones.

So, it stands to reason that the more that ceramic tile looks like stone, the more it acquires natural stone characteristics, such as color, texture and shade variations.

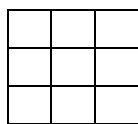
The situation given, it was necessary to inform customer about the grade of color shade variation he could expect from the product he was buying and then the American Ceramic Tile Distributor's Association (CTDA) published the Color Shade Variation Guide which includes a grading of materials for floors within the following categories:

V1 = UNIFORM APPEARANCE: Differences among pieces of the same production run are minimal.

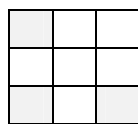
V2 = SLIGHT VARIATION: Clearly distinguishable differences in texture and/or pattern within similar colors.

V3 = MODERATE VARIATION: While the colors present on a single piece of tile will be indicative of the colors to be expected on the other tiles, the amount of colors on each piece may vary significantly. For example "that little bit of color" on one piece may be the primary color on the next piece.

V4 = RANDOM VARIATION: Random color differences from tile to tile, so that one tile may have totally different colors from that on the other tiles. Thus, the final installation will be unique.



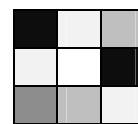
V1



V2



V3



V4

□ SHADE VARIATION AND PEI ON ILVA PRODUCTS

According to the shade variation index and ware resistance (PEI) Ilva products are classified as follows:

Technical Characteristics	Series	Product	V Grade	PEI
Glazed Porcelain	Amadeus	Linz	2	4
Glazed Porcelain	Amadeus	Salzburgo	2	4
Glazed Porcelain	Amadeus	Viena	2	4
Glazed Porcelain	Mármol Travertino	Mármol Travertino	1	4
Glazed Porcelain	Fiorentino	Fiorentino Rosso	4	4
Glazed Porcelain	Fiorentino	Fiorentino Beige	4	4
Glazed Porcelain	Fiorentino	Fiorentino Verde	4	4
Glazed Porcelain	Paesina	Bosco	2	4
Glazed Porcelain	Paesina	Notte	2	4
Glazed Porcelain	Paesina	Platino	2	4
Glazed Porcelain	Paesina	Quarzo	2	5
Glazed Porcelain	Paesina	Sabbia	2	5
Glazed Porcelain	Oxide	Chrome	3	4
Glazed Porcelain	Oxide	Iron	3	4
Glazed Porcelain	Oxide	Tin	3	5
Glazed Porcelain	Oxide	Yttrium	3	4
Glazed & Rectif. Porcelain	Pietre Travertine	Travertine Beige	2	5
Glazed & Rectif. Porcelain	Pietre Travertine	Travertine Bianco	2	5
Glazed & Rectif. Porcelain	Pietre Travertine	Travertine Noce	2	5
Glazed & Rectif. Porcelain	Pietre Travertine	Trevertine Rosso	2	5
Glazed & Rectif. Porcelain	Opera	Aida	2	5
Glazed & Rectif. Porcelain	Opera	Carmen	2	5
Glazed & Rectif. Porcelain	Opera	Tosca	2	5
Glazed & Rectif. Porcelain	Elementi	Acqua	2	4
Glazed & Rectif. Porcelain	Elementi	Aria	2	5
Glazed & Rectif. Porcelain	Elementi	Fuoco	2	4
Glazed & Rectif. Porcelain	Elementi	Terra	2	4
Glazed & Rectif. Porcelain	Landscapes	Beach	4	4
Glazed & Rectif. Porcelain	Landscapes	Forest	4	4
Glazed & Rectif. Porcelain	Landscapes	Meadow	4	4

[Back to the index](#)

Technical Characteristics	Series	Product	V Grade	PEI
Tech. Porc. ANT, PO or UP	Crema Marfil	Crema Marfil	2	-
Technical Porcelain	Pietra Patagónica	Cardiel	3	-
Technical Porcelain	Pietra Patagónica	Esquel	3	-
Technical Porcelain	Pietra Patagónica	Huemul	3	-
Technical Porcelain	Pietra Patagónica	Maitén	3	-
Technical Porcelain	Andes	Bayo	3	-
Technical Porcelain	Andes	Lacar	3	-
Technical Porcelain	Andes	Otto	3	-
Technical Porcelain	Andes	Traful	3	-

□ **ILVA CALIPERS**

NON RECTIFIED MATERIALS						
Caliper	Nominal Size	34 x 34	35 x 35	44 x 44	50 x 50	60 x 60
8	Minimum	338.85	348.5	437.5	496.0	598.0
	Nominal	339.40	349.0	438.4	496.8	598.8
	Maximum	340.05	349.5	439.3	497.6	599.6
9	Minimum	340.05	349.5	439.3	497.6	599.6
	Nominal	340.70	350.0	440.2	498.4	600.4
	Maximum	341.35	350.5	441.1	499.2	601.2
0	Minimum	341.35	350.5	441.1	499.2	601.2
	Nominal	342.00	351.0	442.0	500.0	602.0
	Maximum	342.65	351.5	442.9	500.8	602.8
1	Minimum	342.65	351.5	442.9	500.8	602.8
	Nominal	343.30	352.0	443.8	501.6	603.6
	Maximum	343.95	352.5	444.7	502.4	604.4
2	Minimum	343.95	352.5	444.7	502.4	604.4
	Nominal	344.60	353.0	445.6	503.2	605.2
	Maximum	345.25	353.5	446.5	504.0	606.0

PIETRA TRAVERTINE, OPERA & ELEMENTI SERIES RECTIFIED			
Single Caliper		34 x 34	44 x 44
S/C	Minimum	336.5	436.5
	Nominal	337.0	437.0
	Maximum	337.5	437.5

LANDSCAPES SERIES RECTIFIED						
Single Caliper		34x34	50x50	25x25	25x50	
					Lado 25	Lado 50
S/C	Minimum	336.5	495.0	245.9	245.9	495
	Nominal	337.0	495.5	246.2	246.2	495.5
	Maximum	337.5	496.0	246.5	246.5	496

Back to the index

CREMA MARFIL SERIES PO OR UP RECTIFIED			
Single Caliper		35x35	50x50
S/C	Minimum	345.00	495.00
	Nominal	345.25	495.25
	Maximum	345.50	495.50

PIETRA PATAGONICA & ANDES SERIES RECTIFIED			
Single Caliper		35 x 35	50 X 50
S/C	Minimum	345.0	495.0
	Nominal	345.5	495.5
	Maximum	346.0	496.0

□ **MULTISIZE INSTALLATION**

When installing multisized tiles from ILVA Series, please keep the following aspects in mind:

- **Shade:** Shades from different sizes must be compatible. It is recommended to combine same shades and production runs. In the case this results to be imposible, control the shading variation of the tiles previous to the installation.
- **Joint:** in non-rectified series, the caliper in the smaller sized tile must be: the same or smaller than the caliper in the bigger size. If this equation is not possible, please don't combine the sizes.

Examples:

7"x7" caliper 0, combining with 14"x14" caliper 0;

7"x7" caliper 0, combining with 14"x14" caliper 1;

Don not combine 7"x7" caliper 1, with 14"x14" caliper 0.

Recommended Joint (Min. 1mm – Max. 5mm)		
<i>Same caliper</i>	<i>Min 1mm</i>	<i>Max 3.5mm</i>
<i>When smaller size has a smaller caliper than the bigger tile</i>	<i>Min 2mm</i>	<i>Max 5mm</i>

In Rectified Series, Ilva recommends a joint of 2mm.