CENTRO CERAMICO
CENTRO DI RICERCA E SPERIMENTAZIONE PER L'INDUSTRIA CERAMICA
**SEDE**
Via Martelli, 26 - 40138 **Bologna**
Tel. (051) 534015 - Fax. (051) 530085

**CERTI.CER.**
**LABORATORIO DI ZONA**
Via Valle d'Aosta, 1 - 41049 **Sassuolo**
Tel. e Fax. (0536) 802154

Part. IVA 0094778-0375

*Bologna,* 22/10/2010

Spett.le
INDUSTRIE PICA S.p.A.
Strada Montefeltro, 83
61100 PESARO (PU)

# TEST LABORATORY

# TEST REPORT Nr. 6727/10

(Traslation of test report Nr 6726/10 of 21/10/2010)

| | |
|---|---|
| Requested by: | INDUSTRIE PICA S.p.A.<br>Strada Montefeltro, 83<br>61122 PESARO |
| On (date): | 21/09/10 |
| For the sample marked: | "TEGOLA PORTOGHESE ROSSA IN LATERIZIO - Produttore INDUSTRIE PICA - Stabilimento di Asti". |

**The results reported relate only to the samples tested.**

**No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.**

**The reproduction of this test report is only authorized in the form of a complete photographic facsimile. Our written approval is necessary for any partial reproduction.**

**This test report consists of 4 pages this cover included.**

| |
|---|
| DESCRIPTION OF THE SAMPLE:<br>Clay roofing tiles, 41.5 x 25.5 cm marked "TEGOLA PORTOGHESE ROSSA IN LATERIZIO - Produttore INDUSTRIE PICA - Stabilimento di Asti", see photo 1. |
| MANUFACTURER: ---------- |
| SAMPLING DETAILS:<br>- Where: --------<br>- Date: --------<br>- By whom: CUSTOMER<br>- How (methods): -------- |
| DATE OF RECEIVAL IN LABORATORY: 17/09/2010 |

TEST PERFORMED:

| | | Date of starting | Date of ending |
|---|---|---|---|
| [X] EN 539-2 (6/2006) | Clay roofing tiles for discontinuous laying - Determination of physical characteristics - Part 2: Test for frost resistance | 23/09/10 | 19/10/10 |

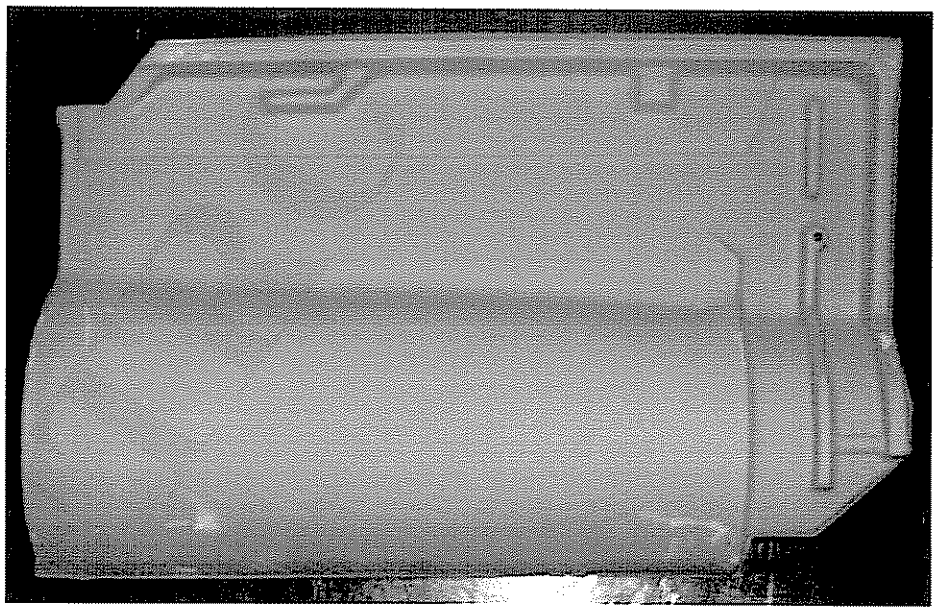

photo 1

## EN 539-2 (6/2006) - Clay roofing tiles for discontinuous laying Determination of physical characteristics – Part 2:Test for frost resistance

TEST METHOD B

Water absorption $W_u$ (%) of 30 initial specimens

| Specimen | Initial dry mass $m_{tr}$ (g) | Wet mass $m_{n.u}$ (g) | Water absorption $W_u$ (%) |
|---|---|---|---|
| 1 | 2824.0 | 3045.5 | 7.8 |
| 2 | 2841.0 | 3070,0 | 8,1 |
| 3 | 2838.0 | 3060.0 | 7.8 |
| 4 | 2820.5 | 3037.0 | 7.7 |
| 5 | 2798.0 | 3018.0 | 7.9 |
| 6 | 2846.0 | 3063.0 | 7.6 |
| 7 | 2799.0 | 3017.5 | 7.8 |
| 8 | 2847.5 | 3077.0 | 8.1 |
| 9 | 2843.0 | 3064.0 | 7.8 |
| 10 | 2844.5 | 3072.0 | 8.0 |
| 11 | 2798.0 | 3019.0 | 7.9 |
| 12 | 2791.5 | 3007.0 | 7.7 |
| 13 | 2814.5 | 3037.0 | 7.9 |
| 14 | 2829.5 | 3052.0 | 7.9 |
| 15 | 2835.5 | 3055.5 | 7.8 |
| 16 | 2833.0 | 3049.0 | 7.6 |
| 17 | 2807.5 | 3034.5 | 8.1 |
| 18 | 2805.5 | 3022.0 | 7.7 |
| 19 | 2790.0 | 3009.0 | 7.8 |
| 20 | 2823.0 | 3044.5 | 7.8 |
| 21 | 2786.0 | 3014.0 | 8.2 |
| 22 | 2839.0 | 3068.5 | 8.1 |
| 23 | 2854.0 | 3079.5 | 7.9 |
| 24 | 2828.5 | 3054.0 | 8.0 |
| 25 | 2841.5 | 3065.0 | 7.9 |
| 26 | 2816.5 | 3037.0 | 7.8 |
| 27 | 2807.0 | 3031.0 | 8.0 |
| 28 | 2838.5 | 3067.0 | 8.0 |
| 29 | 2824.5 | 3043.5 | 7.7 |
| 30 | 2827.5 | 3047.5 | 7.8 |

Water absorption $W_u$ - average value (%) : 7.9
Standard deviation (%) : 0.2

Water absorption $W_u$, R(%) of 6 clay roofing tiles after preconditioning, sprinkling and soaking; than these specimens have been submitted at 150 freeze/thaw cycles.

| Specimen | Dry mass $m_{tr}$ (g) | Wet mass $m_w$ (g) | Water absorption $W_u$, R (%) | Defects before the test |
|---|---|---|---|---|
| 6 | 2846.0 | 3078.0 | 8.2 | ------- |
| 14 | 2829.5 | 3069.0 | 8.5 | ------- |
| 16 | 2833.0 | 3065.5 | 8.2 | ------- |
| 17 | 2807.5 | 3052.0 | 8.7 | ------- |
| 21 | 2786.0 | 3030.5 | 8.8 | ------- |
| 25 | 2841.5 | 3082.0 | 8.5 | ------- |

Water absorption $W_u$, R - average value (%) : 8.5
Standard deviation (%) : 0.3

RESULTS :

| Specimen | | Frost damage after 50 and 75 cycles | Frost damage after 100 and 125 cycles | Frost damage after 150 cycles |
|---|---|---|---|---|
| 6 | Front | ------ | ------ | ------ |
| | Back | | | |
| 14 | Front | ------ | ------ | ------ |
| | Back | | | |
| 16 | Front | ------ | ------ | ------ |
| | Back | | | |
| 17 | Front | ------ | ------ | ------ |
| | Back | | | |
| 21 | Front | ------ | ------ | ------ |
| | Back | | | |
| 25 | Front | ------ | ------ | ------ |
| | Back | | | |

At the end of 150 freeze/thaw cycles the 6 clay roofing tiles were intact and free from defects.

Prof. Eng. Giorgio Timellini
DIRECTOR

Centro Ricerche per l'Industria Ceramica CENTRO CERAMICO BOLOGNA