

|                        |                                                                        |
|------------------------|------------------------------------------------------------------------|
| Requested by:          | LAMINAM S.p.A. – Via Ghiarola Nuova, 258 – 41042 FIORANO MODENESE (MO) |
| On (date):             | 29/09/10                                                               |
| For the sample marked: | "AS FROM THE ANNEX".                                                   |

### EN ISO 10545-13 § 7 - Determination of chemical resistance - Unglazed tiles

| Test solutions                                                   | Class of resistance |                 |                 |                 |                 |
|------------------------------------------------------------------|---------------------|-----------------|-----------------|-----------------|-----------------|
|                                                                  | Test specimen 1     | Test specimen 2 | Test specimen 3 | Test specimen 4 | Test specimen 5 |
| <b>Household Chemicals:</b><br>Ammonium Chloride 100g/l          | UA                  | UA              | UA              | UA              | UA              |
| <b>Swimming pool salts:</b><br>Sodium hypochlorite 20mg/l        | UA                  | UA              | UA              | UA              | UA              |
| <b>Acids:</b><br>Hydrochloric acid 3% V/V<br>Citric acid 100g/l  | ULA<br>ULA          | ULA<br>ULA      | ULA<br>ULA      | ULA<br>ULA      | ULA<br>ULA      |
| <b>Alkali:</b><br>Potassium Hydroxide 30g/l                      | ULA                 | ULA             | ULA             | ULA             | ULA             |
| <b>Acids:</b><br>Hydrochloric acid 18% V/V<br>Lactic acid 5% V/V | UHA<br>UHA          | UHA<br>UHA      | UHA<br>UHA      | UHA<br>UHA      | UHA<br>UHA      |
| <b>Alkali:</b><br>Potassium Hydroxide 100g/l                     | UHA                 | UHA             | UHA             | UHA             | UHA             |

#### CLASSIFICATION - References

U: Unglazed tiles

G: Glazed tiles

L: Low concentration chemicals

H: High concentration chemicals

Class A: No visible effect

Class B: Visible effects on cut sides

Class C: Visible effects on cut sides, non-cut sides and on the profile surface

Prof. Eng. Giorgio Timellini

Director

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(G.U. 20-12-1978 n. 353)

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**CERTI.CER.**

**LABORATORIO DI ZONA**

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Tel. 0536 802154

Part. IVA 0094778-0375

Bologna, 20/10/10

**TEST REPORT N° 6802/10**

concerning ceramic tiles according to  
EN 14411 (ISO 13006)

|                        |                                                                        |
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**EN ISO 10545-14 – Determination of stain resistance**

| Test solutions                              | Resistance class |                 |                 |                 |                 |
|---------------------------------------------|------------------|-----------------|-----------------|-----------------|-----------------|
| Stains                                      | Test specimen 1  | Test specimen 2 | Test specimen 3 | Test specimen 4 | Test specimen 5 |
| Chrome green in light oil                   | 5                | 5               | 5               | 5               | 5               |
| Iodine (alcoholic solution 13g/l)           | 5                | 5               | 5               | 5               | 5               |
| Olive oil (def. Olive Oil Agreement - 1979) | 4                | 4               | 4               | 4               | 4               |

**Stain resistance class - References**

Resistance class 1: Stain not removed.

Resistance class 2: Stain removed by dipping in a suitable solvent for 24 hours.

Resistance class 3: Stain removed by mechanical cleaning and strong cleansing agent.

Resistance class 4: Stain removed by manual cleaning with weak cleansing agent.

Resistance class 5: Stain removed by means of hot current water for 5 min.

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41042 FIORANO MODENESE (MO)

### **GROUP BIa - Series**

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Prof. Eng. Giorgio Timellin  
Director



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