

DIVISIONE: **PHYSICAL- CHEMISTRY**  
 DIVISION:

LABORATORIO:  
 LABORATORY:

**PACKAGING**

<b>RAPPORTO DI PROVA</b> <i>(Test Report)</i>	Pag. 1 di/of pag. 3
N° <b>422i-ING/LCF/PKG/04</b>	Data: 30/07/04 Date:

IDENTIFICAZIONE E DESCRIZIONE DEL CAMPIONE:  
 SPECIMEN DESCRIPTION:

**Expanded corks signed "SIGILLO"**

DATI IDENTIFICATIVI DEL CLIENTE:  
 CLIENT:

**OREMPLAST s.r.l.**  
 Via Martiri della libertà, 60  
 48024 MASSA LOMBARDA (RA)

NORMA DI RIFERIMENTO:  
 REFERENCE STANDARD:

**SO<sub>2</sub> permeability test**

DISTRIBUZIONE ESTERNA:  
 OUTSIDE DISTRIBUTION:

**OREMPLAST s.r.l.**  
**to Mr. CASADEI LELLI**

DISTRIBUZIONE INTERNA:  
 INSIDE DISTRIBUTION:

Copy to: Division Head

ENTE DI ACCREDITAMENTO:  
 ACCREDITATION BODY:

Mod. 371 - Rev. 6



**RAPPORTO DI PROVA**  
(Test Report)

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N° 422i-ING/LCF/PGK/04

Data: 30/07/04  
Date:

**GENERALITIES:**

- Date sample receipt: 05.06.02
- Date Analysis beginning : 12.06.02
- Date Analysis end: 19.09.02
  
- Normalized internal procedure: YES
- Deviation from test methods: NO
- Calculations check and data transfer: YES

**SAMPLES DESCRIPTION :**

**Expanded corks signed "SIGILLO"**

**PERFORMED DETERMINATIONS:**

Determination of SO<sub>2</sub> permeability according to the following CSI procedure.

The cork (two samples for every batch) is placed in a Pyrex glass cylinder ( length > 10 cm ) that 'll be the separatory element between two carrier flows:

the first flow, of 10 ± 1 ml, is constituted from nitrogen with 10% (v/v) of sulphur dioxide;

the second from nitrogen for GC (purity > 99.999 10 ± 1 ml).

This second flow of nitrogen removes sulphur dioxide eventually permeated through the cap under the gradient of partial pressure, induced by the permeating concentration of SO<sub>2</sub> present in the first flow.

The SO<sub>2</sub> permeated is collected in bottles of washing gas containing 50 ml of hydrogen peroxide solution ( 2%).

Every 24 hours, for a total volume of carrier > of 14400 ml, the solutions have been tritated with hydroxide of sodium 0,01 N for the quantification of present sulphur trioxide, coming from the oxidation of sulphur dioxide permeated through the cork.

The sensibility and the effectiveness of the titration is controlled analyzing bottles of washing gases containing the same oxidating solution in which it has been made scrubbing a note concentration of sulphur dioxide captured from a containing bottle diluted sulphur dioxide in nitrogen to note concentration of the order of 50 ppm (~2000 ml of gaseous mixture).

Sensibility of the procedure: 50 µg SO<sub>2</sub>



**RAPPORTO DI PROVA**  
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N° 422i-ING/LCF/PGK/04

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Data: 30/07/04  
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**DECLARATION:**

The test results of the present report are related exclusively to the tested sample.

The present test report cannot be partially reproduced without the authorization of CSI Managing Center.

The test results of the present report are related to corks heighted 37 mm, since using this condition the test is stricter than the shynthetic cork heighted 44 mm.

**RESULTS:**

The results of SO<sub>2</sub> permeability, expressed in µg SO<sub>2</sub>/24h for 10 Kpa, are reported in the following table.

SAMPLE	SO <sub>2</sub> PERMEABILITY, µG SO <sub>2</sub> /24H FOR 10 KPA
1 <sup>st</sup> CORK	< 50
2 <sup>nd</sup> CORK	< 50

RESP. DIV. CHIMICA-FISICA

Laboratory Head

Dr. Gianluigi VESTRUCCI

RESP. CENTRO

Managing Director

Ing. Pasqualino CAU