

**REPORT 104/L DATE 30.03.2022**

Laboratory	GFC - Chimica S.r.l. Laboratorio Chimico Viale Marconi, 73 44122 Ferrara
Customer	IRIS COATINGS S.R.L. Via Novi, 42 15060 Basaluzzo (AI)
Sample identification	11032204 – CHAR 21
Sample description	Intumescent water-based paint
Date of receiving	11.03.2022
Analysis beginning (date)	14.03.2022
Analysis end (date)	30.03.2022
Contact	Ing. Claudio Pagella

## 1 Introduction

A sample identified and described as shown in the table above was examined on behalf of the company IRIS COATINGS of Basaluzzo (AI), hereinafter referred to as the customer.

As agreed with the customer, the determination of CO<sub>2</sub> permeability (test method UNI EN 1062-6:2003) was carried out.

The product was supplied by the customer applied on PE substrates and conditioned, i.e. ready for the test.

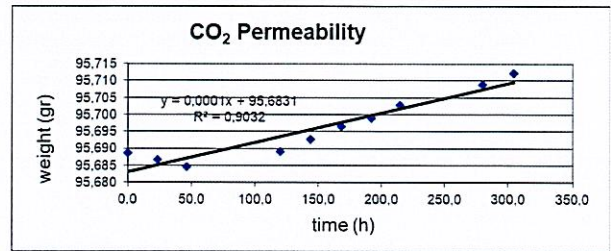
## 2 Results

### 2.1 *Determination of carbon dioxide permeability*

The permeability to carbon dioxide is expressed through the value of equivalent thickness of air ( $S_{dCO_2}$ ), so through the resistance to the transport of CO<sub>2</sub> offered by the paint and the substrate. The  $S_{dCO_2}$  value of the paint is obtained by subtracting the contribution of the substrate. The permeability to CO<sub>2</sub> is also expressed through the number of resistance to CO<sub>2</sub> diffusion ( $\mu_{CO_2}$ ) which is obtained, by calculation, from  $S_{dCO_2}$ .

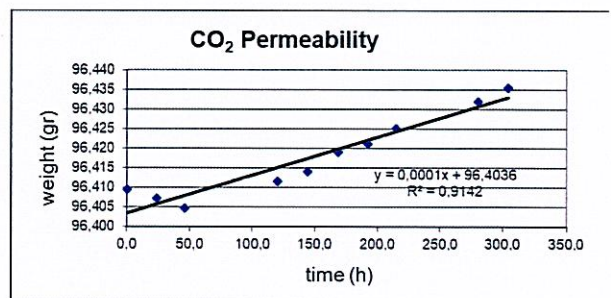
First set of data

time (h)	weight (gr)
0,0	95,689
24,0	95,687
46,0	95,685
120,0	95,689
144,0	95,693
168,0	95,697
192,0	95,699
214,5	95,703
280,0	95,709
304,0	95,712



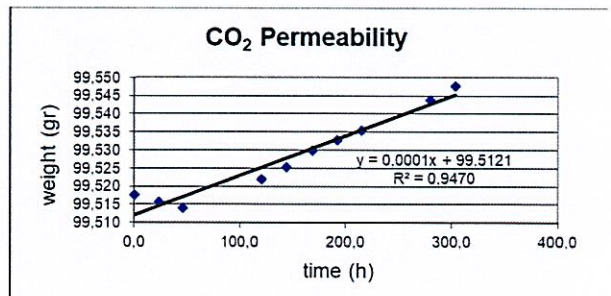
Second set of data

time (h)	weight (gr)
0,0	96,410
24,0	96,407
46,0	96,405
120,0	96,412
144,0	96,414
168,0	96,419
192,0	96,421
214,5	96,425
280,0	96,432
304,0	96,436



Third set of data

time (h)	weight (gr)
0,0	99,518
24,0	99,516
46,0	99,514
120,0	99,522
144,0	99,525
168,0	99,530
192,0	99,533
214,5	99,535
280,0	99,544
304,0	99,548



Considering the resistance of the substrate ( $S_{dCO_2}$  substrate = 1.719 m), the following average transport resistance value is obtained:

$$S_{dCO_2} = 447.582 \text{ m}$$

From the value of the applied thickness (s), equal to 1343  $\mu\text{m}$ , the permeability to carbon dioxide is:

$$\mu_{CO_2} = S_d/s = 333270$$



### 3 Conclusions

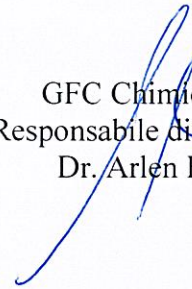
CHAR 21 offers a high barrier to carbon dioxide with  $Sd_{CO_2} = 447.582 \text{ m}$ .

The test method UNI EN 1504-2 (table 5) requires  $Sd_{CO_2} \geq 50 \text{ m}$  in order to guarantee an effective barrier to carbon dioxide.

GFC Chimica Srl  
L'analista  
Ing. Cristina Pocaterra



GFC Chimica Srl  
Il Responsabile di Laboratorio  
Dr. Arlen Ferrari



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END OF THE REPORT

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