

Test Report



Laboratório de Ensaios

Laboratório Ensaios da INTERFACE

Rua Capitães de Abril nº39, 1º Dto
Colina do Sol
2650-351 Amadora - Portugal

Phone: 21 476 77 70

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Report Number: 436AR15

Report Date: 04-08-2015

Equipament Tested **Cleanroom**

Title of Room Production Room
Room Conditions Stopped
Number of people 1
Surface Area 10,4

Identification

Institute IlhaPlast
Department Direcção
Contact Name Engº Jorge Jesus
E-mail address ilhaplast@ilhaplast.com
Installation Address Ilhavo

Equipment used in the tests:

| Test Equipment | Serial Numbers |
|--|-----------------------|
| Air Particle Counter | 71101107 |
| Thermoanemometer | 54100241 |
| Luximeter | 110301261 |
| Micromanometer | 113573 |
| Photometer | 16137 |
| Aerosol generator | 16038 |
| Sound Level Meter + Calibrator | 12016/50441100 |
| Thermohigrometer | 121003692 |
| Other: Supports, tapes leaflets, Tape and Smoke Ampoules | |

Applicable Standards:

| | |
|------------------------------|---|
| ISO 14644-3:2005 | Cleanrooms and associated controlled environments |
| ISO 14698:2003 | Cleanrooms - Biocontamination control |
| IENT- RP-CC006.3:2004 | Testing Cleanrooms |
| | Equipment calibration na Validation Procedures |
| | HEPA and ULPA Filter Leak Tests |

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Testing date: 28-07-2015



Responsible for the Technical Tests
Luís Vaz

Technical Director
Bruna Batista

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Air Velocity Report Test

| Test Code | Expected report |
|--|--|
| SLZOQ.02 | IEST-RP-CC006.3 Uniform flow measurement |
| IEST-RP-CC006.3 | |
| Total Insuflation Area with HEPA filtracion(m2): | 1.44 |
| Number of testes: | 1.00 |
| Medium Velocity in the insuflation by HEPA filters (m/s): | 0.64 |
| Number of renovations of the air in the cleanroom by hour: | 116.78 |

Test for the Pressure Diference

| Test Code | Expected report |
|---|--|
| SLZOQ.03 | There is not a defined value by the norm, the value is defined by the costumer |
| IEST-RP-CC006.3 | Result (Pa) 9 p/SAS Carga; 10 p/SAS Pessoal |
| Pressure inside the room compared with exterior pressure: | Pessoal |
| Pressure in the antechamber (if exist): | NA |

Test to the instalation of the HEPA filter

| Test Code | Expected report |
|-----------------|---|
| SLZOQ.04 | IEST-RP-CC006.3 The aerosol cannot pass more than 0,01% at any point of the filter. |
| Method | |
| IEST-RP-CC006.3 | Result HEPA filter test: OK |

Lightning test

| Test Code | Expected report |
|-----------------|--|
| SLZOQ.05 | There is not a defined value by the norm, the value is defined by the costumer |
| Method | Procedure by the normative: IEST-RP-CC006.3 |
| IEST-RP-CC006.3 | |
| | Result Light Medium Intensity (lux): 773 |

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Sound Level Test

| Test Code | Expected report |
|-----------------|--|
| SLZOQ.06 | There is not a defined value by the norm, the value is defined by the costumer |
| Method | |
| IEST-RP-CC006.3 | Procedure by the normative: IEST-RP-CC006.3 |

Maximum Value obtained by the Frequency Tested:

| | Result |
|--------|--------|
| 63 Hz | 75.3 |
| 125 Hz | 66.8 |
| 250 Hz | 68.5 |
| 500 Hz | 65.4 |
| 1K | 59.1 |
| 2K | 58.7 |
| 4K | 52.6 |
| 8K | 49.6 |

NC value of the room (dB(A)): <65

Humidity and Temperature Test

| Test Code | Expected report |
|-----------------|--|
| SLZOQ.07 | There is not a defined value by the norm, the value is defined by the costumer |
| Method | |
| IEST-RP-CC006.3 | Procedure by the normative: IEST-RP-CC006.3 |

| | Result |
|---|--------|
| Medium Value of the Temperature obtained in the room(°C): | 18 |
| Medium Value of the humidity obtained in the room (%): | 85 |

Flow Direction Test

| Test Code | Expected report |
|-----------------|--|
| SLZOQ.07 | IEST-RP-CC006.3 insuflation - Ar Directly with velocity enough to reach the work area. Ar extration must follow the flow direction |
| Method | |
| IEST-RP-CC006.3 | In the workin zone the air mus go from the top to bottom with a velocity enough. |

| | Result |
|--|--------|
| Air Direction in the Insuflation Area: | OK |
| Air Direction in the Extraction Area: | OK |
| Air Direction in the Work Zone: | OK |

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Room Classification - Particle Counting

Test Code SLZOQ.01 **Expected report** ISO 14644 Normative (Attached table)

| Número de Classe ISO | Valor máximo de concentração de partículas (partículas por metro cúbico de ar) | | | | | |
|----------------------|---|--------|--------|----------|---------|--------|
| Tamanho Partículas | 0.1 µm | 0.2 µm | 0.3 µm | 0.5 µm | 1 µm | 5.0 µm |
| ISO 1 | 10 | 2 | --- | --- | --- | --- |
| ISO 2 | 100 | 24 | 10 | 4 | --- | --- |
| ISO 3 | 1000 | 237 | 102 | 35 | 8 | --- |
| ISO 4 | 10000 | 2370 | 1020 | 352 | 83 | --- |
| ISO 5 | 100000 | 23700 | 10200 | 3520 | 832 | 29 |
| ISO 6 | 1.000.000 | 237000 | 102000 | 35200 | 8320 | 293 |
| ISO 7 | --- | --- | --- | 352000 | 83200 | 2930 |
| ISO 8 | --- | --- | --- | 3520000 | 832000 | 29300 |
| ISO 9 | --- | --- | --- | 35200000 | 8320000 | 293000 |

Number of Particle Counting proceeded: 3

Sample flow: 28 l/min

Medium values of the countings (particles/m3):

| | | | |
|---------------|---------------|---------------|---------------|
| 0,3 µm | 0,5 µm | 1,0 µm | 5,0 µm |
| 298 | 226 | 274 | 36 |

Trust limit at 95%

| | | | |
|---------------|---------------|---------------|---------------|
| 0,3 µm | 0,5 µm | 1,0 µm | 5,0 µm |
| 377 | 386 | 314 | 36 |

ISO Classification for the Room: 6

Corrective Actions

No recommendations for this cleanroom.

Conclusions

The Clean room tested presents a ISO 6 classifications. So it can e used when this classifications is enough.

Note: The corrective actions, observations and conclusions are not supported by the Accredited evaluation criterium.

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