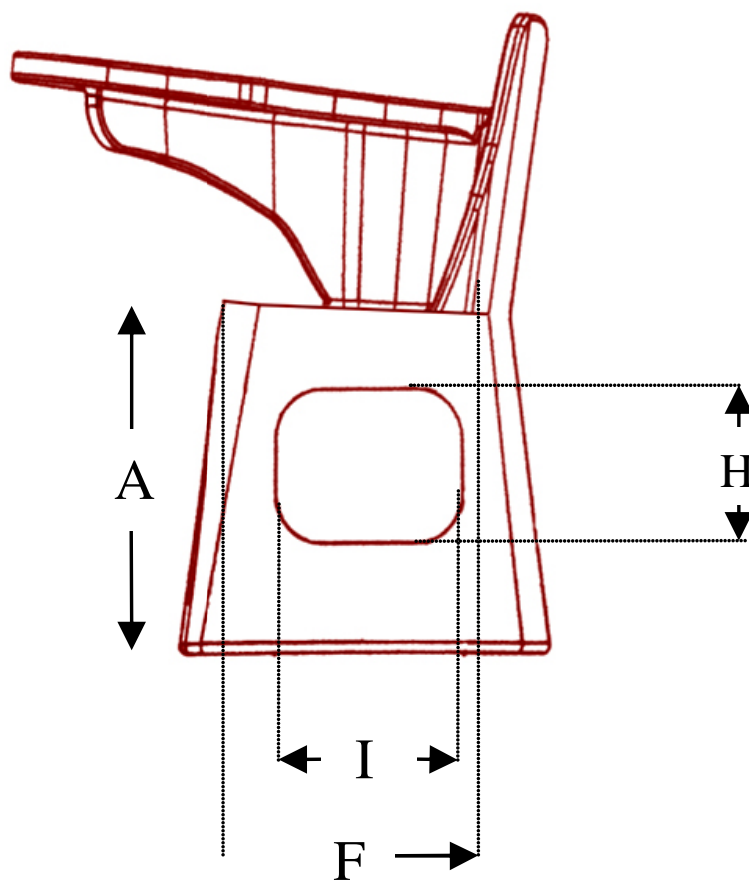


Qdesk[®]

REPORT OF RESULTS
of the Technical Secretariat for
Research in Materials
UNAM



QDESK is a product that has been subjected to studies of its dimensions and characteristics for different institutions and public bodies. All this with the objective of verifying its validity, characteristics and compliance with the local regulations of each Country.

This is an analysis to verify the validity of Qdesk in Mexico. The INIFED (National Institute for Physical and Educational Infrastructure) commissioned a study on QDESK from the UNAM (National Autonomous University of Mexico).

The study concluded that Qdesk complies with the supplier's specifications and with the "Regulations and specifications for studies, projects, construction and facilities."

The Editors

**WWW.QDESK.NET
WWW.QPRODUCTS.NET
715 PINELLAS ST. CLEARWATER , FL
USA 33756
PHONE: 727-442-6219
FAX : 727-442-6223
OFFICE@QDESK.NET**

REPORT OF ESSAYS

REQUESTED BY: Instituto Nacional de la Infraestructura Física Educativa Vito Alessio Robles
380 Colonia Florida, Delegación Álvaro Obregón 01030 Mexico, D.F.

- ANALYSIS:**
- Dimensional.
 - Infrared.
 - Differential Scanning Calorimetry
 - Accelerated Weathering (One year simulation)
 - Mechanical resistance (stability)
 - Resilience to the effects of chemical agents
 - Resistance to scratching.
 - Ergonomics.
 - Resistance to combustion.
 - Resistance to loads and compression.
 - INIFED regulations and specifications for studies, projects, construction and facilities.
- SAMPLES:**
- (3) Selected and handed over by the client, with the following identifications:
 - Rotational molded desks. (2 blue and 1 green)
 - Supplier: Qdesk Mexico
- EQUIPMENT:**
- Measuring tape, Infrared Spectrophotometer manufactured by Thermo, model Nicolet 6700; Differential Scanning Calorimeter manufactured by T.A. Instruments, model 2910; Thermomechanical Analyzer manufactured by T.A. Instruments, model 2940; Accelerated Weathering Equipment manufactured by The Q-Panel Co., model QUV; Universal machine for Mechanical Tests manufactured by Instron, model 3300; burner, chronometer.
- METHOD OR NORM:**
- RECEPTION DATE: Indicated in the results. September 6th, 2011.
- STARTING/FINISHING DATE:** September 20th, 2011 / October 12th, 2011.

RESULTS

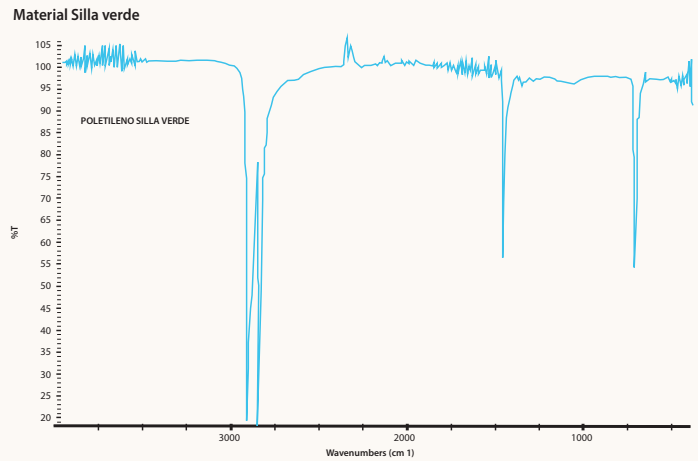
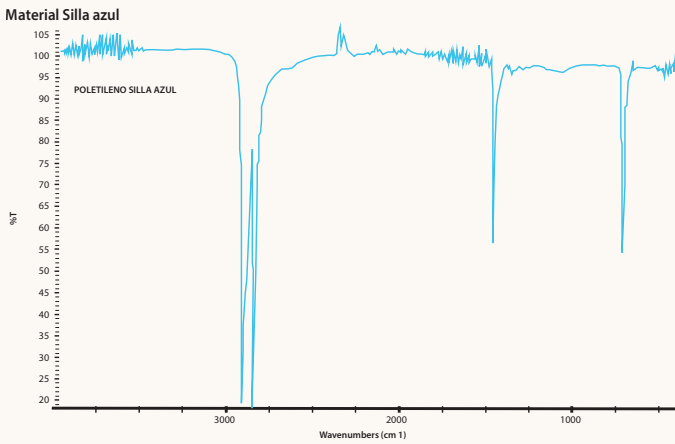
DIMENSIONAL		
SAMPLE	BLUE	GREEN
Weight	11.6Kg	10.2Kg
Height floor-seat	42.8 cm	37.2 cm
Length table-seat	40.8 cm	38.4 cm
Width of working area	38.9 cm	33.2 cm
Length of working area	40.5 cm	30.5 cm
Width of seat	43.2 cm	38.2 cm
Length of seat	36.1 cm	33.2 cm
Diameter of base	58.6 cm	54.2 cm
Height of compartment	17.9 cm	17.5 cm
Width of compartment	25.2 cm	23.5 cm

Infrared (IR)

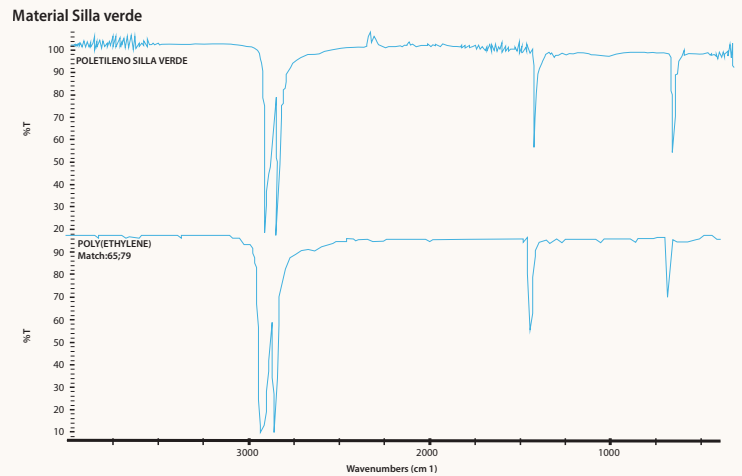
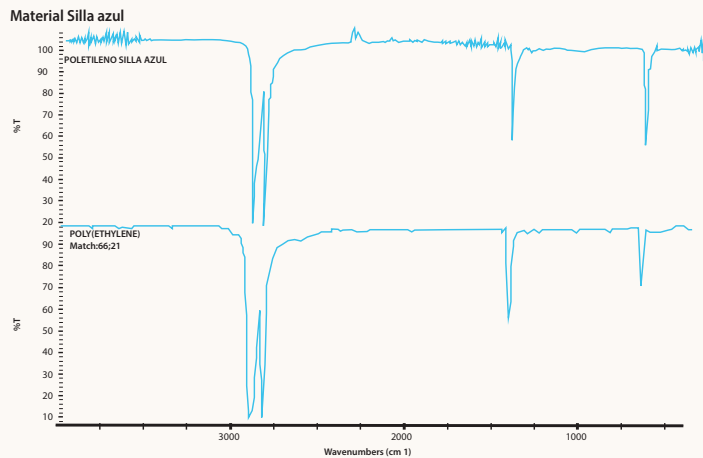
This test is determined by direct transmission.

The infrared spectrum corresponds to a Polyethylene-based material.

The following results were gathered.



And their corresponding variations



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RESULTS

- Both cases involve a polyethylene-based material.

Differential Scanning Calorimetry (DSC).

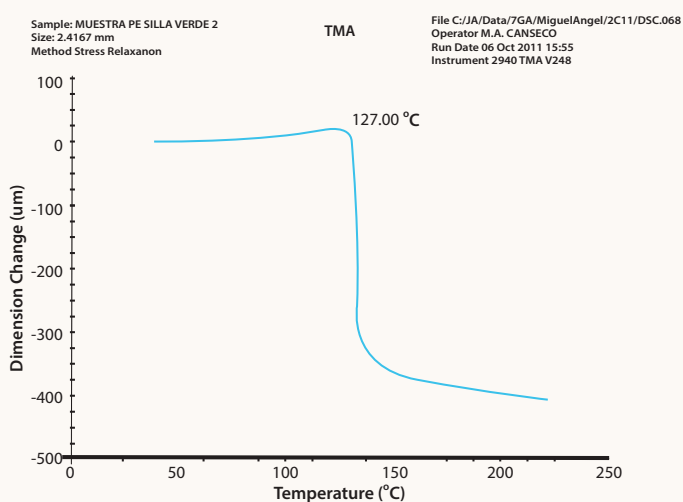
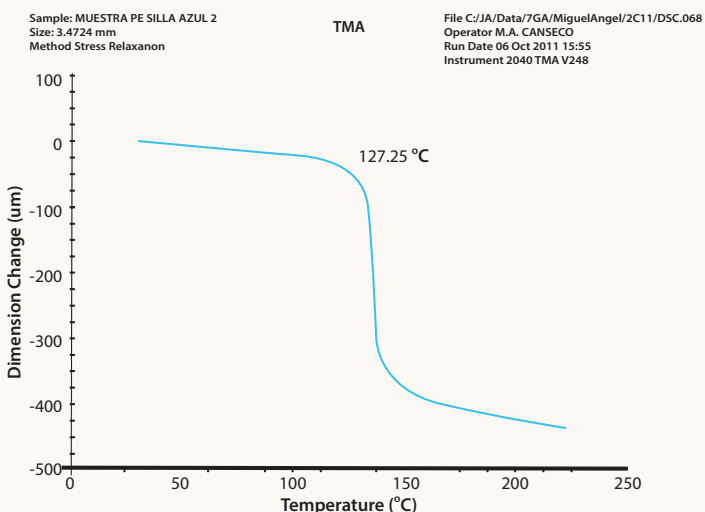
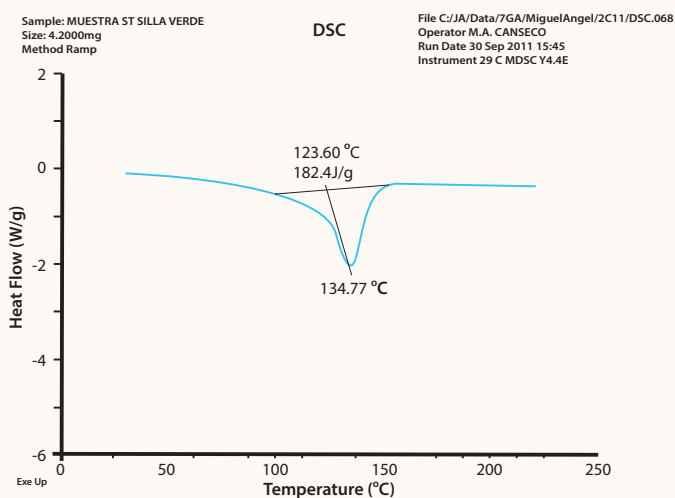
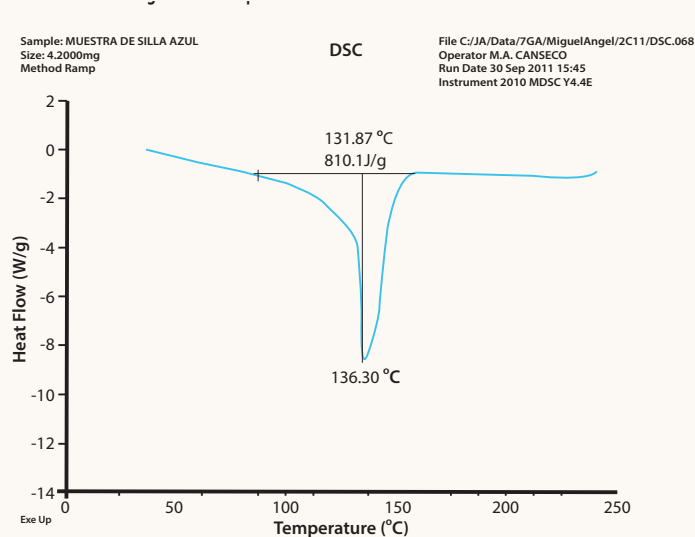
- The tests are performed with a heating speed of 10°C/min up to the indicated temperature, and under a controlled atmosphere with highly-pure nitrogen gas.
- This test establishes the thermal behavior of the material the samples are made of, and the melting temperature is calculated. With this information it is then established that this is a homogeneous material in terms of its composition in both cases.

- Its thermomechanical analysis (TMA) is also established, and the softening temperature of the samples is calculated.

The following results were gathered:

SAMPLE	FUSION TEMPERATURE (°C)	SOFTENING TEMPERATURE (°C)
	DSC	TMA
Blue	131.87	127.25
Green	123.60	127.00

The corresponding thermographs are attached:



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RESULTS

Accelerated weathering (one year simulation).

- This test is still being conducted, but as of now the pieces tested do not show any evidence of deterioration, discoloration, or loss of mechanical properties. Up to now the simulation corresponds to 6 months of natural weathering.

Mechanical resistance (stability).

- The pieces are tested with a mass on top of them, and when hitting them with a blow equal to 30kg, the pieces do not lose any stability.

Resistance to the effect of chemical agents.

- The pieces are subjected to chemical reactants, and no reaction or change of the surface tested has been observed.

The following results were gathered:

SAMPLE	WATER	SOAP SOLUTION	PINE-BASE CLEANER	COLA SODA	GRAPE JUICE	SALINE SOLUTION
Blue	No change	No change	No change	No change	No change	No change
Green	No change	No change	No change	No change	No change	No change

Resistance to scratching.

- The sample presents a level 3 resistance to scratching.
- This is an adequate hardness for the intended use.

Ergonomics.

The samples have the proper dimensions for the users of the two types of chairs, Qdesk#5 and Qdesk#4. The position of the feet on the floor is flat. There is clearance between the knees and the table that allows for comfort. This ensures a proper posture during the time the user is on the desk.

Resistance to combustion.

In this test a 10x4 inches piece is put in contact with the flame of a burner for one minute. After this time, we check for Auto-extinguishing, or determine how long it takes for the flame to be extinguished.

The following results were gathered:

SAMPLE	TIME (S)
Blue	9
Green	120*

*The flame in this sample is not extinguished.

Resistance to load and compression.

The following results were gathered:

SAMPLE	MAXIMUM LOAD (MPA)	COMPRESSION (MPA)
Blue	19.6	698
Green	18.8	675

INIFED norms and specifications for studies, projects, construction and facilities.

- These norms and specifications are fully complied with by this type of furniture.

Results:

The pieces tested are comfortable, easy to clean and safe, as they do not have any protruding parts or edges; they are aesthetic, as their appearance is nice and anatomic.

In terms of comfort, the following are INIFED's specifications:

- A. Placing of feet flat on the ground. This characteristic is complied with.
- B. Lack of any pressure on the back of the thighs, close to the knees. This characteristic is also complied with.
- C. The pieces tested have clearance between the legs and the upper part of the table.
- D. The position of the chair's cover is slightly higher than the height of the elbows, sitting in a proper position.

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RESULTS

- E. The back, when leaning against the back of the chair, covers the upper part of the lumbar region.
- F. There is a small separation between the back of the knee and the seat.

The basic furniture is detailed below, and the general requirements are requested.

The following results were gathered:

- The chairs do not roll due to lack of stability.
- The pieces do not have any corners or protrusions; thus, no accidental blows will happen.
- No fingers will be stuck into small holes. The pieces do not have any small holes.
- The pieces analyzed do not deteriorate or break due to exaggerated misuse.
- Based on the tests performed and mentioned above, the chairs are strong, rigid and light.
- The work surface is resistant to deterioration, cleaning, stains with colors, and scratching.
- In terms of ergonomics, the rotational molded desks analyzed guarantee a proper level of comfort and allow for a proper posture.

In general, the pieces tested comply with the suppliers' specifications, and with the "Norms and specifications for studies, projects, construction and facilities". Volume 3 Habitability and operation, Volume 111 Furniture, of the National Institute for Educational Physical Infrastructure, INIFED.

Sincerely,

Cd. Universitaria, October 19th, 2011

Responsable del Ensayo
P.A.
Q. Miguel Angel Canseco Martínez
Responsable del Laboratorio

Signatario Autorizado
Ing. José de Jesús Camacho Sabaiza
Secretario Técnico

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WWW.QDESK.NET
info@qdesk.net