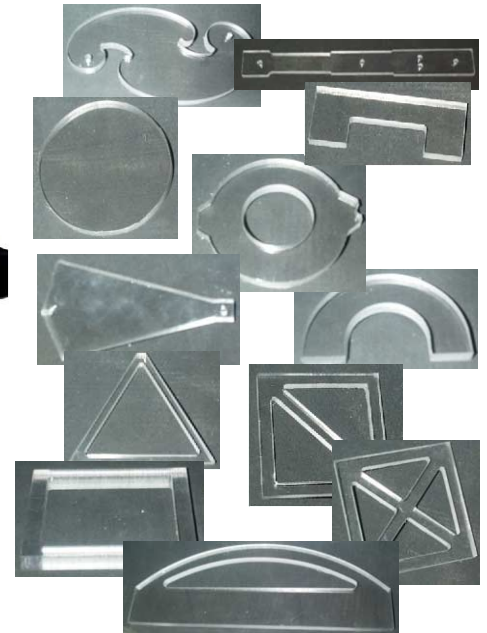


Some available specimens



[www.edibon.com](http://www.edibon.com)  
 ↳ Products  
 ↳ Products range  
 ↳ Units  
 ↳ 7.-Mechanics & Materials

## INTRODUCTION

Photoelasticity is method of analysing and recording mechanical stresses and strains in components.

The components used are specimens or models made of transparent plastic which becomes optically double-refractive under mechanical loading. Using polarised light, the distribution of stress in plastic models is investigated.

The polarisation filters represent the distribution of stress in colours.

## DESCRIPTION

Unit for photoelasticity practices, illustrating the subjects of the Photoelasticity theory, the Elasticity theory, Strength of Materials, and Structure theory.

It is very suitable for the introduction and study of photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tension sing, etc.

Using this unit photoelastic experiments and practices of transparent plastic specimens (models) may be performed.

The different models are subjected to loading by external forces and have polarised light shone through them.

A load application element can apply tensile, bending, compressive, and distributed and punctual loads to the specimen.

The stresses and strains occurring in the plastic specimen (model) are represented as bright spots or figures of different colours, and we can visualise the distribution of stress.

We offer a wide range of specimens for making practices and experiments.



ISO:9001-2000 Certificate of Approval. Reg. No. E204034



European Union Certificate

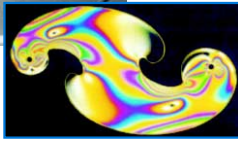
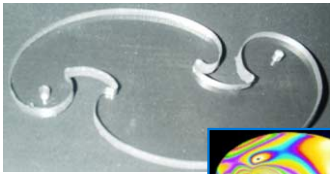


Certificates ISO 14001: 2004 and ECO-Management and Audit Scheme (environmental management)

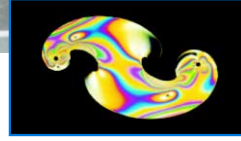


Worlddidac Quality Charter Certificate Worlddidac Member

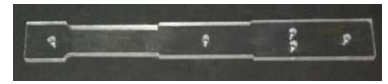
AVAILABLE SPECIMENS



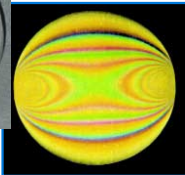
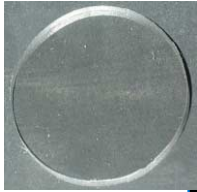
N°1  
Big Irregular Specimen



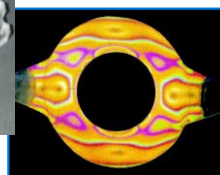
N°2  
Small Irregular Specimen



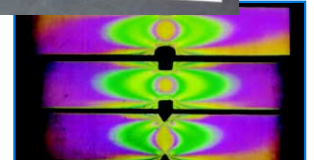
N°3  
Stepped Rectangular Specimen



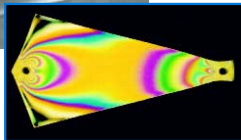
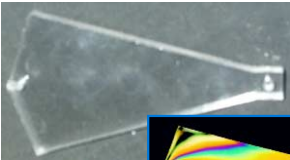
N°4  
Compact Circular Specimen



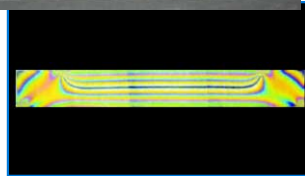
N°5  
Circular with Orifice Specimen



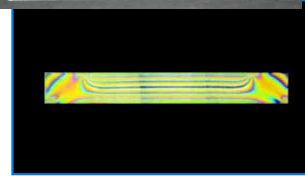
N°6  
Notches Rectangular Specimen



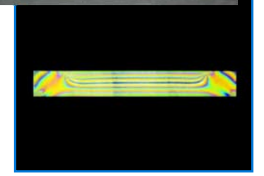
N°7  
Trapezoidal Specimen



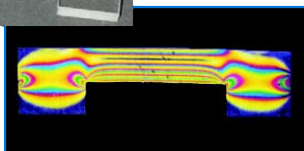
N°8  
Big Rectangular Specimen



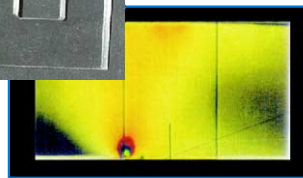
N°9  
Medium Rectangular Specimen



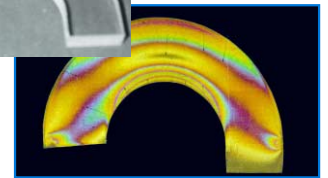
N°10  
Small Rectangular Specimen



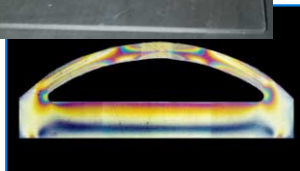
N°11  
"U" Specimen



N°12  
Wide Rectangular Specimen



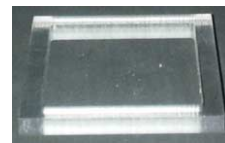
N°13  
"C" Specimen



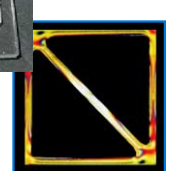
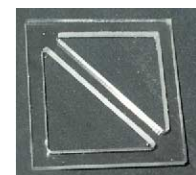
N°14  
Specimen with Arch



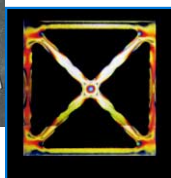
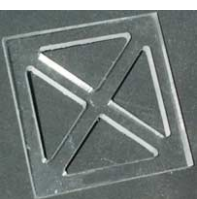
N°15  
Triangular Specimen



N°16  
Hollow Square Specimen



N°17  
Square with Diagonal Bar Specimen



N°18  
Square with Two Diagonal Bars Specimen



N°19  
"T" Beam Specimen

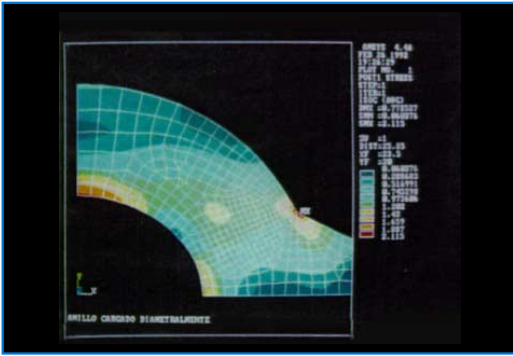


N°20  
Double "T" Beam Specimen

\* N° X : Specimen at approximated dimensions

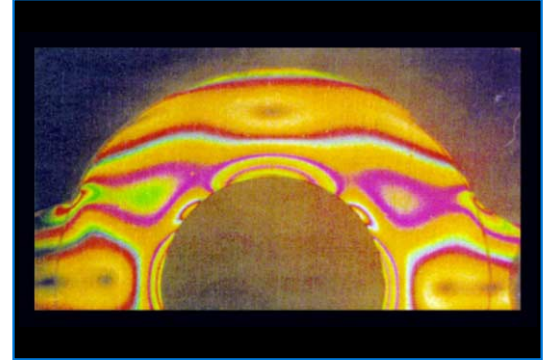
## RESULTS

Software  
Simulation

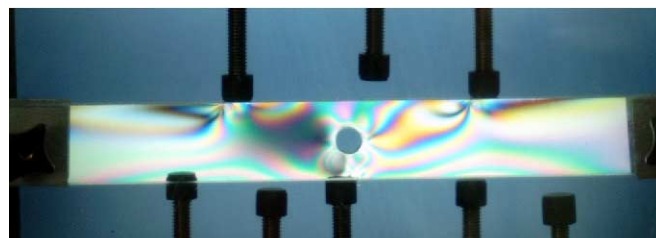
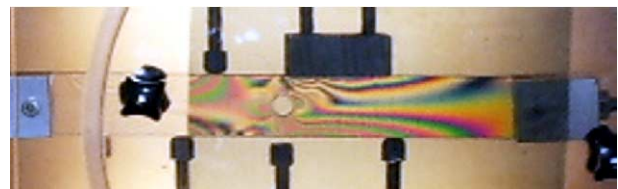
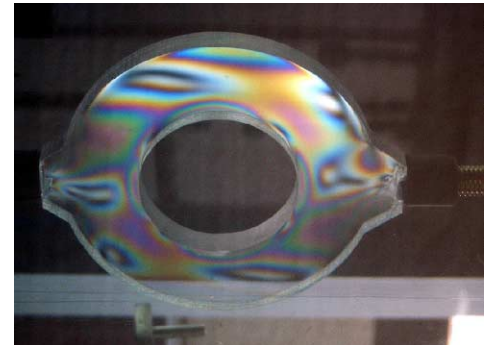
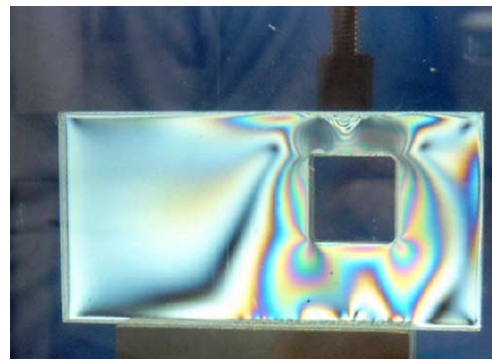


Differences between the  
simulation and the  
photoelastic reality.

Real  
(with EFO Unit)



Some typical results with EFO Unit and different specimens:



Anodized aluminium structure.

Main metallic elements in anodized aluminium and stainless steel.

Light source, two fluorescent tubes of 30 cm and 8W.

Opalescent diffuser plate.

Double effect polarizing filters ( linear polarization and circular polarization), of 30 x 30 cm and protected by methacrylate plates.

Double effect polarizing glasses.

Specimens machined by laser cutting.

Set of epoxy specimens included:

- N°3. Stepped Rectangular Specimen.
- N°4. Compact Circular Specimen.
- N°5. Circular with Orifice Specimen.
- N°9. Medium Rectangular Specimen.
- N°13. "C" Specimen.
- N°14. Specimen with Arch.
- N°17. Square with Diagonal Bar Specimen.

Load frame with pulling jack, dynamometric bar, comparator clock (millesimal indicator) , 8 pressure screws and accessories.

Accessories and cable, for normal operation.

Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance, & Practices Manuals.

**Optional specimens:** (not included in the standard supply)

- N°1. Big Irregular Specimen.
- N°2. Small Irregular Specimen.
- N°6. Notches Rectangular Specimen.
- N°7. Trapezoidal Specimen.
- N°8. Big Rectangular Specimen.
- N°10. Small Rectangular Specimen.
- N°11. "U" Specimen.
- N°12. Wide Rectangular Specimen.
- N°15. Triangular Specimen.
- N°16. Hollow Square Specimen.
- N°18. Square with two Diagonal Bars Specimen.
- N°19. "T" Beam Specimen.
- N°20. Double "T" Beam Specimen.

## EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1.- Introduction to photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tension sign, etc.</li> <li>2.- Determination of principal stress difference.</li> <li>3.- Isochromatics.</li> <li>4.- Illustration of the themes about elasticity, strength of materials and structures using photoelastic tests</li> <li>5.- Pure traction/ optical-tensional law.</li> <li>6.- Diametrically compressed disc.</li> <li>7.- Ring with diametrical compression traction.</li> <li>8.- Ring with diametrical compression.</li> <li>9.- Plate with circular drill with traction.</li> <li>10.- Comparison of the effects from different engraves in piece with traction.</li> <li>11.- Pure traction in a piece with linearly variable.</li> <li>12.- Pure flexion.</li> <li>13.- Simple flexion.</li> </ul> | <ul style="list-style-type: none"> <li>14.- Simple flexion. Compound beams.</li> <li>15.- Compound flexion.</li> <li>16.- Compound central core of the section.</li> <li>17.- Piece with a great curvature subjected to flexion.</li> <li>18.- Arch built-in with a central charge.</li> <li>19.- Triangular structure.</li> <li>20.- Comparison of the structure.</li> <li>21.- Comparison of the effect of different notches.</li> </ul> |
|--|--|

## REQUIRED SERVICES

-Electrical supply: Single-phase 220V./50Hz or 110V./60Hz.

## DIMENSIONS & WEIGHTS

-Dimensions: 750 x 400 x 550 mm. approx.

-Weight :15 Kg. approx.

## OPTIONAL SPECIMENS

- Nº1. Big Irregular Specimen.
- Nº2. Small Irregular Specimen.
- Nº6. Notches Rectangular Specimen.
- Nº7. Trapezoidal Specimen.
- Nº8. Big Rectangular Specimen.
- Nº10. Small Rectangular Specimen.
- Nº11. "U" Specimen.
- Nº12. Wide Rectangular Specimen.
- Nº15. Triangular Specimen.
- Nº16. Hollow Square Specimen.
- Nº18. Square with two Diagonal Bars Specimen.
- Nº19. "T" Beam Specimen.
- Nº20. Double "T" Beam Specimen.

\* Custom-made specimens. We can supply specimens according to your plans.

## OTHER AVAILABLE VERSIONS

**-EFOC. Photoelastic Unit with strain gauge measurer.**(Qualitative and quantitative tests)

**-EFO/RMC. Strength of Materials Basic Unit with quantitative measurement system. (Compression, strength, torsion).**  
(Quantitative test.)

\*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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Date: October/2008

REPRESENTATIVE: