

EXTEND THE LIFE OF YOUR OPTICAL SYSTEMS

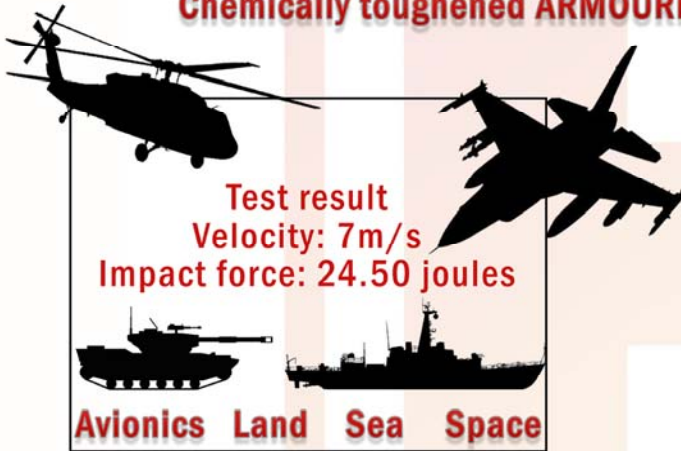


ARMOURDILLO
TOUGHENED PX4 GLASS



N-BK7
TRADITIONAL STANDARD
GLASS

Chemically toughened ARMOURDILLO™ Verses N-BK7 Drop ball test



Test result
Velocity: 7m/s
Impact force: 24.50 joules

Avionics Land Sea Space

Leading the way in HUD technology



ARMOURDILLO™ TOUGHENED GLASS IS 6.6 TIMES STRONGER THAN NBK-7

ARMOURDILLO™

EXCLUSIVELY CREATED, SUPPLIED AND MANUFACTURED BY



www.potl.co.uk



PHOENIX
Optical Technologies Ltd
Est. 1991



PX4 is an optical glass that has been specifically designed for chemical strengthening. It holds optical properties very similar to N-BK7 and maintains image integrity even after chemical strengthening. Phoenix Optical Technologies Ltd create, supply and manufacture **ARMOURDILLO™** toughened glass and it is the perfect new addition for any optical protective system.

Speak to one of our Agents at **Naked Optics Corp** today!

sales@nakedoptics.com

www.nakedoptics.com

908-685-0352

Naked Optics Corp is the official North American agent for Phoenix Optical Technologies Ltd.

Physical Properties

Density	2,539g/cm ³
Linear Expansion Coefficient	87 10 ⁻⁷ /°C
Softening Point	714°C
Annealing Point	Strain Point 485°C

Transmission Properties (25mm)

Internal transmittance at 20nm	>95%
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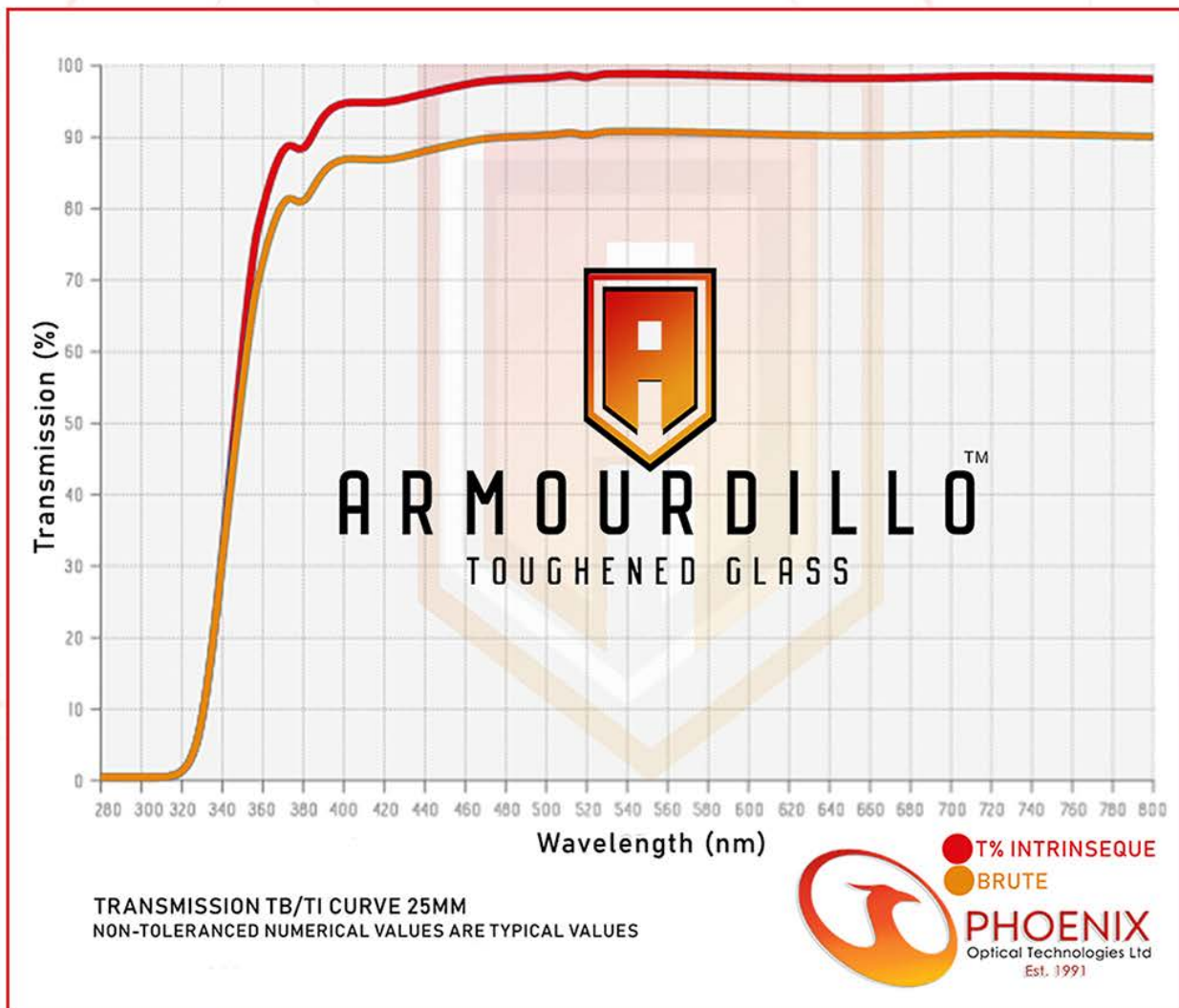
Modules of Rupture >900MPa

Refractive Index

Line	λ(nm)	Value
F' Cadmium	480.0	1.53182
F Hydrogen	486.1	1.53130
E Mercury	546.1	1.52716
D Helium	587.6	1.52500
C' Cadmium	643.8	1.52265
C Hydrogen	656.3	1.52229
Abbe Number	Ve	57.69
	Vd	57.9

Chemical Strengthening

PX4 is an untoughened glass type exclusively designed by Phoenix Optical Technologies for chemical strengthening. Phoenix Optical Technologies Ltd chemically toughen the PX4 glass and then the toughened PX4 is known by our brand name - Armourdillo™





PHOENIX
OPTICAL TECHNOLOGIES LTD
Est. 1991

Flexural Strength (Modulus of Rupture) testing of PX4

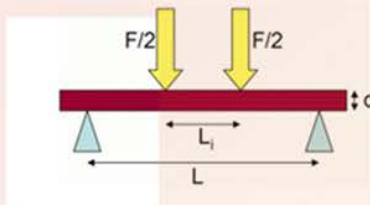
Date of Tests – 29th November 2019

Those Present – Simon Birchenough (Phoenix), Roger Morrell (NPL)

Overview

1. Samples of PX4 were manufactured to undergo 4-point bending tests to destruction to measure the strength of the material. For Comparison, samples of PX4 were made toughened and untoughened along with samples of toughened and untoughened traditional glass.
2. The 4-point bending tests were undertaken at the National Physical Laboratories and a report has been supplied by them.
3. The formula for Flexural Strength under 4-point bending is given as:

$$\sigma = \frac{3F(L-L_i)}{2bd^2}$$



Where:

F= the Load (Force) at the point of fracture	(N)
L= the length of the outer supports	(mm)
L _i = ther length of the loading (inner) supports	(mm)
b= the width of the material	(mm)
d= the thickness of the material	(mm)
σ= the Flexural strength	(MPa)

Phoenix Optical Technologies Ltd.
Lakeside
St. Asaph Business Park
Glascoed Road
St. Asaph
Denbighshire
LL17 0LJ
North Wales

www.potl.co.uk
sales@potl.co.uk


ARMOURDILLOTM
TOUGHENED GLASS

NPL 
National Physical Laboratory