Mitsui Chemicals
Europe

APEL™

AR/VR applications

APEL™, cyclic olefin copolymer (COC) produced by Mitsui Chemicals, is an amorphous and transparent resin with excellent optical properties. APEL™ has been contributing to “smaller and lighter lens design”, with the highest refractive index and lowest birefringence among amorphous polymers, which enables replacement of conventional lens materials such as glass or PMMA (Poly(methyl methacrylate)). APEL™ maintains its performance in severe environments such as high humidity, high temperature, hence it is suitable for new applications such as lenses for Automotive Camera and Head Mounted Display (HMD) in AR/VR applications.

Benefits of APEL™:

High Refractive Index

It has the highest refractive index, even compared to other amorphous polyolefins.

Ultra Low Birefringence

It has little optical anisotropy and ultra low birefringence.

High Transparency

APEL™ has an excellent transparency in the visible light range.

High Moisture Resistance

With the lowest moisture permeability coefficient among transparent resins, it is ideal for applications that demand moisture resistance.

Dimensional Stability

Its amorphous nature gives it excellent dimensional accuracy and does not change due to water absorption.

Mitsui Chemicals
Europe GmbH

Helmholtzstraße 19, 40215 Düsseldorf, Germany
Optical Polymers Group: opticalpolymers@mcie.de

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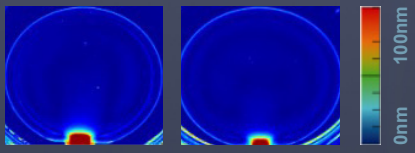
APEL™ enables image formation with little blurring and distortion right to the edge.
Achieves thinner, or lighter lenses.
Good adhesiveness of AR coating and resists peeling.
Recommended grades for this application:

APL5013VH
APL5014XH

Ultra low birefringence



APL5013VH 3.4nm **APL5014XH 2.1nm**

VR model lenses - after annealing
With using APEL™ lenses, you will get less distortion and clearer images.

High Refractive Index

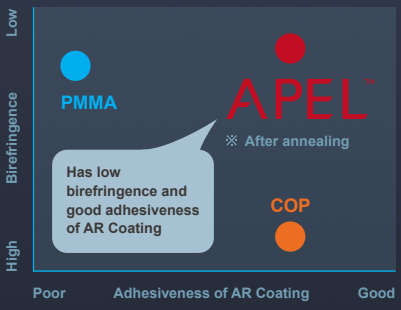
Resin	Refractive Index
APEL™	1.54
COP	1.53
PMMA	1.49

Adhesiveness of AR Coating

Has low birefringence and good adhesiveness of AR Coating

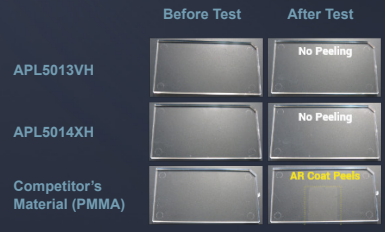
APEL™ has better adhesiveness of AR coating than competitor's material (PMMA)

Birefringence and Adhesiveness of AR Coating



These data are just representative values, but not specification values.

Tape Test for AR Coating Adhesive



1 Adhere tape to surface of test pieces
2 Purge air between tape and test pieces surface
3 Peel up within 1 second

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