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3M Display Materials & Systems Division

Technical Data 2024

3M™ Automotive Converted Optically Clear Adhesive Film (ACO 01N-XXX Series)

- **XXX represents thickness between 50 & 250 µm (availability of samples and product may vary)**
- **Excellent durability in reliability testing**
- **Easy use, general purpose**

Product Description

3M™ Automotive Converted OCA (ACO 01N-XXX) Series film is a specialized optically clear adhesive offering clarity and adhesion to various transparent display substrates. 3M ACO 01N-XXX Series film is a bare ITO compatible and easy to convert adhesive with no UV curing required. 3M ACO 01N-XXX is recommended for glass cover lens to sensor or sensor to sensor bonding.

Product Construction

Product	3M ACO 01N-050	3M ACO 01N-075	3M ACO 01N-100	3M ACO 01N-250
Adhesive Type:	Acrylic	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None	None
Approximate Thickness:				
Release Liner:	75 µm (3.0 mils) Clear Polyester			
Adhesive:	50 µm (2.0 mils)	75 µm (3.0 mils)	100 µm (4.0 mils)	250 µm (10.0 mils)
Release Liner:	75, 100 or 125 µm (3.0, 4.0, or 5.0 mils) Clear Polyester			

The 3M family of optically clear adhesives for automotive displays are usually available in two forms. 3M Automotive Roll OCA (ARO) comes in roll good form and 3M Automotive Converted OCA (ACO) is available in die-cut form.

Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Environmental Testing:

The following environmental tests were conducted in the 3M laboratory under the conditions specified without any appreciable deterioration in visible appearance (no bubbles, delamination, and minimal change to haze and color). Sample construction is optical glass/3M ACO 01N-XXX Series film/optical glass.

	Condition	Duration
High Temperature	+105°C	>1000 hours*
Low Temperature	-40°C	>1000 hours*
High Temp/Humidity-1	+65°C/90%RH	>1000 hours*
High Temp/Humidity-2	+85°C/85%RH	>1000 hours*
Thermal Shock	-40°C and +95°C (1 hour dwell, 1< min ramp time)	>500 cycles*
UV	0.55 W/m^2 at 340nm, Daylight filter	>500 hours*

*For specifics on duration and color, contact a 3M expert

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from glass, 1cm wide peel strips, 12 in/min (305 mm/min), 2.0 mil polyester backing, 3M ACO 01N-XXX Series film.

Peel Adhesion to Glass		
Dwell Time	20 min dwell at 25°C/50%RH	3 days dwell at 25°C/50%RH
Units	N/cm	N/cm
3M ACO 01N-050 film	9.7	10.3
3M ACO 01N-100 film	10.9	11.4
3M ACO 01N-250 film	15.4	16.0

*For specifics on duration and color, contact a 3M expert

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10° 3M ACO 01N-XXX Series film on LCD glass.

3M ACO 01N-XXX Series film			
3M ACO 01N-050 film	L* = 96.9	a* = -0.01	b* = 0.16
3M ACO 01N-100 film	L* = 96.9	a* = -0.03	b* = 0.16

Refractive Index:

(+ 0.0005 Metricon measurements from standard deviation of ellipsometry) 3M ACO 01N-XXX Series film.

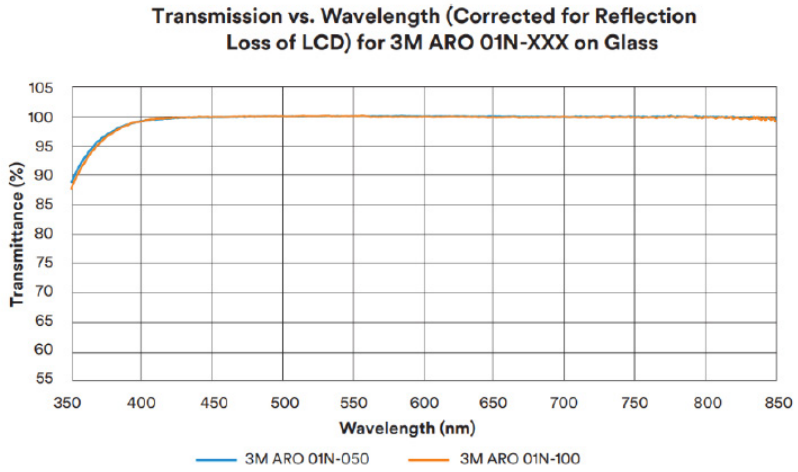
3M ACO 01N-XXX Series film		
405 nm	532 nm	633 nm
1.4981	1.4860	1.4809

Haze:

Haze is measured according to ASTM D1003-92, 3M ACO 01N-XXX Series film on LCD glass.

3M ACO 01N-050 film	3M ACO 01N-100 film	3M ACO 01N-250 film
0.1%	0.1%	0.2%

Transmission Curve:



Typical Electrical Properties at Room Temperature

ASTM-D150-92. 3M ACO 01N-XXX Series film

Dielectric Constant:

3M ACO 01N-XXX Series film	
Frequency (kHz)	Dielectric Constant
100	4.11
500	3.72

Suggested Lamination Process

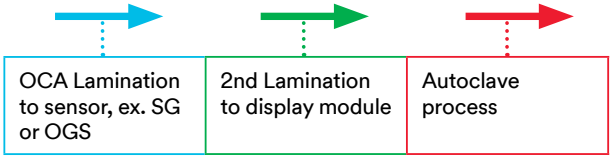
Step 1: Remove secondary liner, and then laminate 3M ACO 01N-XXX Series film to first adherent substrate by roller at room temperature

Recommendation: roller pressure 0.1 – 0.2 MPa, roller speed 0.5 – 1m/min

Step 2: Remove primary liner, and then laminate 3M ACO 01N-XXX/first adherent to second adherent by vacuum lamination (if rigid-to-rigid bonding)

Recommendation: Vacuum condition < 50 Pa, pressure around 0.1 – 0.2 MPa

Step 3: **Autoclave process recommendation:** 30-60°C/3-5kgf/cm2/20-30min



Technical Information

The technical information, recommendations and other statements contained in this document are based on tests or experience 3M believes reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within the user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for the user's method of application.

Regulatory

For regulatory information about this product, please refer to the Product Article Information Sheet (AIS) and Regulatory Data Sheet (RDS) that can be obtained at 3M.com/3M/en_US/company-us/SDS-search searching by the product trade name. The RDS provides product responses to various regulations (such as the EU Restriction on Hazardous Substances (RoHS) Directive, the EU REACH Substances of Very High Concern (SVHC)), halogen content, chemicals of concern and more. For additional regulatory information, please contact your 3M representative.

Storage

- Avoid applying pressure or resting objects on the product to prevent marking, denting, or deforming the surface.
- Wear gloves to prevent fingerprints or nail marks when handling.
- Product needs to be unpacked and handled in a clean-room facility.
- For additional storage conditions see products customer quality specifications (CQS) document.

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3M Display Materials & Systems Division
3M Center, Building 235-1E-54St. Paul, MN
55144-1000 U.S.A.

Phone 1-800-3M HELPS
Web 3M.com/AutoHMI