

3M™ Automotive Converted Optically Clear Adhesive

ACO 04N-XXX Series

- High durability for automotive plastic display bonding
- Excellent bonding to curved displays

Product Description

3M™ Automotive Converted OCA (ACO) films are specialized optically clear adhesives offering excellent clarity and adhesion to display substrates. 3M ACO 04N-XXX is designed for automotive applications requiring plastic bonding and high durability. 3M ACO 04N-XXX adhesive is non UV curable and can even bond curved displays.



Construction

Product	3M ACO 04N-050	3M ACO 04N-100	3M ACO 04N-150
Adhesive Type:	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None
Approximate Thickness:			
Release Liner:	50 um (2.0 mils) Clear Polyester	50 um (2.0 mils) Clear Polyester	50 um (2.0 mils) Clear Polyester
Adhesive:	50 um (2.0 mils)	100 um (4.0 mils)	150 um (6.0 mils)
Release Liner:	100 um (4.0 mils) Clear Polyester	100 um (4.0 mils) Clear Polyester	100 um (4.0 mils) Clear Polyester

Product	3M ACO 04N-175	3M ACO 04N-200	3M ACO 04N-250
Adhesive Type:	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None
Approximate Thickness:			
Release Liner:	50 um (2.0 mils) Clear Polyester	50 um (2.0 mils) Clear Polyester	50 um (2.0 mils) Clear Polyester
Adhesive:	175 um (7.0 mils)	200 um (8.0 mils)	250 um (10.0 mils)
Release Liner:	100 um (4.0 mils) Clear Polyester	100 um (4.0 mils) Clear Polyester	100 um (4.0 mils) Clear Polyester

* Other liner thicknesses may be available upon request

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.

Performance to Environmental Conditions:

The following environmental tests were conducted in the 3M laboratory under the conditions specified without any appreciable deterioration in visible appearance (no bubbles, delamination, haze <0.2%, b* <1). Sample construction is cover glass/ACO 04N-XXX/Substrate.

	Condition	Float Glass Duration	PC Duration
High Temperature	+95°C	1000 hours	1000 hours
High Temp/Humidity-1	+65°C/90%RH	1000 hours	
High Temp/Humidity-2	+85°C/85%RH	1000 hours	1000 hours
Thermal Shock	-40°C and +85°C (1 hour dwell, <1 min ramp time)	300 cycles	300 cycles
UV	.55 W/m ² at 340nm, Daylight filter	500 hours	

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from glass, 1 cm wide peel strips, 12 in/min (305 mm/min), 2.0 mil polyester backing, 3M ACO 04N-XXX

	Glass	PC
Dwell Time	3 days dwell at 25°C/50%RH	3 days dwell at 25°C/50%RH
Units	N/cm	N/cm
3M ACO 04N-200	6.21	6.02

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10°
 3M ACO 04N-XXX on LCD glass.

3M ACO 04N-250	
L*	96.1
a*	-0.45
b*	0.48

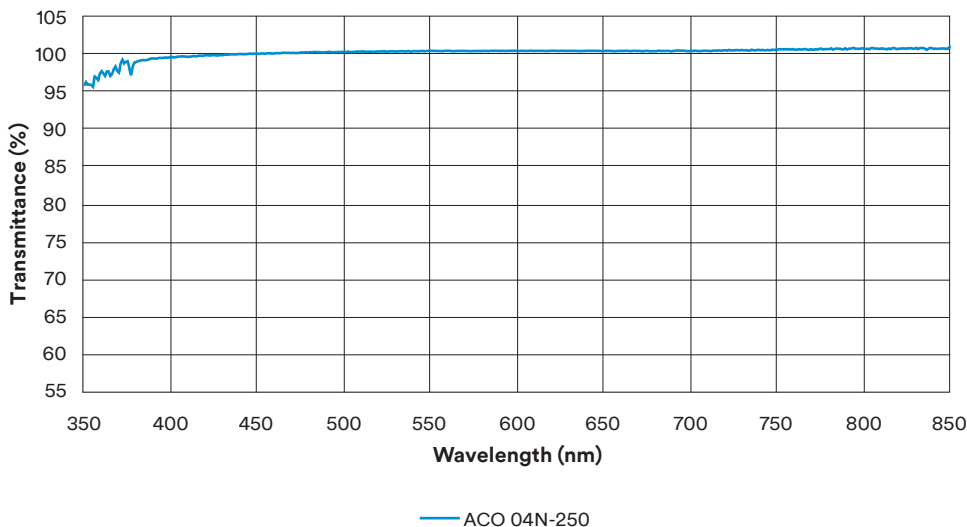
Haze:

Haze is measured according to ASTM D1003-92,
 3M ACO 03U-XXX on LCD glass, uncured.

3M ACO 03U-250	
Haze	0.08%

Transmission Curve:

Transmission vs. Wavelength (Corrected for Reflection Loss of LCD) for 3M ACO 04N-XXX on Glass



Typical Electrical Properties of 3M™ ACO 04N-XXX at Room Temperature

ASTM-D150-92. ACO 04N-XXX

Dielectric Constant:

3M ACO 04N-XXX	
Frequency (kHz)	Dielectric Constant
100	4.57
500	4.16

Suggested Lamination Process

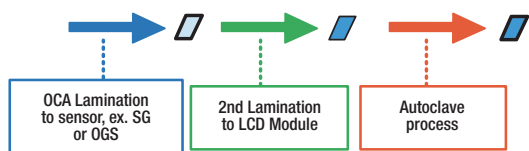
Step 1: Remove secondary liner, and then laminate 3M ACO 04N-XXX to first adherent substrate by roller at room temperature

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

Step 2: Remove primary liner, and then laminate 3M ACO 04N-XXX/first adherent to second adherent by vacuum lamination

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

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



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.
- Product must be protected from light exposure.
- Store in sealed, foil bag under -20°C to 30°C and less than 70% relative humidity. If removed from cold storage, ensure no condensation on packaging.

Regulatory

For regulatory information about this product, please contact your 3M representative.



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Technical Information

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

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