

## **NCIM Matting Additive**

## **PRODUCT DESCRIPTION**

The admixing of our proprietary NCIM Matting Additive into Nano-Clear NCI & Nano-Clear NC 40, and Nano-Clear NCIF Easy Clean Coatings to reduces specular gloss level to a desired "flatness" and dramatically improves abrasion resistance. This "first-to-market" matting additive is based on Nanovere's proprietary multifunctional polymers and the functional nanoparticles within NCIM.



Nano-Clear Coatings are based on our own proprietary hybrid polyurethane/polyurea/polysilane polymers. Nano-Clear Coatings provide remarkable multi-functional properties for paint enhancement, and extended service life (15 years). Nano-Clear Coatings are designed to be applied over high value industrial, refinery, fleet and military assets.

#### Eample: A mixture of Nano-Clear NCI @ 100g + NCIM Additive @ 27g is used to make Nano-Clear SuperCARC.

## MARKETING INFORMATION AND TECHNICAL ADVANTAGES

- NCIM admixed into Nano-Clear NCI will easily produce a specific level of "flatness and hardness".
- VOC content for the NCIM (*less exempts*) Matting Additive has 0% by weight VOC allowing NCI to retain its 150g/L VOC content figure.
- NCI + NCIM can be applied to 2K epoxies, 2K polyurethanes, powder coatings, polyesters, gel coats, e-Coats, fibreglass, and anodized aluminum.
- Simple Part A+B Admix Stir In process.
- Solids Content: 20%
- NCIM's addition to Nano-Clear NCI will dramatically *increase*:
  - Pencil hardness from a 4H to 7H,
  - Scratch, abrasion, and chip resistance,
  - Corrosion resistance,
  - The technical performance specification for coating requirements.

#### ADMIX % BY WEIGHT AND BLENDING INSTRUCTIONS

To insure accurate and repeatable admixing of NCI or NC 40 or NCIF Easy Clean and NCIM should be mixed **by weight**. To verify the desired "flatness" finish we also recommend that a **test panel** be sprayed with the desired admix.



Once the panel has cured we suggest performing a gloss measurement using the appropriate measuring geometry of either  $20^{\circ}$ ,  $60^{\circ}$ , or  $85^{\circ}$  for the finish captured. Record the test results onto a label and affix to the rear of the coated panel for future reference.

Desired	Part A:	Part B:
Finish	NCI or NC 40	NCIM
Matte	100%	20 – 27%
Eggshell	100%	10 – 20%
Semi-Gloss	100%	10%

Full Matte Finish Example: SuperCARC

Part A: Add 1000 grams (100%) of NCI into container Part B: Add 270 grams (27%) of NCIM into container

## ADMIX PROCEDURES



- 1. Shake NCIM container vigorously prior to admixing with NCI as sedimentation occurs
- 2. Using an appropriate sized painter's cup, weigh NCI (Part A) on an electronic scale. **DO NOT** remove cup from scale once weight is established.
- 3. Record the weight figure for the NCI or NC 40. (NOTE this figure can be applied to the test panel label)
- 4. Next refer to the Admix % by Weight Table to determine the desired Finish for your project.
- 5. Calculate and use this weight figure for NCIM (Part B).
- 6. Record the weight figure for NCIM. (NOTE this figure can be applied to the test panel label)
- 7. Use the NCIM (Part B) weight figure and Admix it to the NCI or NC 40 (Part A).
- 8. Recap the NCIM container immediately after dispensing to avoid solvent evaporation.
- 9. Stir mixture with a 1/2" to 1" spatula for ~60 seconds.
- 10. The NCI + NCIM mixture or NC 40 + NCIM mixture is now ready for application.

NOTE: Full Matte Finish @ 27% - Admix 27 ounces of NCIM (Part B) into 100 ounces of NCI (Part A).

#### APPLICATION, EQUIPMENT, FLASH OFF, AND DRYING DETAILS Post NCI and NCIM Admix.

#### APPPLICATION AND EQUIPMENT

• Following application procedures and use listed equipment as per information provided in the NCI TDS.



## FLASH OFF

Flash off time between coats:

Allow at least 10-15 minutes between wet coats to allow for the matting effect.
Visual que: "a flattening effect" should be observed prior to applying the second and third wet coats.



#### DRYING TIMES

- Drying Time information is supplied within the NCI TDS.
- Follow the specified drying times for Nano-Clear NCI.



#### EQUIPMENT CLEAN-UP

- Clean application equipment immediately after use with Acetone or MEK.
- **DO NOT** clean application equip with water or alcohol.



## STORAGE AND SHELF LIFE INFORMATION

- UNOPENED: 6 months, tightly capped and in original container.
- OPENED:
- 2 months, tightly capped and in original container.
  - **NOTE**: Container must be closed and capped immediately after product dispensing to prevent and reduce solvent evaporation.
- TEMPERATURES: Store opened and un-opened NCIM in dry and low light area at temperatures between 40°F / 4°C and 72°F / 22°C. Higher temperatures will decrease shelf life.

## HEALTH AND SAFETY



**NCI and NCIM are for commercial and industrial use only,** and are not to be used for purposes other than those specified. The information within this TDS is based on past, present, and ongoing scientific and technical knowledge, and it is the responsibility of the user to take all necessary steps in order to ensure the suitability of the products for the intended purpose. For Health and Safety information please refer to the material Safety Data Sheets (SDS).

#### NANOVERE TECHNOLOGIES, LLC

4023 S. Old US23, Suite 101Brighton, MIUSA 48114Telephone:+1.810.227.0077Url:https://www.nanocoatings.comEmail:info@nanocoatings.com







# Nano-Clear NCI + NCIM Matting Additive

**Test Report** 



Mr. Tom Choate Nanovere Technologies 4023 S. Old 23, Suite 101 Brighton, MI 48114

Re.: SCLI Job No. 617\_146D – Testing of Chemical Agent Resistant Coatings

Dear Mr. Choate:

We have completed the initial screening testing of your chemical agent resistant coatings. Two coated carbon fiber composite samples were received and labeled as CARC and CARC + NCIM Matt Clear. Table 1 summarizes the samples received. The Sherwin Williams CARC paint was applied as per the enclosed instructions @ 2 mils DFT and allowed to air cure for 24 hours at RT w/50% R.H. The Nanovere NCIM Matte Clear Coating was also applied @ 2 mils DFT and allowed to air cure for 24 hours at RT w/50% R.H.

Table	1:	Samples

	Sample ID	
	A SW CARC Only	G CARC + NCIM Matt Clear
Basecoat	Tan CARC CC-M25 *	Tan CARC CC-M25 *
Topcoat	None	NCIM Matt Clear**

\* Sherwin-Williams MIL-DTL-53039E, Type IX, 1K Aliphatic Polyurethane 3.5 VOC, CARC

\*\* Nanovere NCIM Matte Clear, Nanostructured Polyurethane/Polyurea Hybrid System

The samples were tested for a variety of optical and physical properties. On the following pages, Table 2 lists the tests that were performed while Tables 3 - 5 detail the test results. Test panels will be returned under separate cover.

We thank you for the opportunity to assist you in your testing needs.

Sincerely,

Debora L. Hense

**Technical Manager** 

	<u>Table</u>	2:	Test	Protocol
--	--------------	----	------	----------

Property	Test Method
Optical Properties:	
Gloss	ASTM D523
Color	ASTM D2244
Infrared Reflectance	ASTM E-903
Physical Properties:	
Adhesion	ASTM D3359
Hardness (Pencil)	ASTM D3363
Resistance Properties:	
Acid Spot Resistance	MIL-DTL-53039E Sec 4.6.24
MEK Resistance (Double Rubs)	ASTM D4752
Water Immersion Resistance	MIL-DTL-53039 Sec 4.6.22

Regarding optical properties, the 20° and 85° gloss was unchanged by the addition of the topcoat, while the 60° gloss dropped. Color values were not significantly different. Regarding IR reflectance, the topcoat sample was comparable to the control without topcoat from 800 to 1100nm, slightly higher in % IRR from 700 to 800nm and lower than the control for wavelengths greater than 1100nm. Refer to Table 3 for detailed gloss and color measurements and Table 4 for % IR Reflectance.

	Sample A Tan CARC	Sample G Tan CARC with NCIM Matt Clear
<u>Gloss:</u>		
20°	0.7	0.6
60°	3.6	1.3
85°	7.4	7.8
<u>Color:</u>		
L	65.05	66.66
а	6.36	6.02
b	20.88	20.71

Table 3: Optical Property Test Results - Gloss & Color

	Sample A	Sample G
	Tan CARC	Tan CARC w/
		NCIM Clear
Mayalanath (nm)		
<u>1500</u>	70.76%	59 36%
1467	70.85%	61 55%
1407	71 49%	62.88%
1400	73.98%	66.65%
1267	76.18%	71.32%
1222	76.94%	72.75%
1300	76.94%	73.04%
1267	76.68%	72.04%
1233	74 20%	68 59%
1200	74.20%	69.86%
1167	74.52%	72 21%
1107	74.00%	72.21%
1100	68 72%	68.06%
1067	66 70%	66 79%
1033	65 25%	65.26%
1000	64 14%	64.37%
980	63 55%	63.92%
960	63 10%	63 30%
940	62 43%	62 63%
920	62.43%	62.67%
900	63 33%	63 38%
880	64 10%	64.02%
860	65 25%	65 32%
840	67 19%	67.24%
820	68 90%	68 95%
800	70.16%	70 13%
780	69 73%	70.36%
760	66 54%	67.69%
740	62.03%	63.24%
720	59.31%	60.41%
700	56.86%	58.27%

## Table 4: Optical Property Test Results – Infrared Reflectance

Regarding physical properties, both the control and topcoat samples showed good adhesion, acid spot and water immersion resistance. The topcoat sample showed superior hardness before and after water immersion and exceptional MEK resistance. The control showed moderate burnishing after 200 MEK double rubs and showed dissolving of the tan coating within 20 MEK double rubs. The topcoat sample was unaffected by 200 MEK double rubs. Table 5 details these test results.

	Sample A Tan CARC	Sample G Tan CARC with NCIM Matt Clear
Adhesion	5B	5B
Hardness (Pencil)	2B	>7H
Acid Spot Resistance	No Effect	No Effect
MEK Resistance:		
Double Rubs to Substrate	>200	>1500
Double Rubs to Start of		
Coating Dissolution	20	>1500
Appearance after 200 DRs	Moderate Burnishing	No Effect
Water Immersion Resistance:		
Visual Observation	No Effect	No Effect
Pencil Hardness	4B	>7H
Adhesion	5B	5B

· · · · · · · · · · · · · · · · · · ·	Table 5: Ad	dhesion, Hai	dness & Re	sistance Properties
---------------------------------------	-------------	--------------	------------	---------------------