

# TUFF COVER™

*Prolongs the life of your graphics!*

**TUFF COVER™** Is an Eight mil. velvet textured clear laminate that protects your underlying graphics from a host of harsh elements. It is easy to handle and laminate (even by hand) to most smooth printed surfaces. The easy-to-read matte surface prevents glare. Our latest development is new TUFF COVER UV MAX™. Its UV blocking power can extend the life of your graphics up to twice as long. TUFF COVER non-UV and UV MAX are both available in rolls up to 54" wide at \$.98 to \$1.16 per square ft.



TUFF Cover is used to protect Wyoming's outdoor Park and Trail Signs.

## PROTECT AGAINST:

- UV Damage (Tested in Arizona)
- Oils and Petroleum products
- Abrasion and Scratches
- Cleaning Agents
- Chemicals

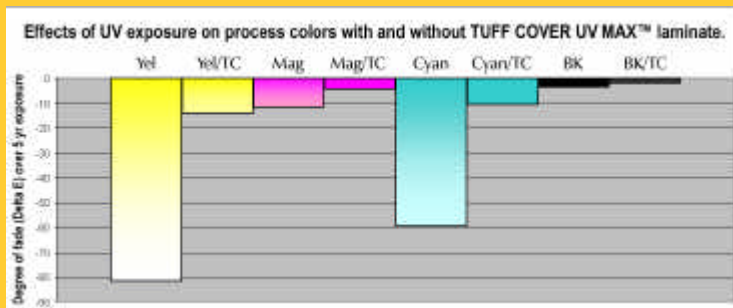
## LAMINATE:

- Indoor and Outdoor Signs
- Equipment Safety markings
- Name and Data plates
- Control Panels
- Membrane Switch Overlays

### The Proof:

This Chart is composed of readings taken by a spectrophotometer starting at one year, with little to no change until year two. The Chart shows "Delta E" readings. A "Delta E" reading of 3 or more is significant enough for most people to notice a difference in color. The resin ribbons are rated for 3 to 5 years without laminating.

The degree of fade on thermal transfer resin ribbons is greatly reduced by laminating with Tuff Cover. It can therefore be assumed that Tuff Cover may provide the same results when laminated on media printed by other methods.



## TUFF COVER UV MAX™

is proven to protect graphics from weathering and UV exposure for at least 5 years.

This is a Photo of an actual test panel after a 5 year UV exposure test in Arizona.

The left column is unlaminated and is worn due to the elements and UV exposure.

The right column is laminated with TUFF COVER and shows no signs of fading.



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\*Many tests have been performed including drop & wipe tests with a variety of liquids. Test results are available for review. However the test results and information represent our recommendation only, and do not suggest or constitute a written or verbal warranty or guaranty of any kind by the manufacturer or distributor of this product. Purchasers of this product shall be responsible for independently determining the suitability of the product for the intended application.

GOVERNING STANDARDS for Color Evaluation Test Exposure (Bottom of page)

ASTM G 147 - 02  
Standard Practice for Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests

ASTM G 90 - 98  
Standard Practice for Performing Accelerated Outdoor Weathering of Nonmetallic Materials Using Concentrated Natural Sunlight

EXPOSURE MEASUREMENT DATA

Exposure testing is performed in New River, AZ, in accordance with ASTM G90-98, SPRAY CYCLE 1 (EMMAQUA, day spray with night time wetting). The specimens are facing the sun.

EXPOSURE DATA

Location: New River, Arizona  
Type of Test: EMMAQUA  
Radiant Energy: Total: 29,482 MJ/m<sup>2</sup>;  
704,643 Langley  
UV: 900 MJ/m<sup>2</sup> (295-385 nm)

CHEMICAL RESISTANCE TEST

NES Mo133 Method 3

24 hrs. @ RT 73°

24 hrs. @ RT 176°

Gasoline	PASS	PASS
Diesel Fuel	PASS	PASS
Kerosene	PASS	PASS
Wax	Some Swelling	Watermarks
Windshield		
Wash Fluid	PASS	PASS
Detergent	PASS	PASS
Engine Oil	PASS	Watermarks
		Some Swelling
		Could be due to the heat.
Sulfuric Acid	PASS	Burn Marks

COLOR EVALUATION RESULTS 5\_YR.

Evaluation Interval: 900 MJ UV of 900 MJ UV

Reading Type =		L*	A*	B*	Delta E*
CONVEX™ Supreme w/YELLOW	Initial--	89.24	-4.81	89.92	
Current--Wash		95.48	-1.67	1.09	
Delta E Reading		6.24	3.14	-88.83	89.10
CONVEX™ Supreme w/MAGENTA	Initial--	52.27	57.03	-7.55	
Current--Wash		59.86	50.16	-6.74	
Delta E Reading		7.59	-6.87	0.81	10.27
CONVEX™ Supreme w/CYAN	Initial--	61.03	-32.70	-41.32	
Current--Wash		84.15	-11.70	-8.26	
Delta E Reading		23.12	21.00	33.06	45.48
CONVEX™ Supreme w/BLACK	Initial--	24.76	0.82	0.94	
Current--Wash		28.13	0.50	1.05	
Delta E Reading		3.37	-0.32	0.11	3.39
TUFF COVER™ LAM. YELLOW	Initial--	87.08	-4.73	83.09	
Current--Wash		88.57	-10.13	70.38	
Delta E Reading		1.49	-5.40	-12.71	13.89
TUFF COVER™ LAM. MAGENTA	Initial--	52.55	53.52	-7.60	
Current--Wash		55.64	51.87	-8.54	
Delta E Reading		3.09	-1.65	-0.94	3.63
TUFF COVER™ LAM. CYAN	Initial--	60.55	-31.11	-38.81	
Current--Wash		61.22	-32.94	-30.42	
Delta E Reading		0.67	-1.83	8.39	8.61
TUFF COVER™ LAM. BLACK	Initial--	27.76	-0.28	-2.16	
Current--Wash		29.25	-0.23	-2.12	
Delta E Reading		1.49	0.05	0.04	1.49