



D Y N A P R O

Thin Film
Products Inc.

Touch Screen Surface Finishes

data sheet 1005

Description

Dynapro uses a UV cured acrylate custom hardcoated polyester (PET) for the front surface of most touch screens. This specially hardcoated Dynapro material is substantially harder and more abrasion resistant than uncoated PET and is the toughest material in the industry. Dynapro hardcoats are available in clear high-gloss (HCC01), and various antiglare (matte) finishes (HCG10, HCG12). Specific properties of each hardcoat category are listed below. All values are typical for the materials listed.

Optical Characteristics

TYPICAL OPTICAL VALUES

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Gloss (Units)	168	135	80
Clarity (%)	86%	28%	11%

TEST PROCEDURES

Gloss is measured using a BYK Gardner™ model 4520 micro-TRI-gloss meter with a PET sample placed on black felt. The light source was placed at a 60° angle. ASTM (American Society for Testing and Materials U.S.A.) D523-89. Dynapro Test Procedure DTFP-TD-OP06.

Clarity is measured using a Zebedee™ CL100 clarity meter. The meter uses air and black felt as upper and lower clarity references. ASTM D1746-92. Dynapro Test Procedure DTFP-TD-OP05.

Pencil Hardness

TYPICAL VALUES

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Hardness	4H	4H	4H

TEST PROCEDURES

ASTM D 3363-92a. Scale (Softest to Hardest): 6B 5B 4B 3B 2B B HB F H 2H 3H 4H 5H 6H 7H 8H 9H.

Touch Screen Surface Finishes

Abrasion Resistance

XY ABRASION TEST

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Clarity (%)			
Initial	87%	38%	12%
After 200k cycles	86%	37%	13%
After 400k cycles	86%	36%	14%
Gloss (Units)			
Initial	161	135	80
After 200k cycles	155	133	83
After 400k cycles	146	118	85
Transmission Haze (%)			
Initial	1.8%	3.6%	7.7%
After 200k cycles	2.2%	3.7%	5.7%
After 400k cycles	2.9%	5.3%	6.0%

XY ABRASION TEST PROCEDURE

Abrasion was created in an elliptical pattern using a polycetal resin-tipped stylus with a 250 gram weight at 40 cycles/minute. Dynapro Test Procedure DTFP-TD-DU02.

TABER ABRASION TEST

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Transmission Haze (%)			
Initial	1.8%	3.6%	7.7%
After 20 cycles	2.9%	4.4%	8.1%
After 60 cycles	2.3%	4.2%	7.1%
After 100 cycles	2.4%	4.5%	7.2%

TABER ABRASION TEST PROCEDURE

Abrasion was created in a circular motion with a 500 gram weight on each Taber abraser wheel. ASTM 1044-90. Dynapro Test Procedure DTFP-TD-DU06.

UV Resistance

ASTM G53-93. 504 hours QUV chamber with UVA-340 ambient temperature and humidity. Results for all PET categories showed slight yellowness and brittleness and reduced adhesion. Not recommended for applications where touch screen is exposed to direct sunlight for long periods of time.

Touch Screen Surface Finishes

Chemical Resistance Characteristics

SOLVENTS

One hour continuous wet contact at ambient conditions.

	HCC01	HCG10/HCG12
Heptane	NE	NE
Ethanol	NE	NE
Isopropanol	NE	NE
Acetone	NE	NE
Methyl Ethyl Ketone	NE	NE
Cellosolve Acetate	NE	NE
Toluene	NE	NE
Carbitol Acetate	NE	NE
40% Sodium Hydroxide	NE	MW
Hydrochloric Acid	NE	NE
Turpentine	NE	NE
Vm & P Naptha	NE	NE
Unleaded Gasoline	NE	NE
Motor Oil	NE	NE
Diesel Fuel	NE	NE
Transmission Fluid	NE	NE
Antifreeze	NE	NE

HOUSEHOLD CHEMICALS

Effect of 24 hours at 60°C with 95% relative humidity.

	HCC01	HCG10/HCG12
Strong Tea	NE	NE
Coffee	NE	NE
Catsup	NE	NE
Mustard	NE	SY
Vinegar	NE	NE
Milk	NE	NE
Wisk Laundry Detergent	NE	NE
Fantastik	NE	NE
Betadine Topical Antiseptic	NE	NE
Hydrogen Peroxide	NE	NE
Joy Dish Soap	NE	NE
Windex Glass Cleaner	NE	NE
Armour All Protectant	NE	NE

CHEMICAL RESISTANCE CODES

NE	No Effect
MW	Moderate White Discoloration
SY	Severe Yellow Discoloration

Touch Screen Surface Finishes

Environmental Characteristics

ASTM D1308-87, Dynapro Test Procedure L1284-89.

PENCIL HARDNESS

ASTM D3363-92a. Dynapro Test Procedure L 1284-93.

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Initial	4H	4H	4H
2 weeks 60°C/95% RH	4H	4H	4H

ADHESION

Hardcoat adhesion to PET, ASTM D3359-92a. Dynapro Test Procedure L1284-87. Scale: OB=100% Delamination. 5B=No Delamination.

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Initial	5B	5B	5B
2 weeks 60°C/95% RH	5B	5B	5B

CLARITY

ASTM D1746-92.

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Typical Values	86%	28%	11%
2 weeks 60°C/95% RH	86%	No Data	No Data

OPTICAL DEFECTS

Dynapro Test Procedure L1284-40.

	HCC01 High Gloss	HCG12 Antiglare	HCG10 Antiglare
Initial	No Defects	No Defects	No Defects
2 weeks 60°C/95% RH	No Defects	No Defects	No Defects

Recommended Cleaning

The front surface of the touch screen should be kept free of dirt, dust, finger prints and other materials that could degrade optical properties. Long term contact with abrasive materials will scratch the front surface, and image quality will be detrimentally affected. For best results, use a clean (damp) non-abrasive cloth towel and any commercially available window cleaner to regularly clean the surface. The cleaning solution should be applied to the towel rather than the surface of the touch screen. Many touch screens have air vents and are not designed with water tight bezels. Fluid ingress may occur from behind the panel if it is not cleaned properly.



D Y N A P R O

Thin Film
Products Inc.

7025 West Marcia Road
Milwaukee, WI 53223 USA
Tel: 414-365-3555 • Fax: 414-365-1133
Email: dtfsales@dynapro.com

Call Toll-Free 1-888-222-9214
www.dynapro.com

Dynapro is a world leader in the design and manufacture of hardware and software solutions for human/machine interface applications and the largest supplier of touch screens in North America.

Specifications subject to change without notice. All values are typical. Dynapro products are sold with the understanding that buyers will test them in actual use and determine their adaptability to the intended use. Dynapro products are represented in North and South America, Europe, Asia and the Pacific. Dynaclear, Microdot, and Flex-On-Glass are trademarks and Dynapro is a registered trademark of Dynapro Systems Inc. All other brand and product names are trademarks or registered trademarks of their respective companies and are hereby acknowledged. Printed in USA. June 97. DS-1005.