

ESSENTIAL R4511

HYDROXYL-FUNCTIONAL POLYURETHANE DISPERSION

Essential R4511 is an aliphatic triethanolamine neutralized hydroxyl-functional polyurethane dispersion that will produce low VOC 2-K coatings when cross-linked with a water-dispersible polyisocyanate. The 2-K coating formulated with R4511 can be classified as a vapor barrier because of its extremely low perm rating.

It is designed for topcoat applications for concrete, wood, metal and plastics.

KEY BENEFITS

- 2-K system
- Hydroxyl-functional
- Chemical resistance
- < 0.1 per rating
- Solvent-free

DISCLAIMER: The information and recommendations contained herein are based on data believed to be correct. The information is offered solely for the customer's consideration, investigation and verification because of numerous factors beyond our control affecting the results of the use of products, Essential Industries, INC. makes no warranty of any kind, expressed or implied, including those of merchantability and fitness for a particular purpose, other than that the product conforms to its applicable current standard specification. The manufacturer's only obligation shall be to replace such quantity of the product proven to be defective.

TYPICAL PROPERTIES*

Appearance	Translucent
pH.....	8.0
Solids, % by Weight	35.0
Viscosity, cps @ 25°C	<75
Density, lbs/gal	8.8
% VOC (when cross-linked)	0
Acid Number	26
Hydroxyl Number	71
Freeze/Thaw Stability	Passes 3 cycles
Konig Hardness (secs).....	139

*These values should not be interpreted as specifications.



**Essential[®]
Polymers**

The Spark of Innovation

Visit us on the web at
www.essentialpolymers.com

28391 Essential Road • P.O. Box 12
Merton, WI 53056-0012
(262) 538-0091 • FAX: (262) 538-1354

ESSENTIAL R4511

Hydroxyl-Functional Polyurethane Dispersion

Starting Point Formulation - ALX292

INGREDIENTS

POUNDS

Part A

Essential R4511	559.33
Water	83.84
SURFYNOL® 104BC	2.83
BYK028	3.33
TEGO® Glide 496	<u>0.67</u>

TOTAL: 650.00

Part B

Easaqua L 600	250.00
Dipropylene glycol dimethyl ether (DMM)	<u>75.00</u>

TOTAL: 325.00

Formulation Attributes

Part A

Solids, % by Weight	30.70
pH	8.00
Viscosity	< 25 cps
VOC	5.2 g/L
Density, Lbs./Gal	8.81

Part A plus Part B

Solids, % by Weight	44.50
---------------------------	-------

Film Properties - ALX292:

Applied using a 50-wire wound bar to Cold rolled Steel panels.
1 mil dry film thickness.

Konig Hardness

1 day	67 secs
2 day	78 secs
3 day	112 secs
7 day	139 secs

ESSENTIAL R4511

Hydroxyl-Functional Polyurethane Dispersion

Film Properties - ALX292 (continued)

Abrasion Resistance

7 day cure C-17 wheel, 500 mg, 1000 CYCLES 29.50 mg lost

Crosshatch Adhesion

Dry No removal of the coating
Wet (1 hour spot test with water) No removal of the coating

Chemical Resistance

200 MEK double rubs No effect

Impact Resistance

Direct Passes 160-inch lbs.
Indirect Passes 160-inch lbs.

Mandrel Bend Passes 0 t-bend

Perm Rating (ASTM E96) ... 0.098 perms (Vapor Impermeable Rating)

Chemical Resistance Properties

1 coat applied to concrete tile using a roller at 300 sq feet per gallon.
Allowed to cure for 7 days.

Chemical Spot Test

	<u>1 HR.</u>	<u>24 HR.</u>
5% NaOH	No Effect	No Effect
5% NaCl	No Effect	No Effect
5% HCl	No Effect	No Effect
10% Bleach	No Effect	No Effect
Kerosene	No Effect	No Effect
Antifreeze	No Effect	No Effect
Motor Oil	No Effect	No Effect
Ethanol	No Effect	No Effect
Isopropanol Alcohol	No Effect	No Effect
Transmission Fluid	No Effect	No Effect
Skydrol	No Effect	No Effect
Brake Fluid	No Effect	No Effect