

# 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

- Low VOC coatings
- Excellent chemical resistance
- Excellent adhesion
- Vapor Impermeable

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.



**The Spark of Innovation**

Visit us on the web at  
**[www.essentialpolymers.com](http://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>
<b>TOTAL:</b>	<b>650.00</b>

##### Part B

Esaqua L 600	250.00
Dipropylene glycol dimethyl ether (DMM)	<u>75.00</u>
<b>TOTAL:</b>	<b>325.00</b>

### 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