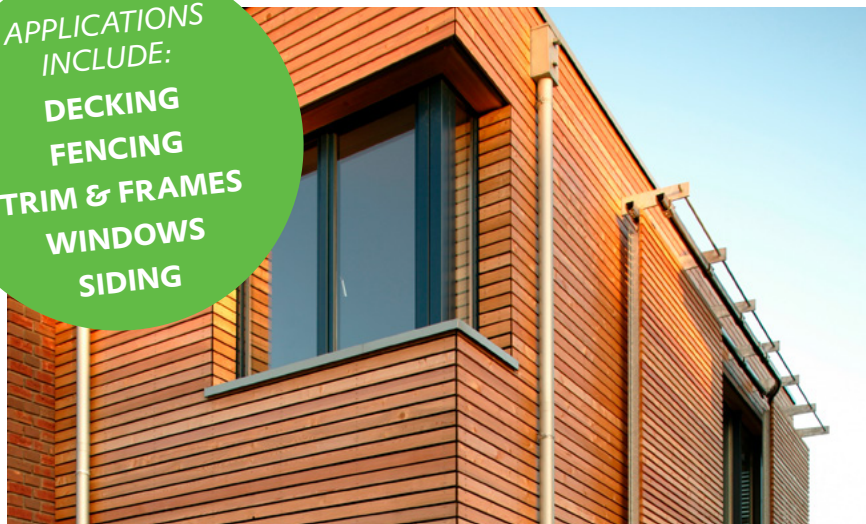


# HYBRIDUR® for Exterior Wood Application

How do you transform your exterior wood coatings formulations from “good enough” to “high performance”? The answer is HYBRIDUR® waterborne acrylic urethane dispersions from Evonik.

Hybridur® is a line of water-based urethane-acrylic hybrid dispersions from Evonik Corporation. These innovative materials have been found to exhibit excellent wetting, adhesion, barrier and film properties when used in air dry, baked or crosslinked high-performance coatings in a wide variety of applications. The necessary aesthetics, weathering resistance, flexibility, abrasion resistance, and water resistance allow for application over exterior wood.

APPLICATIONS  
INCLUDE:  
DECKING  
FENCING  
TRIM & FRAMES  
WINDOWS  
SIDING



## PREMIUM PERFORMANCE

- Excellent weathering resistance
- High flexibility
- High chemical and abrasion resistance

## IMPROVED PRODUCTIVITY

- Fast return-to-service
- Worry-free application
- Ease of handling
- Cost efficient

## ECO-FRIENDLY, USER FRIENDLY

- Waterborne
- Isocyanate free
- Low-VOC

## PROPERTIES AND SELECTION GUIDE FOR EXTERIOR WOOD APPLICATION

	Solids (%)	Viscosity Brookfield (cP)	pH	Freeze-Thaw Stability Cycles	Mechanical Stability	Hot Box Stability	Density (lb/gal)	Exterior Wood
<b>Hybridur® 570</b>	40 - 42	50 - 150	7.5 - 8.5	10 +	Good	Good	8.6	++
<b>Hybridur® 580</b>	40 - 42	50 - 150	7.5 - 8.5	10 +	Good	Good	8.7	++
<b>Hybridur® 870</b>	40	< 150	7.5 - 9.0	5	Good	Good	8.7	++
<b>Hybridur® 878</b>	40	< 150	7.5 - 8.5	5	Good	Good	8.7	+



The starting point formulation and performance properties for a clear coating using Hybridur® 570 or as a blend with Hybridur® 580 can be seen below. The performance properties of the Hybridur formulations are compared to the standard commercial solvent borne varnish and waterborne polyurethane. To formulate a low VOC coating, it is recommended to use Hybridur® 870. Slight modifications will be needed in the starting point formulation to achieve an excellent finish and performance. All products allow for clear and pigmented high gloss and matte finish.

## STARTING POINT FORMULATION – HYBRIDUR® 570 CLEAR COATING FOR EXTERIOR WOOD

MATERIAL	POUNDS	GALLONS	SUPPLIER
HYBRIDUR® 570 (or 50:50 blend w/ 580)	690.42	79.85	Evonik
Water	69.04	8.27	
Troyson® 174 Biocide	1.38	0.16	Troy Corporation
Blend: Pre – blend the following 5 items before adding to the HYBRIDUR® polymer dispersion above			
ACROSOLV® DPNB	34.52	4.55	Lyondell
ACROSOLV® TPM	34.52	4.32	Lyondell
BYK® 346 (surfactant)	5.52	0.66	Byk-Chemie
TINUVIN® 384 Light stabilizer	6.90	0.78	BASF
TINUVIN® 292 Light Stabilizer	3.45	0.41	BASF
FOAMMASTER® VF (defoamer)	1.38	0.18	BASF A
ACRYSOL® RM-2020 NPR (Rheology modifier)	3.45	0.41	Dow
TROYSOL® LAC (surfactant)	0.69	0.08	Troy corporation
Polyphase P-20-T (fungicide)	2.76	0.33	
<b>Total</b>	<b>854.03</b>	<b>100</b>	

## PERFORMANCE PROPERTIES – HYBRIDUR® 570 & 570/580 FOR EXTERIOR WOOD

TYPICAL PHYSICAL PROPERTIES	HYBRIDUR® 570	HYBRIDUR® 570/580 1:1	SOLVENT-BORNE SPAR VARNISH	WATERBORNE POLYURETHANE
<b>Gloss 60°/20°</b> (1 mil film on Leneta chart)	87/70	85/63	94/89	91/76
<b>Sward Hardness</b> (relative)	4	8	0	6
<b>Dry Block/Tack</b>	RT 24 hr	None	V Slightly	V Slightly
	120°F/30 min	None	Tacky	None
<b>Wet Block/Tack</b>	RT 24 hr	Slight	Tacky	Tacky
	120°F/30 min	None	Tacky	Tacky
<b>Water Immersion</b> (1 Wk)	No Effect	No Effect	Some Blisters	Totally Failed
<b>Spot Tests On Glass</b>	10% NaOH	OK	Fail	Slight Attack
	14% NH <sub>4</sub> OH	OK	OK	Slight Attack
	Formula 409	OK	OK	OK
	Ethanol/Water	Fail	Fail	Fail Badly
<b>Spot Tests On Steel</b>	10% NaOH	OK	Fail	OK
	14% NH <sub>4</sub> OH	OK	OK	OK
	10% HCL	OK	OK	OK
	Ethanol/Water	OK	OK	Some Attack
<b>Sand Abrasion Wear</b> (mils after 40 liters)	0.16	0.15	0.16	0.10
<b>Taber Abrasion, mg weight loss</b> (CS-17 wheel, 1000 gm, 1000 cycles)	56	57		
<b>Weathering (QUV-A, 1000 Hrs)</b>	60°	98	98	94
	On Cedar Siding % Gloss Retention	20°	100	87
<b>Weathering (QUV-A, 4700 Hrs)</b>	60°	70-80	92-100	23-42
	On Cedar Siding % Gloss Retention	20°	89-100	60-100
<b>Gloss 60°/20°</b>	3-Coats on Cedar	60/12	63/9	
	Flexthane @ 4-Coats	90/72	86/53	91/54
				97/69

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