

# HYDRAFLEX™ ULTRA

MEETS GRI-GM17 STANDARD SPECIFICATION



## PRODUCT DESCRIPTION

HydraFlex™ Ultra HU20B, HU30B and HU40B are very flexible linear-low density polyethylene geomembranes. Virgin grade high-strength LLDPE provides exceptional elongation, tensile and impact strength. Antioxidants and a minimum carbon black content of 2.0% delivers excellent protection from UV rays and harsh weather conditions. HydraFlex™ Ultra is exceptionally pliable and conforming, and is preferred for ease-of-field seaming or factory fabricated high strength seams.

## PRODUCT USE

HydraFlex™ Ultra HU20B, HU30B and HU40B are used in containment applications that require excellent outdoor longevity, chemical resistance and exceptional toughness, even in cold weather environments. HydraFlex™ Ultra is highly flexible and conforms easily to uneven surfaces, and is engineered to be used in more critical applications including the fish-safe requirements for aquaculture. HydraFlex™ Ultra HU20B, HU30B and HU40B meet or exceed the comprehensive requirements of GRI-GM17 Standard Specification for (LLDPE) geomembranes, and perform well in water and waste water applications for commercial and municipal projects. HydraFlex™ Ultra HU40B is recommended and meets the performance expectations for use in coal ash capping and temporary capping systems requiring extended longevity.

## SIZE & PACKAGING

HydraFlex™ Ultra HU20B is available in up to 75,000 square foot panels and HydraFlex™ Ultra HU30B in up to 50,000 square foot panels. HydraFlex™ Ultra HU40B is available in up to 38,000 square foot panels. Pre-fabricated, stepped panels are produced in our quality-controlled factory environment; all panels are accordion folded and tightly rolled onto a heavy duty core for ease of handling and time saving installation.



HydraFlex™ Ultra Pond Liner

## PRODUCT

## PART #

HYDRA FLEX™ ULTRA.....	HU20B
HYDRA FLEX™ ULTRA.....	HU30B
HYDRA FLEX™ ULTRA.....	HU40B

## APPLICATIONS

Decorative Ponds	Mine Tailing Ponds
Pond/Canal Liners	Interim Landfill Caps
Outdoor Covers	Waste Water Ponds
Fire Ponds	Golf Course Pond Liners
Remediation Liners	Farm Ponds
Brine Ponds	Leachate Collection Ponds
Oil Field Pit Liners	

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PROPERTIES	TEST METHOD	HYDRA FLEX™ ULTRA HU20B**		HYDRA FLEX™ ULTRA HU30B		HYDRA FLEX™ ULTRA HU40B	
		MIN.	TYPICAL	MIN.	TYPICAL	MIN.	TYPICAL
APPEARANCE		Black		Black		Black	
THICKNESS	ASTM D5199	20 mils	21 mils	30 mils	31 mils	40 mils	41 mils
WEIGHT		100 lbs/MSF		150 lbs/MSF		200 lbs/MSF	
DENSITY	ASTM D792 or ASTM D1505	0.939 Max. g/cm <sup>3</sup>					
*TENSILE STRENGTH	ASTM D6693 1. Tensile Strength at Break 2. % Elongation at Break	136 lbf/in 800 %	151 lbf/in 950 %	170 lbf/in 800 %	189 lbf/in 1000 %	208 lbf/in 800 %	242 lbf/in 1000 %
*TEAR RESISTANCE	ASTM D1004	13 lbf	15 lbf	18 lbf	19 lbf	22 lbf	24 lbf
PUNCTURE RESISTANCE	ASTM D4833	49 lbf	53 lbf	62 lbf	66 lbf	77 lbf	85 lbf
CARBON BLACK	ASTM D1603 D4218	2 - 3 %					
CARBON BLACK DISPERSION	ASTM D5596	Pass					
OXIDATIVE INDUCTION TIME (OIT) or HIGH PRESSURE OIT	ASTM D3895 ASTM D5885	> 100 min. > 400 min.					
OVEN AGING AT 85° C (90 Days)	ASTM D5721 / D5885	Pass		Pass		Pass	
UV RESISTANCE (1600 Hours)	GRI GM11	Pass		Pass		Pass	
DIMENSIONAL STABILITY % CHANGE	ASTM D1204	< 2					
MULTIAXIAL TENSION % ELONGATION	ASTM D5617	> 90	> 120	> 90	> 120	> 90	> 120
ENVIRONMENTAL STRESS CRACK RESISTANCE HOURS TO FAILURE	ASTM D5397 Appendix A	> 400					
2% SECANT MODULUS	ASTM D 5323	14,636 psi	15,951 psi	21,845 psi	23,807 psi	30,667 psi	32,066 psi
PERMS grains/ft <sup>2</sup> /hr/in. Hg	ASTM E96 Method 73° F, 50% RH		0.045		0.029		0.022
MAXIMUM STATIC USE TEMPERATURE			180° F		180° F		180° F
LOW TEMP, IMPACT FAILURE TEMP	ASTM D746		< - 70° F		- 70° F		- 70° F
FACTORY SEAM REQUIREMENTS							
BONDED SEAM STRENGTH	ASTM D6392	45 lbf/in width	57 lbf/in width	65 lbf/in width	81 lbf/in width	99 lbf/in width	101 lbf/in width
SEAM PEEL ADHESION	ASTM D6392	30 lbf/in width	35 lbf/in width	45 lbf/in width	50 lbf/in width	60 lbf/in width	69 lbf/in width

\* Tests are an average of MD and TD directions.

\*\* HU20B values extrapolated using HU30B & HU40B

\*\*PRO-FORMA Contents: Data listed for HydraFlex Ultra HU20B is extrapolated from similar products and initial prototypes and is subject to change at any time as additional test data becomes available.

Hydraulic conductivity values are derived from permeability data. HU20 =  $3.62 \times 10^{-10}$  cm/sec, HU30 =  $2.33 \times 10^{-10}$  cm/sec, and HU40 =  $1.77 \times 10^{-10}$  cm/sec.



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Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at [www.ravenefd.com](http://www.ravenefd.com)

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