

**Injection Molded UHMW-PE  
Drag Paddles for Grain Handling  
Study Data**

Note: Where “New” is mentioned in the data, the material tester is referring to Diversified Plastics Injection Molded UHMW-PE parts. Where “Old” is mentioned in the data, the material tester is referring to extruded sheet that has been finished machined into parts.

**SUMMARY PAGE**

<b>Test</b>	<b>OLD</b>	<b>NEW</b>
In Service Load Test	2411 lbs.	2406 lbs.
Flexural Strength	3074 Psi	2939 Psi
Tensile Strength	2934 Psi	2902 Psi
Abrasion Resistance	No Loss	0.30 Grams Loss

**Conclusion:** From the test data above it suggests that there is no significant difference between the old and new properties.

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (Old)

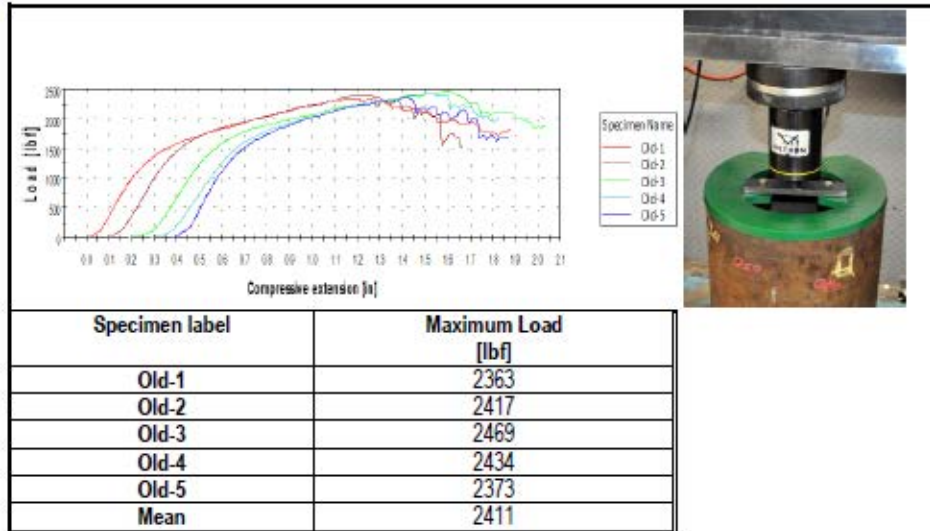
**SUBJECT:** Paddle Load Test

**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483

**TEST CONDITION:** 69.5°F / 19.4%RH

**PROCEDURE:** The paddles were supported around the outer edges and an axial load was applied to the center bolt connect area.

### RESULTS:

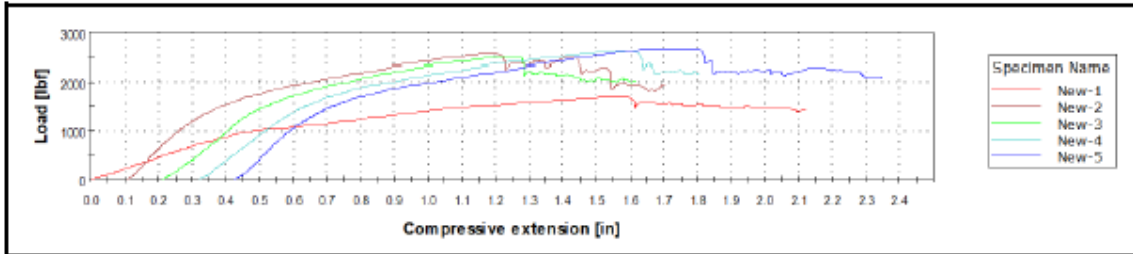


- Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483
- The paddles were supported around the outer edges and an axial load was applied to the center bolt connect area.

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (New)  
**SUBJECT:** Paddle Load Test  
**SPECIFICATION:** Per Client's Specification/Tested as design to be in service  
**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483  
**TEST CONDITION:** 69.5°F / 19.4%RH

### RESULTS:



Specimen label	Maximum Load [lbf]
New-1	1693
New-2	2555
New-3	2513
New-4	2601
New-5	2670
Mean	2406

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (Old)

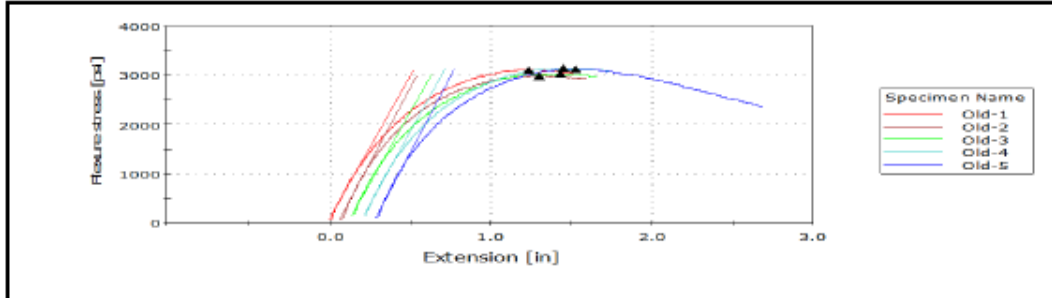
**SUBJECT:** Flexural Strength

**SPECIFICATION:** ASTM D790-17

**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483

**TEST CONDITION:** 69.5°F / 19.4%RH

**RESULTS:**



Specimen label	Width [in]	Thickness [in]	Support span [in]	Maximum Load [lbf]	Maximum Flexure stress [psi]	Modulus [psi]	Flexure extension at Maximum Load [in]
Old-1	1.07	0.48	6.50	80	3111	84442	1.25
Old-2	1.09	0.49	6.50	80	2985	89286	1.24
Old-3	1.05	0.48	6.50	77	3026	83375	1.33
Old-4	1.00	0.50	6.50	79	3141	84847	1.26
Old-5	1.05	0.48	6.50	79	3116	89373	1.26
Mean	1.05	0.49	6.50	79	3076	86265	1.27

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (New)

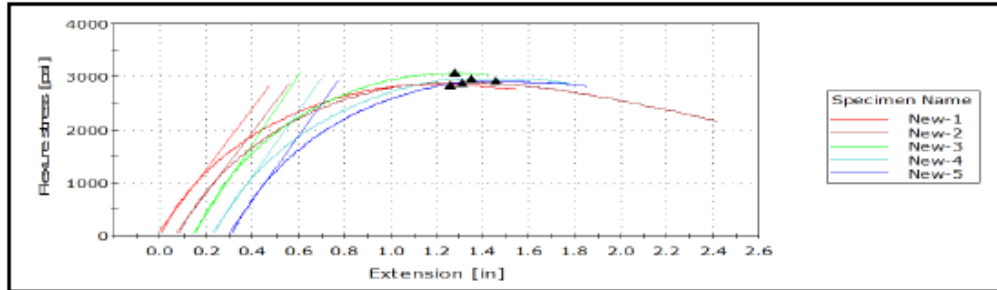
**SUBJECT:** Flexural Strength

**SPECIFICATION:** ASTM D790-17

**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483

**TEST CONDITION:** 69.5°F / 19.4%RH

### RESULTS:

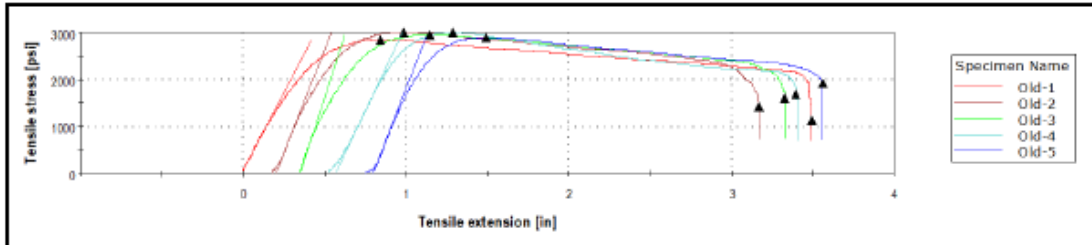


Specimen label	Width [in]	Thickness [in]	Support span [in]	Maximum Load [lbf]	Maximum Flexure stress [psi]	Modulus [psi]	Flexure extension at Maximum Load [in]
New-1	1.08	0.50	6.50	80	2846	80118	1.28
New-2	1.04	0.49	6.50	74	2888	82086	1.25
New-3	1.09	0.51	6.50	88	3079	90179	1.15
New-4	1.09	0.50	6.50	85	2967	85401	1.14
New-5	1.07	0.50	6.50	82	2917	84993	1.16
Mean	1.07	0.50	6.50	82	2939	84555	1.20

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (Old)  
**SUBJECT:** Tensile Strength  
**SPECIFICATION:** ASTM D638-22  
**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483  
**TEST CONDITION:** 69.5°F / 19.4%RH

**RESULTS:**

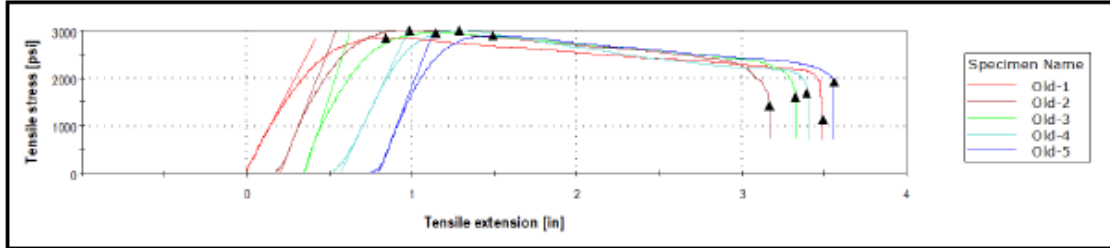


Specimen label	Width [in]	Thickness [in]	Area [in <sup>2</sup> ]	Maximum Load [lbf]	Tensile Stress [psi]	Elongation Percent	Modulus (Automatic Young's) [psi]
Old-1	0.737	0.480	0.3538	1000	2840	130	13100
Old-2	0.742	0.477	0.3539	1060	3000	100	17900
Old-3	0.752	0.480	0.3610	1070	2950	110	21200
Old-4	0.738	0.480	0.3542	1060	2990	100	14500
Old-5	0.741	0.482	0.3572	1030	2890	100	17800
Mean	0.742	0.480	0.3560	1044	2934	108	16900

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (New)  
**SUBJECT:** Tensile Strength  
**SPECIFICATION:** ASTM D638-22  
**INSTRUMENT:** Testing was performed on the above parts using an Instron 5500R Universal Testing Machine, S/N H3483  
**TEST CONDITION:** 69.5°F / 19.4%RH

### RESULTS:



Specimen label	Width [in]	Thickness [in]	Area [in <sup>2</sup> ]	Maximum Load [lbf]	Tensile Stress [psi]	Elongation Percent	Modulus (Automatic Young's) [psi]
New-1	0.749	0.495	0.3708	1210	3250	210	22200
New-2	0.751	0.526	0.3950	1060	2670	170	19000
New-3	0.749	0.506	0.3790	1100	2900	160	23200
New-4	0.759	0.505	0.3833	1100	2860	150	20600
New-5	0.749	0.501	0.3752	1060	2830	170	18000
Mean	0.751	0.507	0.3807	1106	2902	172	20600

## REPORT OF MECHANICAL TEST

**SAMPLE ID:** Paddle Chain Loop (Old & New)  
**SUBJECT:** Abrasion Test  
**INSTRUMENT:** Testing was performed on the above parts using a Gardner Abrasion Tester.  
**PROCEDURE:** Specimens were placed in a sand media tray and reciprocated back and forth for a total 1000 cycles.

### RESULTS:

Specimen	Weight Before Test (grams)	Weight After Test (grams)	Weight Loss (grams)
Old	252.3	252.3	0.00
New	273.5	273.2	0.30

