

# V00188

## TUFFlex Ultra Machine Film

9.4 Micron / 37 Gauge / 0.37 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	9.4 Micron / 37 Gauge / 0.37 Mil	
Color	Clear	
Film Width (inches)	20"	
Length (feet)	12500'	
Net Weight / Roll (lbs. – nominal)	37 lb	
Roll Diameter (O.D., inches)	9.5"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Haze	ASTM D1003	3%
Gloss	ASTM D2457	75%
Tensile Strength at Break (MD)	ASTM D882	6800 psi
Tensile Strength at Break (TD)	ASTM D882	
Tensile Strength at 200% (MD)	ASTM D882	
Tensile Strength at 200% (TD)	ASTM D882	
Elongation at Break (MD)	ASTM D882	350%
Elongation at Break (TD)	ASTM D882	
Elmendorf Tear Strength (MD)	ASTM D1922	200 g
Elmendorf Tear Strength (TD)	ASTM D1922	460 g
Cling	ASTM D5458	180 g

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# V00189

## TUFFlex Ultra Machine Film

10.7 Micron / 42 Gauge / 0.42 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	10.7 Micron / 42 Gauge / 0.42 Mil	
Color	Clear	
Film Width (inches)	20"	
Length (feet)	11000'	
Net Weight / Roll (lbs. – nominal)	36.96 lb	
Roll Diameter (O.D., inches)	9.5"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Haze	ASTM D1003	3.0%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	175 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	495%
Elongation at Break (TD)	ASTM D882	645%
Elmendorf Tear Strength (MD)	ASTM D1922	135 g
Elmendorf Tear Strength (TD)	ASTM D1922	365 g
Cling	ASTM D5458	100 g

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# V00190

## TUFFlex Ultra Machine Film

10.7 Micron / 42 Gauge / 0.42 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	10.7 Micron / 42 Gauge / 0.42 Mil	
Color	Clear	
Film Width (inches)	30"	
Length (feet)	11000'	
Net Weight / Roll (lbs. – nominal)	55.44 lb	
Roll Diameter (O.D., inches)	9.5"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Haze	ASTM D1003	3%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	175 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	495%
Elongation at Break (TD)	ASTM D882	645%
Elmendorf Tear Strength (MD)	ASTM D1922	135 g
Elmendorf Tear Strength (TD)	ASTM D1922	365 g
Cling	ASTM D5458	100 g

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# V00191

## TUFFlex Ultra Machine Film

11.4 Micron / 45 Gauge / 0.45 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	11.4 Micron / 45 Gauge / 0.45 Mil
Color	Clear
Film Width (inches)	20"
Length (feet)	10250'
Net Weight / Roll (lbs. – nominal)	36.9 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3.0%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	180 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	500%
Elongation at Break (TD)	ASTM D882	650%
Elmendorf Tear Strength (MD)	ASTM D1922	140 g
Elmendorf Tear Strength (TD)	ASTM D1922	380 g
Cling	ASTM D5458	100 g

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# V00192

## TUFFlex Ultra Machine Film

11.4 Micron / 45 Gauge / 0.45 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	11.4 Micron / 45 Gauge / 0.45 Mil
Color	Clear
Film Width (inches)	30"
Length (feet)	10250'
Net Weight / Roll (lbs. – nominal)	55.35 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3.0%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	180 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	500%
Elongation at Break (TD)	ASTM D882	650%
Elmendorf Tear Strength (MD)	ASTM D1922	140 g
Elmendorf Tear Strength (TD)	ASTM D1922	380 g
Cling	ASTM D5458	100 g

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# V00193

## TUFFlex Ultra Machine Film

13 Micron / 51 Gauge / 0.51 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	13 Micron / 51 Gauge / 0.51 Mil
Color	Clear
Film Width (inches)	20"
Length (feet)	9000'
Net Weight / Roll (lbs. – nominal)	36.72 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	210 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	510%
Elongation at Break (TD)	ASTM D882	655%
Elmendorf Tear Strength (MD)	ASTM D1922	150 g
Elmendorf Tear Strength (TD)	ASTM D1922	395 g
Cling	ASTM D5458	100 g

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# V00194

## TUFFlex Ultra Machine Film

13 Micron / 51 Gauge / 0.51 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES
Manufacturing Process	Cast
Thickness (nominal)	13 Micron / 51 Gauge / 0.51 Mil
Color	Clear
Film Width (inches)	30"
Length (feet)	9000'
Net Weight / Roll (lbs. – nominal)	55.08 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

TESTS	METHODS	VALUES
Haze	ASTM D1003	3%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	210 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	510%
Elongation at Break (TD)	ASTM D882	655%
Elmendorf Tear Strength (MD)	ASTM D1922	150 g
Elmendorf Tear Strength (TD)	ASTM D1922	395 g
Cling	ASTM D5458	100 g

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# V00195

## TUFFlex Ultra Machine Film

15.5 Micron / 61 Gauge / 0.61 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	15.5 Micron / 61 Gauge / 0.61 Mil
Color	Clear
Film Width (inches)	20"
Length (feet)	7500'
Net Weight / Roll (lbs. – nominal)	36.6 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	260 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	525%
Elongation at Break (TD)	ASTM D882	665%
Elmendorf Tear Strength (MD)	ASTM D1922	170 g
Elmendorf Tear Strength (TD)	ASTM D1922	450 g
Cling	ASTM D5458	100 g

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# V00196

## TUFFlex Ultra Machine Film

15.5 Micron / 61 Gauge / 0.61 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	15.5 Micron / 61 Gauge / 0.61 Mil
Color	Clear
Film Width (inches)	30"
Length (feet)	7500'
Net Weight / Roll (lbs. – nominal)	54.9 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	260 g
Tensile Strength at Break (MD)	ASTM D882	5500 psi
Tensile Strength at Break (TD)	ASTM D882	4575 psi
Tensile Strength at 200% (MD)	ASTM D882	1960 psi
Tensile Strength at 200% (TD)	ASTM D882	1425 psi
Elongation at Break (MD)	ASTM D882	525%
Elongation at Break (TD)	ASTM D882	665%
Elmendorf Tear Strength (MD)	ASTM D1922	170 g
Elmendorf Tear Strength (TD)	ASTM D1922	450 g
Cling	ASTM D5458	100 g

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# V00197

## TUFFlex Ultra Machine Film

20.3 Micron / 80 Gauge / 0.80 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	20.3 Micron / 80 Gauge / 0.80 Mil
Color	Clear
Film Width (inches)	20"
Length (feet)	5500'
Net Weight / Roll (lbs. – nominal)	35.2 lb
Roll Diameter (O.D., inches)	9.5"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Haze	ASTM D1003	3.5%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	360 g
Tensile Strength at Break (MD)	ASTM D882	5750 psi
Tensile Strength at Break (TD)	ASTM D882	4800 psi
Tensile Strength at 200% (MD)	ASTM D882	2500 psi
Tensile Strength at 200% (TD)	ASTM D882	1750 psi
Elongation at Break (MD)	ASTM D882	570%
Elongation at Break (TD)	ASTM D882	775%
Elmendorf Tear Strength (MD)	ASTM D1922	240 g
Elmendorf Tear Strength (TD)	ASTM D1922	550 g

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# V00198

## TUFFlex Ultra Machine Film

20.3 Micron / 80 Gauge / 0.80 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	20.3 Micron / 80 Gauge / 0.80 Mil	
Color	Clear	
Film Width (inches)	30"	
Length (feet)	5500'	
Net Weight / Roll (lbs. – nominal)	52.8 lb	
Roll Diameter (O.D., inches)	9.5"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Haze	ASTM D1003	3.5%
Gloss	ASTM D2457	69%
Dart Impact Strength	ASTM D1709	360 g
Tensile Strength at Break (MD)	ASTM D882	5750 psi
Tensile Strength at Break (TD)	ASTM D882	4800 psi
Tensile Strength at 200% (MD)	ASTM D882	2500 psi
Tensile Strength at 200% (TD)	ASTM D882	1750 psi
Elongation at Break (MD)	ASTM D882	570%
Elongation at Break (TD)	ASTM D882	775%
Elmendorf Tear Strength (MD)	ASTM D1922	240 g
Elmendorf Tear Strength (TD)	ASTM D1922	550 g

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# V03785

## TUFFlex Ultra Machine Film

9.9 Micron / 39 Gauge / 0.39 mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES
Manufacturing Process	Cast
Thickness (nominal)	9.9 Micron / 39 Gauge / 0.39 mil
Film Width (inches)	20"
Length (feet)	10000'
Net Weight / Roll (lb, nominal)	31.2 lb
Roll Diameter (O.D., inches)	8.7"

TESTS	METHODS	VALUES
Tensile Strength at Break (MD)	ASTM D882	7735 psi
Tensile Strength at Break (TD)	ASTM D882	5425 psi
Elongation at Break (MD)	ASTM D882	480%
Elongation at Break (TD)	ASTM D882	777%
Elmendorf Tear Strength (MD)	ASTM D1922	153
Elmendorf Tear Strength (TD)	ASTM D1922	362
Cling	ASTM D5458	130
Dart Drop	ASTM D1709	905g

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TFStetchTDSUS

# V03786

## TUFFlex Ultra Machine Film

10.7 Micron / 42 Gauge / 0.42 mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	10.7 Micron / 42 Gauge / 0.42 mil
Film Width (inches)	20"
Length (feet)	9500'
Net Weight / Roll (lb, nominal)	31.92 lb
Roll Diameter (O.D., inches)	8.8"

### TESTS

### METHODS

### VALUES

Tensile Strength at Break (MD)	ASTM D882	6730 psi
Tensile Strength at Break (TD)	ASTM D882	5300 psi
Elongation at Break (MD)	ASTM D882	520%
Elongation at Break (TD)	ASTM D882	740%
Elmendorf Tear Strength (MD)	ASTM D1922	250
Elmendorf Tear Strength (TD)	ASTM D1922	450
Cling	ASTM D5458	152
Dart Drop	ASTM D1709	860g

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# V03787

## TUFFlex Ultra Machine Film

11.4 Micron / 45 Gauge / 0.45 mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	11.4 Micron / 45 Gauge / 0.45 mil
Film Width (inches)	20"
Length (feet)	9000'
Net Weight / Roll (lb, nominal)	32.4 lb
Roll Diameter (O.D., inches)	8.9"

### TESTS

### METHODS

### VALUES

Tensile Strength at Break (MD)	ASTM D882	6198 psi
Tensile Strength at Break (TD)	ASTM D882	5900 psi
Elongation at Break (MD)	ASTM D882	500%
Elongation at Break (TD)	ASTM D882	725%
Elmendorf Tear Strength (MD)	ASTM D1922	245
Elmendorf Tear Strength (TD)	ASTM D1922	544
Cling	ASTM D5458	150
Dart Drop	ASTM D1709	920g

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# V04743

## TUFFlex Ultra Machine Film

10.7 Micron / 42 Gauge / 0.42 mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	11.4 Micron / 42 Gauge / 0.42 mil	
Film Width (inches)	19.7"	
Length (feet)	10000'	
Net Weight / Roll (lb, nominal)	33.1 lb	
Roll Diameter (O.D., inches)	9"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Ultimate Tensile MD (psi)	ASTM D 882	6500 psi
Ultimate Tensile TD (psi)	ASTM D 882	3900 psi
Elongation MD (%)	ASTM D 882	420%
Elongation TD (%)	ASTM D 882	580%
Tear Resistance MD (grams)	ASTM D 1922	650 g/mil
Tear Resistance TD (grams)	ASTM D 1922	970 g/mil
Puncture Resistance (in-lbs.)	ASTM D 4649	18.7 in-lbs
Ultimate Prestretch (%)	Mfg./Highlight	
Cling (in to out, grams)	Mfg. method	150 g/in

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# V04744

## TUFFlex Ultra Machine Film

11.9 Micron / 47 Gauge / 0.47 Mil

*Not intended as limiting specifications.*

CHARACTERISTICS	VALUES	
Manufacturing Process	Cast	
Thickness (nominal)	11.9 Micron / 47 Gauge / 0.47 Mil	
Film Width (inches)	19.7"	
Length (feet)	9000'	
Net Weight / Roll (lb, nominal)	33.3 lb	
Roll Diameter (O.D., inches)	8.6"	
Core I.D.	3"	

  

TESTS	METHODS	VALUES
Ultimate Tensile MD (psi)	ASTM D 882	4500 psi
Ultimate Tensile TD (psi)	ASTM D 882	4350 psi
Elongation MD (%)	ASTM D 882	370%
Elongation TD (%)	ASTM D 882	575%
Tear Resistance MD (grams)	ASTM D 1922	650 g/mil
Tear Resistance TD (grams)	ASTM D 1922	970 g/mil
Puncture Resistance (in-lbs.)	ASTM D 4649	11.4 in-lbs
Ultimate Prestretch (%)	Mfg./Highlight	
Cling (in to out, grams)	Mfg. method	150 g/in

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# V04745

## TUFFlex Ultra Machine Film

13.7 Micron / 54 Gauge / 0.54 Mil

*Not intended as limiting specifications.*

### CHARACTERISTICS

### VALUES

Manufacturing Process	Cast
Thickness (nominal)	13.7 Micron / 54 Gauge / 0.54 Mil
Film Width (inches)	19.7"
Length (feet)	8000'
Net Weight / Roll (lb, nominal)	34 lb
Roll Diameter (O.D., inches)	8.7"
Core I.D.	3"

### TESTS

### METHODS

### VALUES

Ultimate Tensile MD (psi)	ASTM D 882	11900 psi
Ultimate Tensile TD (psi)	ASTM D 882	8500 psi
Elongation MD (%)	ASTM D 882	610%
Elongation TD (%)	ASTM D 882	690%
Tear Resistance MD (grams)	ASTM D 1922	650 g/mil
Tear Resistance TD (grams)	ASTM D 1922	970 g/mil
Puncture Resistance (in-lbs.)	ASTM D 4649	16.9 in-lbs
Ultimate Prestretch (%)	Mfg./Highlight	
Cling (in to out, grams)	Mfg. method	150 g/in

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