PRODUCT SPECIFICATION
DuPont Nonwovens

Features: High Opacity

Product: Tyvek® Protective Material

Style: 1056D 1.6 oz/yd^2

Customer-Use/End-Use: Mailing and Courier

Customer Delivery Unit: Roll

Product Unit: Mill Roll

Use Exception:

Effective Date: Sept. 2004 *Next Review Date:* April 2005

Merge: 18627, 48627

Specification Properties	**99.994% Range (Roll Ave.)**						**Test Method**	
	------US Units------			**-International Units-**				**Comparable**
	Aim	**Low**	**High**	**Aim**	**Low**	**High**	**DuPont**	**ASTM Std.**
Unit Weight US - oz/ yd^2 Int'l – g/m^2	1.60	1.53	1.67	54.3	51.9	56.7	0010-96	D3776-85 (1990)[1]
Delamination US – lb/in Int'l – N/2.54cm	0.30	0.14	0.42	1.33	0.62	1.86	0005-96	D2724-87
Log R (at 55% RH) smooth & rough side	N/A	-	9.8	N/A	-	9.8	0025-90	D257-93[2]

Roll Averages are based on samples taken uniformly across their width.

Specification properties are controlled to aim and released within specifications. The customer is responsible for determining that Tyvek® is suitable for the intended application.

[1] Modified for specimen size
[2] Electrodes 0.75 in^2, 0.5 inches apart on the same side of sheet

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The following data is supplied for information:

Non-Specification Properties	**99.994% Range (Roll Ave.)**						**Test Method**	
	--------**US Units**---------			**--International Units--**				**Comparable**
	Nominal	**Low**	**High**	**Nominal**	**Low**	**High**	**DuPont**	**ASTM Std.**
Opacity US - % Int'l - %	96.8	95.9	100.0	96.8	95.9	100.0	0020-96	T-425 om-91(TAPPI)
Thickness (Roll Ave.) US - mils Int'l - µm	6.3	4.8	7.8	160	122	198	0027-96	D1777-64(1975)[3]
Thickness (Indiv.) US - mils Int'l - µm	6.3	2.1	10.6	160	53	269	0027-96	D1777-64(1975)[3]
Tensile (MD) US - lb/in Int'l – N/2.54cm	24.2	18.7	37.6	108	83	167	0041-96	D5035-90[4]
Tensile (CD) US - lb/in Int'l – N/2.54cm	27.9	20.2	36.8	124	90	164	0041-96	D5035-90[4]
Elmendorf Tear (MD) US - lb Int'l - m-N	1.14	0.53	2.21	4717	2181	9835	0007-96	D1922-93 D1424-83
Elmendorf Tear (CD) US - lb Int'l - m-N	1.06	0.49	1.97	5073	2359	8767	0007-96	D1922-93
Mullen Burst, psi US – psi Int'l - kPa	109	70	146	752	483	1007	0014-90	D774-92a

Roll Averages are based on samples taken uniformly across their width. Non-specification properties are monitored. The values shown for non-specification properties are typical but carry no warranty, expressed or implied. The customer is responsible for determining that Tyvek® is suitable for the intended application.

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[3] 7.15 psi, 0.62 inches diameter presser foot

[4] Modified for speed and gauge length

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Property	***Class***	***N***
Unit Weight, oz/yd^2	II	131
Delamination, lb/in	II	593
Log R (at 55% RH)	III	-
Opacity, %	III	332
Thickness, mils (Roll Avg.)	III	310
Thickness, mils (Individual Test Results)	III	35329
Tensile (MD), lb/in	III	130
Tensile (CD), lb/in	III	131
Elmendorf Tear (MD), lb	III	127
Elmendorf Tear (CD), lb	III	131
Contact Angle, degrees	II	-

Database Information

N = The minimum number of roll averages included in the database used for this specification update.

DATE RANGE = 1/1/98 – 11/24/98

New aim and limits for Delamination and Opacity determined with data 7-1-02 – 7-1-04.

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Visual Quality	***Class***	***Limits (Minimum Grade)***
Antistat Nord Dye	III	2
Bonder Melts	III	1
Imprints	III	1
Rope	III	1
Spits	III	2
Visual Creases, beyond first 5 yds at core	III	None

Internal Release Limits (Mill Roll Averages)

	Minimum	***Maximum***
Delamination, lb/in	0.18	0.39
Log R	-	9.8
Nord Dye, Grade	2	-
Tensile (MD), lb/in	20.0	-
Unit Weight, oz/yd^2	1.55	1.65
Contact Angle, degrees	-	72

Monitored Physical Property Alert Limits (Mill Roll Averages).

Elmendorf Tear (MD), lb	0.70	-
Opacity, %	96.0	100
Thickness, mils	5.2	7.3

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Other Information

ClassLimits

Irganox 1010	III	1500 ppm, typical 4800 ppm, max
Indopol Oil	III	< or = 2500 ppm

History:

August 2004 – Combined 1056DS and 1056D product specs and records. Raised the aim for delamination from 0.25 lb/in to .030 lb/in to provide stiffer sheet that has demonstrated improved performance at customers. Opacity aim adjusted based on line trials (Test 4017).

Unit Weight:

In addition to control of bonded product, T-800 rolls will meet Beta Gauge limits of:

	Line 1	**Line 4/7**
Profile Basis Weight High	7.7 %	8.7 %
Profile Basis Weight Low	7.7 %	8.7 %
Profile High-Low-High	13 %	20 %

APPROVALS (authorized signature, title, and date for each)

Product Quality/Service Envelope and Courier: _____
Name Title Date

Product Quality/Service Graphics: _____
Name Title Date

Technical: _____
Name Title Date

Manufacturing: _____
Name Title Date