

**Brady B-1100 Off-metal RFID Integrated Label**

TDS No. B-1100  
Effective Date: 1/31/2019

**Description:**

Brady Off-metal RFID Integrated Labels incorporate extended temperature range chip technology with durable label materials to withstand challenging environments on non-metallic surfaces.

Print Technology

Thermal transfer print

Recommended Ribbon

Brady Series R6400

Material Type

White PVF film (2 mil)

Adhesive

Acrylic-Rubber Hybrid

Shelf Life

2 years

User Memory

2K bits  
Designed for up to 30 years of data retention at 85°C

EPC Bank

Up to 496-bit EPC identifier

TID Bank

256 bits

Regulatory

ATA Spec 2000 Ch 9 Rev 2016.1  
SAE AS5678A 2015-12

Label Dimensions

Units	English			Metric (mm)		
	Width (in)	Length (in)	Thickness (mil)	Width	Length	Thickness
Large	4	2	9	101.6	50.8	0.23
Medium	4	1	9	101.6	25.4	0.23
Small	2	0.5	9	50.8	12.7	0.23

Liner thickness on the Brady Off-metal RFID Integrated Label is 2 mil, 0.05 mm.

Approximate Read Range

Tag Format	Surface	Average Read Range (m)*
Large/Medium	Polycarbonate	8
Small	Polycarbonate	4

\*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Read Range and Orientation Testing Methodology* for additional detail.

**Details:**

**Surface Dependent Testing**

*Surface Dependent Read Range\**

Tag Size Surface	Large/Medium		Small	
	EU Average (m)	US Average (m)	EU Average (m)	US Average (m)
Air	10.3	11.3	2.8	2.5
Acrylic	8.3	8.9	3.6	4.0
Fiberglass A13RG2W	9.7	10.3	3.3	3.4
Fiberglass electrical grade	6.3	6.0	4.1	5.6
CPVC	8.3	8.9	3.7	4.3
FAA TSO-C13f dual life vest	7.0	7.2	3.9	3.8
Nylon	7.5	7.9	3.8	4.8
Polycarbonate	8.4	8.8	3.8	4.5
PEEK	7.5	7.9	3.9	4.9
PET	4.1	4.3	3.5	4.8
Polypropylene	8.9	9.5	3.3	3.4

\*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Read Range and Orientation Testing Methodology* for additional detail.

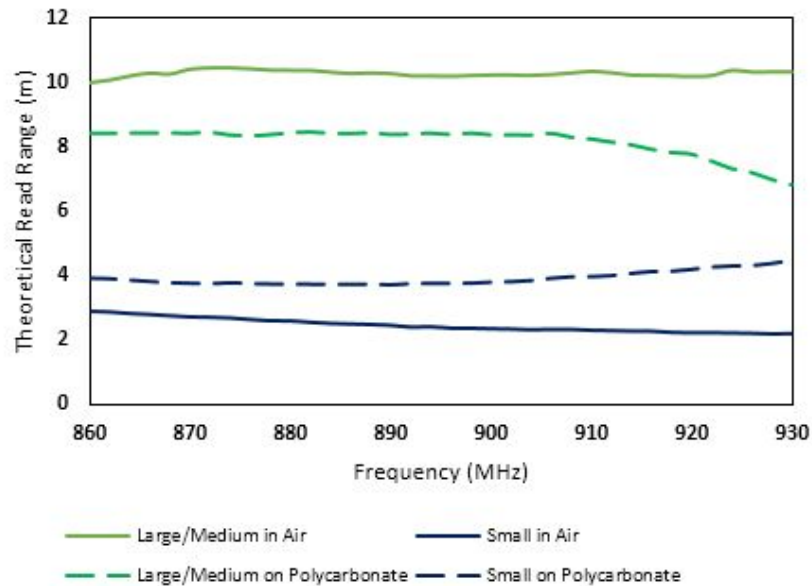
*Surface Adhesion*

Material	Peel Average (N/25mm)	Peel Average (oz/in)
Polypropylene	12.4	44.7
CPVC	16.7	60.0
HDPE	10.3	36.9
Acrylic	17.6	63.1
Fiberglass Electrical grade	11.7	42.1
Nylon	18.9	68.0
Polycarbonate	19.8	71.1
PET	11.2	40.3
PEEK	21.5	77.2
CRES	18.9	68.0

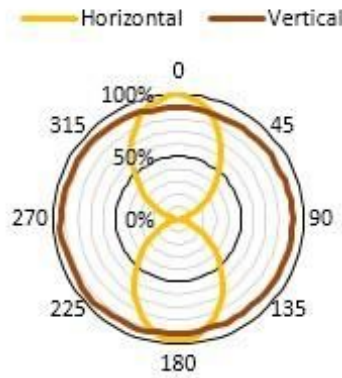
Adhesion values reported were an average of a sample set.

**Read Range and Orientation**

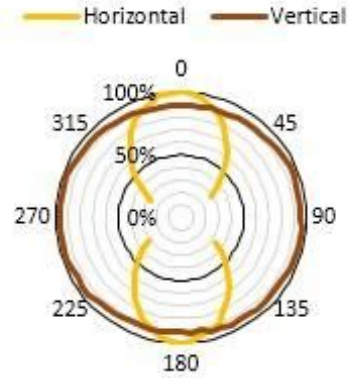
*Frequency Scans of Small and Large/Medium Tags*



Orientation Measurement of Large/Medium Tag



Orientation Measurement Small Tag



**Read Range and Orientation Methodology**

Read range and orientation measurements were performed using a 3.28 W EIRP patch antenna in an anechoic environment. Sample to antenna distance used for read range measurements was 1 m for all tags. EU read range was measured at 866 MHz and US read range was measured at 915 MHz. Large and medium tags exhibited the same results and were reported in the same data sets. Surfaces tested were 0.062” thick, except for PET, which was 0.25” thick. US measurements were adjusted by +10% to account for US antenna power of 4.00 W EIRP . The Brady Off-metal RFID Integrated Label must be sufficiently distanced from a conductive surface to read from an adequate range.

**Curved Surfaces**

The Brady Off-metal RFID Integrated Label is capable of adhering to and functioning on curvatures.

**Environmental Testing**

The Brady Off-metal RFID Integrated Label is SAE AS5678A 2015-12 compliant for the following environmental tests.

*AS5678A Environmental Compliance*

Environmental Requirement	Environmental Test Reference Document	Performance Standard	Pass/Fail
Operating temperature	RTCA DO-160E, Section 4	Data integrity	Pass
Survival temperature	RTCA DO-160E, Section 4	Data integrity	Pass
Altitude test	RTCA DO-160E, Section 4	Data integrity	Pass
Decompression test	RTCA DO-160E, Section 4	Data integrity	Pass
Over pressure test	RTCA DO-160E, Section 4	Data integrity	Pass
Humidity	RTCA DO-160E, Section 6	Data integrity	Pass
Operational shocks	RTCA DO-160E, Section 7	Data integrity	Pass
Vibration	RTCA DO-160E, Section 8	Data integrity	Pass
Magnetic Effect	RTCA DO-160E, Section 15	Data integrity	Pass
Flammability	CFR, Section 25.853(a)	Flammability per CFR limits	Pass

*Additional Environmental Testing\**

Exposure	Exposure Temperature(°C)	Exposure Duration (hr)	Method	Power effectiveness Pass/Fail*	Data Integrity Pass/Fail*	Adhesion*	Print Durability
Skydrol LD4 Immerse	23	336	Immerse	Pass	Pass	Pass	No effect
Skydrol LD4 Brush	70	1000	Brush Daily	Pass	Pass	Pass	No effect
Kerosene	23	500	Brush Daily	Pass	Pass	Pass	No effect
Mil 7808 Oil	70	500	Brush Daily	Pass	Pass	Pass	No effect
IPA	23	500	Brush Daily	Pass	Pass	Pass	No effect
MEK	23	500	Brush Daily	Pass	Pass	Pass	No effect
Alpine RF-11	23	500	Brush Daily	Pass	Pass	Pass	No effect
Cryotech Polar Guard Advance Type IV	23	500	Immerse	Pass	Pass	Pass	No effect
Aeroshell Grease 33	70	24	Brush Once	Pass	Pass	Pass	No effect
Fire Extinguisher FE36	23	24	Brush Daily	Pass	Pass	Pass	No effect
Corrosion	23	96	5% Salt Spray	Pass	Pass	Pass	No effect
Humidity (Internal)	85/30	18, 2 cycles (36 total)	95% Humidity, Cycle Temp	Pass	Pass	Pass	No effect
Humidity (External)	85/30	18, 6 cycles (108 total)	95% Humidity, Cycle Temp	Pass	Pass	Pass	No effect
Waterproofness	23	0.25	DO-160E, Section 10	Pass	Pass	Not Tested	No effect

\*Results dependent on conditions used for testing, actual performance will vary depending on environment and substrate composition. See *Environmental Testing Methodology* for additional detail.

### *Environmental Testing Methodology*

RF Performance, adhesion, and visual defects were evaluated. PET and CRES test panels were used for immersion and brush testing. Polycarbonate test panels were used for environmental exposures. Initial samples were adhered to test panels and tested for average minimum transmitted power (MTP) between 860 and 930 MHz. Initial samples were written with random bits and recorded. RF performance was evaluated in terms of power effectiveness. Power effectiveness of greater than 50% in comparison to a control earned a passing grade. Adhesion values were an average of a sample set. Adhesions of unexposed samples were used as controls. Adhesion performance was calculated as percentage difference of exposed samples to control sample adhesion. Samples with average adhesion above 9.5 N/25 mm to stainless steel earned a passing grade.

### **References:**

SAE: Society of Automotive Engineers  
RTCA DO-160E: Environmental Conditions and Test Procedures for Airborne  
Equipment CFR: Code of Federal Regulations (U.S.A.)  
FAA TSO: Federal Aviation Administration Technical Standard Orders (U.S.A.)

### **Shelf Life:**

Shelf life is two years from the date of receipt for this product as long as this product is stored in its original packaging in an environment below 80° F (27° C) and 60% RH. It remains the responsibility of the user to assess the risk of using this product. We encourage customers to develop testing protocols that will qualify a product's fitness for use in their actual application.

### **Trademarks:**

AeroShell® is a registered trademark of SHELL TRADEMARK MANAGEMENT  
Alpine RF-11™ is a trademark of Na-Churs Plant Food Company dba NACHURS ALPINE SOLUTIONS  
Polar Guard® is a registered trademark of GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology  
Skydrol® is a registered trademark of Solutia Inc.

**Note:** All values shown are averages and should not be used for specification purposes.

Test data and test results contained in this document are for general information only and shall not be relied upon by Brady customers for designs and specifications, or be relied on as meeting specified performance criteria. Customers desiring to develop specifications or performance criteria for specific product applications should contact Brady for further information.

Product compliance information is based upon information provided by suppliers of the raw materials used by Brady to manufacture this product or based on results of testing using recognized analytical methods performed by a third party, independent laboratory. As such, Brady makes no independent representations or warranties, express or implied, and assumes no liability in connection with the use of this information.

### **WARRANTY**

Brady products are sold with the understanding that the buyers will test them in actual use and determine for themselves their adaptability to their intended uses. Brady warrants to the buyers that its products are free from defects in material and workmanship, but limits its obligation under this warranty to replacement of the product shown to Brady's satisfaction to have been defective at the time Brady sold it. This warranty does not extend to any persons obtaining the product from the buyers. This warranty is in lieu of any other warranty, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on Brady's part. Under no circumstances will Brady be liable for any loss, damage, expense, or consequential damages of any kind arising in connection with the use, or inability to use, Brady's products.

Copyright 2019 Brady Worldwide, Inc. | All Rights Reserved  
Material may not be reproduced or distributed in any form without written permission.

Brady North America | 6555 W. Good Hope Rd | Milwaukee, WI 53223 | USA | Tel: 414-358-6600 | Fax: 800-292-2289