

**Brady B-1000 On-Metal Passive RFID Integrated Label**

TDS No. B-1000  
Effective Date: 04/13/2022

**Description:**

**GENERAL**

**Print Technology:** Thermal Transfer

**Material Type:** White PVF film (face sheet), PET construction, ECH rubber, aluminum

**Finish:** Matte

**Adhesive:** Acrylic-Rubber Hybrid

**User Memory:** Dual-record memory: 2 kbits, Multi-record memory: 64 kbits

**EPC Bank:** Up to 496-bit EPC identifier

**TID Bank:** 256 bits

**APPLICATIONS**

Brady on-metal RFID integrated labels incorporate extended temperature range chip technology with durable label materials to withstand challenging environments on metal surfaces. Passive RFID tags, such as B-1000, do not require routine maintenance.

**RECOMMENDED RIBBON**

Brady Series R6400

**REGULATORY APPROVALS**

For information on the Weee-RoHS compliance status for a Brady Product go to one of the following websites:

In Canada: [www.bradycanada.ca/weee-rohs](http://www.bradycanada.ca/weee-rohs)

In Europe: [www.bradyeurope.com/rohs](http://www.bradyeurope.com/rohs)

In Japan: [www.brady.co.jp/products/labelsuse/rohs](http://www.brady.co.jp/products/labelsuse/rohs)

All other regions: [www.bradyid.com/weee-rohs](http://www.bradyid.com/weee-rohs)

**SPECIAL FEATURES**

B-1000 labels meet the requirements of ATA Spec 2000 Ch 9 Rev 2016.1 and SAE AS5678A. Passive RFID tags Intended for aircraft use.

**Label Dimensions**

Tag Format	Metric (mm)		
	Width	Length	Thickness
Large	70.0	32.0	2.0
Medium	55.0	25.0	2.0
Small	35.0	25.0	2.0

**Label Mass**

Tag Format	Label Mass (g)
Large	2.0
Medium	1.3
Small	0.8

**Approximate Read Range Across EU & US Bands:**

Tag Format	Memory Size	Read Range (m)*
Large	Dual	2.0
Large	Multi	1.5
Medium	Dual	1.9
Medium	Multi	1.1
Small	Dual	0.9
Small	Multi	0.7

\*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 Dependent Testing**

*Surface Dependent Read Range\**

Dual-Record Memory Range

Tag Size Surface	Large		Medium		Small	
	EU Average (m)	US Average (m)	EU Average (m)	US Average (m)	EU Average (m)	US Average (m)
Aluminum	3.6	2.0	3.2	1.9	0.9	1.2
Stainless Steel	3.3	1.9	3.1	1.9	0.9	1.2
Painted Aluminum	3.6	1.7	2.7	1.7	0.9	1.4
PEEK Composite	3.5	2.0	2.2	1.9	1.1	1.5
Poly(p-phenylene sulfide) Composite	2.8	2.0	1.8	1.8	1.0	1.4
Titanium	2.0	2.0	2.5	1.7	1.0	1.3

\*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.

Multi-Record Memory Range

Tag Size Surface	Large		Medium		Small	
	EU Average (m)	US Average (m)	EU Average (m)	US Average (m)	EU Average (m)	US Average (m)
Aluminum	2.2	1.5	1.9	1.1	0.7	0.9
Stainless Steel	2.5	1.3	1.6	1.0	0.7	1.0
Painted Aluminum	2.6	1.2	1.1	1.3	0.7	1.0
PEEK Composite	2.7	1.3	1.5	1.1	0.8	1.1
Poly(p-phenylene sulfide) Composite	2.3	1.3	1.1	1.1	0.7	1.0
Titanium	2.9	1.3	1.2	1.0	0.7	1.1

\*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)
Stainless Steel	20.3	74.4
Aluminum with interior TC	15.7	57.6
PEEK Composite	15.5	56.9
PPS Composite	14.4	53.0
Fiberglass A13RG2W	14.8	54.4
Titanium	12.9	47.2

Adhesion values reported were an average of a sample set.

**Label Orientation Sensitivity**

Angle	Dual Record Memory: Label Effectiveness					
	Large		Medium		Small	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
0	100%	100%	100%	100%	100%	100%
15	97%	95%	94%	93%	93%	96%
30	85%	81%	82%	80%	82%	84%
45	67%	60%	64%	59%	74%	67%
60	48%	38%	46%	NA*	66%	50%
75	31%	21%	NA*	NA*	55%	NA*

Multi-Record Memory: Label Effectiveness						
	Large		Medium		Small	
Angle	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
0	100%	100%	100%	100%	100%	100%
15	92%	94%	92%	95%	96%	98%
30	81%	81%	81%	81%	93%	93%
45	64%	60%	63%	60%	82%	79%
60	46%	38%	45%	38%	74%	60%
75	30%	21%	29%	NA*	NA*	NA*

### Read Range and Orientation Methodology

Read range and orientation measurements were performed using a 3.28 W EIRP patch antenna in an anechoic environment. US read range measurements were adjusted by +10% to account for US antenna power of 4.00 W EIRP. Sample to antenna distance used for read range measurements was 0.5 m for all tags. EU read range was measured at 866 MHz and US read range was measured at 905 MHz. EU orientation sensitivity was measured at 890 MHz for Medium and Large tags and 865 MHz for Small tags. An orientation of 0° indicates that the antenna is perpendicular to the RFID tag.

\*NA in Label Effectiveness corresponds to no reading at 0.5 meters.

### Curved Surfaces

The Brady on-metal RFID integrated label is capable of adhering to and functioning on curved surfaces greater than 30 mm in diameter.

### Environmental Testing

The Brady on-metal RFID integrated label is AS5678 2006-12 / AS5678A 2015-12 compliant for the following environmental tests.

#### AS5678 Environmental Compliance

Environmental Requirement*	Environmental Test Reference Document	Performance Standard	Pass/Fail
Operating temperature	RTCA DO-160G, Section 4	Data integrity	Pass*
Survival temperature	RTCA DO-160G, Section 4	Data integrity	Pass*
Altitude test	RTCA DO-160G, Section 4	Data integrity	Pass
Decompression test	RTCA DO-160G, Section 4	Data integrity	Pass
Over pressure test	RTCA DO-160G, Section 4	Data integrity	Pass
Humidity	RTCA DO-160G, Section 6	Data integrity	Pass
Operational shocks	RTCA DO-160G, Section 7	Data integrity	Pass
Vibration	RTCA DO-160G, Section 8	Data integrity	Pass
Waterproofness	RTCA DO-160G, Section 10	Data integrity	Pass
Fungus	RTCA DO-160G, Section 13	Fungal Growth	Pass
Corrosion	EN2591-307	Data integrity	Pass
Magnetic Effect	RTCA DO-160G, Section 15	Data integrity	Pass
Flammability	14 CFR, Section 25.853(a)	Flammability per CFR limits	Pass

\*Product is not intended for continual operation above 85°C.

Exposure	Exposure Temperature(°C)	Exposure Duration (hr)	Method	Adhesion*	Print Durability
Skydrol LD4 Immerse	23	336	Immerse	Pass	No effect
Skydrol LD4 Brush	70	1000	Brush Daily	Pass	No effect
Kerosene	23	500	Brush Daily	Pass	No effect
Mil 7808 Oil	70	500	Brush Daily	Pass	No effect
IPA	23	500	Brush Daily	Pass	No effect
MEK	23	500	Brush Daily	Pass	No effect
Alpine RF-11	23	500	Brush Daily	Pass	No effect
Cryotech Polar Guard Advance Type IV	23	500	Immerse	Pass	No effect
Aeroshell Grease 33	70	24	Brush Once	Pass	No effect
Fire Extinguisher FE36	23	24	Brush Daily	Pass	No effect
Demineralized Water	70	72	Immerse	Pass	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*

Test panels used for brush and immersion testing were Stainless Steel CRES test panels. Adhesion values were an average of a sample set. 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.

#### **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:**

CFR: Code of Federal Regulations (U.S.A.)

RTCA DO-160G: Environmental Conditions and Test Procedures for Airborne Equipment

SAE: Society of Automotive Engineers (U.S.A.)

All S.I. Units (metric) are mathematically derived from the U.S. Conventional Units

**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.

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