

Brady B-1000 RFID Integrated Label

TDS No. B-1000
Effective Date: 09/25/2015

Description:

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

Details:

Print Technology

Thermal transfer print

Recommended Ribbon

Brady Series R6400

Material Type

White PVF film: Face Sheet
PET Construction
ECH Rubber
Aluminum

Adhesive

Acrylic-Rubber Hybrid

Shelf Life

2 years in ambient conditions

User Memory

Dual-Record Memory: 2 kbits
Multi-Record Memory: 64 kbits

EPC Bank

Up to 496-bit EPC identifier

TID Bank

256 Bits

Regulatory

ATA Spec 2000 Ch 9 Rev 2016.1
SAE AS5678 2006-12

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	Average (m)*
Large	Dual	2.0
Large	Multi	1.5
Medium	Dual	1.9
Medium	Multi	1.1
Small	Dual	0.8

*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

*SurfaceDependentReadRangeAcross EU and US Bands**

Dual-Record Memory

Tag Size	Large	Medium	Small
Surface	Read Range (m)	Read Range (m)	Read Range (m)
Aluminum	2.0	1.9	0.8
Stainless Steel	1.9	1.9	0.9
Painted Aluminum	1.7	1.7	0.8
PEEK Composite	2.0	1.9	0.9
Poly(p-phenylene sulfide) Composite	2.0	1.8	0.7
Titanium	2.0	1.7	0.8

*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

Tag Size	Large	Medium
Surface	Read Range (m)	Read Range (m)
Aluminum	1.5	1.1
Stainless Steel	1.3	1.0
Painted Aluminum	1.2	1.3
PEEK Composite	1.3	1.1
Poly(p-phenylene sulfide) Composite	1.3	1.1
Titanium	1.3	1.0

*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)
CRES	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.

Read Range and Orientation

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%	96%	95%
30	85%	81%	82%	80%	85%	78%
45	67%	60%	64%	59%	71%	53%
60	48%	38%	46%	NA	54%	NA
75	31%	21%	NA	NA	37%	NA

Angle	Multi-Record Memory: Label Effectiveness			
	Large		Medium	
	Horizontal	Vertical	Horizontal	Vertical
0	100%	100%	100%	100%
15	92%	94%	92%	95%
30	81%	81%	81%	81%
45	64%	60%	63%	60%
60	46%	38%	45%	38%
75	30%	21%	29%	NA

Read Range and Orientation Methodology

Read range and orientation measurements were performed using a 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 905 MHz.

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 Off-metal RFID Integrated Label is AS5678 2006-12 compliant for the following environmental tests.

AS5678 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
Waterproofness	RTCA DO-160E, Section 10	Data integrity	Pass
Fungus	RTCA DO-160E, Section 13	Fungal Growth	Pass
Corrosion	EN2591-307	Data integrity	Pass
Magnetic Effect	RTCA DO-160E, Section 15	Data integrity	Pass
Flammability	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	Power effectiveness Pass/Fail*	Adhesion*	Print Durability
Skydrol LD4 Immerse	23	336	Immerse	Pass	Pass	No effect
Skydrol LD4 Brush	70	1000	Brush Daily	Pass	Pass	No effect
Kerosene	23	500	Brush Daily	Pass	Pass	No effect
Mil 7808 Oil	70	500	Brush Daily	Pass	Pass	No effect
IPA	23	500	Brush Daily	Pass	Pass	No effect
MEK	23	500	Brush Daily	Pass	Pass	No effect
Alpine RF-11	23	500	Brush Daily	Pass	Pass	No effect
Cryotech Polar Guard Advance Type IV	23	500	Immerse	Pass	Pass	No effect
Aeroshell Grease 33	70	24	Brush Once	Pass	Pass	No effect
Fire Extinguisher FE36	23	24	Brush Daily	Pass	Pass	No effect
Demineralized Water	70	72	Immerse	Pass	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 CRES test panels. Initial samples were adhered to test panels and tested for average minimum transmitted power (MTP) between 860 and 930 MHz. RF performance was evaluated in terms of power effectiveness. Power effectiveness of less than 2 dB in comparison to a control earned a passing grade. 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.

Trademarks:

- ASTM: American Society for Testing and Materials (U.S.A.)
- All S.I. Units (metric) are mathematically derived from the U.S. Conventional Units
- CFR: Code of Federal Regulations (U.S.A.)
- FAA TSO: Federal Aviation Administration Technical Standard Orders (U.S.A.)
- RTCA DO-160E: Environmental Conditions and Test Procedures for Airborne Equipment
- SAE: Society of Automotive Engineers (U.S.A.)

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.

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