

Milestone AV Technologies TECHNICAL SPECIFICATION	
Number:	8900-000002
Title:	Materials & Finishing Specification
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Revision History

Date	Rev	Reason for Change
3/1/05	A	ECO 1746. Initial Release
4/27/05	B	ECO 1768. Added finishing codes 267, 272, 273, and 274
8/19/05	C	ECO 1934. Added flammability requirement for plastic materials
1/16/06	D	ECO 2134. Multiple changes including: Changed to CSAV and included Sanus Systems in the scope, changed title to include materials, added specifications for glass and wood materials. Added appearance criteria.
11/21/06	E	ECO 2622. Added reference to BS6206 for tempered glass. Fixed typo on manufacturer column for 012 finish code. Added color samples to paint appearance criteria. Added finishing codes 005, 006, 011, 027, 029, 030, 031, 032, 033, 034, 035, 036, 037 and 293.
2/1/07	F	ECO 2825. Added finishing codes 038, 039, 040, 041, 042, 043, 044 and 045.
2/26/07	G	ECO 2954. Added finishing codes 046, 047, 048, 049, 050, 051, 052, 053 and 295.
5/11/07	H	ECO 3137. Added finishing codes 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067 and 253.
7/24/07	I	ECO 5156. Added finishing codes 068, 069, 070 and 284. Removed "Specification Pending" from finishing codes 061 through 065.
8/14/07	J	ECO 5221. Added finishing code 071.
11/20/07	K	ECO 5461. Added note to section 4.6.1 specifying minimum plastic requirements per UL standard. Added 3.1.6 note - UL94 as a reference document. Added liquid paint specification.
7/1/08	L	ECO 6083. Administrative change to company name from CSAV to Milestone. Removed section 4.6.1 as section is no longer needed in light of CoC meeting UL requirements. Added Finishing codes 76 – 79 (color codes for Cisco product) and 289.
8/1/08	M	ECO 6148. Corrected ECO # for rev L and added leading zeros to finish codes 077-079. Changed the CSAV logo to Milestone. Added finish codes 072-075, 254, 278, 300-303. Changed Morton to Rohm & Haas because of buyout.
9/10/08	N	ECO 6276. Added finish code 304
10/6/08	O	ECO 6419. Added ECO #'s for traceability to rev changes M and N. Added finish code 080.
10/15/08	P	ECO 6443. Added finish code 081.
12/23/08	00	ECO 50000091. Added finish code 084 and changed revision to numerical accommodate SAP conversion.
02/16/09	01	ECO 50000212. Added finish code 085 and material code 305. Changed the paint color description on 044 to Titanium.
3/26/09	02	ECO 50000481. Added finish code 082 and 083.
04/10/09	03	ECO 50000697. Added material codes 306 and 307.
06/19/09	04	ECO 50000842. Updated finish code 060. Added plating code 086 and Material Codes 308 and 309.
7/13/09	05	ECO 50001107. Added Finish Codes 087, 088, 310, 311, 312
7/29/09	06	ECO 50001193. Added Finish Code 089
9/02/09	07	ECO 50001375. Added finish code 090 and updated codes 087 and 089.
9/22/09	08	ECO 50001442. Added finish codes 091- 096
12/22/09	09	ECO 50001660. Added material codes 097 and 313.
8/13/10	10	ECO 50002077. Modified finish code 029 to add Cardinal Industrial Finishes T006-BK66, added new code for wood finish (code 099), soft touch paint (code 100), and outdoor powder coat (code 098), modified finish code 088 under and over coat.
3/4/11	11	ECO 50003714. Added finish codes 101, 104, 105, 106, 107, Added note for min plating thickness required by UL for zinc in outdoor finishes
3/22/11	12	ECO 50004280. Added finish codes 102, 114, 115, Added CARB compliance requirements to section 4.8, Updated finish code 088 with minimum plating thickness, Updated out of date manufacturers for multiple codes , Removed obsolete codes 006, 096, and 026
5/18/11	13	ECO 50004489. Added Die casting section 4.9 and added die cast specifications to section 3.0, Added new finish codes 111, 113, 116, 117

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12/15/11	14	ECO 500005413, Updated glass requirements section 4.7.1, Added Panolam - W370 Noble Mahogany to finish code 104, Added new codes 120, 121, 122, 123, 126
1/05/12	15	ECO 5000005502. Added finish code 109, 110, 127
2/07/12	16	ECO 5000005558. Added finish code 103, 112, 119, 125, 128, corrected finish code 115 typo
4/18/2012	17	ECO 500005826. Changed 013 from paint to coating, added e-cote description, added US & AP manufacturers for e-cote, and updated section 4.4 for e-cote requirements. Updated finish code 119 and 128, Added finish code 118, removed reference to primer in section 4.4, Updated code 029 because cardinal replaced T006-BK66 with T006-BK05. Added requirement plated threads must pass thread gauge in section 4.5.2
5/31/2012	18	ECO 500006036. Added United States manufacturer for code 106, Added codes 124, 131, 132, and 133
10/23/12	19	ECO 500006541. Added codes 129, 130, 134, 135. Updated codes for clarification: Added Anodized to Paint/Texture Other column to code 086 and 131, re-orientated code Color/Plate description for codes 126 and 127, changed Manufacture from vendor supplying parts to paint vendor on codes 106, 124, and 133
1/8/2013	20	ECO 500006912. Section 4.0: Added United States manufacturer for code 107, and added new codes 108, 136, 139, 140, 314, 315, 316 and 266.
4/24/2013	21	ECO 500007791. Section 3.0 Added 3.1.13 Section 4.0: Added new codes 141, 142, 143, 144, 145, 317, 318, 319 and 320 Section 4.3: Added 4.3.2, 4.3.5 and updated 4.3.3 Section 4.3.4 and 4.4.6.2: Added metric measurements Section 4.8.2: Added 4.8.2.2, 4.8.2.3, 4.8.2.4 and 4.8.2.5 appearance criteria for wood or composite panels Added Figure 1 - Milestone Appearance Acceptance Criteria Size Template
8/6/2013	22	ECO 500008201 Added new finish codes 146, 147, 148, 149, 150, 151, 152, 321 and 322
8/13/2013	23	ECO 500008529: Added new material/finish codes 153, 323, and 324 Section 4.1: Deleted "Dupont" from the manufacturer column for code 136, deleted "Soft Touch" from the manufacturer column for codes 142 and 248, and deleted "Soft Touch" from the Paint Texture/Other column for code 319.
11/1/2013	24	ECO 500008645: Added material codes 325 and 326
Not Applicable	25	ECO 500007682: Cancelled ECO - change to add weld standard rejected by Tracy Hartwig
2/19/2014	26	ECO 500009391: Added finish code 154; added material code 327
4/15/2015	27	ECO 500011451: Added finish codes 155, 156 and 157; added material codes 328, 329, 330 and 331; added India paint manufacturer to finish codes 002, 012, 022 and 024
10/13/2015	28	ECO 500012349: Added finish codes 158, 159 and 160; added material codes 332, 333 and 334
4/11/2016	29	ECO 500013502: Changed manufacturer finish code information for 158 and 159; added section 4.10 hot-rolled and cold-rolled steel requirements
8/5/2016	30	ECO 500013951: Added new finish codes 161 and 162; added new material codes 335 and 336; added 8900-000007 Milestone Finish Code -161 Outdoor Paint Test Specification to section 3.0 (3.1.5)
3/23/2017	31	ECO 500015270: Added new material codes 337, 338, 339, 340 and 341
4/26/2017	32	ECO 500015485: Added new material codes 342, 343, 344, 345, 346, 347 and finish code 163

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1.0 Purpose

The purpose of this specification is to define the finishing requirements for product purchased by Milestone

2.0 Scope

The scope of this specification includes all parts and component parts of assemblies purchased by Milestone which reference this specification on purchasing documents (Purchase order, part drawing, etc.)

3.0 Documents

3.1 Reference documents

- 3.1.1 ASTM D3359 – 02 Standard Test Methods for Measuring Adhesion by Tape Test
- 3.1.2 ANSI A208.2 – 2002 Medium Density Fiberboard for Internal Use
- 3.1.3 ANSI A208.1 – 1999 Particleboard, Mat-Formed Wood
- 3.1.4 Milestone Purchasing Specification 8900-000001
- 3.1.5 Milestone 8900-000007 Finish Code -161 Outdoor Paint Test Specification
- 3.1.6 BS6206:1981 Appendix B Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings
- 3.1.7 UL94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
- 3.1.8 Airborne Toxic Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products [Sections 93120 to 93120.12, title 17, California Code of Regulations (CCR)]
- 3.1.9 ASTM B85 Standard Specification for Aluminum Alloy Die Castings
- 3.1.10 NADCA A-3-1-09: Product Specification Standards for Die Castings/2009 – Aluminum Alloys, Chemical Compositions
- 3.1.11 ASTM E155 Standard Reference Radiographs for Inspection of Aluminum and Magnesium Castings
- 3.1.12 UL1678:2004 Section 20 Household, Commercial, and Professional-Use Carts and Stands for Use with Audio-Video Equipment
- 3.1.13 UL2442:2011 Section 61.3 Safety for Wall and Ceiling Mounts and Accessories
- 3.1.14 Milestone Appearance Acceptance Criteria Size Template (see Figure 1 in this specification)

4.0 Requirements

4.1 Finishing/Material codes

The following table lists the finishes designated by the three digit suffix of the part number. E.g. for part #1021-000004-002, 002 is the finishing code.

Code	Type	SubType	Color/Plate	Paint Texture/Other	Manufacturer
000	Unfinished				
001	Paint	Powdercoat	Black	Smooth	Valspar IF2135 Low Gloss Black <u>or</u> DuPont EFB-408-S3
002	Paint	Powdercoat	Black	Wrinkle	DuPont Black Wrinkle GFB600W3 <u>or</u> Akzo Nobel 12-7001 Corvel Midnight Black <u>or</u> Paramount U8NO 180ZZ0 (India)
003	Plating	Normal	Black	Anodized	
004	Plating	Normal	Clear Zinc		
005	Plating	Normal	Black Zinc		

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Code	Type	SubType	Color/Plate	Paint Texture/Other	Manufacturer
007	Plating	Normal	Nickel Chrome		
008	Paint	Powdercoat	Spartan Bronze	Smooth	DuPont Spartan Bronze PFJ-507-A5
009	Heat Treat			Case Hardening	
010	Plating	Normal	Zinc Phosphate		
011	Paint	Powdercoat	Platinum Grey		
012	Paint	Powdercoat	Pure White		Sherwin Williams HWS6-20002 POWDURA® Hybrid Powder Coating, Pure White <u>or</u> Akzo Nobel SC19AN (India)
013	E-Cote		Black		PPG Powercron 6000CX Epoxy, Unires Chemical Co., Ltd EEB-060 <u>or</u> EEB-068, NIPPON PAINT POWERNICS EXCEL 2100 F-1 Black, <u>or</u> XinQing JingCheng Paint Co.,Ltd JC-01, <u>or</u> HuBeiZhaoYang XiangRui Chemical Co.,Ltd F11-51
014	Paint	Primer	Grey		
015	Plating	Normal	Black Zinc	Baked	
016	Plating	Flash	Clear Zinc		
017	Plating	Normal	Black Oxide		
018	Plating	Normal	Nickel Chrome	Rack Plated	
019	Paint	Powdercoat	Light Grey	Texture	Akzo Nobel 41-7169 Corvel™ Light Grey Texture
020	Plating	Normal	Clear anodized		
021	Plating	Normal	Hard Chrome		
022	Paint	Powdercoat	Stardust Silver (Britebond)		DuPont Stardust Silver III PFA639B6 <u>or</u> Akzo Nobel 23-9430 Britebond™ Stardust Silver <u>or</u> Paramount D6N00637M8 (India)
023	Paint	Powdercoat	Flint (Charcoal/ Dark Gray)		Akzo Nobel 21-7017 Corvel™ Flint Texture
024	Paint	Powdercoat	Raven Black		Akzo Nobel 30-7262 Corvel™ Raven Black <u>or</u> Rapid Coat PN 35069
025	Plating	Normal	Black Anodized		
027	Paint	Powdercoat	Silvadillo Silver		DuPont Silvadillo PFA500M9
029	Paint	Powdercoat	Vulcan Black		Valspar IF7948M Coal TGIC <u>or</u> Cardinal Industrial Finishes T006-BK05 <u>or</u> Dupont Vulcan Black PFB652S6
030	Paint	Liquid	RPM Black		
031	Paint	Liquid	RPM Silver		
032	Paint	Liquid	RPM White		
033	Plating	Normal	Yellow Zinc		
034	Paint	Normal	Black_Silver iC Combination Color		
035	Die Sublimation		Cabela's Seclusion 3D-Kolorfusion International		

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Code	Type	SubType	Color/Plate	Paint Texture/Other	Manufacturer
036	Plating	Normal	Nickel Teflon		
037	Paint	Liquid	Piano Black		
038			Silver Anodized Finish for Aluminum Extruded Pillars (CF)		
039			Black Anodized Finish for Aluminum Extruded Pillars (CF)		
040			Hand Sanded Black Lacquer Finish		
041			Cherry Finish for Component Furniture		
042			Espresso Finish for Component Furniture		
043			TS Piano Black Gloss		
044	Paint		Titanium		Akzo Nobel 23-9435 Britebond™ Black Chrome
045	Paint		Bowe White	BBH Spec: EC-1229	Sherwin Williams #HAT6-90018 POWDURA® Hybrid Powder Coating, Bowe Gray
046	Paint	Wet Paint	Mat Black	Ltd Product Name: mat black 14 degree	
047	Paint	AC Lacquer	AC Black	YS	
048	Paint	Powdercoat	Euro Accurate Silver	YS Bright	DuPont EP9020-0047333
049	Paint	Powdercoat	Black Wrinkle	Crackle 4649/3 Euro Wrinkle	DuPont EPIO0400-4000132
050	Paint	Powdercoat	High Gloss Black	SF Black	
051	Paint	Powdercoat	Silver Texture	HF Base	
052	Paint		Silver Vein Hybrid		
053	Paint		Taos Silver		PPG Envirocron PCFP73103
054	Paint	Wet Paint	Alusilver	PFFP Metal	
055	Paint	Wet Paint	Plasilver	PFFP Plastic	
056	Paint	Wet Paint	Gloss Black	PFFP Feet	
057	Paint	Powdercoat	PFFPb Black	PFFPb Pillar	
058	PFFPs Silver Base		Silver		
059	PFFPs Frosted Glass				

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Code	Type	SubType	Color/Plate	Paint Texture/Other	Manufacturer
060	PFFP2b Smoked Glass		50% Visible Light Transmittance, 29% UV Transmittance, and 48% Total Solar energy Transmittance (PFFP2b SMOKED GLASS)		
061			Black Lacquer Finish for Natural Furniture	Hand Sanded	
062			Cherry Finish for Natural Furniture		
063			Maple Finish for Natural Furniture		
064			Mocha Finish for Natural Furniture		
065	Paint		Black	Textured Matt Wood Finish	
066	Paint	Powdercoat	Graphite		Akzo Nobel SM QX116Q Interpon™
067		Anodize	Bright Dip Frost-Kote		Pioneer Metal Finishing
068	Plating		Black	Electroless Nickel	
069		Mechanical		#4 Brushed Stainless	
070	A-coat		Autophoretic		
071	Plating		Nickel	Electroless Nickel	
072	Paint	Textured Powdercoat	VMAV Silver TT272A		
073	Paint	Textured Powdercoat	VMAV Black EN320C		
074	Material	Clear Glass			
075	Material	Clear glass	Clear glass painted Black on one side		
076	Paint	Wet Paint	Stardust Silver color match		
077	Paint	Powdercoat	Cisco IP Matte Black		Cardinal Industrial Finishes H341-BK224
078	Paint	Powdercoat	Cisco Metallic Gray		Cardinal Industrial Finishes H341-GR673
079	Paint	Powdercoat	Cisco IP Matte White		

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Code	Type	SubType	Color/Plate	Paint Texture/Other	Manufacturer
080	Plating/Paint	Normal/ Powdercoat	Clear zinc plating then Black Powdercoat	Milestone 002 Black Wrinkle Powdercoat Milestone 004 Clear zinc plating	
081	Paint	Lacquer	Black (textured)	Textured lacquer for TVXX turntables	
082	Paint	Powder Coat	Aged Bronze	Finish SM MT	Tiger Drylac 38/60090
083	Paint	Wet Paint	Aged Bronze		
084	Paint		Chinese Black Pearl		
085	Paint	Powdercoat	Basalt Metallic		
086	Plating	Normal	204-R1 Hot Etch Natural	Anodized	
087	Plating	Normal	Black Anodized, Mil-A-8625C Type 2 Class 2	Brushed finish: 150 grit. Brushed on all surfaces. Form lines not permissible	
088	Paint	Paint over black zinc	Black zinc (005) plus Black Outdoor Powder coating (098)	Minimum of 0.00041" coating thickness for Zinc	
089	Plating	Normal	Clear Anodized	Brushed finish: 150 grit. Brushed all surfaces. Form lines not permissible	
090	Wood Finish		Chocolate Wood Finish, 30 Sheen		
091	Wood Finish	Melamine	Nutmeg Cherry # W 272 <u>or</u> approved equivalent		Panolam
092	Wood Finish	Melamine	Select Walnut #W 194 <u>or</u> approved equivalent		Panolam
093	Wood Finish	Melamine	Ebony Sand # P 895 <u>or</u> approved equivalent		Panolam

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Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
094	Wood Finish	Melamine	Country Maple # W256 or approved equivalent		Panolam
095	Wood Finish	Melamine	Black Cathedral Ash G2S or approved equivalent	Black Ash Wood Finish	Panolam
097	Plating	Normal	Clear Anodized	#1 Polished	
098	Paint	Powdercoat	Black Outdoor Powder coating		HeShan DongXu Chemical Co. Ltd Outdoor low-light black powder PL5950
099	Wood Finish		NC, 30 sheen, chestnut finish		Circle and Yuefeng
100	Paint	Soft touch	Black	Soft touch	Manfield Coatings 503 series
101	Plating		Bright Dipped Chrome		Jurong metal product company
102	Vacuum coating		Chrome		Jurong metal product company
103	Paint		Gloss Black		Qianrui Chemical Industrial (Huizhou) Co., Ltd.
104	Wood Finish		Mahogany		Uniboard USA LLC or Panolam - W370 Noble Mahogany
105	Wood Finish		Black		Uniboard USA LLC
106	Paint		Silver texture		Jurong metal product company or Cardinal Silver Texture T391-GR1031
107	Paint		Black texture		Jurong metal product company
108	Paint	Powder coat	Gun metal		Dongrong Metal Products Co.,Ltd
109	Wood Finish	Laminate	Graphite/ Gun metal		Omnova Carbon Fiber thermofoil
110	Wood Finish	Laminate	Brushed Stainless		PFA60 Negotiating in Geneva melamine
111	Paint	Liquid	Vulcan Black		Dong Guan Xin Yi Chemical Paint Co. Ltd Zhuhai Kai Jun Precision Plastic Products Co, Ltd
112	Plating		Black Phosphate		
113	Wood Finish	Melamine	Ebony Sand		Panolam
114	Paint		Silver Hammertone Semi gloss		Cardinal T064-GR05
115	Paint		RAL7035 Gray Lite Texture 89/71530		Tiger Drylac

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Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
116	Painted ABS	ABS	White ABS (251) painted Pure White RAL9003		Sherwin-Williams
117	Paint		Silver Fine Texture		Tiger Drylac 09/90530
118	Paint	Powder coat	Ship Black		Sherwin-Williams "New Rockwell Black texture" PBT2-20026 <u>or</u> Ningbo YinZhou PULITE Powder Coating factory PE304M.PT309P.PT404XB.PJ001W <u>or</u> FUMEIQI Industry Co., Ltd Black Powder
119	Paint	Powdercoat	White	Wrinkle	CARDINAL C031-WH120 WHITE RIVER
120	Lacquer		Leggy (Antique Black)		QIANRUI CHEMICAL INDUSTRIAL (HUIZHOU) CO.LTD
121	Lacquer		Craftsman (Walnut)		QIANRUI CHEMICAL INDUSTRIAL (HUIZHOU) CO.LTD
122	Lacquer		Little L (Dark Brown)		QIANRUI CHEMICAL INDUSTRIAL (HUIZHOU) CO.LTD
123	Smoked Glass		Amber		Donguan Zhongsen Glass Products Factory
124	Paint	Powder coat	Coffee		Dongguan Lianying Powder Goods Co., Ltd.
125	Paint	Liquid	Brown		HuaRun
126	Plating/Paint	Normal/ Powder coat	Clear zinc plating then Titanium	Milestone 004 Clear zinc plating Milestone 044 Titanium Powdercoat	
127	Plating/Paint	Normal/ Powder coat	Clear zinc plating then black wrinkle	Milestone 004 Clear zinc plating Milestone 002 Black Wrinkle Powdercoat	
128	Wood finish	Vinyl	Thermofoil Omnova brushed Aluminum		
129	Wood Finish		"Graphite": Dark grey wood stain		Guangdong Huarun Paint Chemical Co., Ltd.
130	Wood Finish		"Caramel": Medium brown wood stain		Guangdong Huarun Paint Chemical Co., Ltd
131	Plating	Normal	Extreme Etch Black	Anodized	

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Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
132	E-cote		White		Tatung Fine Chemicals Co., Ltd. Acrylic Electroposition Resin
133	Paint	Powdercoat	White		LETONG CHEMICAL CO.,LTD
134	Paint	Oil			Zhuhai Cailong Plastic Printing Ink Products Co., Ltd. Metallic Paint 410205#
135	Paint	Powdercoat	Pearl Gray	Smooth	Sherwin Williams HAS4-20050 POWDURA® Hybrid Powder Coating, Pearl Gray
136	Paint	Powdercoat	Black Magic II - UFB-657-S0		
137	Paint	Powdercoat	Black Gloss		Pantone 426C, Gloss
138	Paint	Powdercoat	Silver		Pantone 8240C
139	Wood Finish	Melamine	Dark Walnut		
140	E-Cote		Silver		
141	Paint	Powdercoat	Gray		Sherwin Williams - 49 Gray PAS6-C0001
142	Paint	Powdercoat	Silver		Pantone 8240C
143	Hydro-dip film		Mahogany		
144	Hydro-dip film		Birch		
145	Paint	Oil	Black		Pantone 419C
146	Wood Finish		Natural Walnut Stain		
147	Wood Finish	Ash Veneer	Charcoal		
148	Painted Glass	Low Iron Glass	Glass painted white on one side		
149	Wood Finish	Melamine	Dark Walnut		
150	Wood Finish	Veneer	Dark Cherry		
151	Wood Finish	Melamine	Dark Cherry		
152	Paint	Powdercoat	Antique White		
153	Plating	Normal	Green Zinc		
154	Wood Finish	Melamine	Black	Wood Grain	
155	Paint	Powdercoat EP7030B-C Supplier Code	Light Grey	Texture	Huaguang Powder Coatings
156	Paint	Powdercoat EP7031B-C Supplier Code	Dark Grey	Texture	Huaguang Powder Coatings
157	Paint	Powdercoat	Grey	166-077 Texture Lowes Grey Powder	Akzo Nobel Supplier P/N: 41-71016 Pantone 422M
158	Paint		Sonos White		Substrate: Trinseo PC8600 Substrate Color: IC8800381Paint Paint System: BC+PU CC
159	Paint		Sonos Black		Substrate: Trinseo PC8600 Substrate Color: IC7700181Paint Paint System: BC+PU CC
160	Paint	Powdercoat	Black	None	Shenzhen Xinadda IR-PI Products

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Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
*161	Outdoor Paint and Primer	Paint: TGIC – Polyester Primer: Epoxy – Polyester Hybrid	Black	Rich Matte	Paint: Axalta AlestA AR400 Rich Black Matte Primer: Axalta ACE Black 32 *Refer to 8900-000007 Milestone Finish Code -161 Outdoor Paint Test Tech Spec for testing criteria
162	Paint	Liquid	Sonos White		Pantone 11-0601TPX
163	Paint	Powdercoat	Yuda Black		
246	Material	Delrin	Black		Pantone 419C, MT11001
247	Material	Delrin	Silver		Pantone 8240C, Gloss SP1-C1
248	Material	Delrin	Silver		Pantone 8240C
249	Material	ABS	Black		Pantone 426C, Gloss
250	Material	ABS	Black		
251	Material	ABS	White		
252	Material	ABS	Natural		
253	Material	ABS	Silver		
254	Material	ABS	Off White		
256	Material	Acrylic	Black		
257	Material	Acrylic	Clear		
258	Material	Acrylic	Gray		
259	Material	Acrylic	Smoked		
261	Material	Delrin	Black		
262	Material	Delrin	Silver		
263	Material	Delrin	Natural		
264	Material	Delrin	Silver	Painted	VMC18278
266	Material	Nylon	Black	30% Glass filled	
267	Material	Nylon	Medium Gray		
268	Material	Nylon	Black		
269	Material	Nylon	Natural		
270	Material	Nylon	Black	13% Glass Filled	
271	Material	Nylon	Natural	13% Glass Filled	
272	Material	Nylon	White		
273	Material	Nylon	Dark Gray		
274	Material	Nylon	Dark Blue		
275	Material	PVC	Black		
276	Material	PVC	White		
277	Material	PVC	Natural		
278	Material	PVC	Silver		
280	Material	RPVC	Black		1017
281	Material	RPVC	Silver		VMC18278
282	Material	RPVC	White		
283	Material	RPVC	Natural		
284	Material	IC Titanium	Black Chrome	To match powdercoat (044) Rohm & Haas 23-9435 (or equivalent)	
286	Material	UHMW	Natural White		
287	Material	UHMW	Black		
289	Material	Polycarbonate Sheet	Clear		
293	Material	Celcon M90	Matte Black		

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4.1 Finishing/Material codes continued

Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
295	Material	Hardrock Maple Film			Casco H602 or equivalent
300	Material	PP	White		
301	Material	PP	Natural		
302	Material	PP	Light Grey		
303	Material	PP	Dark Grey		
304	Material	PP	Black		
305	Material	PET	Black		
306	Material	ABS	Light Grey		
307	Material	ABS	Dark Grey		
308	Material	ABS	Charcoal		Pantone DS 327-5 U
309	Material	RPVC	Charcoal		Pantone DS 327-5 U
310	Material	ABS	Almond		
311	Material	ABS	Ivory		
312	Material	Teflon			
313	Material	PET	Transparent		
314	Material	PP	Charcoal		Pantone DS327-5U
315	Material	Delrin	Charcoal		Pantone DS327-5U
316	Material	PC	Charcoal		Pantone DS327-5U
317	Material	PVC	Off-White		
318	Material	Polypropylene	Black	Gloss	Black Pantone 426C
319	Material	ABS	Silver	Soft Touch	Silver Pantone 8240C
320	Material	ABS	Black		Black Pantone 419C, MT11020
321	Material	Nylon	Black	30% Glass Filled	Black Pantone 419c, MT11020
322	Material	LDPE	Black		LLDPE (Taisox LLDPE Film Cast Film Grade Polymer 3224)
323	Material	ABS Impact	Gray		Pantone 427C
324	Material	Polypro	Gray		Pantone 427C
325	Material	Polycarbonate	Black		
326	Material	Polycarbonate	Charcoal		Pantone DS327-5U
327	Material	HDPE	Black		HDPE 5000S or equivalent
328	Material	Red Nylon PA 6/6	Red		Pantone 485
329	Material	HDPE	Black		HDPE 5502-01ST
330	Material	POM Copolymer	Red		Pantone 485 Safety Red
331	Material	Nylon 6/6 (PA66)	Black	33% Glass Filled	ZIG SHENG INDUSTRIAL Co. LTD
332	Material	ABS	Light Blue		Pantone 630 C
333	Material	ABS	Green		Pantone 7481 C
334	Material	ABS	Yellow		Pantone 1235 C
335	Material	Nylon	White	13% Glass Filled	Pantone 11-0601 TPX
336	Material	Polycarbonate	Bright White	Makrolon 6487 PC	Pantone 11-0601TPX
337	Material	Liquid Silicone Rubber (LSR)	Black	Silicone-KEG-2000-60 A/B + UV	Shin Etsu
338	Material	Liquid Silicone Rubber (LSR)	White	Silicone-KEG-2000-60 A/B + UV	Shin Etsu
339	Material	Liquid Silicone Rubber (LSR)	Blue	Silicone-KEG-2000-60 A/B + UV	Shin Etsu
340	Material	Liquid Silicone Rubber (LSR)	Magenta	Silicone-KEG-2000-60 A/B + UV	Shin Etsu
341	Material	Liquid Silicone Rubber (LSR)	Green	Silicone-KEG-2000-60 A/B + UV	Shin Etsu
342	Material	ABS UV Stabilized	Dot Gen 1 Black	RTP 0600 UV, Precolor	RTP

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4.1 Finishing/Material codes continued

Code	Type	Sub Type	Color/Plate	Paint Texture/Other	Manufacturer
343	Material	ABS UV Stabilized	Dot Gen 1 White	RTP 0600 UV, Precolor	RTP
344	Material	TPE (Thermo Plastic Elastomer)	Dot Gen 1 Black	RTP6042-70A UV Natural	RTP
345	Material	TPE (Thermo Plastic Elastomer)	Dot Gen 1 White	RTP6042-70A UV Natural	RTP
346	Material	Polycarbonate + ABS	Black		Bayblend FR3010 HF
347	Material	Polycarbonate + ABS	White		Bayblend FR3010 HF

4.2 Certificates of Conformance (CoCs)

4.2.1 Certificates of conformance for any custom part we buy must be available upon request.

4.2.2 Certificates of conformance must be written in English. Additional languages on the certificate must only be direct translations of the items written in English.

4.2.3 Certificates must be sent in electronic format to the Milestone buyer prior to delivery of parts when a certificate of conformance requirement has been noted on the Milestone drawing.

4.2.4 Certificates of Conformance must contain the following information:

- 4.2.4.1 Supplier Name
- 4.2.4.2 Milestone Part Number
- 4.2.4.3 Milestone Purchase Order Number
- 4.2.4.4 Milestone Purchase Order Line #
- 4.2.4.5 Name of material manufacturer
- 4.2.4.6 Material name
- 4.2.4.7 Material manufacturer's lot number(s)
- 4.2.4.8 Statement of the requirements being certified.

For example:

Milestone Requirement	CoC statement
Material block on Milestone drawing states: "ASTM A 1008 C.R.S. CS Type B 12 Gauge (0.1046" Thickness)"	"The items indicated on this CoC meet the requirements of ASTM A 1008 C.R.S. CS Type B 12 Gauge (0.1046" Thickness)"
Notes on Milestone drawing state: "Material must be UL listed to UL94 HB or greater"	"The items indicated on this CoC are listed with UL for UL94 with an HB rating. See file number E985521"

Note: The UL file number is required when UL listing is specified on the drawing.

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4.2.4.9 The name of the individual in the organization that is certifying the material. An additional written signature of the individual is preferred.

4.2.5 The method of determining conformance and/or data supporting the conformance is recommended on the CoC, but not required.

4.3 Appearance Requirements

4.3.1 Appearance requirements for parts vary depending on the type of finish and may differ from surface to surface on the same part. The appearance criteria for common finishes utilized by Milestone are outlined in the sections below according to finish and separated by surface class.

4.3.2 Surface classification shall be noted on the part drawings when utilized.

4.3.3 Surface classification and appearance requirements apply only to aesthetic properties of finishes, not to general workmanship (e.g. burrs, sharp edges) or to surface finishes of the part prior to finishing as specified in the Milestone Purchasing Specification 8900-000001.

4.3.4 Visual inspections to determine acceptance to appearance requirements shall be conducted in a well lit area, at a viewing distance of 61.0 to 76.2 cm. (24 to 30 in.), at an angle of 45 to 90 degrees (with non-reflecting light), for a period of 5 to 10 seconds.

4.3.5 Milestone Appearance Acceptance Criteria Size Template - Figure 1, is a template designed as a visual guide that can be printed on a clear plastic sheet (transparency) and used for inspection. The template illustrates the maximum size and number of imperfections allowed.

4.4 Paint and E-cote

4.4.1 Coating Thickness

The minimum coating thickness shall be as specified by the manufacturer of the coating. Maximum coating thickness shall be as specified in the following table:

Type	Maximum Coating Thickness
Liquid paint	0.004"
Powder coat paint	0.006"
E-Cote	0.001"

4.4.2 For painted parts, unless otherwise specified on the drawing, the entire surface of the part shall be painted with the exception of threaded fasteners and tapped holes.

4.4.3 For e-coted parts, unless otherwise specified on the drawing, the entire surface including threads of the part may be e-coted. E-coted parts must pass the thread gauge after coating.

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4.4.4 Adhesion

Coating adhesion shall have a classification of 4 or greater using test method B (Cross-cut tape test) of ASTM D3359.

4.4.5 Solvent resistance

Solvent resistance shall have a rating of 3 or better when rubbed with moderate pressure a total of 50 times (back and forth is considered one rub) with a cotton-tipped applicator soaked in Methyl Ethyl Ketone (MEK).

<i>Rating</i>	<i>Rub-off</i>	<i>Softening</i>	<i>Dulling</i>
5	None	None	None
4	Slight	Slight	Slight
3	Moderate	Moderate	Moderate
2	Heavy	Heavy	Heavy
1	Extreme	Extreme	Extreme

4.4.6 Appearance

4.4.6.1 The color, finish, and gloss shall be uniform and shall meet the specifications outlined by the manufacturer of the coating.

4.4.6.2 Class B: Surfaces marked as class B shall have no more than three visible sags, drips, orange peel, blistering, gouges, scratches, nicks, bubbles, voids, foreign particles, or other surface defects within any 15.2 by 15.2 centimeters (6" x 6") area of one surface. There shall be no such defects larger than 0.3 centimeters (0.10") in diameter or .01 centimeters wide (0.02") by 1.3 centimeters long (0.5") for scratches.

4.4.6.3 Class A: Surfaces marked as class A shall have no visible sags, drips, orange peel, blistering, scratches, gouges, nicks, bubbles, voids, foreign particles, or other surface defects.

4.4.6.4 Colors shall match the color samples provided or the product approved during the first article process if color samples are not available.

4.5 Plating

4.5.1 Plating Thickness is below unless otherwise specified on the drawing or the suffix code is 088.

Subtype	Coating Thickness Specification
Normal	0.0002" to 0.0005"
Flash	~0.0001"

4.5.2 Unless otherwise specified on the drawing, the entire surface of the part shall be plated. Plated parts must pass the thread gauge after coating.

4.5.3 Appearance

Plating shall be uniform in appearance.

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4.6 Plastics

4.6.1 Appearance

4.6.1.1 The surface of molded-in texture shall be uniform in appearance.

4.6.1.2 Class A: Surfaces marked as class A shall have no visible blemishes, nicks, splay, scratches, gate marks, gate blush, flash, sink marks or other surface irregularities including short shots, burned material and excessive knit lines.

4.7 Glass

4.7.1 Characteristics

All glass used in assemblies shall be tempered glass and shall meet the requirements of BS6206:1981 Appendix B, UL1678:2003 Section 20 and UL2442:2011 Section 61.3.

4.7.2 Appearance

Painted or textured glass products (e.g. frosted, etched, painted) shall be uniform in appearance.

4.8 Wood or Composite Panels

4.8.1 Characteristics

4.8.1.1 Medium density fiberboard (MDF) used in assemblies shall meet ANSI A208.2 requirements.

4.8.1.2 Particle board used in assemblies shall meet ANSI A208.1 requirements.

4.8.1.3 Composite wood shall meet CARB Phase 2 requirements. A certificate issued by a CARB approved third party certification testing agency shall be provided upon request

4.8.2 Appearance

4.8.2.1 The finished assembly shall be uniform in appearance with respect to grain and finish (stain, paint, etc.) with minimal veneer lamination lines. Special requirements such as number of laminations, which plane the laminations are allowed and color consistency will be specified on the drawing.

4.8.2.2 Class AA, A, B, or C surfaces will be noted on the part drawings or the purchase order.

4.8.2.3 Glue or stain seeping or dripping is not acceptable on surfaces classified as AA, A, B or C.

4.8.2.4 With the exception of knots, natural variation of the surface veneer such as whorls, burls, grain changes, swirls, etc. are allowed unless otherwise noted on part drawings.

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4.8.2.5 Defects are defined as but not limited to, veneer patching, large knots, pitch pockets, scratches, holes, scrapes, dents, dirt or dust spots, fisheyes, gum, sap, pith, checks, splits, worm holes, gouges, discoloration and wood filler marks. Milestone's Appearance Acceptance Criteria Size Template is available as a visual guide for inspection and disposition of appearance imperfections. See Figure 1 at the end of the specification.

4.8.2.6 Stain and paint colors shall match the color samples provided or the product approved during the first article process if color samples are not available.

4.9 Die Castings

4.9.1 Prior to die construction, any questions regarding how the casting is going to be used, i.e. places of high stress, stress concentration points, purely decorative castings, etc. will be the vendor's responsibility to ask the appropriate Milestone design and/or manufacturing engineer prior to building the die.

4.9.2 The supplier is responsible for the performance of all inspection and test requirements specified in referenced standards (Ex ASTM B 85) and Milestone drawings and specifications.

4.9.3 Milestone drawings for die cast components shall indicate location of markings and marking requirements. Unless specified on the drawing, castings shall not be marked.

4.9.4 The specification for the chemical composition of Magnesium (Mg) in A380 shall be 0.30 instead of 0.10 as called out in the Chemical Requirements table of ASTM B85 Standard Specification for Aluminum Alloy Die Castings.

Reference NADCA A-3-1-09: Product Specification Standards for Die Castings/2009 – Aluminum Alloys, Chemical Compositions.

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4.9.5 Internal Soundness

4.9.5.1 The internal soundness of aluminum or magnesium die castings shall be evaluated using the test methods and reference radiographs specified in ASTM E155.

4.9.5.2 The table below is an initial guideline for maximum discontinuity levels during die construction.

Discontinuity Specifications as per ASTM E155		
Discontinuity	Casting Thickness < 1/2"	Casting Thickness ≥ 1/2"
Gas Holes	3	6
Gas Porosity (Round)	3	6
Gas Porosity (Elongated)	3	6
Shrinkage Cavity	3	5
Shrinkage (Sponge)	3	5
Foreign Material (Less dense)	2	3
Foreign Material (More dense)	2	3

4.9.5.3 The specific maximum levels of discontinuity for each part and/or sections of a part will be determined upon completion of testing and validation. These values shall be specified on part drawings.

4.9.5.4 Unless otherwise specified on part drawings, maximum grade levels apply to the entire part.

4.9.5.5 Certificates of Analysis (CoA) for internal soundness of castings shall be available upon request and shall include the evaluation method, grade for each discontinuity type per sample, and digital images of each sample.

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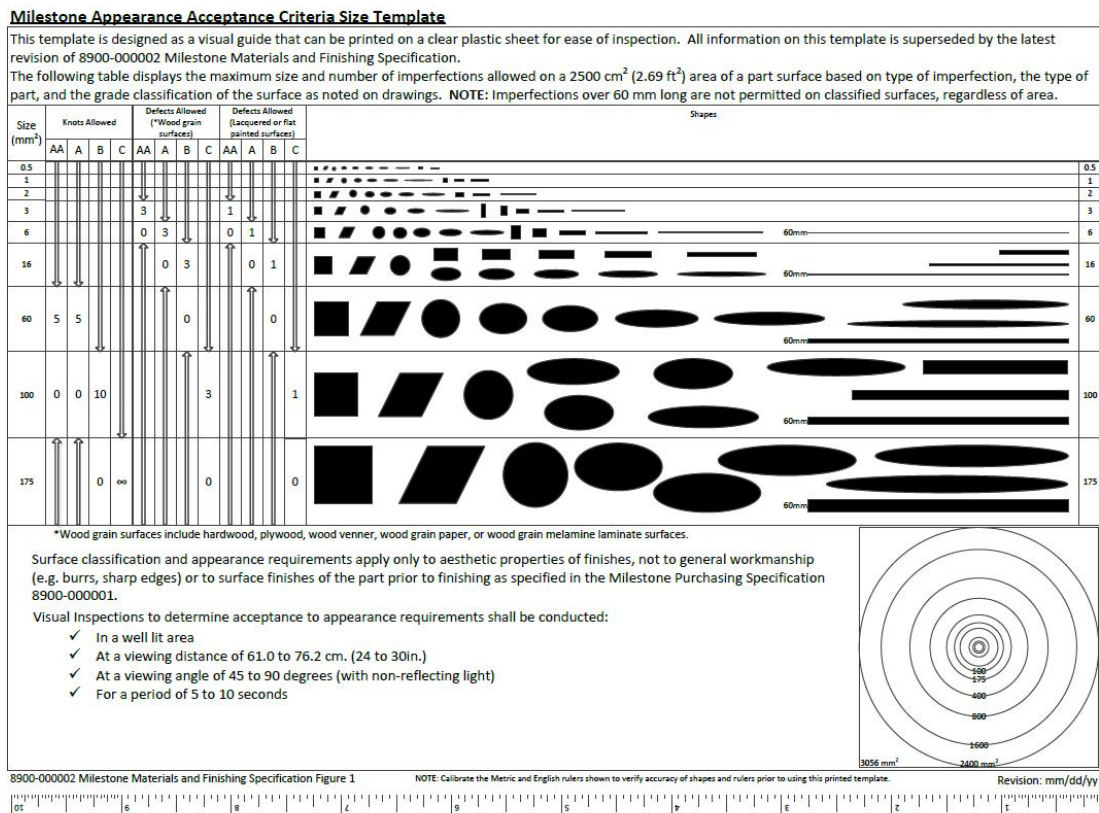
4.10 Cold-Rolled Steel – Hot-Rolled Steel

4.10.1 Any component and/or sub-assembly with a country of origin of People’s Republic of China, Brazil, India, Japan, Russia or the United Kingdom where the Milestone drawing specifies the material to be used as either Cold-Rolled or Hot-Rolled Steel, Hot-Rolled steel must be used.

4.10.2 The supplier must notify Milestone if Hot-Rolled steel is not readily available In the specified thickness.

4.10.3 Any country of origin that is not mentioned above, the manufacturer has The option to use either Cold-Rolled or Hot-Rolled steel.

Figure 1: Milestone Appearance Acceptance Criteria Size Template



NOTE: Figure 1 template shown above is not the actual size. The template must be printed from Visio or pdf version.

NOTE: Calibrate the Metric and English rulers shown on the template to verify accuracy of shapes and rulers prior to using the printed template.