

Launch Services Program – Standard Material List Form

12/10/2009

CubeSat Developer: Rowan University

CubeSat Name: Memsat

Date Provided: 2/13/2017

Purpose: The purpose of this document is to provide a listing of materials that have been selected for use in the CubeSats.

<http://outgassing.nasa.gov/>

%TML (Total Mass Loss)

%CVC M (collected volatile condensable materials)

Table 1 – Metals

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference
1	Al 6061	MIL Spec	Frame	N/D	N/D	Structure	N/D
2	Steel 410	MIL Spec	Antennae	N/D	N/D	External on Structure	N/D
3	5052-H32 Aluminum	MIL Spec	Chassis components	N/D	N/D	External	N/D
4	Lithium, metal casing	MIL Spec	Battery	N/D	N/D	Internally fastened	N/D
5	Copper alloy	MIL Spec	Cabling	N/D	N/D	Various	N/D
6	7075-T6 billet Aluminum	MIL Spec	Chassis components	N/D	N/D	External	N/D
7	nonmagnetic stainless steel	MIL Spec	All fasteners	N/D	N/D	Various	N/D
8	Lithium, metal casing	MIL Spec	Batteries - ICR18650	N/D	N/D	Internal	N/D
9	neodymium	MIL Spec	Permanent Magnet	N/D	N/D	Internal	N/D

Table 2 – Non-Metal

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference
1	PCB FR-4	MIL-P-13949	Circuit Board	0.26	0.00	Circuit Board	GSC21073
2	PCB FR-4	MIL-P-13949	Power Circuit Board	0.26	0.00	Internal	GSC21073

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3	PCB FR-4	MIL-P-13949	Command and Data Circuit Board	0.26	0.00	Internal	GSC21073
4	PCB FR-4	MIL-P-13949	Payload control Circuit Board	0.26	0.00	Internal	GSC21073
5	PCB FR-4	MIL-P-13949	Payload/solar cell Circuit Board	0.26	0.00	External	GSC21073
6	GaInP2, GaAs, Ge	MIL-P-13949	Ultra Triple Junction Solar Cells	N/D	N/D	External	Spectrolab
7	polymeric material	MIL-P-13949	Antenna Deployment chassis	0.45	0.03	External mounting structure	N/A

Table 3 – Surface Coatings

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference
1	Adonization	TYPE III, CLASS 1 (.0005" MIN to .0008" MAX)	Structure Coating	0.67	0.05	Structure	MIL-A-86 25F

Table 4 – Elastomerics

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference

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Table 5 – Adhesives

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference
1	<i>Kapton Tape</i>	<i>Acrylic Adhesive</i>	<i>Tape</i>	<i>0.62</i>	<i>0.12</i>	<i>Internal Harness Bundling</i>	<i>GSFC3590</i>
2	<i>Araldite 2014 Epoxy</i>	<i>Solar Cell Adhesive</i>	<i>Adhesive Fixing</i>	<i>0.97</i>	<i>0.05</i>	<i>Solar Cell</i>	<i>Huntsman</i>
3	<i>Stycast 4952</i>	<i>Thermally Conductive RTV</i>	<i>Thermal management</i>	<i>0.42</i>	<i>0.17</i>	<i>CPU</i>	<i>Emerson & Cuming</i>

Table 6 – Miscellaneous

Item #	Material ID	Specification	Description	% TML	% CVC M	Location	Data Reference
1	Solder	Leaded solder	All subsystems	0.00	0.00	Various	N/D

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Notes:

N/A Non Applicable

N/D No Data Available