
	RM-SPECIFICATION Material : Acetone (C₃H₆O) Item Code: Purpose : Consumables		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	C01	DOCUMENT NO.	42

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/Colorless
2.	Assay Content (by GC)	%	98
3.	Grade	-	ER/ACS
4.	Mol. Wt.	g/mol	58
5.	Impurities	%	Percentage
a.	Water (By KF)	%	0.5
b.	Acidity (as CH ₃ COOH)	%	0.002
c.	Alkalinity (In ml N/1)	%	0.03
d.	Non-Volatile Matter	%	0.0005
e.	Aldehyde	%	0.002
f.	Methanol (CH ₃ OH)	%	0.05
6.	Melting point	°C	-94
7.	Boiling point	°C	56
8.	Supplier	-	Madhava Lab Chemicals
9.	MSDS no.	-	XXX
10.	CAS no.	-	67-64-1
11.	Acceptance Criteria		
a.	Visual Acceptance	-	Colorless Liquid
b.	Assay Content	%	98
c.	Boiling point	°C	56
12.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	NMR/GC/COC	NABL, IIT-HYD/CMET

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	RM-SPECIFICATION Material : Silver nitrate (AgNO₃) Item Code: Purpose : Consumables		DOCUMENT STATUS DRAFT
	MATERIAL CODE:	C13	DOCUMENT NO.

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Crystalline solid/white
2.	Assay Content	%	99
3.	Odor	-	Odorless
4.	Grade	%	AR
5.	Mol. Wt.	g/mole	169.87
6.	Element	%	Percentage
a.	Silver Nitrate	%	99
b.	Substance insoluble water	%	0.003
c.	Sulphates	%	0.0025
d.	Chlorides	%	0.0005
e.	Iron	%	0.0003
f.	Bismuth	%	0.001
7.	Melting point	°C	212
8.	Boiling point	°C	440
9.	Supplier	-	Sneha Scientific
10.	MSDS no.	-	XXXX
11.	CAS no.		7761-88-8
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Crystalline solid
b.	Assay Content	%	98±1
c.	Boiling point	°C	440
13.	Properties to be tested	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/Titration	NABL, IIT-HYD, CMET
b.	Purity Analysis	NMR	IIT-HYD/CMET

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Asbestos Chrysolite Item Code: Purpose : Heat Pellet		DRAFT
MATERIAL CODE:	I05	SPEC NO.	PBD/RM/07

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Fibrous solid / Creamy White
2.	Grade	-	B
3.	Mol. Wt.	amu	520.8
4.	Melting point	°C	NA
5.	Boiling point	°C	850
6.	Surface Area	cm ³	XXX
7.	Powder density	g/cm3	2.523
8.	Specific heat	J/ (g K)	0.84
9.	Fiber length	mm	12.5
10.	Supplier	-	Hyderabad Traders
11.	MSDS no.	-	XXX
12.	CAS no.	-	NA
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Creamy White
b.	Dimensions	-	As per drawing No.
c.	Thermal Conductivity	-	0.08
d.	Moisture content	-	XXX
14.	Properties to be tested	Test Method	Test Agency
a.	Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET
b.	Moisture	Moisture analyser	RES

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[illegible]

	RM-SPECIFICATION Material : Asbestos paper 0.3mm thk Item Code: Purpose : Heat Pellet		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	I01	SPEC NO.	PBD/RM/03

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Fibrous solid / Creamy White
2.	Grade	-	B
3.	Mol. Wt.	amu	520.8
4.	Melting point	°C	NA
5.	Boiling point	°C	850
6.	Surface Area	cm ³	XXX
7.	Powder density	g/cm3	2.523
8.	Specific heat	J/ (g K)	0.84
9.	Fiber length	mm	12.5
10.	Supplier	-	Hyderabad Traders
11.	MSDS no.	-	XXX
12.	CAS no.	-	NA
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Creamy White
b.	Dimensions	-	As per drawing No.
c.	Thermal Conductivity	-	0.08
d.	Moisture content	-	XXX
14.	Properties to be tested	Test Method	Test Agency
a.	Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET
b.	Moisture	Moisture analyser	RES

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	RM-SPECIFICATION Material : Benzene (C₆H₆) Item Code: Purpose : Consumables		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	C03	DOCUMENT NO.	45

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/colorless
2.	Assay Content (By GC)	%	98
3.	Grade	%	AR/ACS
4.	Mol. Wt.	g/mol	78
5.	Element	%	Percentage
a.	Acidity	%	0.001
b.	Alkanity	%	<0.0001
c.	Iron (Fe)	%	<0.00005
d.	Lead	%	0.00002
e.	Sulphur	%	0.0003
6.	Density	g/cm ³	0.877 - 0.878
7.	Melting point	°C	5.5
8.	Boiling point	°C	80.1
9.	MSDS no.	-	XXXX
10.	CAS no.	-	71-43-2
11.	Acceptance Criteria		
a.	Visual Acceptance	-	Clear colorless Liquid
b.	Assay Content (By GC)	%	98
12.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	NMR/GC/COC	NABL, IIT-HYD/CMET


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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Calcium Ingot Item Code: Purpose : Anode		DRAFT
MATERIAL CODE:	C05	DOCUMENT NO.	27

Sno	Description	UOM	Specification
1	Physical State / Color	-	Solid / Silver grey
2	Assay Content	%	98
4	Grade	-	NA
5	Mol. Wt.	g/mol	40
6	Element	%	Percentage
a)	Ca	%	98
b)	Ni	%	0.001
c)	Fe	%	0.008
d)	Mn	%	0.02
e)	Mg	%	0.33
f)	Al	%	0.25
g)	Si	%	0.005
7	Melting point	°C	842
8	Boiling point	°C	1484
9	Particle size distribution	µm	XXX
10	Surface Area	cm ³	XXX
11	Bulk density	g/cm ³	XXX
12	Specific heat	J/g K	0.6
13	Supplier		Shanghai Ca Metal Limited
14	MSDS no.	-	XXX
15	CAS no.	-	7440-70-2
16	Acceptance Criteria		
a)	Visual Acceptance	-	Silver grey
b)	Assay Content	%	98
c)	Melting point	°C	842±2
17	Properties	Test Method	Test Agency
a)	Quantitative & qualitative analysis	ICPMS/XRD/ED-XRF	NABL, IIT-HYD, CMET
b)	Morphology & Particle size distribution	Scanning electron microscope (SEM)	NABL, SRR labs
c)	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET


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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : DI Water Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C01	DOCUMENT NO.	44

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/Colorless
2.	Assay Content	%	-
3.	Odor	-	Odorless
4.	pH value	-	6 – 8(Neutral)
5.	Mol. Wt.	g/mole	18
6.	Sulphates	-	< 1 ppm
7.	Chlorides	-	< 1 ppm
8.	Calcium	-	< 1 ppm
9.	Resistivity	ohm-cm (megohm)	18.2
10.	Boiling point	°C	100
11.	MSDS no.	-	XXX
12.	CAS no.	-	XXX
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Colorless liquid
b.	Boiling point	°C	100
c.	Treating with AgNO ₃	-	No Precipitate
d.	Conductivity	Ohm-cm(megohm)	18.2
14.	Properties to be tested	Test Method	Test Agency
a.	Conductivity	Resistance	RES
b.	Chemical Reactivity	Test with AgNO ₃	RES


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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Iron Powder (Fe) Item Code: Purpose : Heat Pellet		DRAFT
MATERIAL CODE:	C28	DOCUMENT NO.	7


Sno	Description	UOM	Specification
1.	Physical State / Color	-	Powder /Greyish Brown
2.	Assay Content	%	98
3.	Grade		XXX
4.	Mol. Wt.	g/mol	56
5.	Element	%	Percentage
a.	Total iron content	%	98
b.	Metal iron content (Fe)	%	≥ 97
6.	Melting point	°C	1535
7.	Particle size distribution	µm	2 – 30
8.	Bulk density	kg/m ³	2380
9.	Burning Speed (Fe: KClO ₄ = 87:13)	mm/sec	138
10.	Specific heat	J/ (g °C)	0.451
11.	Calorific value (Fe: KClO ₄ = 87:13)	Cal/gm	260
12.	Supplier		Gelon Energy Corp
13.	MSDS no.	-	XXX
14.	CAS no.	-	7439-89-6
15.	Acceptance Criteria		
a.	Visual Acceptance	-	Greyish brown powder
b.	Assay Content	%	97 ± 1
c.	Melting point	°C	1535 ± 2
d.	Burning Speed (Fe: KClO ₄ = 87:13)	mm/sec	138 ±2
e.	Calorific value (Fe: KClO ₄ = 87:13)	Cal/gm	260 ±2
16.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/ED-XRF	NABL, IIT-HYD, CMET
b.	Particle size distribution	PSD & Sieving	RES, NABL, SRR labs
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Iron Di-sulfide (FeS₂) Item Code: Purpose : Cathode		DRAFT
MATERIAL CODE:	C25	DOCUMENT NO.	5

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Powder / Brass yellow
2.	Assay Content	%	97±1
3.	Grade	-	NA
4.	Mol. Wt.	g/mol	120
5.	Element	%	Percentage
a.	Iron (Fe ⁴⁺)	%	44 to 46
b.	Sulphur (S ²⁻)	%	49 to 51
c.	Silica (SiO ₂)	%	0.5 to 1
d.	Lead (Pb)	%	0.001 to 0.002
e.	Copper (Cu)	%	0.05 to 0.07
f.	Cobalt (Co)	%	0.5 to 1
6.	Melting point	°C	1194
7.	Particle size distribution	µm	200 – 350
8.	Bulk density	kg/m ³	5020
9.	Specific heat	J/ (mol °C)	25.418
10.	Supplier		Jainson Lab India
11.	MSDS no.	-	XXX
12.	CAS no.	-	12068-85-8
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Brass yellow power
b.	Assay Content	%	97±1
c.	Melting point	°C	1194±2
14.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/XRD/ED-XRF	NABL, IIT-HYD, CMET
b.	Particle size distribution	Sieving & others	RES, NABL, SRR labs
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET


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	RM-SPECIFICATION Material : Fiber Glass Tape Item Code: Purpose : Insulation		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	I07	SPEC NO.	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/White
2.	Grade	-	018-3 of IS 5352/1974
3.	Weave/Pattern		Plain, Medium
4.	Threads	Per cm	14.4×13.6
5.	Tensile strength along wrap direction	mm/min	3.05
6.	Width	mm	20±1 or 25±1
7.	Thickness	mm	0.18mm/7mil
8.	Thermal Conductivity	W/m-K	1.2
9.	Melting point	°C	1428
10.	Supplier	-	INTEK Tapes
11.	MSDS no.	-	XXX
12.	CAS no.		XXX
13.	Acceptance Criteria		
a.	Visual Acceptance	-	White
b.	Dimensions	-	Drawing no:
c.	Thermal Conductivity	W/m-K	1.2
14.	Properties to be tested	Test Method	Test Agency
a.	Dimensions	Vernier & others	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Flexible Samica Item Code: Purpose : Insulation		DRAFT
MATERIAL CODE:	I06	DOCUMENT NO.	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Flexible solid/Golden yellow
2.	Assay Content	%	NA
3.	Grade	-	NA
4.	Glass content	g/m ²	15 - 25
5.	Bond content	g/m ²	28 - 40
6.	Mica Paper	g/m ²	≥ 116
7.	Break Down Voltage	KV	3.5
8.	Weight Density	g/m ²	230
9.	Thickness	mm	0.12 - 0.14
10.	Tensile Strength	N/cm	≥ 130
11.	Melting point	°C	1350
12.	Supplier	-	COGEBI
13.	MSDS no.	-	XXX
14.	CAS no.	-	12001-26-2
15.	Acceptance Criteria		
a.	Visual Acceptance	-	Golden yellow
b.	Dimensions	-	Drawing no:
c.	Thermal conductivity	W/m-K	0.175±0.025
16.	Properties to be tested	Test Method	Test Agency
a.	Dimensions	Vernier & others	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET
c.	Moisture	Moisture analyser	RES

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Glass Cloth 0.27mm Item Code: Purpose : Insulation		DRAFT
MATERIAL CODE:	I09	SPEC NO.	PBD/RM/16

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid fabric / White
2.	Grade	-	NA
3.	Type of Glass Threads	-	Twisted
4.	Type of Weave	-	Linen (plain)
5.	Wrap Thread per 1cm	Threads	16 to 17 threads
6.	Weft Thread per 1cm	Threads	9 to 11 threads
7.	Weight per Square meter	gm	280±28
8.	Melting point	°C	1135
9.	Boiling point	°C	482
10.	Thermal Conductivity	W/m-K	0.03
11.	Width	mm	XXX
12.	Thickness	mm	0.27±0.027
13.	Supplier	-	Galaxy industries
14.	MSDS no.	-	XXX
15.	CAS no.		XXX
16.	Acceptance Criteria		
a.	Visual Acceptance	-	White
b.	Dimensions	-	Drawing no:
c.	Thermal Conductivity	W/m-K	0.03
d.	Moisture content		
17.	Properties	Test Method	Test Agency
a.	Dimensions	Vernier	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET
c.	Moisture	Moisture analyzer	RES

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Glass to metal seal Item Code: Purpose : Insulation		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	I12	DOCUMENT NO.	

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Blue
2.	Assay Content	%	NA
3.	Grade	-	NA
4.	Coefficient Thermal Expansion (30 ⁰ - 300 ⁰ C)	cm/cm/ ⁰ C	85 to 96 x 10 ⁻⁷
5.	Density (Specific Gravity)	gm/cm ³	2.44 to 2.7
6.	Softening Point (10 ^{7.6} Poise)	⁰ C	640 - 690 ⁰ C
7.	Annealing Point (0 ¹³ Poise)	⁰ C	465 - 480 ⁰ C
8.	Working Point	⁰ C	980 - 1020 ⁰ C
9.	Strain Point [10 ^{14.6} Poise]	⁰ C	405 - 480 ⁰ C
10.	Dielectric Constant	-	6 to 10
11.	Volume Resistivity [Log10 DC Resistivity at 25 ⁰ C]	Ohm cm	8.0 – 16 Ohm cm
12.	Supplier	-	Televac
13.	Melting point	⁰ C	450
14.	MSDS no.	-	XXXX
15.	CAS no.	-	XXXX
16.	Acceptance Criteria		
a.	Visual Acceptance	-	Blue
b.	Insulation Resistance	MΩ	10
17.	Properties to be tested	Test Method	Test Agency
a.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET

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	RM-SPECIFICATION Material : Glass Textolite Item Code: Purpose : Insulation		DOCUMENT STATUS DRAFT
	MATERIAL CODE:	I10	SPEC NO.

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/Greenish yellow
2.	Grade		TPO 1201
3.	Glass Fabric	-	E" class fiber glass reinforcements, glass fabric Epoxy
4.	Resin	-	Resin content 35%
5.	Density	g/cm ³	1.85
6.	Heat resistance	°C	140-180
7.	Volume resistivity	Ohm/m	107
8.	Thermal Conductivity	W/m-K	0.2 to 0.4
9.	Melting point	°C	Varies
10.	Supplier	-	Galaxy industries
11.	MSDS no.	-	XXX
12.	CAS no.	-	XXX
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Solid/Greenish yellow
b.	Dimensions	-	Drawing no:
c.	Thermal Conductivity	W/m-K	XXX
14.	Properties	Test Method	Test Agency
a.	Dimensions	Vernier & others	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET
c.	Moisture	Moisture analyser	RES

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Sulfuric acid (H ₂ SO ₄) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C13	DOCUMENT NO.	47
S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/colorless
2.	Assay Content	%	35-38
3.	Grade	-	AR
4.	Mol. Wt.	g/mol	98.07
5.	Element	%	Percentage
a.	H ₂ SO ₄	%	98
b.	Chlorides	%	0.00002
c.	Nitrates (NO3)	%	0.00002
d.	Ammonium Salts	%	0.0002
e.	Heavy Metals (Pb)	%	0.0001
6.	Specific gravity	-	XXX
7.	Melting point	°C	10.31
8.	Boiling point	°C	337
9.	Supplier		Sneha Scientific
10.	MSDS no.	-	XXX
11.	CAS no.	-	7664-93-9
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Clear colorless liquid
b.	Assay Content	%	35-38
13.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	NMR/COC	NABL/IIT-HYD/CMET
PREPARED BY:		REVIEWED & APPROVED BY:	
RENEWABLE ENERGY SYSTEMS LIMITED			

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Ortho Phosphoric Acid (H_3PO_4) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C24	DOCUMENT NO.	43

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/Colorless
2.	Assay Content	%	88
3.	Odor	-	Odorless
4.	Grade	-	ExcelaR
5.	Molecular Weight	g/mol	98
6.	Element	%	Percentage
a.	Purity	%	85
b.	As	%	0.0001
c.	Ca	%	0.004
d.	SiO ₂	%	0.002
7.	Melting point	°C	21
8.	Boiling point	°C	158
9.	Supplier	-	Sneha Scientific
10.	MSDS no.	-	XXX
11.	CAS no.		7664-38-2
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Colorless Liquid
b.	Assay Content	%	88 ±2
13.	Properties to be tested	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/Titration	NABL, IIT-HYD, CMET
b.	Purity Analysis	NMR	IIT-HYD/CMET


PREPARED BY:		REVIEWED & APPROVED BY:
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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Hydrochloric Acid (HCl) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C31	DOCUMENT NO.	11

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/Hazen 10
2.	Assay Content	%	35-38
3.	Grade	-	NA
4.	Mol. Wt.	g/mol	36.46
5.	Element	%	Percentage
a.	Assay	%	35-38
b.	Residue on evaporation	%	0.01
c.	Cl	%	0.0005
d.	Fe	%	0.0001
e.	Pb	%	0.0005
6.	Specific gravity		1.18
7.	Melting point	°C	-114
8.	Boiling point	°C	-85.05
9.	Supplier	-	Sneha Scientific
10.	MSDS no.	-	XXX
11.	CAS no.	-	7647-01-0
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Hazen 10 Liquid
b.	Assay Content	%	35-38
13.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	COC	-

PREPARED BY:		REVIEWED & APPROVED BY:
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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Nitric Acid (HNO ₃) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C11	DOCUMENT NO.	46

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/colorless
2.	Assay Content	%	68
3.	Grade	-	AR
4.	Mol. Wt.	g/mol	63.01
5.	Element	%	Percentage
a.	Nitric Acid (HNO ₃)	%	68
b.	Sulphates (SO ₄)	%	0.0002
c.	Chlorides (Cl) max.	%	0.00005
d.	content of phosphates (PO ₄)	%	0.0001
e.	Iron (Fe)	%	0.00002
f.	Heavy Metals (Pb)	%	0.00002
6.	Specific gravity	g/ml	1.42
7.	Melting point	°C	-42
8.	Boiling point	°C	83
9.	Supplier	-	Sneha Scientific
10.	MSDS no.	-	XXX
11.	CAS no.	-	7697-37-2
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Clear colorless liquid
b.	Assay Content	%	68 ± 2
c.	Boiling point	°C	83 ± 2
13.	Properties	Test Method	Test Agency
a.	Purity Analysis	NMR/COC	NABL, IIT-HYD/CMET

PREPARED BY:		REVIEWED & APPROVED BY:
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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Isopropyl Alcohol (C_3H_8O) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C07	DOCUMENT NO.	48

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/Colorless
2.	Assay Content (By G.C)	%	99
3.	Grade	-	SQ
4.	Mol. Wt.	g/mol	60.1
5.	Impurities	%	Percentage
6.	Aldehydes & Ketones	%	0.05
7.	Non- Volatile matter	%	0.01
8.	Water	%	0.01
9.	Acidity (In ml N/1%)	%	0.05
10.	Density	g/cm ³	0.79
11.	Melting point	°C	-89
12.	Boiling Point	°C	81
13.	Supplier	-	Sneha Scientific
14.	MSDS no.	-	XXX
15.	CAS no.	-	67-63-0
16.	Acceptance Criteria		
17.	Visual Acceptance	-	Colorless Liquid
18.	Assay Content	%	99 ± 2
19.	Melting point	°C	-89
20.	Properties	Test Method	Test Agency
21.	Purity Analysis	NMR	IIT-HYD/CMET
22.	Boiling Point	Distillation	RES

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	RM-SPECIFICATION Material : Lid Item Code: Purpose : Container		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	M09	DOCUMENT NO.	22

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/ Greyish White
2.	Assay Content	%	99
3.	Grade	%	SS-304
4.	Element	%	Percentage
a.	Iron (Fe)	%	66.5
b.	Chromium (Cr)	%	18 - 20
c.	Nickel (Ni)	%	8.0 – 10.5
d.	Manganese (Mn)	%	2.00
e.	Silicon (Si)	%	1.00
f.	Sulphur (S)	%	0.03
g.	Phosphorus (P)	%	0.045
h.	Carbon (C)	%	0.08
5.	Ultimate Tensile Strength (kg/mm ²)	MPa	515
6.	Yield Point(kg/mm ²)	MPa	205
7.	Elongation on 50mm GL	%	40
8.	Hardness RB		88
9.	Specific heat	J/kg K	490
10.	Thermal Conductivity	W/m-K	16.2
11.	Thickness	mm	1.0±0.09
12.	Melting point	°C	1400 - 1450
13.	MSDS no.	-	XXX
14.	CAS no.	-	65997-19-5
15.	Acceptance Criteria		
a.	Visual Acceptance	-	Solid Greyish White
b.	Assay Content	%	99 ± 2
c.	Thermal Conductivity	W/m-K	16.2 ± 2
d.	Dimensions	-	Drawing No.
e.	Melting point	°C	1400 - 1450
16.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/ED-XRF	NABL, IIT-HYD, CMET
b.	Morphology & Particle size distribution	Scanning electron microscope (SEM)	NABL, SRR labs
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET
d.	Salt Corrosion Resistance	Salt Corrosion Resistance	NABL

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Lithium sulfide (Li₂S) Item Code: Purpose : Cathode		DOCUMENT STATUS	
			REV	00
MATERIAL CODE:	C29	DOCUMENT NO.	6	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/ Yellow white
2.	Assay Content	%	98±1
3.	Grade	-	Metals Basis
4.	Mol. Wt.	g/mol	45.5
5.	Element	%	Percentages
a.	Lithium (Li ⁺)	%	30.6
b.	Sulfide (S ²⁻)	%	69.4
6.	Melting point	°C	938
7.	Particle size distribution	µm	200-350
8.	Bulk density	kg/m ³	1820
9.	Supplier	-	Jainson Lab India
10.	MSDS no.	-	XXXX
11.	CAS no.	-	12136-58-2
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Yellow white powder
b.	Assay Content	%	98 ± 1
c.	Melting point	°C	938 ± 2
13.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/XRD/ED-XRF	NABL, IIT-HYD, CMET
b.	Particle size distribution	Sewing & others	RES, NABL, SRR labs
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD/CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Lithium Chloride (LiCl) Item Code: Purpose : Electrolyte		DOCUMENT STATUS	
			REV	00
MATERIAL CODE:	C09	DOCUMENT NO.	1	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid Powder / White
2.	Assay Content	%	98
3.	Grade	-	AR
4.	Mol. Wt.	g/mol	42.39
5.	Element	%	Percentage
a.	Lithium (Li ⁺)	%	16.36
b.	Cl (Cl ⁻)	%	83.64
c.	Sulphates (SO ₄ ²⁻)	%	0.05
d.	Barium (Ba ²⁺)	%	0.002
e.	Iron (Fe)	%	0.002
f.	Calcium (Ca)	%	0.01
6.	Melting point	°C	605
7.	Boiling point	°C	1382
8.	Particle size distribution	µm	50 - 150
9.	Bulk density	kg/m ³	530
10.	Specific heat	J/ (kg K)	4243
11.	Supplier	-	Azaricta research labs
12.	MSDS no.	-	XXXX
13.	CAS no.	-	7447-41-8
14.	Acceptance Criteria		
a.	Assay Content (w.r.t Chloride)	%	98±1
b.	Visual Acceptance	-	White Solid Powder
c.	Melting Point	°C	605±2
d.	Eutectic Mixture (LiCl: KCl = 44:56) M. P	°C	352
15.	Properties to be tested	Test Method	Test Agency
a.	Assay Content (w.r.t Chloride)	Argentometric titration	RES/SRR
b.	Quantitative/Qualitative analysis	ICPMS	NABL, IIT-HYD, CMET
c.	Particle size distribution	Sieving & others	RES
d.	Specific heat, Melting point	DSC/TGA	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED


	RM-SPECIFICATION Material : Li-Si Alloy Item Code: Purpose : Anode		DOCUMENT STATUS	
			REV	00
MATERIAL CODE:	C27	DOCUMENT NO.	4	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid Powder / Grey
2.	Assay Content	%	98
3.	Grade	-	Industrial Grade
4.	Mol. Wt.	g/mol	51
5.	Element	%	Percentage
a)	Lithium (Li)	%	44 ± 2
b)	Silicon (Si)	%	56 ± 2
c)	Sodium (Na)	%	≤0.18
d)	Aluminum (Al)	%	≤0.04
e)	Calcium (Ca)	%	≤0.06
f)	Nickel (Ni)	%	≤0.20
6.	Melting point	°C	700
7.	Particle size distribution	µm	100
8.	Bulk density	g/cm ³	XXX
9.	Specific heat	J/ (kg K)	0.92885
10.	Supplier	-	MBC Solar
11.	MSDS no.	-	XXX
12.	CAS no.	-	NA
13.	Acceptance Criteria		
a)	Visual Acceptance	-	Grey Powder
b)	Assay Content	%	98 ± 1
c)	Melting Point	°C	700 ± 2
14.	Properties	Test Method	Test Agency
a)	Quantitative & qualitative analysis	ICPMS/ED-XRF	NABL, IIT-HYD, CMET
b)	Particle size distribution	Sieving & Others	RES, NABL
c)	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED


	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Magnesium Oxide (MgO) Item Code: Purpose : Electrolyte		DRAFT
MATERIAL CODE:	C32	DOCUMENT NO.	3
Sno	Description	UOM	Specification
1	Physical State / Color	-	Solid Powder / White
2	Assay Content (w.r.t MgO)	%	97
4	Grade	-	Extra Pure
5	Mol. Wt.	g/mol	40.03
6	Element & Its Percentages.	%	Percentage
a.	SO ₃	%	≤ 1
b.	Acid Insoluble Matter	%	≤ 0.1
c.	Calcium (Ca)	%	≤ 1.1
d.	Heavy metal (Pb)	%	≤ 0.002
e.	Iron (Fe)	%	≤ 0.05
f.	Residual Solvents	%	Complies
7	Melting point	°C	2852
8	Boiling point	°C	3600
9	Particle size distribution	µm	50 - 90
10	Surface area	m/g	133
11	Bulk density	kg/m ³	550
12	Specific heat	J/ (kg K)	0.928
13	Supplier	-	Elegance Scientific
14	MSDS no.	-	XXX
15	CAS no.	-	1309-48-4
16	Acceptance Criteria		
a.	Assay Content	%	97±1
b.	Visual Acceptance	-	White Solid Powder
c.	Specific Heat	J/ (kg K)	0.928
d.	Melting point	°C	2852±2
17	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/XRD	NABL, IIT-HYD, CMET
b.	Particle size distribution	Sieving & others	RES
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET
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	RM-SPECIFICATION Material : Methanol (CH₃OH) Item Code: Purpose : Consumables		DOCUMENT STATUS DRAFT
	MATERIAL CODE:	C21	DOCUMENT NO.

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/colorless
2.	Assay Content (By GC)	%	98
3.	Grade	%	AR/ACS
4.	Mol. Wt.	g/mol	32.04
5.	Impurities	%	Percentage
a.	Non- Volatile matter	%	0.0005
b.	Acidity	%	0.001
c.	Alkalinity	%	0.0002
d.	Ethanol	%	0.1
e.	Water (By KF)	%	0.1
6.	Melting point	°C	-97.6
7.	Boiling point	°C	64.7
8.	Freezing point	°C	5
9.	Supplier	-	Elegance Scientific
10.	MSDS no.	-	XXX
11.	CAS no.	-	67-56-1
12.	Acceptance Criteria		
a.	Visual Acceptance	-	Liquid/colorless
b.	Assay Content (By GC)	%	98 ± 2
13.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	NMR/GC/COC	NABL/IIT-HYD/CMET


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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Mica Item Code: Purpose : Insulation		DRAFT
MATERIAL CODE:	I12	DOCUMENT NO.	17

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid/Brown
2.	Assay Content	%	XXX
3.	Grade	-	XXX
4.	Volume Resistivity	Ohm/cm	10 ¹⁴
5.	Electric Strength	V/m	2 KV for 10 secs
6.	Punctures and Through inclusion of foreign minerals	-	Impermissible
7.	Dielectric constant	-	6%
8.	Dielectric strength	V/m	2 KV for 10 sec sat random on mica sheet
9.	Width	mm	20±1 or 25±1 mm
10.	Thickness	mm	0.90 – 1.10
11.	Specific heat	J/ (kg K)	880
12.	Thermal Conductivity	W/m-K	0.3
13.	Supplier	-	Indo union mica
14.	Melting point	°C	1800
15.	MSDS no.	-	XXX
16.	CAS no.	-	12001-26-2
17.	Acceptance Criteria		
a.	Visual Acceptance	-	Brown
b.	Assay Content	%	XXX
c.	Dimensions	-	Drawing no:
d.	Thermal Conductivity	W/m-K	0.3
18.	Properties to be tested	Test Method	Test Agency
a.	Dimensions	Vernier & others	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET
c.	Moisture	Moisture analyser	RES


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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Nickel Ferni Wire Item Code: Purpose : Current Collector		DRAFT
MATERIAL CODE:	M03	DOCUMENT NO.	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/ Silvery White
2.	Assay Content	%	50(Ni) & 50(Fe)
3.	Grade	%	NA
4.	Mol. Wt.	g/mole	NA
5.	Element	%	Percentage
a.	Nickel	%	≥ 49
b.	iron (Fe)	%	≥ 49
c.	Manganese (Mn)	%	< 1
d.	Silicon (Si)	%	< 0.5
e.	Sulphur (S)	%	< 0.03
f.	Carbon (C)	%	< 0.10
6.	Melting point	°C	1450 – 1455
7.	Thermal Expansion	10 ⁻⁶ /°C	9.6 – 10.4
8.	Supplier	-	JLC electromet
9.	MSDS no.	-	XXX
10.	CAS no.	-	XXX
11.	Acceptance Criteria		
a.	Visual Acceptance	-	Silvery White Solid
b.	Assay Content	%	48(Ni) & 52(Fe) ± 1
c.	Dimensions	-	Drawing no:
d.	Thermal Conductivity	W/m-K	XXX
12.	Properties	Test Method	Test Agency
a.	Quantitative analysis	ICPMS/AAS	NABL, IIT-HYD, CMET
b.	Dimensions	Vernier & others	RES
c.	Mechanical Properties	Tensile strength	CITD
d.	Specific heat & Thermal Conductivity	COC	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Nickel Foil Item Code: Purpose : Current Collector		DOCUMENT STATUS DRAFT
	MATERIAL CODE:	M03	DOCUMENT NO.

Sno	Description	UOM	Specification
1.	Physical State / Color	-	solid/ silvery White
2.	Assay Content	%	97
3.	Grade	%	XXX
4.	Mol. Wt.	g/mole	58.69
5.	Element	%	Percentage
a.	Nickel	%	≥ 99.5
b.	Manganese (Mn)	%	≤ 0.30
c.	iron (Fe)	%	≤ 0.2
d.	Copper (Cu)	%	≤ 0.05
e.	Sulphur (S)	%	≤ 0.02
f.	Carbon (C)	%	≤ 0.1
6.	Thickness	mm	0.14, 0.30,0.12,0.2 (±0.005)
7.	Melting point	°C	1455
8.	Supplier		JLC Electromet
9.	MSDS no.	-	XXXX
10.	CAS no.	-	12001-26-2
11.	Acceptance Criteria		
a.	Visual Acceptance	-	Silvery White Solid
b.	Assay Content	%	96 ± 1
c.	Dimensions	-	Drawing no:
d.	Thermal Conductivity	W/m-K	90-100
12.	Properties	Test Method	Test Agency
a.	Quantitative analysis	ICPMS/AAS	NABL, IIT-HYD, CMET
b.	Dimensions	Vernier & others	RES
c.	Mechanical Properties	Tensile strength	CITD
d.	Specific heat & Thermal Conductivity	COC	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Lead Sulphate Item Code: Purpose : Cathode		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	C08	DOCUMENT NO.	28

	Description	UOM	Specification
1	Physical State / Color	-	Powder / white
2	Assay Content	%	98
4	Grade		AR
5	Mol. Wt.	g/mol	303.2
6	Element	%	Percentage
a)	Lead Sulphate	%	98
b)	Water soluble substance	%	0.05
c)	Substance soluble in. Solution of sodium acetate	%	0.05
d)	Iron (Fe)	%	0.002
e)	Chloride (Cl)	%	0.002
7	Melting point	°C	1087
8	Boiling point	°C	XXX
9	Particle size distribution	µm	50-150 mesh
10	Bulk density	g/cm3	XXX
11	Supplier		Elegance Scientific
12	MSDS no.	-	XXX
13	CAS no.	-	7446-14-2
14	Acceptance Criteria		
a)	Visual Acceptance	-	White
b)	Assay Content	%	97±1
c)	Melting point	°C	1087
15	Properties	Test Method	Test Agency
a)	Quantitative & qualitative analysis	ICPMS/XRD/ED-XRF	NABL, IIT-HYD, CMET
b)	Morphology & Particle size distribution	Scanning electron microscope (SEM)	NABL, SRR labs
c)	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Potassium Chloride (KCl) Item Code: Purpose : Electrolyte		DRAFT
MATERIAL CODE:	C12	DOCUMENT NO.	2

Sno	Description	UOM	Specification
1	Physical State / Color	-	Solid Powder / White
2	Assay Content	%	97
4	Grade	-	ExcelR
5	Mol. Wt.	g/mol	74.55
6	Element	%	Percentage
a.	Potassium(K)	%	51 ± 0.1
b.	Chloride (Cl)	%	46 ± 0.2
c.	Sulphates	%	≤ 0.001
d.	Phosphates	PPM	≤ 5
e.	Iron	%	0.004
f.	Ca	%	≤ 0.001
7	Melting point	°C	770
8	Boiling point	°C	1420
9	Particle size distribution	µm	50 - 90
10	Specific heat	J/ (kg K)	693.7
11	Supplier		Madhava Lab chemicals
12	MSDS no.	-	XXX
13	CAS no.	-	7447-40-7
14	Acceptance Criteria		
a.	Assay Content (w.r.t Chloride)	%	97
b.	Visual Acceptance	-	White Solid Powder
c.	Melting Point	°C	770
d.	Boiling Point	°C	1420
e.	Eutectic Mixture (LiCl: KCl = 44:56) M.P	°C	352
15	Properties to be tested	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/Titration	NABL, IIT-HYD, CMET
b.	Particle size distribution	PSD	NABL, SRR labs
c.	Mechanical Properties (Pellet Strength)	NA	NA
d.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Potassium Perchlorate (KClO₄) Item Code: Purpose : Heat Pellet		DRAFT
MATERIAL CODE:	C26	DOCUMENT NO.	10

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid Powder / White
2.	Assay Content	%	98
3.	Grade	-	XXX
4.	Mol. Wt.	g/mol	138.55
5.	Element	%	Percentage
a.	Potassium (K ⁺)	%	27.8
b.	Chlorine (Cl ⁺⁷)	%	24.4
c.	Oxygen (O ²⁻)	%	46.19
6.	Melting point	°C	400
7.	Particle size distribution	µm	30 - 140
8.	Bulk density	kg/m ³	1150
9.	Burning Speed (Fe: KClO ₄ = 87:13)	mm/sec	138
10.	Calorific Value (Fe: KClO ₄ = 87:13)	cal/g	260
11.	Supplier	-	Nano Research Lab
12.	MSDS no.	-	XXXX
13.	CAS no.	-	7778-74-7
14.	Acceptance Criteria		
a.	Visual Acceptance	-	Solid White Powder
b.	Assay Content	%	98 ± 1
c.	Melting point	°C	400 ± 2
d.	Burning Speed (Fe: KClO ₄ = 87:13)	mm/sec	138±2
e.	Calorific Value (Fe: KClO ₄ = 87:13)	cal/g	260±2
15.	Properties to be tested	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/XRD	NABL, IIT-HYD, CMET
b.	Particle size distribution	Sieving & Others	RES, NABL, SRR labs
c.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION Material : Silicon Bonded Mica Item Code: Purpose : Insulation		DOCUMENT STATUS
			DRAFT
MATERIAL CODE:	I13	SPEC NO.	PBD/RM/LI/11

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/Brown
2.	Assay Content	%	NA
3.	Grade	-	NA
4.	Mol. Wt.	gm/mole	NA
5.	Element	%	Percentage
a.	Mica content	%	>90
b.	Bonded Content	%	<10
6.	Width	mm	20±1 or 25±1 mm
7.	Thickness	mm	0.90 – 1.10
8.	Thermal Conductivity	W/m-K	0.3
9.	Heat Resistance	°C	500
10.	Melting point	°C	1250 – 1800
11.	Supplier	-	Indo union Mica
12.	MSDS no.	-	XXX
13.	CAS no.	-	XXX
14.	Acceptance Criteria		
a.	Visual Acceptance	-	Solid Brown color
b.	Assay Content	%	>90
c.	Dimensions	-	Drawing no:
d.	Thermal Conductivity	W/m-K	0.3 ± 0.1
15.	Properties	Test Method	Test Agency
a.	Dimensions	Vernier & others	RES
b.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET
c.	Moisture	Moisture analyser	RES

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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Squib Ignitor Item Code: Purpose : Electricals		DRAFT
MATERIAL CODE:	E01	DOCUMENT NO.	

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid
2.	Grade		
3.	Igniter Resistance	Ohm	.
4.	Head mass test	grams	Range of powder mass:0.03gms to 0.12gms
5.	Thermal Cycling		Duration:6hrs, Temp:- (60+5) deg c for each cycle this test is carried for 3 cycles
6.	Vibration	Hz	Frequency 20-25HZ
7.	Powder Piles	Ampere	Current 0.49-0.51A
8.	All fire current	Ampere	2000mA for 10ms
9.	No fire current	Ampere	500mA for 300 sec
10.	Surface texture		
11.	Thermal conductivity		
12.	MSDS no.	-	
13.	CAS no.		121-82-4
14.	Acceptance Criteria		
a.	Visual Acceptance	-	
b.	Dimensions	-	Drawing no:
c.	Thermal conductivity	W/m-K	
d.	Electrical properties	Ohm	0.75-1.20
15.	Properties	Test Method	Test Agency
a.	Quantitative analysis	ICPMS	IIT-HYD/CMET
b.	Dimensions	Vernier & others	RES
c.	Electrical properties	Ohmmeter & others	RES
d.	Thermal Conductivity	COC	NABL, IIT-HYD, CMET


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RENEWABLE ENERGY SYSTEMS LIMITED

	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Squib Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C01	DOCUMENT NO.	11


MILAN			
S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid/Red
2.	Igniter Resistance	Ohms	0.75 – 1.20
3.	Head mass	g	0.03 – 0.12
4.	No of Head	No's	2 (Double head Parallel)
5.	Vibration	Hz	20 - 25
6.	Powder Piles	A	0.49 – 0.51
7.	All Fire Current (AFC)	mA	2000mA for 10s
8.	No Fire Current (NFC)	mA	500mA for 300 sec
KONKUR			
S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid/Red
2.	Igniter Resistance	Ohms	2.00 to 4.00
3.	Head mass	g	0.03 – 0.07
4.	No of Head	No's	1 (Single Head)
5.	Vibration	Hz	XXX
6.	Powder Piles	A	0.49 – 0.51
7.	All Fire Current (AFC)	mA	500mA for 10sec
8.	No Fire Current (NFC)	mA	74 – 76mA for 300sec

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Trichloro Ethylene (C ₂ HCl ₃) Item Code: Purpose : Consumables		DRAFT
MATERIAL CODE:	C18	DOCUMENT NO.	49

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Liquid/colorless
2.	Assay Content (By GC)	%	99
3.	Grade	-	ExcelaR
4.	Mol. Wt.	g/mol	131
5.	Element	%	Percentage
a.	Chloride (Cl)	%	<0.0005
b.	Free Chlorine (Cl)	%	<0.00003
c.	Copper (Cu)	%	<0.0001
d.	Iron	%	<0.00001
e.	Non – Volatile matter	%	0.0003
6.	Melting point	°C	-84
7.	Boiling point	°C	87.2
8.	Supplier	-	Sneha Scientific
9.	MSDS no.	-	XXX
10.	CAS no.	-	79-01-6
11.	Acceptance Criteria		
a.	Visual Acceptance	-	Colorless Liquid
b.	Assay Content (By GC)	%	99±2
c.	Boiling point	°C	87.2±2
12.	Properties to be tested	Test Method	Test Agency
a.	Purity Analysis	NMR /GC	NABL, IIT-HYD, CMET


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	RM-SPECIFICATION Material : Zirconium (Zr) Item Code: Purpose : Heat Pellet		DOCUMENT STATUS	
			REV	00
MATERIAL CODE:	C15	DOCUMENT NO.	8	

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid Powder / Greyish white
2.	Assay Content	%	97
3.	Grade	-	XXX
4.	Mol. Wt.	g/mole	91.22
5.	Element	%	Percentage
a.	active Zirconium (Zr)	%	97.00
b.	Hafnium (Hf)	%	2.00
c.	Titanium (Ti)	%	0.6
d.	Iron (Fe)	%	0.4
6.	Melting point	°C	1855
7.	Particle size distribution	µm	4-40 microns
8.	Burning Speed (Zr : BaCrO ₄ = 45 : 55)	cm/sec	50
9.	Calorific Value (BaCrO ₄ : Zr = 76 : 24)	cal/gm	430
10.	Supplier	-	China Make (MBC Solar)
11.	MSDS no.	-	XXXX
12.	CAS no.	-	7440-67-7
13.	Acceptance Criteria		
a.	Assay Content	%	96±1
b.	Visual Acceptance	-	Greyish white
c.	Burning Speed	cm/sec	>45
d.	Calorific Value (BaCrO ₄ : Zr = 76:24)	cal/gm	430±2
14.	Properties to be tested	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/Titration	NABL, IIT-HYD, CMET
b.	Particle size distribution	PSD	NABL, SRR labs
c.	Burning speed & Calorific value	Bomb Calorimeter	RES, NABL
d.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Barium Chromate (BaCrO₄) Item Code: Purpose : Heat Pellet		DRAFT
MATERIAL CODE:	C02	DOCUMENT NO.	9

S.no	Description	UOM	Specification
1.	Physical State / Color	-	Solid Powder / Yellow
2.	Assay Content	%	98
3.	Grade	-	NA
4.	Mol. Wt.	g/mol	253
5.	Element	%	Percentage
a.	BaCrO ₄	%	98
b.	Soluble in water	%	0.05
c.	Soluble in HCl	%	0.03
d.	Carbonates (CO ₃ ⁻)	%	0.03
e.	Chlorides (Cl)	%	0.0001
6.	Melting point	°C	1380
7.	Particle size distribution	µm	50 - 200
8.	Bulk density	g/cm ³	2.523
9.	Calorific Value (BaCrO ₄ : Zr = 76:24)	Cal/g	430
10.	Supplier	-	Voxco Pigments
11.	MSDS no.	-	XXX
12.	CAS no.	-	10294-40-3
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Yellow Powder
b.	Assay Content	%	97 ± 1
c.	Burning Speed	mm/sec	-
d.	Calorific Value (BaCrO ₄ : Zr = 76:24)	Cal/g	430
14.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS	NABL, IIT-HYD, CMET
b.	Particle size distribution	PSD	RES, NABL, SRR labs
c.	Calorific Value	Bomb Calorimeter	RES
d.	Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Liquid Paraffin Oil Item Code: Purpose : Consumable		DRAFT
MATERIAL CODE:	I13	DOCUMENT NO.	50

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Oily Liquid/Colorless
2.	Assay Content	%	-
3.	Grade	-	LR
4.	Mol. Wt.	g/mole	338.69
5.	Melting point	°C	-24
6.	Density at 20 °C	g/ml	0.830 – 0.860
7.	Supplier	-	Elegance Scientifics
8.	MSDS no.	-	XXXX
9.	CAS no.	-	8012-95-1
10.	Acceptance Criteria		
a.	Visual Acceptance	-	Clear oily liquid
b.	Assay Content	%	
11.	Properties	Test Method	Test Agency
a.	Purity analysis	NMR	NABL, IIT-HYD/CMET

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	RM-SPECIFICATION		DOCUMENT STATUS
	Material : Stainless Steel container Item Code: Purpose : Container/Lid/Current collector		DRAFT
MATERIAL CODE:	M09	DOCUMENT NO.	11

Sno	Description	UOM	Specification
1.	Physical State / Color	-	Solid/ Silvery White
2.	Assay Content	%	98
3.	Grade	-	SS-304
4.	Element	%	Percentage
a.	Iron (Fe)	%	66.5
b.	Chromium (Cr)	%	18 - 20
c.	Nickel (Ni)	%	8.0 – 10.5
d.	Manganese (Mn)	%	2.00
e.	Silicon (Si)	%	0.75
f.	Nitrogen (N)	%	0.10
g.	Phosphorus (P)	%	0.045
h.	Carbon (C)	%	0.03
5.	Ultimate Tensile Strength	MPa	505
6.	Yield Point	MPa	205
7.	Specific heat	J/kg K	490
8.	Thermal Conductivity	W/m-K	16.2
9.	Melting point	°C	1400 - 1450
10.	Supplier	-	Nivee metal products
11.	MSDS no.	-	XXX
12.	CAS no.	-	65997-19-5
13.	Acceptance Criteria		
a.	Visual Acceptance	-	Silvery White
b.	Assay Content	%	98 ± 1
c.	Thermal Conductivity	W/m-K	16.2 ± 2
d.	Melting point	°C	1400 - 1450
14.	Properties	Test Method	Test Agency
a.	Quantitative & qualitative analysis	ICPMS/ED-XRF	NABL, IIT-HYD, CMET
b.	Specific heat & Thermal Conductivity	DSC/TGA	NABL, IIT-HYD, CMET
c.	Tensile strength	-	CITD
d.	Yield point	COC	-
e.	Salt Corrosion Resistance	Salt Corrosion Resistance	NABL

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