

General Technical Particulars

Type of Cell	Units	YAP 5
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P16P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	16
Rated	AH	16
End of Life	AH	16
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1 + 0.009(t - 27)\}$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1 + 0.009(t - 27)\}$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	2.30
15 minutes	1.65	5.25
30 minutes	1.69	7.30
45 minutes	1.71	8.96
1 hour	1.75	9.60
2 hour	1.78	11.81
3 hour	1.80	12.98
4 hour	1.81	13.79
5 hour	1.82	14.40
6 hour	1.83	14.88
7 hour	1.83	15.22
8 hour	1.84	15.54
9 hour	1.84	15.81
10 Hour	1.85	16.00
Maximum momentary current for 1 min till 1.60 e.c.v		35.84
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	6.869
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	3.2
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	2.24
ii) Finishing current	A	1.12
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	10
ii) Maximum	mA	30
Equalising charge		
a) Voltage	V	2.3
b) Current	A	0.8
c) Duration	Hrs.	6
d) Interval between successive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	114*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	123
Quantity of Electrolyte per Cell	litres	1.7
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	2.7
with acid	kg	4.7
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		2
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		3
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel/Teak wood
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	0.512
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 7
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P24P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	24
Rated	AH	24
End of Life	AH	24
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}(1 + 0.009(t - 27))$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}(1 + 0.009(t - 27))$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	3.46
15 minutes	1.65	7.87
30 minutes	1.69	10.94
45 minutes	1.71	13.44
1 hour	1.75	14.40
2 hour	1.78	17.71
3 hour	1.80	19.46
4 hour	1.81	20.69
5 hour	1.82	21.60
6 hour	1.83	22.32
7 hour	1.83	22.82
8 hour	1.84	23.30
9 hour	1.84	23.71
10 Hour	1.85	24.00
Maximum momentary current for 1 min till 1.60 e.c.v		53.76
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	4.579
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	4.8
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	3.36
ii) Finishing current	A	1.68
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	15
ii) Maximum	mA	45
Equalising charge		
a) Voltage	V	2.3
b) Current	A	1.2
c) Duration	Hrs.	6
d) Interval between successive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	114*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	123
Quantity of Electrolyte per Cell	litres	1.6
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	3.5
with acid	kg	5.4
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		3
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		4
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel / Teak wood
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	0.768
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 9
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P32P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	32
Rated	AH	32
End of Life	AH	32
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27} \{1 + 0.009(t-27)\}$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27} \{1 + 0.009(t-27)\}$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	4.61
15 minutes	1.65	10.50
30 minutes	1.69	14.59
45 minutes	1.71	17.92
1 hour	1.75	19.20
2 hour	1.78	23.62
3 hour	1.80	25.95
4 hour	1.81	27.58
5 hour	1.82	28.80
6 hour	1.83	29.76
7 hour	1.83	30.43
8 hour	1.84	31.07
9 hour	1.84	31.62
10 Hour	1.85	32.00
Maximum momentary current for 1 min till 1.60 e.c.v		71.68
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	3.425
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	6.4
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	4.48
ii) Finishing current	A	2.24
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	20
ii) Maximum	mA	60
Equalising charge		
a) Voltage	V	2.3
b) Current	A	1.6
c) Duration	Hrs.	6
d) Interval between successive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	114*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	123
Quantity of Electrolyte per Cell	litres	1.5
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	4.3
with acid	kg	6.1
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		4
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		5
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel / Teak wood
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	1.024
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 11
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P40P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	40
Rated	AH	40
End of Life	AH	40
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1+0.009(t-27)\}$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1+0.009(t-27)\}$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
1 hour	1.75	24.00
2 hour	1.78	29.52
3 hour	1.80	32.44
4 hour	1.81	34.48
5 hour	1.82	36.00
6 hour	1.83	37.20
7 hour	1.83	38.04
8 hour	1.84	38.84
9 hour	1.84	39.52
10 Hour	1.85	40.00
Maximum momentary current for 1 min till 1.60 e.c.v		89.6
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	2.748
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	8
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	5.6
ii) Finishing current	A	2.8
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	30
ii) Maximum	mA	90
Equalising charge		
a) Voltage	V	2.3
b) Current	A	2
c) Duration	Hrs.	6
d) Interval between succesive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130

Permissible max. temperature of Electrolyte

i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	190*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	199
Quantity of Electrolyte per Cell	litres	2.9
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	5.4
with acid	kg	8.8
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		5
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		6
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	1.28
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 13
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P48P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	48
Rated	AH	48
End of Life	AH	48
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}(1 + 0.009(t - 27))$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}(1 + 0.009(t - 27))$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	6.91
15 minutes	1.65	15.74
30 minutes	1.69	21.89
45 minutes	1.71	26.88
1 hour	1.75	28.80
2 hour	1.78	35.42
3 hour	1.80	38.93
4 hour	1.81	41.38
5 hour	1.82	43.20
6 hour	1.83	44.64
7 hour	1.83	45.65
8 hour	1.84	46.61
9 hour	1.84	47.42
10 Hour	1.85	48.00
Maximum momentary current for 1 min till 1.60 e.c.v		107.52
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	2.29
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	9.6
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	6.72
ii) Finishing current	A	3.36
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	40
ii) Maximum	mA	120
Equalising charge		
a) Voltage	V	2.3
b) Current	A	2.4
c) Duration	Hrs.	6
d) Interval between successive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	190*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	199
Quantity of Electrolyte per Cell	litres	2.8
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	6.9
with acid	kg	9.5
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		6
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		7
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover	Adhesive Sealed
Material of Cover	Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors	Lead Plated Copper
Thickness of Inter-Cell Connectors	2
Method of connection	Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?	Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections	Lead plated MS

Racks

Racks	
a) Number of racks per battery	Depends on the battery layout
b) Number of cells per rack	Depends on the battery layout
c) Type of racks	Depends on the battery layout
d) Material of rack	steel / Teak wood
e) Dimensions of the racks	Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	1.536
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Characteristic Curves (furnish curve numbers and attach separate sheet)

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 15
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P56P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	56
Rated	AH	56
End of Life	AH	56
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1 + 0.009(t - 27)\}$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1 + 0.009(t - 27)\}$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	8.06
15 minutes	1.65	18.37
30 minutes	1.69	25.54
45 minutes	1.71	31.36
1 hour	1.75	33.60
2 hour	1.78	41.33
3 hour	1.80	45.42
4 hour	1.81	48.27
5 hour	1.82	50.40
6 hour	1.83	52.08
7 hour	1.83	53.26
8 hour	1.84	54.38
9 hour	1.84	55.33
10 Hour	1.85	56.00
Maximum momentary current for 1 min till 1.60 e.c.v		125.44
Expected life of battery under normal operation & maintainence conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	1.963
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	11.2
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	7.84
ii) Finishing current	A	3.92
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	45
ii) Maximum	mA	135
Equalising charge		
a) Voltage	V	2.3
b) Current	A	2.8
c) Duration	Hrs.	6
d) Interval between succesive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L ^{+/-3} x W ^{+/-3} x H ^{+/-5}	mm	190*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	199
Quantity of Electrolyte per Cell	litres	2.7
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	7
with acid	kg	10.2
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		7
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		8
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel / Teak wood
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	1.792
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)

General Technical Particulars

Type of Cell	Units	YAP 17
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P64P - HDP
Number of cells in the battery bank		n
Nominal Voltage of Battery	Volts	2 X n
Declared Capacity at 27 degree C upto 1.85 ecv		
Initial	AH	64
Rated	AH	64
End of Life	AH	64
Rated Capacity at minimum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1+0.009(t-27)\}$
Rated Capacity at maximum ambient temperature	Ah	As per formula: $C_t = C_{27}\{1+0.009(t-27)\}$
Capacity in AH at various end cell voltages and duration of discharge		
	E.C.V.	Ah output
5 minutes	1.62	9.22
15 minutes	1.65	20.99
30 minutes	1.69	29.18
45 minutes	1.71	35.84
1 hour	1.75	38.40
2 hour	1.78	47.23
3 hour	1.80	51.90
4 hour	1.81	55.17
5 hour	1.82	57.60
6 hour	1.83	59.52
7 hour	1.83	60.86
8 hour	1.84	62.14
9 hour	1.84	63.23
10 Hour	1.85	64.00
Maximum momentary current for 1 min till 1.60 e.c.v		143.36
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	1.717
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	12.8
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	8.96
ii) Finishing current	A	4.48
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	50
ii) Maximum	mA	150
Equalising charge		
a) Voltage	V	2.3
b) Current	A	3.2
c) Duration	Hrs.	6
d) Interval between successive equalising charge	Months	6
Recommended Specific gravity at 27 deg C		
a) for first filling		1.205 +/- 0.005
b) at full charge		1.215 +/- 0.005
c) when Battery is discharged at 10 hours rate		1.120 - 1.130
Permissible max. temperature of Electrolyte		
i) During Initial Charging	deg C	50
ii) During Normal Operation	deg C	45

Overall dimensions

Each Cell L x W x H (tolerance of +/- 2 mm in each case)	mm	190*133*260
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	199
Quantity of Electrolyte per Cell	litres	2.6
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	7.8
with acid	kg	11
Complete Battery without acid	kg	n X each cell weight without acid
with acid	kg	n X each cell weight with acid

Material and type of Plates

i) Positive Plates

Material		99.99% Pure Lead
Height of Positive Plate	mm	106
Thickness of Positive Plate	mm	7.3
No. of positive plates per cell		8
Whether positive plates of individual cells are interchangeable		Yes, but not recommended

ii) Negative Plates

Material		Lead - Antimony alloy grid
Height of Negative Plate	mm	119
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		9
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.43
Clearance between bottom of the plate and the bottom of the container	mm	21
Clearance between top of the plates and top of container	mm	69
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	3
Material of Container		Transperant Styrene Acrylonitrile (SAN)

Cover

Type of cover		Adhesive Sealed
Material of Cover		Opaque Styrene Acrylonitrile (SAN)

Connections

Material of Inter-Cell Connectors		Lead Plated Copper
Thickness of Inter-Cell Connectors	mm	2
Method of connection		Bolted
Inter-row, Inter-tier connectors and end take-offs furnished?		Yes
Material of Bolt, Nut and Washer for Inter-Cell and Cable Connections		Lead plated MS

Racks

Racks		
a) Number of racks per battery		Depends on the battery layout
b) Number of cells per rack		Depends on the battery layout
c) Type of racks		Depends on the battery layout
d) Material of rack		steel / Teak wood
e) Dimensions of the racks		Depends on the battery layout

Ventilation requirements

Cubic content of battery rooms	m ³	To be provided by customer
Gas generation per single cell per hour	Lit	2.048
No. of air exchanges required per hour		Depends on the size of battery room
Gasification Voltage per Cell	Volt	2.36

Efficiency

Ah efficiency	%	> 92 %
Watt Hr efficiency	%	> 80 %
Recommended Max. period of cell storage before the first Charge (After Installation and filling of Electrolyte)		12 - 18 hours
Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)