

General Technical Particulars

Type of Cell	Units	YKP 27
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P325P - 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	325
Rated	AH	325
End of Life	AH	325
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	46.80
15 minutes	1.65	106.60
30 minutes	1.69	148.20
45 minutes	1.71	182.00
1 hour	1.75	195.00
2 hour	1.78	239.85
3 hour	1.80	263.58
4 hour	1.81	280.15
5 hour	1.82	292.50
6 hour	1.83	302.25
7 hour	1.83	309.08
8 hour	1.84	315.58
9 hour	1.84	321.10
10 Hour	1.85	325.00
Maximum momentary current for 1 min till 1.60 e.c.v		728
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	0.48
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	65
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	45.5
ii) Finishing current	A	22.75
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	260
ii) Maximum	mA	780
Equalising charge		
a) Voltage	V	2.3
b) Current	A	16.25
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	362*203*426
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	211
Quantity of Electrolyte per Cell	litres	13.7
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	36.3
with acid	kg	52.6
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	207
Thickness of Positive Plate	mm	7.8
No. of positive plates per cell		13
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	211
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		14
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.2
Clearance between bottom of the plate and the bottom of the container	mm	35
Clearance between top of the plates and top of container	mm	89
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container mm 4

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 m³ To be provided by customer

Gas generation per single cell per hour Lit 10.4

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	YKP 29
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P350P - 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	350
Rated	AH	350
End of Life	AH	350
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	50.40
15 minutes	1.65	114.80
30 minutes	1.69	159.60
45 minutes	1.71	196.00
1 hour	1.75	210.00
2 hour	1.78	258.30
3 hour	1.80	283.85
4 hour	1.81	301.70
5 hour	1.82	315.00
6 hour	1.83	325.50
7 hour	1.83	332.85
8 hour	1.84	339.85
9 hour	1.84	345.80
10 Hour	1.85	350.00
Maximum momentary current for 1 min till 1.60 e.c.v		784
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	0.44
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	70
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	49
ii) Finishing current	A	24.5
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	280
ii) Maximum	mA	840
Equalising charge		
a) Voltage	V	2.3
b) Current	A	17.5
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	362*203*426
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	211
Quantity of Electrolyte per Cell	litres	13.4
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	38.5
with acid	kg	54.4
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	207
Thickness of Positive Plate	mm	7.8
No. of positive plates per cell		14

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	211
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		15

Whether negative plates of individual cells are interchangeable Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.2
Clearance between bottom of the plate and the bottom of the container	mm	35
Clearance between top of the plates and top of container	mm	89

Whether explosion vents are offered YES

Type of Vent and Filling Plugs Explosion proof microporous ceramic made

Container

Thickness of Container	mm	4
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	11.2
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	YKP 31
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P375P - 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	375
Rated	AH	375
End of Life	AH	375
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	54.00
15 minutes	1.65	123.00
30 minutes	1.69	171.00
45 minutes	1.71	210.00
1 hour	1.75	225.00
2 hour	1.78	276.75
3 hour	1.80	304.13
4 hour	1.81	323.25
5 hour	1.82	337.50
6 hour	1.83	348.75
7 hour	1.83	356.63
8 hour	1.84	364.13
9 hour	1.84	370.50
10 Hour	1.85	375.00
Maximum momentary current for 1 min till 1.60 e.c.v		840
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	0.42
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	75
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	52.5
ii) Finishing current	A	26.25
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	300
ii) Maximum	mA	900
Equalising charge		
a) Voltage	V	2.3
b) Current	A	18.75
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	362*203*426
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	211
Quantity of Electrolyte per Cell	litres	13.1
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	40.8
with acid	kg	56.4
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	207
Thickness of Positive Plate	mm	7.8
No. of positive plates per cell		15
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	211
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		16
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.2
Clearance between bottom of the plate and the bottom of the container	mm	35
Clearance between top of the plates and top of container	mm	89
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	4
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	12
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

	Units	
Type of Cell		YKP 33
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P400P - 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	400
Rated	AH	400
End of Life	AH	400
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	57.60
15 minutes	1.65	131.20
30 minutes	1.69	182.40
45 minutes	1.71	224.00
1 hour	1.75	240.00
2 hour	1.78	295.20
3 hour	1.80	324.40
4 hour	1.81	344.80
5 hour	1.82	360.00
6 hour	1.83	372.00
7 hour	1.83	380.40
8 hour	1.84	388.40
9 hour	1.84	395.20
10 Hour	1.85	400.00
Maximum momentary current for 1 min till 1.60 e.c.v		896
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	0.38
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	80
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	56
ii) Finishing current	A	28
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	320
ii) Maximum	mA	960
Equalising charge		
a) Voltage	V	2.3
b) Current	A	20
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 L = +/-3, W = +/-3, H = +/-5)	mm	362 x 203 x 426
Complete Battery	mm	Depends on the battery layout
Distance between cell centres	mm	211
Quantity of Electrolyte per Cell	litres	12.8
Quantity of Electrolyte for battery (Including 10% extra)	litres	n X electrolyte per cell X 1.1

Weight(+/-5%)

Each cell		
without acid	kg	43.2
with acid	kg	58.4
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	207
Thickness of Positive Plate	mm	7.8
No. of positive plates per cell		16
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	211
Thickness of Negative Plate	mm	3.81
No. of negative plates per cell		17
Whether negative plates of individual cells are interchangeable		Yes, but not recommended

Material and type of Separators

Material		PVC
Thickness of separator	mm	3.2
Clearance between bottom of the plate and the bottom of the container	mm	35
Clearance between top of the plates and top of container	mm	89
Whether explosion vents are offered		YES
Type of Vent and Filling Plugs		Explosion proof microporous ceramic made

Container

Thickness of Container	mm	4
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(L x W x H)		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	cc/hr/AH	12.8
No. of air exchanges required per hour		Depends on the size of battery room

Gasification Voltage per Cell	Volt	2.36
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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
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Recommended Storage life of Battery (Dry shelf life)		2 yrs.(with the plugs closed tightly)
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Does the battery meet the required duty cycle curve	Yes/No	Yes (refer sizing calaulation)
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General Technical Particulars

Type of Cell	Units	YKP 35
Nominal Voltage per cell	Volts	2
Manufacturer's Name		Exide Industries Ltd.
Standards to which battery is manufactured		IS 1652 / BS6290
IS Nomenclature		P425P - 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	425
Rated	AH	425
End of Life	AH	425
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	61.20
15 minutes	1.65	139.40
30 minutes	1.69	193.80
45 minutes	1.71	238.00
1 hour	1.75	255.00
2 hour	1.78	313.65
3 hour	1.80	344.68
4 hour	1.81	366.35
5 hour	1.82	382.50
6 hour	1.83	395.25
7 hour	1.83	404.18
8 hour	1.84	412.68
9 hour	1.84	419.90
10 Hour	1.85	425.00
Maximum momentary current for 1 min till 1.60 e.c.v		952
Expected life of battery under normal operation & maintenance conditions	Years	15 - 20 years
Internal Resistance of cell (IR)	milli ohms	0.36
Loss in capacity in 28 days due to self discharge	%	<8%
Recommended Charging rate for		
a) Float Charging		
i) Limit current	A	85
ii) Voltage	V	2.25 vpc
b) Boost charging		
i) Starting Current	A	59.5
ii) Finishing current	A	29.75
iii) Voltage	V	2.75
Trickle Charging Rate		
i) Minimum	mA	340
ii) Maximum	mA	1020
Equalising charge		
a) Voltage	V	2.3
b) Current	A	21.25
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

Container

Thickness of Container	mm	4
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	13.6
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)