

CHARGING STORAGE BATTERIES

ELECTROLYTE

CONTENTS

- | | |
|-----------------------|--------------------------------|
| 1. GENERAL | 3. TEMPERATURE MEASUREMENTS |
| 1.1 Scope | 4. GRAVITY MEASUREMENTS |
| 1.2 Cautions | 5. CORRECTING GRAVITY READINGS |
| 1.3 Definitions | 6. ELECTROLYTE QUANTITIES |
| 2. TOOLS AND SUPPLIES | |

1. GENERAL

1.1 Scope

1.11 This section contains information on electrolyte used in storage batteries for low gravity cells shipped filled and low gravity cells shipped dry. It also contains information on hydrometer readings, etc. It is to be used with the other sections in the 18 series. This section does not cover electrolyte used in high gravity cells such as some engine starting batteries.

1.2 Cautions

1.21 Electrolyte shall be used from carboys without removing the container from its packing.

1.22 Further cautions regarding electrolyte are in Section 17A.

1.3 Definitions

1.31 Descriptions of terms such as specific gravity, electrolyte, thermometer, hydrometer, maximum and minimum level, etc., are found in Section 17A of this handbook.

2. TOOLS AND SUPPLIES

2.1 The required tools and supplies are listed in Section 18A.

3. TEMPERATURE MEASUREMENTS

3.1 The thermometer shall be inserted in the cell funnel opening and held in the electrolyte for at least two minutes before taking any reading. When the thermometer is equipped with a rubber collar of such size, proper positioning of the thermometer, the collar should be set so that the thermometer bulb is completely immersed in electrolyte. Where there is no collar or the collar is too small to be stopped by the top of the cell or funnel, the thermometer may be inserted until stopped by the top of the plates or separators.

4. GRAVITY MEASUREMENTS

4.1 Hydrometer readings are taken by inserting the syringe type hydrometer tube through the opening used for adding

water or through the electrolyte withdrawal tube. Draw a sufficient quantity of electrolyte into the syringe barrel first, until the float just hits the top. This is to wet the float. Expel this and draw into the barrel sufficient electrolyte to support the float without touching the top or bottom. If the float tends to stick to the side of the barrel, tap gently with the finger until it floats freely. When the float comes to rest take the reading at the level of the electrolyte on the float scale. Expel all electrolyte before moving to the next cell. Exercise care when removing the hydrometer from the cell to prevent the tip from flipping electrolyte.

5. CORRECTING GRAVITY READINGS

5.1 The purpose of gravity correction is for comparison of readings at different temperatures. The "corrected" value is approximately what the hydrometer would read if electrolyte temperatures were changed to reference temperature. If electrolyte with high temperatures were cooled to reference temperatures, the electrolyte would be denser and the specific gravity higher.

5.2 Specific gravity correction values may be read directly from the thermometers usually furnished with the battery.

5.3 Reference temperatures for correction of specific gravity readings may be 70°F or 77°F. Thermometers now being supplied are arranged for correction to 77°F. If such a thermometer is furnished the reference temperature shall be 77°F. Batteries previously installed having reference temperatures of 70°F will remain so unless changed by the telephone company. See Table A for both correction scales.

5.4 On ID-1285 reference temperature is assumed to be 77°F. If 70°F reference is used at the request of the telephone company, note this on the form.

6. ELECTROLYTE QUANTITIES

6.1 Table B lists the approximate quantities of electrolyte per single cell for each battery manufacturer.

TABLE A

TEMPERATURE CORRECTIONS
FOR HYDROMETER READINGS
(PAR. 5.3)

Degrees F. With REFERENCE TEMPERATURE AT 70°F	CORRECTIONS VALUES TO BE APPLIED TO HYDROMETER READINGS		Degrees F. With REFERENCE TEMPERATURE AT 77°F
	ADD	SUBTRACT	
51 50 53		.007	55 56 57
54 55 56		.006	58 59 60
57 58 59		.005	61 62 63
60 61 62		.004	64 65 66
63 64 65		.003	67 68 69
66 67 68		.002	70 71 72
69 70 71	0	.001	73 74 75
72 73 74	.001	0	76 77 78
75 76 77	.002		79 80 81
78 79 80	.003		82 83 84
81 82 83	.004		85 86 87
84 85 86	.005		88 89 90
87 88 89	.006		91 92 93
90 91 92	.007		94 95 96
93 94 95	.008		97 98 99
96 97 98	.009		100 101 102
99 100 101	.010		103 104 105
102 103 104	.011		

TABLE B

APPROXIMATE QUANTITIES OF ELECTROLYTE PER
SINGLE BATTERY CELL. (PAR. 6)

Single Cell (2 Volts)		Low Gravity Electrolyte in Gallons		
		Exide Plastic	Gould Plastic	C & D Plastic
5361 Lead- Antimony	100			
	110 &			
	111			
	116	.16	.09	.137
	120	.15	.12	.13
	130	.21	.22	.254
	140	.21	.32	.36
	141	.21	.32	.36
	150	.42	.54	.54
	151	.52	.52	.52
	★151H	.50	.50	.50
15886 Lead- Calcium	140	.36	.36	.36
	141	.36	.36	.36
	150	.53	.53	.53
	151	.53	.53	.53
KS-5553 Lead- Antimony KS-15544 Lead- Calcium	310	1	1	1
	311	1	1	1
	402	1.35	1.35	1.35
	403	1.85	1.85	1.85
	405	2.1	2.1	2.1
	407	2.6	2.6	2.6
	409	3.4	3.4	3.4
	501	4.1	4.1	4.1
	503	5.2	5.2	5.2
	505	6.5	6.5	6.5
	508	7.75	7.75	7.75
KS-5562 Lead- Antimony		Hard Rubber	Hard Rubber	Hard Rubber
	04	37.5	20	29
	05	35	23	31
	06	41.5	26	36
	07	51	31	43

★ High gravity electrolyte.

→ Arrowed lines indicate new
or changed information.

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Engineer of Installation

Reason for Reissue:

- (1) To remove gravity requirements now contained in Sections 18B and 18C.
- (2) To remove Paragraph titled Dilution of Acid due to its infrequent use.
- (3) To add Table B listing quantities of electrolyte per KS cell.

Replaces Section 18E dated 12-18-58.