Biological limit values

ACGIH Biological Exposure Indices

Ingredient	Value	Determinant	Specimen	Sampling Time
Lead	300 µg/l	Lead	Blood	*

* - For Sampling details please see the source document.

Engineering Controls (Ventilation):
Store sealed lead acid batteries at ambient temperature. Never recharge batteries in an unventilated, enclosed space. Do not subject product to open flame or fire. Avoid conditions that could cause arcing between terminals.

Respiratory Protection (NIOSH/MSHA approved):
NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT.
When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Skin Protection:
NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT.
If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing and boots.

Eye Protection:
NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT.
If necessary to handle damage product where exposure to the organic electrolyte is a possibility, chemical splash goggles and a face shield are recommended.

Other Protection:
Safety footwear meeting the requirements of ANSI Z 41.1 is recommended when it is necessary to handle the finished product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.
Odor Threshold	Not applicable.
pH	Not applicable
Boiling Point	Not applicable unless individual components exposed. Battery Electrolyte (Acid) - 230 - 233.6 °F (110 - 112 °C) Lead - 3191 °F (1755 °C)
Melting Point	Lead - 621.32 °F (327.4 °C)
Specific Gravity (H_2O = 1)	1.215 to 1.350
Flash Point	498.2 °F (259.0 °C) Hydrogen
Evaporation Rate (Butyl Acetate = 1)	< 1
Vapor Pressure (mm Hg @ 20 ° C)	Battery Electrolyte (Acid) 11.7
Flammability	
Upper/lower flammability or explosive limits	Hydrogen Flammability Limit Lower- 4.1 % Flammability Limit Upper – 74.2 %
Vapor Pressure	Not applicable.
Vapor Density	3.4 (Air = 1) Battery Electrolyte (Acid)
Relative Density	1.21 - 1.3 Battery Electrolyte (Acid)
Solubility	Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid).
% Volatile by Weight	Not applicable unless individual components exposed.
Partition coefficient (n-octanol/water)	Not applicable