

Power/Full Solutions					ECO #: 1002195	
I. PRODUCT IDENTIFICATION						
Chemical Trade Name (as used on la	abel):		Chemical Family/Classi	fication:		
Non-Spillable Lead Acid Battery			Electric Storage Battery			
Synonyms:						
Industrial Battery, Traction Battery, St	ationary Battery,		Telephone:			
Deep Cycle Battery		For information and emer	rgencies, contact EnerSys	3'		
Manufacturer's Name/Address:			Environmental, Health &	Safety Dept. at 610-208-	1996	
EnerSys	Canada Corporate Office					
P.O. Box 14145	3-61 Parr Boulevard		24-Hour Emergency Re	sponse Contact:		
2366 Bernville Road	Bolton, Ontario		CHEMTREC DOMESTIC	C: 800-424-9300 CHE	MTREC INT'L: 703-527-3877	
Reading, PA 19612-4145	L7E 4E3					
I GHS HAZARDS IDENTIFICATI	ION					
HEALTH	[ENVIRONMENTAL		PHYSICAL	
Acute Toxicity			Aquatic Chronic 1		Explosive Chemical, Division 1.3	
Oral/Dermal/Inhalation)	Category 4		Aquatic Acute 1			
Skin Corrosion/Irritation	Category 1A					
Eye Damage	Category 1					
Reproductive	Category 1A					
Carcinogenicity (lead compounds)	Category 1B					
Carcinogenicity (arsenic)	Category 1A					
Carcinogenicity (acid mist)	Category 1A					
Specific Target Organ	Category 2					
Foxicity (repeated exposure)						
GHS LABEL:						
HEALTH	[ENVIRONMENTAL		PHYSICAL	
			¥2			
Hazard Statements		Precautionary State	nents	Letter and the second sec		
DANGER!		Wash thoroughly after				
Causes severe skin burns and serious e	eve damage	e :	noke when using this prod	huet		
May damage fertility or the unborn chi		Wear protective gloves/protective clothing, eye protection/face protection.				
nhaled.	nu n nigesteu or	Avoid breathing dust/fume/gas/mist/vapors/spray.				
May cause cancer if ingested or inhale	d	Use only outdoors or in a well-ventilated area.				
Causes damage to central nervous syst		Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid.				
		Irritating to eyes, respiratory system, and skin.				
tidneys through prolonged or repeated		Obtain special instructions before use.				
May form explosive air/gas mixture du		1				
Explosive, fire, blast, or projection haz	Do not handle until all safety precautions have been read and understood					
May cause harm to breast-fed children		Avoid contact during pregnancy/while nursing Keep away from heat./sparks/open flames/hot surfaces. No smoking				
Harmful if swallowed, inhaled, or cont		Keep away from heat.	/sparks/open flames/hot su	artaces. No smoking		
Causes skin irritation, serious eye dam	age.					
II. COMPOSITION/INFORMATI	ON ON INGREDIENTS	CASNumber	Annovincta 0/ ha			
Components		CAS Number	Approximate % by			

III. COMPOSITION/INFORMATION ON INGREDIENTS		
Components	CAS Number	Approximate % by
		Wt.
Inorganic Lead Compound:		
Lead	7439-92-1	45-60
Lead Dioxide	1309-60-0	15-25
* Antimony	7440-36-0	2
* Arsenic	7440-38-2	0.2
* Calcium	7440-70-2	0.04
* Tin	7440-31-5	0.2
Electrolyte (Sulfuric Acid (H2SO4/H2O))	7664-93-9	10-30
Case Material:		5-10
Polypropylene	9003-07-0	
Polystyrene	9003-53-6	
Styrene Acrylonitrile	9003-54-7	
Acrylonitrile Butadiene Styrene	9003-56-9	
Styrene Butadiene	9003-55-8	
Polyvinylchloride	9002-86-2	
Polycarbonate, Hard Rubber, Polyethylene	9002-88-4	



SAFETY DATA SHEET

,	Power/Full Solutions			ECO #:	1002195			
Other:								
	Silicon Dioxide (Gel batteries only)	7631-86-9	1-5					
	Sheet Molding Compound							
	(Glass reinforced polyester)							
	Inorganic lead and electrolyte (sulfuric acid) are the pr	imary components of e	very battery manufactu	ired by EnerSys.				
	Other ingredients may be present dependent upon batt	ery type. Contact your	EnerSys representativ	e for additional information.				
IV. FIRST	CAID MEASURES	5 51 5	<u> </u>					
Inhalation:								
	Sulfuric Acid: Remove to fresh air immediately. If br	eathing is difficult, giv	e oxygen. Consult a ph	lysician.				
	Lead: Remove from exposure, gargle, wash nose and 1	lips; consult physician.						
Ingestion:								
	Sulfuric Acid: Give large quantities of water; do not in	nduce vomiting or aspi	ration into the lungs m	ay occur and can cause permanent injury or death;				
	consult a physician.							
	Lead: Consult physician immediately.							
Skin:								
	Sulfuric Acid: Flush with large amounts of water for a	t least 15 minutes; ren	nove contaminated clot	hing completely, including shoes.				
	If symptoms persist, seek medical attention. Wash con	taminated clothing bef	ore reuse. Discard cont	aminated shoes.				
	Lead: Wash immediately with soap and water.	-						
Eyes:								
	Sulfuric Acid and Lead: Flush immediately with large	amounts of water for a	a least 15 minutes whil	e lifting lids				
	Seek immediate medical attention if eyes have been ex	posed directly to acid.						
V. FIRE F	IGHTING MEASURES							
Flash Point	t: N/A	Flammable Limits:	LEL = 4.1% (Hydrogen	n Gas) UEL = 74.2%				
Extinguishi	ing Media: CO2; foam; dry chemical. Do not use carbo	n dioxide directly on c	ells. Avoid breathing v	apors. Use appropriate media for surrounding fire.				
Special Fire	e Fighting Procedures:							
	If batteries are on charge, shut off power. Use positiv	e pressure, self-contair	ned breathing apparatus	 Water applied to electrolyte generates 				
	heat and causes it to spatter. Wear acid-resistant cloth	ing, gloves, face and e	ye protection.					
	But note that strings of series connected batteries may	still pose risk of electr	ic shock even when cha	arging equipment is shut down.				
Unusual Fi	re and Explosion Hazards:							
	Highly flammable hydrogen gas is generated during ch	arging and operation of	of batteries. To avoid r	isk of fire or explosion, keep sparks or other				
	sources of ignition away from batteries. Do not allow	metallic materials to si	multaneously contact r	negative and positive terminals of cells and				
	batteries. Follow manufacturer's instructions for instal	lation and service.						
VI. ACCII	DENTAL RELEASE MEASURES							
Spill or Lea	ak Procedures:							
	Stop flow of material, contain/absorb small spills with	dry sand, earth, and ve	ermiculite. Do not use	combustible materials. If possible, carefully				
	neutralize spilled electrolyte with soda ash, sodium bio	carbonate, lime, etc. W	ear acid-resistant cloth	ning, boots, gloves, and face shield. Do not				
	allow discharge of unneutralized acid to sewer. Acid m	nust be managed in acc	ordance with local, sta	te, and federal requirements.				
	Consult state environmental agency and/or federal EPA	4.						
VII. HANI	DLING AND STORAGE							
Handling:								
	lved in recycling operations, do not breach the casing or		•					
which may a	allow electrolyte leakage. There may be increasing risk of	of electric shock from s	strings of connected bat	tteries.				
Keep contai	iners tightly closed when not in use. If battery case is br	oken, avoid contact wi	th internal components	i.				
Keep vent c	caps on and cover terminals to prevent short circuits. Pla	ace cardboard between	layers of stacked autor	notive batteries to avoid damage and short circuits.				
Keep away	from combustible materials, organic chemicals, reducing	g substances, metals, st	trong oxidizers and wat	ter. Use banding or stretch wrap to secure items for				
shipping.								
Storage:								
	ies in cool, dry, well-ventilated areas with impervious su			*				
also be store	ed under roof for protection against adverse weather con	ditions. Separate from	incompatible material	s. Store and handle only				
in areas with	h adequate water supply and spill control. Avoid damag	e to containers. Keep	away from fire, sparks	and heat. Keep away from metallic objects could				
bridge the te	erminals on a battery and create a dangerous short-circuit	it.						
Charging:								
	ossible risk of electric shock from charging equipment a	nd from strings of seri-	es connected batteries,	whether or not being charged. Shut-off power to				
-	nenever not in use and before detachment of any circuit of	-		· ·				
	pace should be ventilated. Keep battery vent caps in posi							
001	and eye protection when near batteries being charged.	6		× -				



SAFETY DATA SHEET

Power/Full Solutions	LS/PERSONAL PROTECTION				E	CO #: 1002195
Exposure Limits (mg/m3) Note						
inposare zinito (ing/ine) riot						
NGREDIENTS	OSHA PEL	ACGIH	US NIOSH	Quebec PEV	Ontario OEL	EU OEL
Chemical/Common Names)	OSIMILL	леош	05 110511	Quebee I L V	Ontario OEE	LUOLL
Lead and Lead Compounds						
inorganic)	0.05	0.05	0.05	0.05	0.05	0.15 (b)
Antimony	0.5	0.5	0.5	0.5	0.5	0.15 (b,e)
Arsenic	0.01	0.01	0.002	0.2	0.01	N.E
Calcium	N.E	N.E	0.002 N.E	N.E	N.E	N.E
Sin	2	2	2	2	2	N.E
Electrolyte (Sulfuric Acid)	1	0.2	1	1	0.2	0.05 (c)
Polypropylene	N.E	N.E	N.E	N.E	N.E	N.E
Polystyrene	N.E	N.E N.E	N.E	N.E N.E	N.E	N.E N.E
Styrene Acrylonitrile	N.E	N.E N.E	N.E	N.E N.E	N.E	N.E N.E
Acrylonitrile Butadiene	IN.E	11.12	IN.E	IN.E	11.15	N.L
Styrene	N.E	N.E	N.E	N.E	N.E	N.E
Styrene Butadiene	N.E	N.E	N.E	N.E	N.E	N.E
Polyvinylchloride	N.E	N.E	N.E	N.E	1	N.E
Polycarbonate, Hard		1.12	1.1.2			- 11-2
Rubber, Polyethylene	N.E	N.E	N.E	N.E	N.E	N.E
Silicon Dioxide	11.12	11.15	14.15	14.15	11.12	11.12
(Gel Batteries Only)	N.E	N.E	N.E	N.E	N.E	N.E
(Ger Batteries Only)	IV.E	N.L	IV.L	11.12	IVLE	N.E
Sheet Molding Compound						
(Glass reinforced polyester) NOTES:	N.E	N.E	N.E	N.E	N.E	N.E
Handle batteries ca clothing, eye and fa positive and negati Respiratory Protection (NIOS None required und respiratory protecti Skin Protection: If battery case is da Eve Protection: If battery case is da Other Protection:	er normal conditions. When conce	ain vent caps are on s ag or handling batteric ge the batteries in area ntrations of sulfuric a resistant gloves with o ce shield.	securely. Avoid contact of es. Do not allow metallic as with adequate ventilation acid mist are known to ex- elbow-length gauntlet, ac	with internal componen materials to simultane ion. General dilution ve acceed the PEL, use NIC	ously contact both the entilation is acceptable. OSH or MSHA-approved hing and boots.	
	er supply. Acid-resistant apron. U	-			·	
	nended when adding water or elect	*				
X. PHYSICAL AND CHEMI	CAL PROPERTIES					
Properties Listed Below are fo	r Electrolyte:					
Boiling Point:		203 - 240° F	Specific Gravity (H2	20 = 1):	1.215 to 1.350	
Melting Point:		N/A	Vapor Pressure (mn	n Hg):	10	
Solubility in Wate	er:	100%	Vapor Density (AIR	= 1):	Greater than 1	
Evaporation Rate	: (Butyl Acetate = 1)	Less than 1	% Volatile by Weigh	ht:	N/A	
-	pH		Flash Point:		Below room temperature	(as hydrogen gas)
LEL (Lower Expl		4.1% (Hydrogen)	UEL (Upper Explosi	ive Limit)	74.2% (Hydrogen)	(
Appearance and (Manufactured articl	e; no apparent odor. r liquid with a sharp, pen			



Power/Full Solutions	ECO #:	1002195
X. STABILITY AND REACTIVITY		
Stability: Stable X_ Unstable		
This product is stable under normal conditions at ambient temperature		
Conditions To Avoid: Prolonged overcharge; sources of ignition		
Incompatibility: (Materials to avoid)		
Sulfuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agen	8,	
metals, sulfur trioxide gas, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammabl	e	
hydrogen gas.		
Lead Compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen		
and reducing agents.		
Arsenic compounds: strong oxidizers; bromine azide. NOTE: hydrogen gas can react with inorganic arsenic to form the highly toxic gas-arsine		
Hazardous Decomposition Products:		
Sulfuric Acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen sulfide.		
Lead Compounds: High temperatures likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascer	t	
hydrogen may generate highly toxic arsine gas.		
Hazardous Polymerization:		
Will not occur		
XI. TOXICOLOGICAL INFORMATION		
Routes of Entry:		
Sulfuric Acid: Harmful by all routes of entry.		
Lead Compounds: Hazardous exposure can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, van	or	
or fume. The presence of nascent hydrogen may generate highly toxic arsine gas.		
Inhalation:		
Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.		
Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.		
Ingestion:		
Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach.		
Lead Compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to syste	mic	
toxicity and must be treated by a physician.		
Skin Contact:		
Sulfuric Acid: Severe irritation, burns and ulceration.		
Lead Compounds: Not absorbed through the skin.		
Arsenic Compounds: Contact may cause dermatitis and skin hyper pigmentation.		
Eye Contact:		
Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness.		
Lead Components: May cause eye irritation.		
Effects of Overexposure - Acute:		
Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.		
Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep		
disturbances and irritability.		
Effects of Overexposure - Chronic:		
Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes.		
Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and		
females. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abn	ormal	
conduction velocities in persons with blood lead levels of 50mcg/100 ml or higher. Heavy lead exposure may result in central nervous system	lamage,	
encephalopathy and damage to the blood-forming (hematopoietic) tissues.		
Carcinogenicity:		
Sulfuric Acid: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as	a	
Group 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric		
acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of	the	
product, such as overcharging, may result in the generation of sulfuric acid mist.		
Lead Compounds: Lead is listed as a Group 2A carcinogen, likely in animals at extreme doses. Per the guidance found in OSHA 29 CFR 1919	0.1200	
Appendix F, this is approximately equivalent to GHS Category 1B. Proof of carcinogenicity in humans is lacking at present.		
Arsenic: Arsenic is listed by IARC as a Group 1 - carcinogenic to humans. Per the guidance found in OSHA 29 CFR 1910.1200 Appendix F,	his is	
approximately equivalent to GHS Category 1A.		
Medical Conditions Generally Aggravated by Exposure:		
Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggrav	ate	
diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.		



Power/Full Solution	^	ECO #:	1002195
Acute Toxicity:			
Inhalation LD50:			
Electrolyte: LC50 rat: 375 mg	/m3; LC50: guinea pig: 510 mg/m3		
	ty Point Estimate = 4500 ppmV (based on lead bullion)		
Elemental Arsenic: No data			
Oral LD50:			
Electrolyte: rat: 2140 mg/kg			
	ity Estimate (ATE) = 500 mg/kg body weight (based on lead bullion)		
Elemental Arsenic: LD50 mo			
Elemental Antimony: LD50			
Elemental Antinolity. LD30	at. 100 mg/kg		
Additional Health Data:			
	s, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion.		
	problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8.		
Follow good per	sonal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving	he	
worksite. Keep	contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of	of food,	
tobacco and cos	netics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated area	as and	
never taken hon	e or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated	from	
children and the	ir environment.		
The 19 th Amend	ment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction.		
	May cause harm to the unborn child, applies to lead compounds, especially soluble forms.		
XII. ECOLOGICAL INFO			
Environmental Fate:			
Lead is very per	sistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments	s is slow.	
• •	n of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain.		
	lude lead compounds and not elemental lead.		
Environmental Toxicity: Ad			
Sulfuric acid:	24-hr LC50, freshwater fish (Brachydanio rerio): 82 mg/L		
Summe actu.	96 hr- LOEC, freshwater fish (Cyprinus carpio): 22 mg/L		
Land			
Lead:	48 hr LC50 (modeled for aquatic invertebrates): <1 mg/L, based on lead bullion		
Arsenic:	24 hr LC50, freshwater fish (Carrassisus auratus) >5000 g/L.		
Additional Information:			
	cts on stratospheric ozone depletion.		
-	c compounds: 0% (by Volume)		
	ering Class (WGK): NA		
	ERATIONS (UNITED STATES)		
-	ondary lead smelter for recycling. Spent lead-acid batteries are not regulated as hazardous waste when the requirements of		
40 CFR Section 266.80 are n	et. This should be managed in accordance with approved local, state and federal requirements. Consult state environmental		
agency and/or federal EPA.			
Electrolyte:			
Place neutralized slurry into s	ealed containers and handle as applicable with state and federal regulations. Large water-diluted spills, after		
	buld be managed in accordance with approved local, state and federal requirements. Consult state environmental		
agency and/or federal EPA.			
0,	ial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.		
Ų ,,			

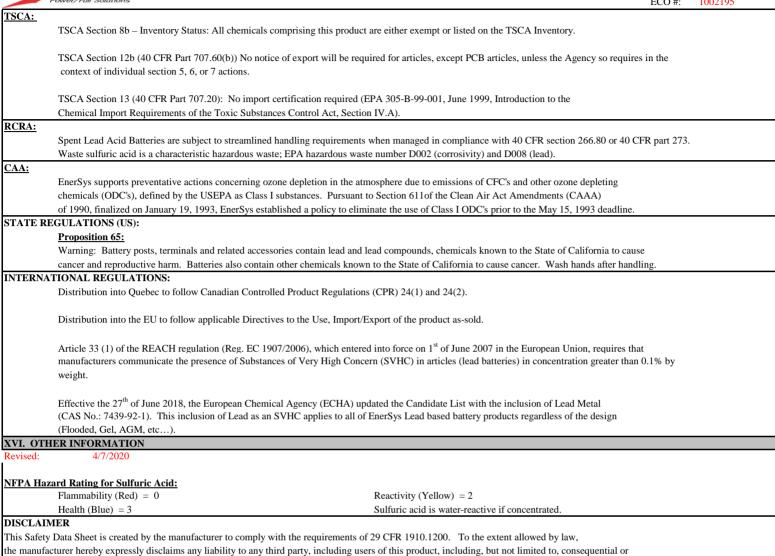
Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-use



SAFETY DATA SHEET

	Power/Full Solutions		ECO #: 1002195				
XIV. TRA	NSPORT INFORMATION						
U.S. DOT:							
		ery and outer package mu	meet the requirements of 49 CFR 173.159(f) and 49 CFR 173.159a ast be marked "NONSPILLABLE" or "NONSPILLABLE BATTERY"				
ATA Don	agerous Goods Regulations DGR:	15.					
ATA Dali	Excepted from the dangerous goods regulations because) Dangerous goods Regu	quirements of Packing Instruction 872 and Special Provisions A67 of ations and International Civil Aviation Organization (ICAO) Technical				
	The words "NOT RESTRICTED", SPECIAL PROVIS	ION A67" must be provi	led on an airway bill when air waybill is issued.				
MDG:	Excepted from the dangerous goods regulations for transport by sea because the batteries meet the requirements of Special Provision 238 of the International Maritime Dangerous Goods (IMDG CODE). Battery terminals must be protected against short circuits.						
VV RECI	ULATORY INFORMATION	L). Dattery terminais ind	st be protected against short circuits.				
UNITED S							
	A Title III:						
Section 502	2 EPCRA Extremely Hazardous Substances (EHS): Sulfuric acid is a listed "Extremely Hazardous Substances"	o" under EDCD A with a	Threshold Planning Quantity (TPQ) of 1,000 lbs				
	•		• • • •				
	*		s present at one site (40 CFR 370.10). For more information consult				
1	40 CFR Part 555. The quantity of suffuric acid will var	y by battery type. Contact	your EnerSys representative for additional information.				
section 50 ²		d under CEDCI A (Super	fund) and				
	Reportable Quantity (RQ) for spilled 100% sulfuric acid						
Tantian 211		6 Know Act) is 1,000 lbs.	State and local reportable quantities for spilled sulfuric acid may vary.				
Section 31	1/312 Hazard Categorization:						
			if sulfuric acid is present in quantities of 500 lbs or more and/or if lead is				
1	present in quantities of 10,000 lbs or more. For more in	formation consult 40 CF	X 370.10 and 40 CFK 370.40.				
Section 31:	3 EPCRA Toxic Substances:						
		•	covered facility, a person is not required to consider the quantity of the				
			nreshold has been met under § 372.25, § 372.27, or § 372.28 or				
	÷ .		n applies whether the person received the article from another person				
	or the person produced the article. However, this exemp	ption applies only to the c	uantity of the toxic chemical present in the article.				
Supplier N	Notification:						
	· · ·	•	ection 313 Toxic Chemical Release Inventory (Form R) requirements. information is provided to enable you to complete the required reports:				
	Toxic Chemical	CAS Number	Approximate % by Wt.				
	Lead	7439-92-1	60				
	Electrolyte (Sulfuric Acid (H2SO4/H2O))	7664-93-9	10 - 30				
	* Antimony	7440-36-0	2				
	* Arsenic	7440-38-2	0.2				
	Tin	7440-31-5	0.2				
	See 40 CRG Part 370 for more details.	/110 51 5	0.2				
	If you distribute this product to other manufacturers in of each calendar year.	SIC Codes 20 through 39	, this information must be provided with the first shipment				
	The Section 313 supplier notification requirement does	not apply to batteries, wh	nich are "consumer products".				
	* Not present in all battery types. Contact your EnerSy	s representative for addit	ional information.				
	· · · · · · · · · · · · · · · · · · ·	•					





other damages, arising out of the use of, or reliance on, this Safety Data Sheet.