 Transportation Business Group	MATERIAL SPECIFICATION		M #: M500
	Subject: Supplier Quality Requirements		Section: 02
			Revision: 19
	Issued by: M. Ansari		Date: 10/26/09
			Page: 1 of 9
			ECO: 0603109

1. PURPOSE:

- 1.1. The purpose of this specification is to establish the general quality requirements for suppliers who supply production parts, materials, components, and key services that impact quality.
- 1.2. Standard quality conditions are provided for supplier certification submittals, test reports, and samples based on the critical nature of the materials being supplied as determined by Exide Technologies.

PART A - EXIDE TECHNOLOGIES RESPONSIBILITY


2. IMPLEMENTATION:

- 2.1. Purchasing and Quality Assurance shall select from this specification the appropriate parts for each production-quantity purchase contract.
- 2.2. This specification shall be included with each Exide Technologies Purchase Order and shall become a binding part of the purchase contract.
- 2.3. The standard terms and conditions are contained in the parts of this specification which follow:

PART B - SUPPLIER GENERAL CONDITIONS

3. SUPPLIER'S QUALITY SYSTEM

- 3.1. Exide Technologies suppliers shall be third party registered to the current versions of ISO 9001 or ISO/IEC 17025 for suppliers of calibration or testing services.
 - 3.1.1. If a supplier is not registered to the applicable ISO standard, a quality systems audit shall be conducted by Exide Technologies personnel annually.
- 3.2. In addition to ISO registration, the following ISO/TS 16949 requirements shall be included in the supplier's quality system:
 - 3.2.1. Suppliers shall use an inventory management system to assure first in/first out (FIFO) stock rotation of product to Exide Technologies.
 - 3.2.2. Any Exide Technologies supplied tooling or equipment shall be permanently marked to indicate Exide Technologies' ownership.
 - 3.2.3. If any non-conforming or suspect product is shipped to Exide Technologies, the supplier shall immediately notify Exide Technologies Procurement and the Quality Assurance Manager at the receiving location(s).
- 3.3. In addition to the requirements listed above, the following Exide Technologies requirements shall be included in the supplier's quality system:
 - 3.3.1. The supplier shall utilize a zero defect acceptance level for outgoing/final inspection of Exide Technologies product. Exceptions to this shall be approved by Exide Technologies Quality Assurance.
 - 3.3.2. Any material not conforming to the applicable specifications shall be subject to disposition, including return to the supplier. The supplier shall be responsible for any sorting, rework, and return activities.
 - 3.3.2.1. If the disposition includes any rework, the resubmitted product shall be re-inspected according to normal practice and clearly identified as reworked product.

 Transportation Business Group	MATERIAL SPECIFICATION		M #: M500
	Subject: Supplier Quality Requirements		Section: 02
			Revision: 19
	Issued by: M. Ansari		Date: 10/26/09
			Page: 2 of 9
			ECO: 0603109

3.3.3. The supplier shall retain records of inspections and tests for Exide Technologies products for a minimum of five years from date of shipment unless otherwise instructed.

3.3.4. All work performed for an Exide Technologies Purchase Order shall be subject to test, inspection, and quality audit by Exide Technologies at all reasonable times. This includes the plant(s) of the supplier or the supplier of the supplier. This evaluation may include customers of Exide Technologies depending on need. Any inspections and evaluations shall be performed in such a manner as to not delay any work.

3.3.4.1. Any such inspection and test will not relieve the supplier from any responsibility to meet requirements.

3.4. Exide Technologies suppliers shall develop in-house quality systems that pattern the ISO/TS 16949 specification.

3.4.1. The current version of the ISO/TS 16949 specification can be purchased at www.aiag.org.

4. PURCHASED PART INSPECTION & APPROVAL PROCESS (PPIAP)

4.1. Suppliers to Exide Technologies shall obtain product or service approval in advance of first production shipments or services per the Purchased Part Inspection & Approval Process (PPIAP) which follows the AIAG Production Part Approval Process which can be purchased from www.aiag.org.

4.1.1. The PPIAP process shall be initiated for the following conditions:

4.1.1.1. New supplier

4.1.1.2. Use of other construction / material than was used in previously approved product

4.1.1.3. Production from new / modified tools – includes additional or replacement tooling

4.1.1.4. Production transferred to a different or additional manufacturing site

4.1.1.5. Product produced after twelve or more months of inactivity

4.1.1.6. Product / process changes at the supplier – internal or external source of change

4.1.1.7. Change in test / inspection method – new technique

4.1.1.8. Supplier out-sourcing product – sub-supplier to Exide Technologies

4.1.1.9. The following items are requirements for the PPIAP. The submission level is provided by Engineering and provides guidance for submittal and retention requirements of the below items.

4.1.1.10. Design record

4.1.1.11. Engineering change documents, if applicable

4.1.1.12. Customer engineering approval, if required

4.1.1.13. Design FMEA – applicable only for design-responsible suppliers

4.1.1.13.1. The AIAG FMEA format is recommended which may be purchased from www.aiag.org or obtained from Exide Technologies.

4.1.1.14. Process flow diagrams

4.1.1.15. Process FMEA

4.1.1.15.1. The AIAG FMEA format noted in 4.1.2.4.1 is recommended.



Transportation Business
Group

MATERIAL SPECIFICATION

Subject: **Supplier Quality Requirements**

Issued by: **M. Ansari**

M #: **M500**
Section: **02**
Revision: **19**
Date: **10/26/09**
Page: **3 of 9**
ECO: **0603109**


- 4.1.1.16. Control plan
 - 4.1.1.16.1. The AIAG control plan format is recommended which may be purchased from www.aiag.org in the APQP Manual or obtained from Exide Technologies.
- 4.1.1.17. Measurement system analysis study (MSA)
 - 4.1.1.17.1. MSA guidance may be obtained from the MSA Manual available from www.aiag.org.
- 4.1.1.18. Dimensional results
- 4.1.1.19. Material, performance test results
- 4.1.1.20. Initial process studies
 - 4.1.1.20.1. The process capability index (Cpk) target is 1.33 or greater. If the process is not capable or less than 1.33, reaction plans shall be indicated including containment and 100% inspection, as appropriate.
- 4.1.1.21. Qualified laboratory documentation
- 4.1.1.22. Appearance approval report (AAR), if applicable
- 4.1.1.23. Sample product
- 4.1.1.24. Master sample
- 4.1.1.25. Checking aids
- 4.1.1.26. Records of compliance with customer-specific requirements, if applicable
- 4.1.1.27. Part Submission Warrant (PSW)
 - 4.1.1.27.1. The Parts Submission Warrant may be obtained from Exide Technologies.
- 4.1.2. Initial shipments after approval shall be clearly marked indicating the change.

CERTIFICATIONS

PART K - CERTIFIED ANALYSIS AND SAMPLE - EACH SHIPMENT

- a. For each production batch or lot of material to be shipped to Exide Technologies, the supplier must supply a Certificate of Analysis and a representative sample to Exide Technologies as directed below.
- b. In general, the Certificate of Analysis must cover the chemical analysis and/or physical tests performed by, or for, the supplier on the material supplied to substantiate that the shipment meets specified requirements.
- c. The Certificate of Analysis must contain the following, as appropriate, for the type of product supplied:
 - (1) Exide Technologies Order Number.
 - (2) Quantity of parts or material shipped, volume and date.
 - (3) Description of part or material shipped, batch and/or lot number if applicable.
 - (4) Identification of the Exide Technologies specification, specification limits, test values, date of tests, and signature and title of supplier representative releasing the material.
- d. The supplier must furnish the Certificate of Analysis and the representative sample of the material to the Quality Assurance Manager of each Exide Technologies site to which the material shipped.

*The master document is located electronically.
Printed copies of this document are NOT CONTROLLED.
The USER is responsible to ensure the document is valid prior to use*

 Transportation Business Group	MATERIAL SPECIFICATION		M #: M500
	Subject: Supplier Quality Requirements		Section: 02
			Revision: 19
	Issued by: M. Ansari		Date: 10/26/09
			Page: 4 of 9
			ECO: 0603109

PART L - CERTIFIED ANALYSIS ONLY - EACH SHIPMENT

- a. The supplier must supply a Certificate of Analysis to Exide Technologies for each batch or lot of material shipped to the Quality Assurance Manager of each Exide Technologies site to which the material shipped. The Certificate of Analysis shall be prepared in accordance with PART K requirements except that no representative samples of the product need to be supplied.

*Flexural modulus and Izod notched impact testing shall be required in a monthly report (Appendix B) to Industrial NA Corporate Quality, Transportation NA Supplier Quality, and the Quality Manager at the location of delivery, as a representative sample for reprocessed polypropylene.

PART M - CERTIFICATION STATEMENT AND TEST RESULTS – MONTHLY

- a. The supplier shall prepare and provide to Exide Technologies at the receiving location certification statements and actual or summary test results for the material supplied.
- b. The certifications shall be supplied on a monthly basis beginning with the first shipment. The certifications shall be supplied to each Exide Technologies location that product is supplied to.
- c. The certification shall state that the product and or material conforms to the specific Material specification and/or drawings listed on the Purchase Order.
- d. The Certificate of Analysis must contain the following, as appropriate, for the type of product supplied:
- (1) Exide Technologies Order Number. For multiple monthly orders, not all order numbers need to be listed since the certification report covers all product supplied for the month.
 - (2) Description of parts or materials supplied.
 - (3) Exide Technologies material specification number and the specification limits for the data.
 - (4) Actual or summary test data for the characteristics identified in Appendix A of this specification.
 - (5) Identification of the time period and/or quantity of product certified.
 - (6) Signature and title of a person of authority in the supplier’s organization.
- e. One copy to the Quality Assurance Manager of each receiving Exide Technologies site.

PART N-CERTIFICATION OF COMPLIANCE–GOVERNMENT/SAFETY CONSTRAINTS-EACH SHIPMENT

- a. The supplier shall prepare and provide to the receiving location a Certificate of Compliance stating that materials supplied satisfy current governmental and safety constraints on restricted, toxic, and hazardous materials; as well as environmental, electrical, and electromagnetic considerations applicable to the country of manufacture and sales. This certification statement may be supplied on an annual basis.

PART O - CERTIFICATION OF COMPLIANCE - EACH SHIPMENT

- a. The Seller shall prepare and provide a certification of compliance for the products/material supplied. The certification must contain the following:
- (1) Supplier’s letterhead
 - (2) Exide Technologies part number/specification, if listed on purchase order, or industry part name.
 - (3) Quantity/volume shipped and suppliers order no.
 - (4) Certification statement that the product or service supplied complies with specification.
 - (5) Signature and title of a person of authority in the supplier’s organization.



**Transportation Business
Group**

MATERIAL SPECIFICATION

Subject: Supplier Quality Requirements

Issued by: M. Ansari

M #: M500
Section: 02
Revision: 19
Date: 10/26/09
Page: 5 of 9
ECO: 0603109

APPENDIX A

Listed are the minimum quality and certification requirements for production parts, materials, and components. Other certifications may be requested by Procurement as needed.

NOTE: Exide Technologies purchasing shall be contacted for commodity types not listed.

MATERIAL	CERTIFICATION REQUIREMENTS
M501/NA MS 100 Lead, Lead Alloys, & Metals	(L)(N) Elements specified in specification
M502 Lead Oxide	(L)(N) Elements specified in specification, % metallic lead, screen, AA or AD.
M503 Plate Additives - 02 Anti-Oxidant Oil - 04 Fiber for Paste Mix - 06 Sodium Perborate - 07, 08 Carbon Black for Bagged Expander - 09, 10 Lignin for Bagged Expander - 14, 15 Oil for Bagged Expander - 16, 17, 18, 19 Bagged Expander - 21, 22 Barium Sulfate - 23 Alpha Cellulose Flock - 24 Milled Tetrabasic Lead Sulfate Crystals	(L)(N) Weight, specific gravity (L)(N) Length, diameter, acid resistance (L)(N) % concentration, density, screen (L)(N) Density, screen, moisture (L)(N) % moisture, density, Mn, % ash (L)(N) Viscosity, density (L)(N) % blend (L)(N) Apparent density, barium sulfate content, Fe, Mn (L)(N) Alpha content, moisture, density (L)(N) Tetrabasic lead sulfate content, moisture, Fe, Sb median particle size, and BET
M504 Separators - 01 Microporous Polyethylene - 04 Flex-sil Microporous - 08 Microporous Polyethylene w/Glass Mat	(M) ER, % moisture, % oil (M) ER, % moisture (M) ER, % moisture, % oil
M505 Containers/Covers - 01 Polypropylene Materials - 02 Polypropylene Covers - 05 Polypropylene Containers - 14 Virgin Polypropylene Resin for Battery Parts NA MS 200-01 Reprocessed Polypropylene	(L) Melt flow, flexural modulus, Izod notched impact @ 23 C (M) Impact BCI Tech Manual sec 4.3.2 (M) Impact BCI Tech Manual sec 4.2.2 Bulge BCI Tech Manual sec 4.2.3 (L) Melt flow, flexural modulus, Izod notched impact @ 23 C (L) Melt flow, flexural modulus, Izod notched impact @ 23 C
M506 Poly Components Miscellaneous Parts - 01 Polypropylene Vents - 03 State of Charge Indicators	(0) Certification of compliance (M) Acid resistance, leak, pressure, relief & flame (L) Room temp. specific gravity float
M507 Sealants & Adhesives - 01 Epoxies – Container Bottom Flood Anchor - 02 Epoxies – Element Anchor Thixotropic Epoxy - 14 Hot Melt – Amorphous Polypropylene Type	(L)(N) Viscosity, flash point, density (L)(N) Viscosity, flash point, density (L)(N) Viscosity, flash point, softening point, needle
M508 Acids	



Transportation Business Group


MATERIAL SPECIFICATION

Subject: Supplier Quality Requirements

Issued by: M. Ansari

M #: M500
Section: 02
Revision: 19
Date: 10/26/09
Page: 6 of 9
ECO: 0603109

MATERIAL	CERTIFICATION REQUIREMENTS
-01 Sulfuric Acid	(L)(N) As specified in material specifications
-02 Sulfuric Acid	(L)(N) As specified in material specifications
M510 Marking and Labeling - 01 Printed Plaques and Labels - 02 Hot Stamp Tape	(M) Adhesion, acid resistance, temperature resistance (O) Certification of compliance
-01 Corrosion Inhibitor -02 No-Ox-ID "A" Grease -03 Flux -04 Terminal Coatings -06 Grid Casting Oil	(O) Certification of compliance (O) Certification of compliance (L)(N) Certification of compliance (O) Certification of compliance (O) Certification of compliance
M512 Battery Additives -02 Sodium Sulfate Tablets -03 Sodium Sulfate Anhydrous	(L) Concentration (L) Concentration & impurities
M514 Metal Hardware -01 Lead Terminals - Side Terminals (ST) -01B Cold Formed Lead Terminals for ST Batteries -02 S/S Hex Nuts -04 Poly Vinyl Tubing -05 S/S Hex Bolts -06 GP 31 Lead Terminals -07 Burn on Lead Terminals -08 Cold Formed Lead Bushings -09, 11 Coated Terminal Bushings	(M) Certification to specification (L) Certification to specification (O) Certification of compliance (O) Certification of compliance (O) Certification of compliance (L) Certification to specification (O) Certification of compliance (O) Certification of compliance (O) Certification of compliance
PK'S Packaging	(O) Certification of compliance when specified by buyer
M519 Paper -01 Paper for Coating of Plates	(L) Physical & disintegration requirements per specification
M520 Purchased Products -01 Lead Acid Storage Batteries (Non-Exide Manufactured)	(L)(N)/Other per spec Test data as identified in specification
M521 Handles	(M) Acid resistance, tensile pull per Exide Drawing

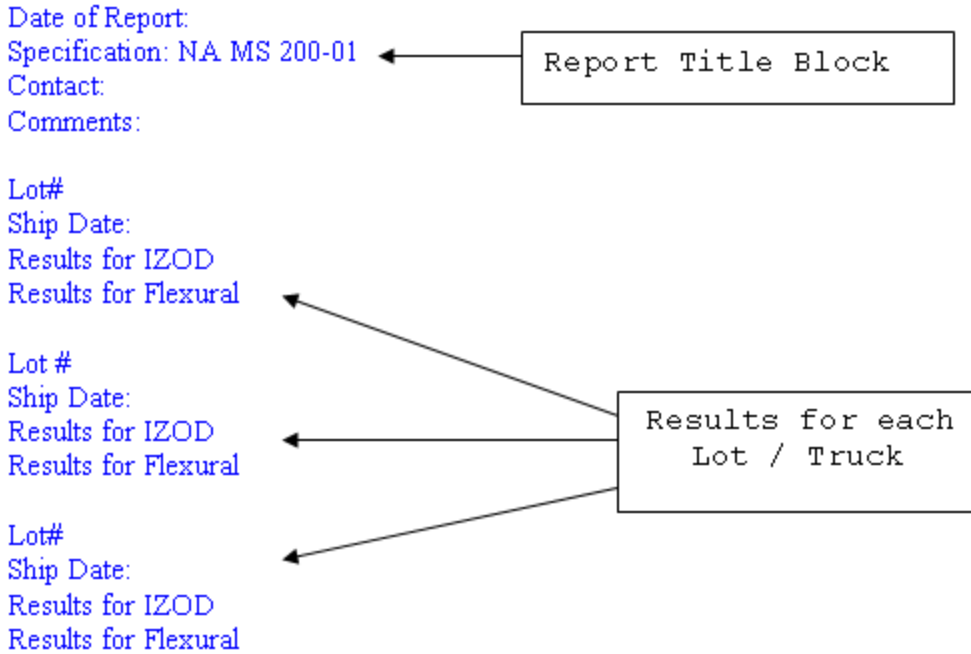
 Transportation Business Group	MATERIAL SPECIFICATION		M #: M500
	Subject: Supplier Quality Requirements		Section: 02
			Revision: 19
	Issued by: M. Ansari		Date: 10/26/09
			Page: 7 of 9
			ECO: 0603109

APPENDIX B

Listed is an example format to report monthly on the Flex modulus and the Izod testing.

1.0) MONTHLY REPORTING FORMAT

1.1 Flexural and Izod





**Transportation Business
Group**

MATERIAL SPECIFICATION

Subject: Supplier Quality Requirements

Issued by: M. Ansari

M #: M500
Section: 02
Revision: 19
Date: 10/26/09
Page: 8 of 9
ECO: 0603109

INDEX OF REVISIONS

REV. NO.	DATE	ITEM NO.	REVISION
Rev 14 (Lewandowski)	10-27-05	APPENDIX A	Added #24 Milled Tetrabasic Lead Sulfate Crystals to M-503 Plate Additives
Rev 15 (Fairfield)	7/7/06	Title & 1.1	Revised title to reflect intent of document
		2.1, 2.4, 5.2 Part K-e-1 (prior)	Sections deleted – no longer applicable or located in other spec
		2.8, 5.1 7.2, 8.1, 8.3, 9.1, 10.1, 11.1, 12.1-12.4, 13.1, 14, 15.2, 16-18 (prior)	Sections deleted – requirements of ISO which is required under 3.1
		10.3, App B (prior)	Sections deleted – requirements within section 4 – PPIAP
		3.1.1, 3.2, 3.3, 3.4.1, Section 4	Sections added
		12.7 (prior)	Added to section 3.1
		5.3, 8.2, 13.2 (prior)	Sections moved under current 3.2
		11.2, 13-3-13.5, 15.1 6.1-6.3 11.3-11.4 (prior)	Sections moved and revised for verbiage under current 3.3
		2.7 (prior)	Section moved to section 3.4
		Section 4 (prior)	Revised for verbiage and included in current section 4 – different numbering
		3, 7.1 10.2, 12.5-12.6 (prior)	Sections moved and revised for verbiage under current 4
		6.4 (prior)	Deleted – confusing as rework is allowed per current 3.3.2
		Part C, E, F, G, H, J (prior) & note on App A	Deleted – additional requirements for P.O.s that are no longer used
		Part K a, b, c, d Part L a Part M d	Revised all prior terminology relating to a certified report to Certificate of Analysis
		Appendix A: Lead, Plate Additives	Revised specs to reflect actual current numbers
		Appendix A: Flock	Added (L)(N) to cert requirement – previously no code listed
		Appendix A: Sealants & Adhesives	Added section – was not included previously
Appendix A: Label – ‘-05’ Additive – ‘-07’ Paper – ‘-04’	Deleted cert requirements – prior GNB materials/specs		
Appendix A: Flux	Revised cert requirement to (L)(N) from (O)		
Appendix A: Lead Side Term	Revised cert requirement to (M) from (L)		
Rev. 16 (Fairfield)	7/10/08	Appendix A	Revised M505-07 reference to current NA MS 200-01 reference (per ECO 0602773)



**Transportation Business
Group**

MATERIAL SPECIFICATION

Subject: Supplier Quality Requirements

Issued by: M. Ansari

M #: M500
Section: 02
Revision: 19
Date: 10/26/09
Page: 9 of 9
ECO: 0603109

Rev 17	8/4/08 (J. Bear)	Appendix A	Deleted Part M requirement from M510 sec 02
18	9/29/08 (R.Tolles)	Part L	Added “*Flexural modulus and Izod notched impact testing shall be required in a monthly report (Appendix B) to Industrial NA Corporate Quality, Transportation Supplier Quality, and the Quality Manager at the location of delivery, as a representative sample for reprocessed polypropylene.” to Part L requirement.
		Appendix B	Monthly report format.
Rev 19	10/26/09 (M. Ansari)	Appendix A	Deleted reference to Micropor-sil, M504 sec 07.