

PART SUBMISSION WARRANT

Part Name	CVR WIR CONN	Customer Part Number	GU5T-14N003-EB
Shown on Drawing No.	GU5T-14N003-EB	Supplier Part Number	6001482802B
Engineering Change Level	B2 AELE-E-12035198-498	Dated	7/16/19
Additional Engineering Changes	N/A	Dated	N/A
Safety and/or Government Regulation	☐ Yes ☒ No	Purchase Order No.	N/A
Weight (kg)			0.0014
Checking Aid No.	N/A	Checking Aid Engineering Change Level	N/A
		Dated	N/A

SUPPLIER MANUFACTURING INFORMATION

Western Diversified Plastics / 609123190

Supplier Name & Supplier/Vendor Code

53150 N. Main St.

Street Address

Mattawan MI 49071 USA
City State Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan

Customer Name/Division

Buyer/Buyer Code

Ford

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ Not Applicable

IMDS - 850560461 / 1

Are polymeric parts identified with appropriate ISO marking codes?

☒ Yes ☐ No ☐ Not Applicable

REASON FOR SUBMISSION (Check at least one)

- ☒ Initial Submission
☐ Engineering Change(s)
☐ Tooling: Transfer, Replacement, Refurbishment, or additional
☐ Correction of Discrepancy
☐ Tooling Inactive > than 1 year

- ☐ Change to Optional Construction or Material
☐ Supplier or Material Source Change
☐ Change in Part Processing
☐ Parts Produced at Additional Location
☐ Other - please specify below

REQUESTED SUBMISSION LEVEL (Check one)

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
☐ Level 2 - Warrant with product samples and limited supporting data submitted to customer.
☒ Level 3 - Warrant with product samples and complete supporting data submitted to customer.
☐ Level 4 - Warrant and other requirements as defined by customer.
☐ Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

SUBMISSION RESULTS

The results for ☒ dimensional measurements ☒ material and functional tests ☐ appearance criteria ☒ statistical process package
 These results meet all drawing and specification requirements: ☒ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process W-4828 / Injection Molding

DECLARATION

I hereby affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 18,732 / 24 hours.
 I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from the declaration below.

EXPLANATION / Customer Requested
 COMMENTS:

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☒ n/a

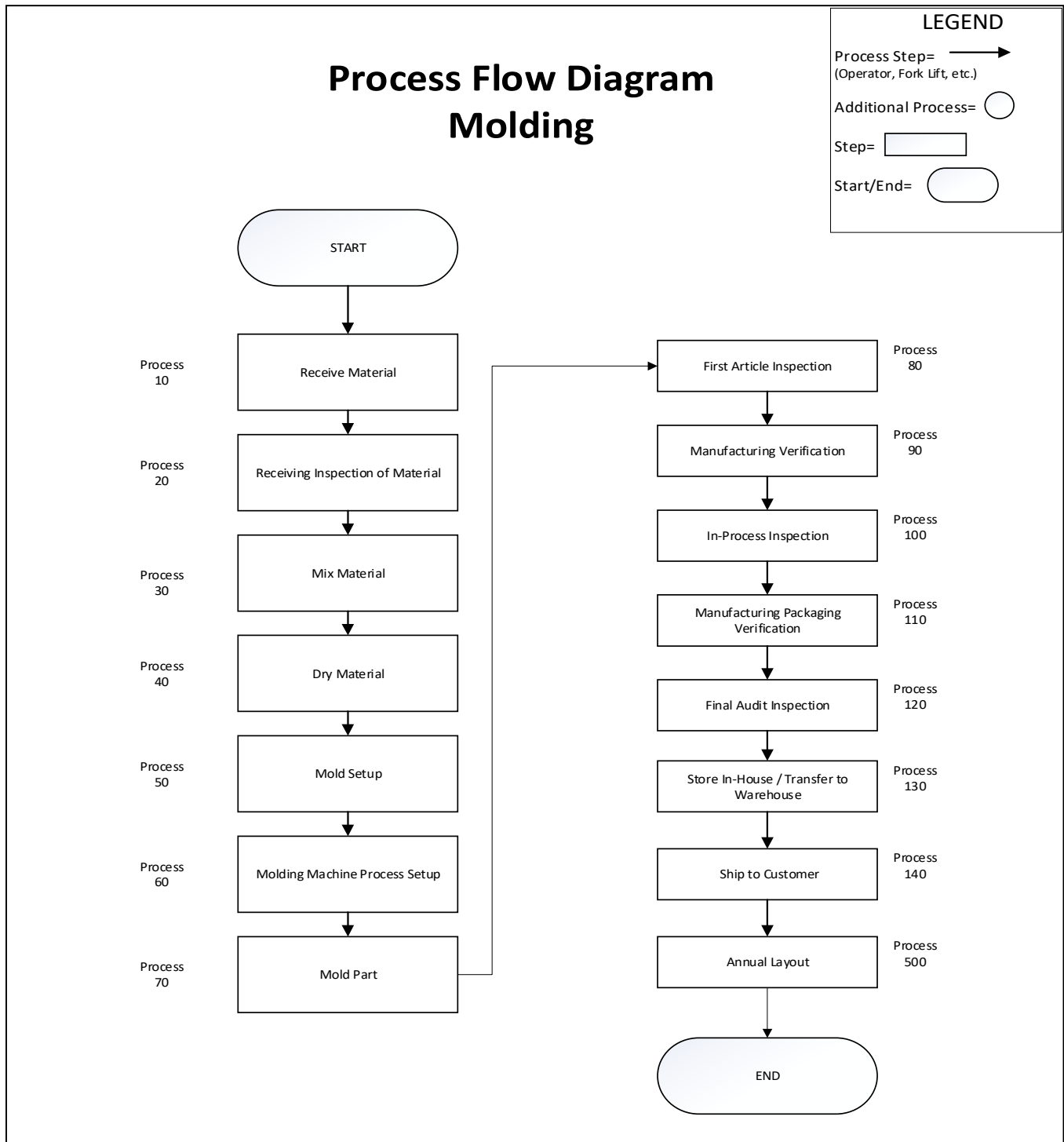
Supplier Authorized Signature *Brenda Lewman* Date 02/20/23
 Print Name Brenda Lewman Phone No. 269-668-3393 Fax No. 269-668-7143
 Title Quality Engineer E-mail brenda.lewman@westerndp.com

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

Process Flow #:	4828-02 (Revision B2)	Date (Orig.):	06/03/2015	Date Rev.:	08/23/2023
Item / Part #:	4828-02-001B / 6001482802B	Prepared By:	Brenda Lewman / Dan Switzer		
Program(s) / Part Name:	Wire Dress Cover / With Tape Tab				



**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer, QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T	R P N
Process 10 Receive material	Material is labeled correctly with the correct quantity	1. Incorrectly labeled material from supplier 2. Incorrect quantity of material	1. Inaccurate inventory 2. Possible line shut down	8		1. Supplier system failure 2. Labels not properly bar coded	3	1. Warehouse scanning system 2. Supplier is minimum ISO 9001 certified 3. Receiving inspection	1. Warehouse scanning system 2. Receiving inspection	2	48	24	None						0
Process 20 Receiving Inspection Of Material	Material certification on file Material correctly labeled	No material certification on file Material labeled wrong	1. Inaccurate inventory 2. Possible line shut down	8		1. Error in raw material handling or processing at supplier. 2. Error in labeling product in house	2	1. Suppliers are ISO 9001 certified at minimum. 2. External Audits of the Suppliers by WDP.. 3. Receiving Inspection Instructions 4. Training of the Receiving Inspector to the work instructions.	1. Material certification received for each lot delivered 2. Receiving inspection	3	48	16	None						0
Process 30 Mix Material (50% Max Regrind)	Correct material blended with the correct amount of regrind	Contaminated material through mixing & handling	1. Premature failures of the part design due to the material properties 2. Unable to process 3. Unable to make a good part	8		1. Error in raw material handling or processing at supplier. 2. Error in labeling product in house 3. Error by material handler requesting material 4. Material handler not following procedures	2	1. Suppliers are ISO 9001 certified at minimum. 2. Training to all work relevant work instructions	1. Visual differences in appearance of pellets at material mixing station 2. One person responsible for mixing of material 3. Mix % documented on the label by material handler 4. Training Matrix	3	48	16	None						0
		Physical properties shift due to excessive regrind mix	1. Premature failures of the part design due to the material properties 2. Unable to process 3. Unable to make a good part	8		1. Error in labeling product in house 2. Error by material handler requesteing material 3. Material handler not following procedures	2	1. Suppliers are ISO 9001 certified at minimum. 2. Training to all work relevant work instructions	1. Visual differences in appearance of pellets at material mixing station 2. One person responsible for mixing of material 3. Mix % documented on the label by material handler 4. Training Matrix	3	48	16	None						0
Process 40 Dry Material	Material is sufficiently dry	Material is not dry (wet)	1. Product failures 2. Unable to process 3. Unable to make a good part	8		1. Inadequate drying equipment throughput 2. Dryer equipment failure 3. Excessive moisture in	2	1. Material handler work instructions 2. Training to all relevant work instructions	1. Training matrix 2. Dryer verification each shift 3. Moisture analysis at start up	5	80	16	None						0
		Material is too dry	1. Product failures 2. Unable to process 3. Unable to make a good part	8		1. Inadequate drying equipment throughput 2. Dryer equipment failure 3. Over dried material	2	1. Material handler work instructions 2. Training to all relevant work instructions	1. Training matrix 2. Dryer verification each shift 3. Moisture analysis at start up	5	80	16	None						0
Process 50 Mold Set Up	Mold setup correctly	Mold not setup correctly	1. Part does not meet dimensional requirements 2. Molding defects - flash, under fill, warpage, etc. 3. Potential 100% scrap of product produced 4. Potential part functional issue	8		1. Mold incorrectly re-assembled 2. Incorrect water diagram 3. Top of mold engraving incorrect	3	1. Tooling Standards for Injection Molds guideline 2. Mold setup book work instructions 3. Training to all relevant work instructions	1. Training matrix 2. Mold Setup Book 3. Visual Inspection	3	72	24	None						0

**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer, QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T	R P N
		Tool inserts not correctly setup (i.e. after tool PM)	1. Part does not meet dimensional requirements 2. Molding defects - flash, under fill, warpage, etc. 3. Potential 100% scrap of product produced 4. Potential part functional issue	8		1. Mold incorrectly re-assembled 2. Incorrect inserts used	3	1. Tooling Standards for Injection Molds guideline 2. Training to all relevant work instructions	1. Training matrix 2. Visual inspection of version identifier	3	72	24	None						0
Process 60 Molding Machine Process Setup	Molding process setup is correct	Molding process setup is not correct	1. Part does not meet dimensional requirements 2. Molding defects - flash, under fill, warpage, etc. 3. Potential 100% scrap of product produced	8		1. Molding Setup Book Master was not created 2. Scientific molding was not performed during Tool Sampling process 3. Molding outside the Material Manufacturer's recommendations 4. Inadequate setup to molding standards 5. Set up book was not created during sampling phase	2	1. Tool Sampling work instruction 2. Training to all relevant work instructions 3. Systems FMEA - Molding 4. Conducting a Sample Run and Developing a Sample Process work instruction	1. Training matrix 2. Sample run 3. First & last article inspection 4. Process verification synopsis per Molding Set up Book Master process	5	80	16	None						0
		Process not set up to material manufacturer's process specifications	1. Molding defects - flash, under fill, warpage, etc. 2. Part does not meet dimensional requirements 3. Part does not meet functional requirements	8		1. Lack of discipline to process materials to Material Manufacturer's recommendations. 2. Inadequate setup to molding standards 3. Tooling condition dictating process adjustments to maintain part quality	2	1. Tool Sampling work instruction 2. Training to all relevant work instructions 3. Systems FMEA - Molding 4. Conducting a Sample Run and Developing a Sample Process work instruction	1. Training matrix 2. Sample run 3. First & last article inspection 4. Process verification synopsis per Molding Set up Book Master process	5	80	16	None						0
Process 70 Mold Part	Molded part must meet acceptance criteria	Molded part does not meet acceptance criteria	1. Part does not meet dimensional requirements 2. Potential 100% scrap of parts produced 3. Potential customer reject & line shut down	8		1. Tool malfunction (i.e. part hung up in tool, etc.) 2. Molding machine malfunction (i.e. clamp not locking up, etc.) 3. Auxiliary equipment malfunction (i.e. sprue picker missing runner, dryers, thermolators, etc.) 4. Molding Setup Book Master was not followed 5. Machine out of material 6. Machine wear (i.e. screw, barrel, etc.) 7. Material contamination 8. Lack of regrind control 9. Moisture analysis not performed or done incorrectly	2	1. Molding Setup Book Master work instruction 2. Material Mixing work instruction 3. Moisture Analysis work instruction 4. Material Collection for Moisture Analysis work instruction 5. Training to all relevant work instructions 6. System FMEA - Molding 7. Molding Cycle Interruption process work instruction	1. Training matrix 2. Daily Process Verification Synopsis 3. First and Last Article inspection 4. In-process inspection 5. Operator - Hourly Review / Process Verification 6. Process Verification Synopsis / Mold Temps 7. Final Audit inspection 8. Machine monitor alarms (i.e. cushion, etc.) 9. SPC performed 10. Molding Cycle Interruption process 11. Reversing conveyors / robot rejection 12. Quality Synopsis	6	96	16	None						0
		Molding machine cycle is interrupted	1. Molded defects in parts create customer rejections (i.e. flash, underfill, smashed parts, contamination, splay, etc.)	8		1. Part stuck in tool 2. Clamp not locking up 3. Machine out of material 4. Sprue picker missing runner 5. Robot missing part 6. Molding machine malfunction	2	1. Molding Set Up Book work instruction 2. Training to all work instructions 3. Conducting a Sample Run and Developing a Sample Process work instruction	1. Training Matrix 2. Process monitor alarms 3. First & last article inspection 4. In-process inspection 5. Operator inspection 6. Final audit inspection 7. IQMS system	5	80	16	None						0

**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer, QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T	R P N
		Mold not cleaned properly	1. Customer Reject 2. Stop Production 3. Physical properties inadequate for design requirements	8		1. Cleaning procedure not followed 2. Inadequate venting 3. Incorrect processing	2	1. Robust PM program for tools 2. Tool cycles tracked in IQMS per Preventative Tool Maintenance Schedule	1. Quality Synopsis process 2. First & last article inspection 3. In-process inspection 4. Operator inspection 5. Final audit inspection 6. SPC performed	6	96	16	None						0
		Inadequate cooling system in mold	1. Customer Reject 2. Stop Production 3. Physical properties inadequate for design requirements	8		1. Injection mold construction issues 2. Inadequate cooling in design 3. Improper cleaning of cooling circuits 4. Not following setup procedures 5. Overtightened water fittings	2	1. Tooling Standards for Injection Mold guidelines 2. Molding Set Up Book Master work instructions 3. First & last article inspection 4. Systems FMEA - Molding 5. Training to all work instructions 6. Tool PM program	1. Training Matrix 2. Quality Synopsis process 3. First & last article inspection 4. In-process inspection 5. Operator inspection 6. Final audit inspection 7. SPC performed	6	96	16	None						0
		Mold Functionality Fails	1. Dimensional inconsistency 2. Physical properties inadequate for design requirements 3. Part incomplete or deformed	8		1. Machine maintenance issues 2. Mold component failed 3. Improper processing 4. Improper mold assembly	2	1. Tooling Standards for Injection Mold guidelines 2. Training to all work instructions 3. Tool PM program 4. Machine PM program	1. Training Matrix 2. First & last article inspection 3. In-process inspection 4. Operator inspection 5. Final audit inspection 6. SPC performed	6	96	16	None						0
Process 80 First Article Inspection	All In-process steps completed, no molding defects, proper carton identification	Inspection process does not detect defects	1. Customer reject 2. Excessive flash 3. Underfill 4. Broken core 5. Warpage 6. Validation sorting	8		1. Inspection instructions not adequate 2. Inspection instructions not followed 3. Inspector error using gages 4. Operator error using gages 5. Gage failure	2	1. Training for all work instructions 2. Gaging guides 3. Internal audits 4. Gage calibrations 5. Cross functional team creates inspection instructions	1. Internal audits 2. Final Audit Inspection 3. In-process inspection 4. First Last Article inspection 5. Training Matrix	5	80	16	None						0
		Inspection process not completed	1. Potential nonconforming part will be produced 2. Possible customer reject & line shut down	8		1. Inspection instructions not followed 2. Operator error	2	1. Cross functional team creates inspection instructions 2. Training to all relevant work instructions 3. Gaging guides	1. Inspection entry into the WDP Database 2. Evidence of parts on First Article board & molding machine 3. Comparison of parts to Last Article samples 4. Work instruction Operator Hourly Review 5. Final Audit Inspection	5	80	16	None						0
		Inspection process not effective	1. Potential nonconforming part will be produced 2. Possible customer reject & line shut down	8		1. Inspection Instructions not adequate 2. Inspection instructions not completed correctly 3. Operator error	2	1. Cross functional team creates inspection instructions 2. Training to all relevant work instructions 3. Gaging guides	1. Non-conforming pictures in WDP Database 2. Alerts in WDP Database 3. Cross functional team creates inspection instructions 4. Final Audit inspection 5. Operator Hourly Review 6. In-process inspection 7. Training Matrix	5	80	16	None						0

**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer, QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS			
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T
		Part does not mate with mating part	1. Customer rejection 2. Potential customer manufacturing shut down	8		1. Broken or chipped core 2. Mold in need of preventative maintenance 3. Inspector / Operator error	2	1. Preventative Tool Maintenance Schedule 2. Gaging guides 3. Training to all relevant work instructions	1. Preventative Tool Maintenance Schedule 2. First Last Article Inspection 3. In-process inspection 4. Final Audit inspection 5. Training Matrix	5	80	16	None					0
		Lock tabs inadequate for the mating device	1. Poor fit to mating part causing no build condition 2. Missing or incomplete features 3. Potential customer manufacturing shut down	8		1. Material degradation through processing 2. Broken and/or chipped cores 3. Improper processing parameters due to a tooling or material problem	2	1. Setup Process 2. DVP&R Testing and full layout validating the process prior to production	1. Preventative Tool Maintenance Schedule 2. Work instruction QW1010 First Last Article Inspection 3. Work instruction QW1026 In-process inspection 4. Work instruction QW1016 Final Audit inspection	5	80	16	None					
		Label printing not completed per procedure (Wrong labels)	1. Internal customer reject 2. Possibly wrong product shipped 3. Potential customer manufacturing shut down	8		1. Operator not following label printing instructions 2. Error with label maker 3. Inspector failure to verify correct labels	2	1. Work instruction MW1025 Printing Production Labels 2. Work instruction QW1010 First Last Article Inspection 3. Work instruction QW1026 In-process inspection 4. Work instruction MW1004 Label ID & Use 5. Work instruction QW1016 Final Audit inspection 6. Training to all work instructions	1. Label Verification Master 2. Work instruction QW1010 First Last Article Inspection 3. Work instruction QW1026 In-process inspection 4. Work instruction QW1016 Final Audit inspection 5. Work instruction MW1004 Label ID & Use	5	80	16	None					
Process 90 Manufacturing Verification	Visual inspection of parts / gaging of parts if required, no molding defects	1. Visual Inspection not 100% effective 2. Error in using gage	1. Customer rejection 2. Potential customer manufacturing shut down 3. Visual Defects go undetected	8		1. Operator not following proper instructions 2. Visual inspection not 100% affective	2	1. Gaging guides 2. Training to all relevant work instructions	1. Label Verification Master 2. First Last Article inspection 3. In-process inspection 4. Final Audit inspection 5. Training Matrix	5	80	16	None					0
Process 100 In-process Inspection	Visual inspection of parts / gaging of parts if required, no molding defects, proper carton identification	See First Article See Control plan	See First Article See Control plan	8		See First Article See Control plan	2	See First Article See Control plan	See First Article See Control plan	5	80	16	None					0
Process 110 Manufacturing Packaging Verification	Correct quantity, labels & parts must be packaged	Incorrect quantity packaged	1. Customer short shipment	6		1. Packaging instructions not clear 2. Packaging instructions not available 3. Packaging instructions not followed 4. Audit scale APW number not calculated correctly	2	1. Detailed packaging instructions developed for each product 2. Training of operators on packaging instructions 3. Using the scale at final audit work instruction	1. First piece inspection 2. In-process inspection 3. Final audit	7	84	12	None					0

**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer , QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T	R P N
		Incorrect label affixed to packaging	1. Customer rejection 2. Potential customer line shut down	6		1. Label verification not available 2. Label verification not used 3. Labels made and affixed to container ahead of time 4. Wrong labels printed at first article	2	1. Molding label verification work instructions 2. Training to all work instructions 3. Each part number assigned a label job number to print labels	1. Training matrix 2. First and Last Article inspection 3. In-process inspection 4. Operator inspection 5. Final audit inspection 6. Molding Label Verification Card	7	84	12	None						0
		Wrong or mixed parts in the package	1. Customer rejection 2. Potential customer manufacturer shut down	6		1. Packages sitting open and unsealed 2. Operators not cleaning out job setups from run to run 3. Filling a partial carton with wrong product	2	1. Packaging plan 2. Housekeeping and Line clearance from previous run. 3. Inspector and Operator Training to the inspection and scanning procedures.	1. First article inspection QW1010 2. In Process inspection QW1026 3. Final Audit inspection QW1016 4. Operator Inspection MW1004 Label ID & Use / Label verification card	7	84	12	None						0
Process 120 Final Audit Inspection	Visual inspection of parts, no molding defects, correct carton label	Inspection process does not detect defects	1. Customer reject 2. Excessive flash 3. Underfill 4. Broken core 5. Warpage 6. Validation sorting	6		1. Inspection Instructions not adequate 2. Inspection instructions not followed 3. Operator error	2	1. Training to all work instructions 2. Internal audits 3. Cross functional team creates inspection instructions	1. Internal audits 2. Final Audit Inspection 3. In-process inspection 4. First Last Article inspection 5. Training Matrix	7	84	12	None						0
		Visual Inspection not 100% effective	1. Visual Defects go undetected	6		1. Inspection Instructions not adequate 2. Inspection instructions not followed 3. Operator error	2	1. Training to all work instructions 2. Past defective boundary sample pictures in the database	1. Internal audits 2. Final Audit Inspection 3. In-process inspection 4. First Last Article inspection 5. Training Matrix	7	84	12	None						0
Process 130 Store In-House / Transfer to Warehouse	Correct product stored in correct location	Incorrect product stored in right location	1. Unable to locate product 2. May need to remake product	8		1. Mis-labeled cartons 2. Scanning instructions not followed 3. Scanning instructions not available	2	1. Scanning from Plant to Warehouse work instructions 2. Scanning from Warehouse to Plant work instructions 3. Training to all relevant work instructions	1. Training matrix 2. Barcode ERP system 3. Month end inventory audit	3	48	16	None						0
		Correct product stored in wrong location	1. Unable to locate product 2. May need to remake product	8		1. Mis-labeled cartons 2. Scanning instructions not followed 3. Scanning instructions not available	2	1. Scanning from Plant to Warehouse work instructions 2. Scanning from Warehouse to Plant work instructions 3. Training to all relevant work instructions	1. Training matrix 2. Barcode ERP system 3. Month end inventory audit	3	48	16	None						0

**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)**

ITEM: **4828-02-001B / 6001482802B**
MODEL YEAR(s) / **Wire Dress Cover / With Tape Tab**
CORE TEAM: **PM - Kirk Boeskool, ME - Dan Switzer, QE - Brenda Lewman, Plant Super. - Steve Britton Jr., QC Super. - Jaime Rigozzi**

Process Responsibility: **WDP Mfg. Engineering**
Key Date: **12/08/2015**

FMEA Number: **4828-02 (Revision B2)**
Prepared by: **Brenda Lewman / Dan Switzer**
FMEA Date (Orig.): **6/3/15** FMEA Date (Rev): **8/23/23**

PROCESS STEP FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	S E V	C L A S S	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	O C C	Current Control		D E T	R P N	O x S	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION						ACTION TAKEN	S E V	O C C	D E T	R P N
Process 140 Ship To Customer	Correct product shipped to customer	Incorrect product shipped to customer	1. Customer rejection 2. Potential customer manufacturing shut down 3. Product non-functional for the application	8		1. Mis-labeled cartons 2. Scanning instructions not followed 3. Scanning instructions not available	2	1. Scanning Product for Shipment work instructions 2. Printing Production Labels work instruction 3. Customer specific label work instruction 4. Training to all relevant work instructions	1. Training matrix 2. Barcode ERP system 3. Label ID & Use 4. Inventory audits-monthly/quarterly 5. Pick process by WHS utility 6. Shipping clerk matches packing list with order and applies BOL & Packing List if they agree 7. WHS utility verifies load to paper work, physically loads it and stamps/initials paper work for accountability	3	48	16	None						0
		Correct product shipped to incorrect customer	1. Customer rejection 2. Potential customer manufacturing shut down 3. Product non-functional for the application	8		1. Mis-labeled cartons 2. Scanning instructions not followed 3. Scanning instructions not available	2	1. Scanning Product for Shipment work instructions 2. Printing Production Labels work instruction 3. Customer specific label work instruction 4. Training to all relevant work instructions	1. Training matrix 2. Barcode ERP system 3. Label ID & Use 4. Inventory audits-monthly/quarterly 5. Pick process by WHS utility 6. Shipping clerk matches packing list with order and applies BOL & Packing List if they agree 7. WHS utility verifies load to paper work, physically loads it and stamps/initials paper work for accountability	3	48	16	None						0

Control Plan

Western Diversified Plastics

Master on Computer - Printed Copies for Reference Only

Page 1 of 2

☐ Pre-Launch	☒ Production	☐ Assembly	☐ Safe Launch	Key Contact / Phone				Date (Orig.)		Date (Rev.)	
Job Number 4828		Part 6001482802B		Alice Lossie 269.668.3393				06/03/2015		08/23/2023	
Part Number 6001482802B		Rev. B2	Engineering Number 4828-02	Rev. B2	Core Team A. Lossie, Dan Switzer, S. Britton Jr., K. Boeskool, K. Kollin				Customer Engineering Approval / Date (If Req'd)		
Part Name / Description Wire Dress Cover W/Tape Tab					Quality Engineering				Customer Quality Approval / Date (If Req'd)		
Supplier / Plant WDP			Supplier Code 609123190		Quality Control				Other Approval / Date (If Req'd)		

Step No.	Process No.	Process Name Operation / Description	Machine, Device, Jig, or Tool for Manufacturing	Characteristics		Special Char. Class.	Methods				Reaction Plan	
				Product	Process		Product / Process Specification/ Tolerance	Evaluation Measurement Technique	Sample			Control Method
									Size	Freq.		
1	10	Receiving	Raw Material	Purchased Material			>PA66-GF15< Mat-025 Chemlon 115G	Visually Verify The Correct Quantity Received		Each Lot / Shipment	WHI007 Warehouse Receiving Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
2	20	Receiving Inspection	Raw Material	Material Content			>PA66-GF15< Mat-025 Chemlon 115G	Review material certification per receiving insp. inst.		Each Lot / Shipment	QWI022 / Receiving Inspection	Reject Per QWI001 / Notify Supervisor / Request Material Cert From Supplier
3	20	Receiving Inspection	Raw Material	Material Labels			>PA66-GF15< Mat-025 Chemlon 115G	Review material Labels	Each Gaylord/ Bag Of Material	Each Lot / Shipment	QWI022 / Receiving Inspection	Reject Per QWI001 / Notify Supervisor / Re-Print Labels
4	30	Mix Material	Injection Molding		Mix Material (50% Max Regrind)		Setup Parameters	WHI026		When Required	WHI026 Mixing Material	Reject Per QWI001 / Notify Supervisor / Adjust Process
5	40	Dry Material	Injection Molding		Dry Material		0.200% max moisture	See QWI023-F001, Moisture Material Code Spreadsheet		At start up	QWI023 Moisture Analyzer	Notify Supervisor / Correct Material Condition / QWI007 Reaction Plan
6	50	Mold Setup	Injection Molding		Setting Mold		MWI029 Mold Changes	MWI028 Process Verification		When Required	MWI028 Process Verification	Reject Per QWI001 / Notify Supervisor / Adjust Process
7	60	Machine Setup	Injection Molding		Machine Settings		MWI017 Molding Setup Book	MWI028 Process Verification		Daily	MWI028 / Process Verification	Reject Per QWI001 / Notify Supervisor / Adjust Process
8	70	Mold Component	Injection Molding		Molding Parameters		MWI017 Molding Setup Book	Tolerances On Process Verification / All Control Plan Inprocess Inspections	1 Shot	At start up / Once A Shift / Every 4 Hours & Shut Down	MWI017 Set Up Book / MWI015 Dryer Verification / MWI028 Process Verification	Reject Per QWI001 / Notify Supervisor / Adjust Process
9	80	First / Last Piece Inspection	Injection Molding				All Control Plan In-Process Inspection steps listed	See steps listed	1 Shot	At start up & Shut Down	QWI010 First / Last Article	Reject Per QWI001 / Notify Supervisor / Adjust Process
10	80	First / Last Piece Inspection	Injection Molding				Verify 1 Last Article Part With Current Production Part	Visual	1 Part	At Start Up	QWI010 First/Last Article	Reject Per QWI010 / Notify Supervisor / Adjust Process
11	90	Manufacturing Verification	Injection Molding	Flash, burn, & Underfill, molding defects			Control samples	Visual	1 Shot	Every Hour	MWI022 Operator Hourly Review	Reject Per QWI001 / Notify Supervisor / Adjust Process
12	100	In-Process Inspection	Injection Molding	Part Cooling			All parts must cool prior to performing any gaging or measurement	Must cool minimum of 30 minutes	All parts	All frequencies	QWI026 In-Process Inspection	Collect new parts / re-cool parts
13	100	In-Process Inspection	Injection Molding	Part Verification			Verify Part Matches Picture In Upper Right Hand Corner	Visual Part To Picture	1 Shot	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
14	100	In-Process Inspection	Injection Molding	Flash, burn, & Underfill, molding defects			Verify No Molding Defects, underfill, flash, burn, warp, etc.	Visual	1 Shot	Every 4 hours	QWI026 Inprocess Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
15	100	In-Process Inspection	Injection Molding	Mate/Demate			Pass/Fail	Mating Part 3705-01 With 3618 Cover	1 Shot	Every 4 hours	QWI026 Inprocess Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process

Control Plan

Western Diversified Plastics

Master on Computer - Printed Copies for Reference Only

Page 2 of 2

☐ Pre-Launch	☒ Production	☐ Assembly	☐ Safe Launch	Key Contact / Phone				Date (Orig.)		Date (Rev.)	
Job Number	4828	Part	6001482802B	Alice Lossie 269.668.3393				06/03/2015		08/23/2023	
Part Number		Rev.	Engineering Number	Rev.	Core Team				Customer Engineering Approval / Date (If Req'd)		
6001482802B		B2	4828-02	B2	A. Lossie, Dan Switzer, S. Britton Jr., K. Boeskool, K. Kollin						
Part Name / Description					Quality Engineering				Customer Quality Approval / Date (If Req'd)		
Wire Dress Cover W/Tape Tab											
Supplier / Plant			Supplier Code		Quality Control				Other Approval / Date (If Req'd)		
WDP			609123190								

Step No.	Process No.	Process Name Operation / Description	Machine, Device, Jig, or Tool for Manufacturing	Characteristics		Special Char. Class.	Methods				Reaction Plan	
				Product	Process		Product / Process Specification/ Tolerance	Evaluation Measurement Technique	Sample			Control Method
									Size	Freq.		
16	100	SPC Inspection	Injection Molding	Dimensional			Width 21.8 +/- .3 mm	Measuring Guide / Micrometers	5 Parts / Cavity #4	At start up / Once A Day (Follow Male Sched)	X Bar & R Chart / Gainseeker	QWI 005 Gainseeker Instr. QWI 007 Reaction Plan
17	100	In-Process Inspection	Injection Molding	Carton Identification			Proper label	Visual	All Labels At Point Of Use	At start up / Once A Shift	QWI026 Inprocess Inspection	Reject Per QWI001 / Notify Supervisor / Re-Print Labels
18	110	Manufacturing Packaging Verification	Injection Molding	Carton Identification			Proper label	Visual	Each Label	Each carton	MWI004 Label ID & Use	Reject Per QWI001 / Notify Supervisor / Re-Print Labels
19	120	Final Audit	Injection Molding	Flash, burn, & Underfill, molding defects			Verify No Molding Defects, underfill, flash, burn, warp, etc.	Visual Parts From Top, Middle & Bottom Of Carton	10 Parts	Each carton	QWI016 Final Audit Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
20	120	Final Audit	Injection Molding	Carton Identification			Proper label	Visual Part To Picture	Each Label	Each carton	QWI016 Final Audit Inspection	Reject Per QWI001 / Notify Supervisor / Re-Print Labels
21	120	Final Audit	Injection Molding	Correct Carton Quantity			Quantity Must Match Label	Audit Scale		Each Carton	QWI012 Using The Scale At Final Audit	Adjust Quantity To Match Label
22	130	Store In-House	Injection Molding	Cover	Transfer To Warehouse		Forklift Truck / Scanning System	WHI008	Each Carton	Each Skid	WHI008 Scanning From Plant To Warehouse	Notify Final Audit To Scan Product Into System
23	140	Shipping	Injection Molding	Cover	Load matches shipper		Scanning System	WHI001	100%	Each Shipment	WHI001 Scanning Product For Shipment	Notify Supervisor / Adjust Process
24	500	Annual Requirement	Layout Equipment	Dimensional			Print Dimensions	Layout	5 Parts	Annual	PDP 21 Annual Layout	Reject Per QWI001 / Notify Supervisor / Adjust Process

AIAG Gauge R&R Study

Alpha value to remove interaction: 0.25
Alpha value to pool Between Operator: 0.1

ANOVA Table 1 (with interaction)					
Term	SS	df	MS	F	p
Parts	2.36	9	0.26 #####	0.000	
Operators	0.01	2	0.00 23.93	0.000	
Op*Part	0.00	18	0.00 1.43	0.149	
Repeatability	0.01	60	0.00		
Total	2.38	89			

Variance Components Table 1 (with interaction)		
Term	VarComp	% Contribution
Parts	0.0291	99.06%
Operators	0.0001	0.46%
Op*Part	0.0000	0.06%
Repeatability	0.0001	0.42%
Total	0.0294	100.00%

ANOVA Table 2 (without interaction)					
Term	SS	df	MS	F	p
Parts	2.36	9	0.26 #####	0.000	
Operators	0.01	2	0.00 31.20	0.000	
Op*Part	0.01	78	0.00		
Repeatability	0.01	78	0.00		
Total	2.38	89			

Interaction Significant. Use ANOVA Table 1.

Variance Components Table 2 (without interaction)		
Term	VarComp	% Contribution
Parts	0.0291	99.07%
Operators	0.0001	0.47%
Op*Part	0.0001	0.46%
Repeatability	0.0001	0.46%
Total	0.0294	100.00%

ANOVA Table 3 (without Operator)					
Term	SS	df	MS	F	p
Parts	2.36	9	0.26 #####	0.00	
Operators	0.02	80	0.00		
Repeatability	0.02	80	0.00		
Total	2.38	89			

Operator Significant. Use ANOVA Table 1 or 2.

Variance Components Table 3 (without Operator)		
Term	VarComp	% Contribution
Parts	0.03	99.19%
Operators	0.00	0.81%
Repeatability	0.00	0.81%
Total	0.03	100.00%

Select ANOVA Table for Report 1 Note: Table 1 or 2 are the standard AIAG ANOVA tables

1
2
3

Gauge Repeatability and Reproducibility Report

Part No. & Name 4828 Wire Dress Cover w/Tape tab	Gage Name GW0432	Date 10/05/2015
Part Characteristic Cover	Gage Make Mitutoyo	Performed By NM
Total Tolerance 0.6	Gage Model Micrometer	
USL 22.1	Gage resolution: 0.001	LSL 21.5

Measurement Units appear to be adequate to detect part variation

MEASUREMENT UNIT ANALYSIS	% TOLERANCE ANALYSIS ¹ (for Product Control Decisions)	% STUDY VARIATION ² (for Process Control Decisions)	% CONTRIBUTION ³ (for Improvement Decisions)
REPEATABILITY - EQUIPMENT VARIATION (EV) EV = $\frac{\text{StdDev}}{6} \cdot \frac{\text{StdDev}}{\text{StdDev}}$ 0.01111505 0.0666903	% EV = 100[(EV)/(TOLERANCE)] % EV = 11.12%	% EV = 100[(EV)/(TV)] % EV = 6.49%	% EV = 100[(EV) ² /(EV ² +OP ²)] % EV = 0.42%
REPRODUCIBILITY - APPRAISER VARIATION (AV) AV = $\frac{\text{StdDev}}{6} \cdot \frac{\text{StdDev}}{\text{StdDev}}$ 0.01238189 0.0742913	% AV = 100[(AV)/(TOLERANCE)] % AV = 12.38%	% AV = 100[(AV)/(TV)] % AV = 7.22%	% AV = 100[(AV) ² /(EV ² +OP ²)] % AV = 0.52%
REPEATABILITY AND REPRODUCIBILITY (R&R) GRR = $\frac{\text{StdDev}}{6} \cdot \frac{\text{StdDev}}{\text{StdDev}}$ 0.01663998 0.0998339	P/T Ratio = 100[(R&R)/(TOLERANCE)] P/T Ratio = 16.64%	% GRR = 100[(R&R)/(TV)] % GRR = 9.71%	% GRR = 100[(GRR) ² /(EV ² +OP ²)] % GRR = 0.94%
PART VARIATION (PV) PV = $\frac{\text{StdDev}}{6} \cdot \frac{\text{StdDev}}{\text{StdDev}}$ 0.17057949 1.0234769	% PV = 100[(PV)/(TOLERANCE)] % PV = 170.58%	% PV = 100[(PV)/(TV)] % PV = 99.53%	% PV = 100[(PV) ² /(EV ² +OP ²)] % PV = 99.06%
TOTAL VARIATION (TV) TV = $\frac{\text{StdDev}}{6} \cdot \frac{\text{StdDev}}{\text{StdDev}}$ 0.17138909 1.0283345	TOTAL VARIATION 171.39%	TOTAL VARIATION 100.00%	TOTAL VARIATION 100.00%
PROBABLE MEASUREMENT ERROR (effective resolution of a single measurement) PME = ± 0.01114811		NUMBER OF DISTINCT CATEGORIES ⁴ 14	
		DISCRIMINATION RATIO ⁵ DR = 21.68	

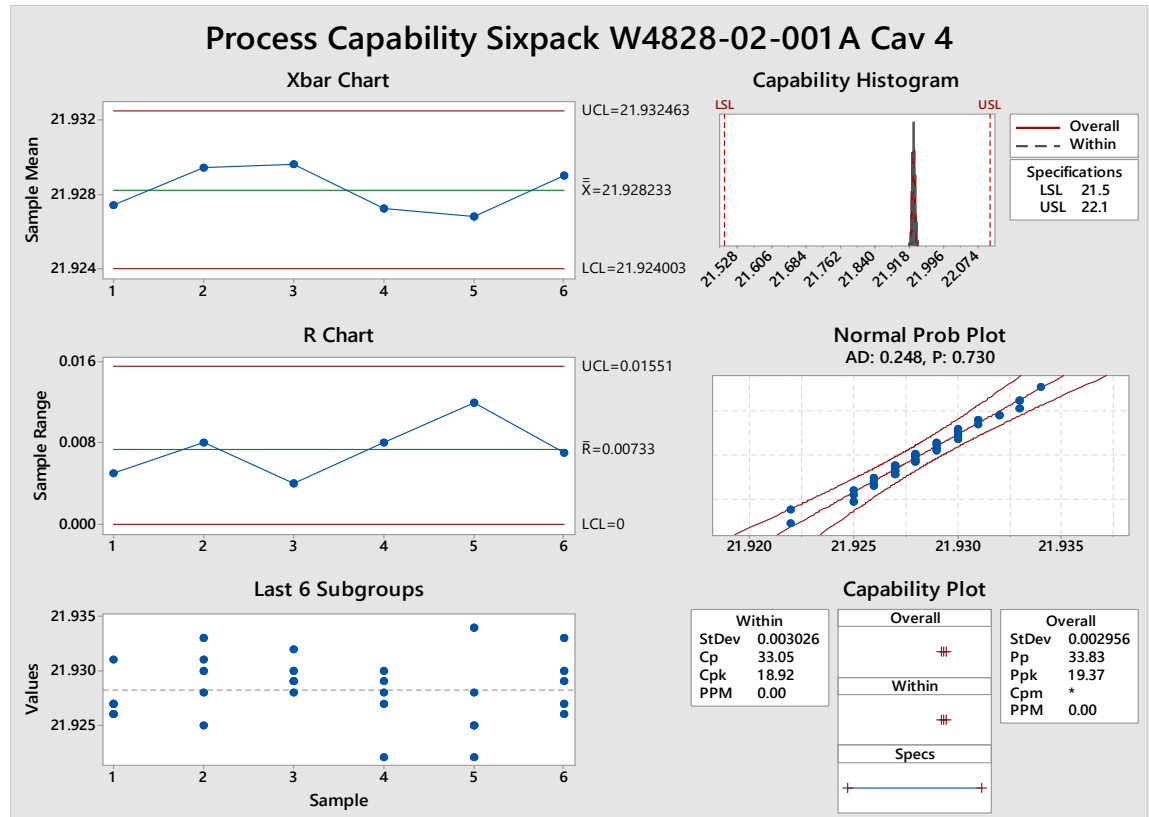
¹ Product Control - Answers the question: Is this gauge good enough to inspect this part to this tolerance?
² Process Control - Answers the question: Is this gauge good enough for SPC or statistical analysis?
³ Answers the question: What components of variation are candidates for improvement?
⁴ Based on GRR (Repeatability and Reproducibility)
⁵ Based on EV (Repeatability)
BorderText Color Key: GREEN = Acceptable, ORANGE = Marginal, RED = Unacceptable

Mold #: W4828
 Part #: 4828-02-001A (6001482802A)
 Part Name: Wire Dress Cover w/Tape Tab
 Date Ran: 11/11/2015
 Material: Chemlon 115g Black (MAT-025-Blk)
 Lot#: 4456271
 Press: 5-04

Spec limits: $21.8 \pm .3\text{mm}$ (21.5-22.1)
 Equipment used: GW-0432 (Micrometer)
 Date of study: 11/11/2015
 Cavity 4

This 30 piece sample was produced at WDP Mattawan.

Shot #	Width
1	21.927
2	21.926
3	21.926
4	21.927
5	21.931
6	21.931
7	21.925
8	21.928
9	21.930
10	21.933
11	21.930
12	21.932
13	21.929
14	21.928
15	21.929
16	21.927
17	21.922
18	21.930
19	21.929
20	21.928
21	21.934
22	21.922
23	21.925
24	21.925
25	21.928
26	21.926
27	21.933
28	21.927
29	21.929
30	21.930
Max	21.934
Min	21.922





W-No. **W-4828**

Part No. **6001482802B**Part Name **Wire Dress 6-Way Female**

0.64 Sealed

Dimensional Layout Inspection Report

Run Date 08/23/22

Print No. **GU5T-14003-EB**Revision / Date **B2 (AELE-E-12035198-498) 07/16/19**

Material >PA66-GF15<

Insp. Date **08/23/22**Insp. By **Sofia V**[illegible]

[illegible]

MDS Report

Substances of assemblies and materials

This report is for internal Automotive industry use only. Distribution to non-Automotive clients is a violation of the Terms of Use, and is not permitted unless a written permission was given by DXC Technology. Parsing is not allowed.

1. Company and Product Name

1.1 Supplier Data

Name [ID]: **Western Diversified
Plastics [51236]**

DUNS Number: **-**

Street/Postal Code: **53150 North Main Street**

Nat./ZipCode/City: **US 49071 Mattawan,
Michigan**

Supplier Code: **-**

Contact Person: **Valerie Lindsey**

- Phone: **(269) 668-3393**

- Fax No.: **-**

- E-Mail Address: **Valerie.Lindsey@western
dp.com**

1.2 Product Identification

Part/Item No.: **GU5T-14N003-EB**

Description: **CVR WIR CONN**

Legacy Spare Part: **No**

Report No.: **-**

Date of Report: **-**

Purchase Order No.: **-**

Bill of Delivery No.: **-**

Preliminary MDS: **No**

Multi Sourced: **No**

IMDS ID / Version: **850560461 / 1**

Node ID: **850560461**

MDS Status (Change Date): **Internally released
(07/24/2019)**

Recipient Company (Org Unit) [ID]: **Nursan Elektrik Donanim
Sanayi ve Ticaret A.S.
[18239]**

Recipient Status (Change Date): **not yet browsed
(08/23/2023)**

MDS Report

Substances of assemblies and materials

Materials which are subject to legal prohibitions must not be included!
Dangerous substances formed or released during use must also be declared
Please note: GADSL list for substances that require declaration

2. Characterization of the Component

Part/Item No.: GU5T-14N003-EB
Description: CVR WIR CONN

Report No.: -
IMDS ID / Version: 850560461 / 1
Node ID: 850560461

Tree Level	 Description  Article Name  Name  Substance name	 Part/Item No.  Item- /Mat.-No.  Material-No.  CAS No.	   IMDS ID / Version	 Quantity	   Weight [g]	   Portion [%]	   Portion (from - to) [%]	 Classif.  GADSL, SVHC	 Parts Marking  Source of material  Application [ID]
1	 CVR WIR CONN	 GU5T-14N003-EB	850560461 / 1		1.16				 Yes
└2	 PA66-GF15	 1025816	94337857 / 2		1.16			 5.1.a	 Recyclate No Content of bio-based material No
└3	 PA66+PA6	 -				87			
└3	 GF-Fibre	 -				12	10 - 14		

IMDS ID / Version: **850560461 / 1**
User: **Lewman, Brenda**

Page: **3 / 3**
Date: **8/23/23 2:36:27 PM**

Tree Level	 Description	 Part/Item No.	  		  	  	  	 Classif.	 Parts Marking
	 Article Name  Name  Substance name	 Item- /Mat.-No.  Material-No.  CAS No.	IMDS ID / Version	Quantity	Weight [g]	Portion [%]	Portion (from - to) [%]	 GADSL, SVHC	 Source of material  Application [ID]
└3	 Carbon black	 1333-86-4				1	0.5 - 1.5		
This is an uncontrolled copy of a document created by IMDS. End of the report.									

Legend

 Multi Sourced Component



Print Date:

May 01,2023

CERTIFICATE OF ANALYSIS

TEKNOR APEX TENNESSEE COMPANY
A SUBSIDIARY OF TEKNOR APEX
751-R NORTH DUPREE AVE
BROWNSVILLE, TN 38012
UNITED STATES

Item No: 100271901
Desc: CHEMLON 115 G BK001 ASTM D6779
Cust Item: MAT-025-BLK

Order Number: 1200324402

Attention:

WESTERN DIVERSIFIED PLASTICS. LLC
53150 NORTH MAIN STREET

Cust PO: WD 034144
Phone#: 1-269-668-3390
Fax#: 1-269-668-4694

MATTAWAN, MI 49071
UNITED STATES

Lot Number: 1392124

MFG Date: Apr 25,2023

Lot Qty Shipped: 6000.000 LBS

MFG At: BROWNSVILLE ETP

MEETS REQUIREMENTS OF ASTM D6779 PA012G15

Box/Blend	Property	Method	Min	Max	Results
	MOISTURE CONTENT %	ISO 15512		0.20	0.05
	DENSITY g/cm3	ISO 1183 METHOD A	1.20	1.26	1.24
	NOTCHED IMPACT STRENGTH /(CHARPY) kJ/m2	ISO 179/1EA @ 23 DEGREE C	3.0		3.0

Teknor Apex Tennessee Company
Quality Control Manager
Contact No.:(731)772-3690

The data above was obtained under laboratory conditions and applies only to the samples of subject material tested, calibrated or sampled. To the best of our knowledge, this data is within the accuracy and precision of the respective tests. Because of testing and sampling variability, we cannot guarantee that other laboratories will obtain the same results and NO WARRANTY IS EXPRESSED OR IMPLIED.
P - indicates the result from a previously pending test

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
CERT-08698-2006-AQ-HOU-ANAB

Initial certification date:
01 December, 1993

Valid:
01 June, 2021 – 26 March, 2024

This is to certify that the management system of
Teknor Apex Tennessee Company
751 Dupree Street, Brownsville, TN, 38012, USA
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:

Manufacture and quality verification of thermoplastic compounds, plasticizer, organic chemicals, ETP compounds and the manufacture of commercial and residential garden hose.

Place and date:
Katy, TX, 01 June, 2021



For the issuing office:
DNV - Business Assurance
1400 Ravello Drive, Katy, TX, 77449-5164, USA

Sherif Mekkawy
Management Representative

Appendix to Certificate

Teknor Apex Tennessee Company

Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
Teknor Apex Tennessee Company	751 Dupree Street, Brownsville, TN, 38012, USA	Manufacture and quality verification of thermoplastic compounds, plasticizer, organic chemicals, ETP compounds and the manufacture of commercial and residential garden hose.
Teknor Apex Tennessee Warehouse	1667 E. Main, Brownsville, TN, 38012, USA	Shipping, Warehouse - ETP
Teknor Apex Tennessee Company (Blackwell Warehouse)	595 Blackwell, Brownsville, TN, 38012, USA	Shipping, Warehouse for Hose Production

CERTIFICATE OF REGISTRATION

This is to certify that the management system of:

Western Diversified Plastics, LLC

53150 North Main Street, Mattawan, MI, 49071, USA

has been registered by Intertek as conforming to the requirements of:

IATF 16949:2016

The management system is applicable to:

Design and Manufacture of Plastic Components and Assemblies

Permissible exclusions include: None

IATF Certificate Number
0407520

Certificate Number:
2007-0124

Certificate Issue Date:
28 June 2021

Certificate Expiry Date:
27 June 2024



Calin Moldovean
President, Business Assurance

Intertek – 4700 Broadmoor, Suite200
Kentwood MI 49512, USA



APPENDIX TO CERTIFICATE OF REGISTRATION

This is to certify that the quality management system of:

Western Diversified Plastics, LLC

53150 North Main Street, Mattawan, MI, 49071, USA

has been registered by Intertek as conforming to the requirements of:

IATF 16949:2016

Including the Following Support Functions:

Western Diversified Plastics -
53196 N. Main Street, Mattawan,
MI, 49071, USA

Calibration, Contract Review,
Laboratory, Process Design,
Product Design, Sales

Western Diversified Plastics -
53301 N. Main Street, Mattawan,
MI, 49071, USA

Warehousing

IATF Certificate Number
0407520

Certificate Number:
2007-0124

Certificate Issue Date:
28 June 2021

Certificate Expiry Date:
27 June 2024



Calin Moldovean
President, Business Assurance

Intertek – 4700 Broadmoor, Suite200
Kentwood MI 49512, USA



INTERNAL TEST LAB SCOPE

Field of Test	Products or Items Tested	Specified Tests or Properties Measured	Specification, Standard, or Method Used	Equipment / Range
Mechanical	Electrical and Mechanical Components	Force - Tension & Compression	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 25 FCA PF90012 WDP PS-001 WDP PSA-002	Instron 3342 5 to 500N Instron 3366 5 to 10KN
Mechanical	Electrical and Mechanical Components	Torque	ES-GU5T-14A067-AB Ford Connector SDS WDP PS-001 WDP PSA-002	Jetco ED-2501 Stanley E231b-16 Stanley E33LA18-46 .5 to 46 Nm
Mechanical	Electrical and Mechanical Components	Environmental Exposure – Temperature, Humidity Salt Fog Dust	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 20, 21 FCA PF90012 CETP 00.00L/E-412 WDP PS-001 WDP PSA-002	Humboldt H30135E Thermotron SM32 & 4, S8 Thermotron SE-600 & 300 Singleton SCCH 22 ESPEC EDC-27 Control Co 4040 Fluke 54 T/C Monitor -70C to 500C
Mechanical	Electrical and Mechanical Components	Environmental Exposure - Vibration – Sine, Random, Sine on Random, & Transient	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2 SAE/USCAR-20 FCA PF90012 WDP PS-001 WDP PSA-002	Thermotron VCS DSX-2250 & 8000 Vib 5 to 3000 Hz, 8000 force lb. 11ms 100g half sine shock 2.54 mps, 3" displacement Endevco 7251A Accel Dytran 3215 Accel ±500g max
Mechanical	Electrical and Mechanical Components	Environmental Exposure - Thermal Shock	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 20, 21 FCA PF90012 WDP PS-001 WDP PSA-002	Thermotron ATS-320 H/V/DD Fluke 54II T/C Meter -70C to 175C
Mechanical	Electrical and Mechanical Components	Sealing Integrity	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2 FCA PF90012 ISO 2653 IPX3,4 WDP PS-001 WDP PSA-002	Weiss DUGY2-015 ±15psi Fluke 700RG07 -14 - 500psi 29.9 in Hg to 350 psi ESPEC ETH-37 Water chmbr Up to 1500 psi - 4 gpm Hongqi0-.41Mpa IPX3/4 Spray Head Ashcroft 5000 psig gage 100, 2000, 4000ml Grad Cyl Control Co 1042 Stopwatch - 1/100 th sec

Distribution List:	Quality Director, Test Lab Manager, Test Lab Technicians, Quality Engineering, Program Managers, Manufacturing Engineer		
TLI002 Internal Test Lab Scope		Page 1 of 3	Revision Date 04/05/2023
Printed Copies are for Reference Only			

Field of Test	Products or Items Tested	Specified Tests or Properties Measured	Specification, Standard, or Method Used	Equipment / Range
Temperature	Electrical Components	Thermal Imaging	ES-GU5T-14A067-AB WDP PS-001 WDP PSA-002	FLIR T620 FLIR E50 Up to 500°C
Sound	Mechanical Components	Sound Level Audible noise	Ford Connector SDS SAE/USCAR-2	Extech 407768 dB A&C scale to 140dB
AC Electrical	Electrical and Mechanical Components	Dielectric	ES-GU5T-14A067-AB WDP PS-001 WDP PSA-002	Vitrek V63 100V to 5KV AC
Dimensional	Electrical and Mechanical Components	Distance / Length Height/Width	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2 SAE/USCAR-20 WDP PS-001 WDP PSA-002	Mitutoyo 0- 6" Caliper GEI SS 1000mm ruler Wixey WR300 Angle Gage
DC Electrical	Electrical and Mechanical Components	Insulation Resistance Dielectric Resistance	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2 FCA PF90012 WDP PS-001 WDP PSA-002	Vitrek V63 IR from 1 to 10Gohm Dielectric 100V to 6KV DC
DC Electrical	Electrical and Mechanical Components	Amperage	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 20, 21 FCA PF90012 WDP PS-001 WDP PSA-002	Fluke 87, 287, 289 Keysight 34450A, HP 60504 Extech 380941, 380947 .01 micro to 400A DC
DC Electrical	Electrical and Mechanical Components	Voltage	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 20, 21 FCA PF90012 WDP PS-001 WDP PSA-002	Fluke 87, 287, 289 Keysight 34450A HP 44701A HP 44702B Rigol DS1104Z O-scope 1 micro to 1000 Volts DC
DC Electrical	Electrical and Mechanical Components	Resistance	ES-GU5T-14A067-AB Ford Connector SDS SAE/USCAR-2, 20, 21 FCA PF90012 WDP PS-001 WDP PSA-002	Keithley 580 Keysight 34450A Analysis Tech 32-106 10micro to 200Kohm
Mechanical / DC Electrical	Electrical and Mechanical Components	Combined Environment Durability/Life Test	Various as Listed Above	Various as Listed Above

Distribution List:	Quality Director, Test Lab Manager, Test Lab Technicians, Quality Engineering, Program Managers, Manufacturing Engineer		
TLI002 Internal Test Lab Scope		Page 2 of 3	Revision Date 04/05/2023
Printed Copies are for Reference Only			

- 1.1** WDP test lab performs testing relative to the internal scope using the Test Request, DVP&R, and the Test Specification.
- 1.2** Capabilities may include tests related to the test technologies listed which utilize equipment and properties listed.
- 1.3** Any required conditions, or deviations, are communicated to the customer as identified in the DVP&R and/or Test data sheet.

Distribution List:	Quality Director, Test Lab Manager, Test Lab Technicians, Quality Engineering, Program Managers, Manufacturing Engineer	
TLI002 Internal Test Lab Scope	Page 3 of 3	Revision Date 04/05/2023
Printed Copies are for Reference Only		