PART SUBMISSION WARRANT

Part Name	SLV ASY WIR CONN FEM	Customer Part Number	EU5T-14A464-JAA
Shown on Drawing No.	EU5T-14A464-JAA	Supplier Part Number	60014221A01A
Engineering Change Level	Released AELE-E-12035198-277	Dated	26-Feb-2014
Additional Engineering Changes	N/A	Dated	N/A
Safety and/or Government Regulation	☐ Yes ☑ No	Purchase Order No.	N/A
Weight (kg)	0.0070		
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 Elektrik
Customer Name/Division

Buyer/Buyer Code

Ford
Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☑ Yes ☐ No ☐ Not Applicable

IMDS - 334353413 / 10

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: Assembly

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 24,480 / 8 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 / COMMENTS: Customer requested

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

Supplier Authorized Signature	Angela Henson	Date	3-May-2021
Print Name	Angela Henson	Phone No.	269-668-3393
Fax No.	269-668-7143		
Title	Quality Engineer	E-mail	angela.henson@westerndp.com

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature | Date

Print Name | Customer Tracking Number (optional)

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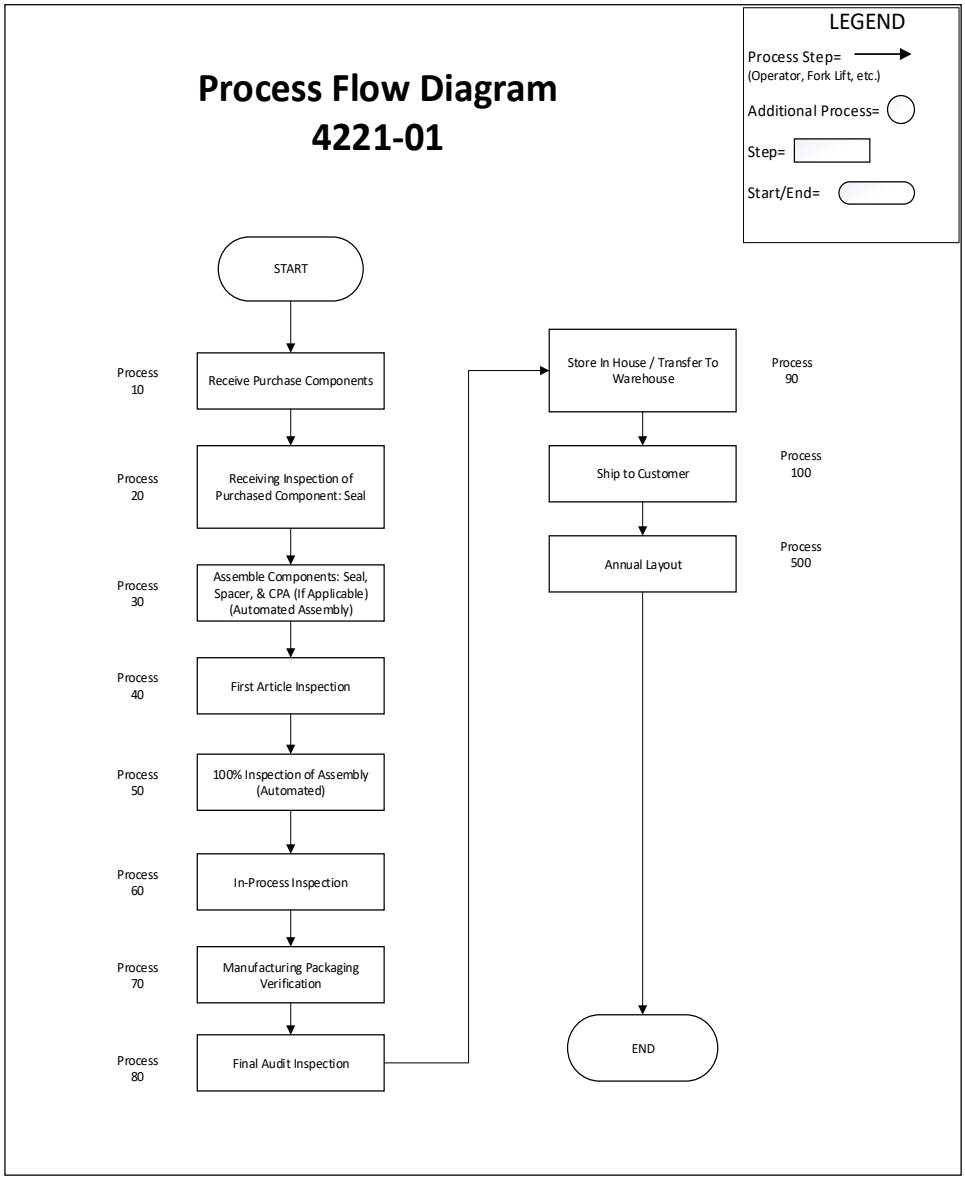
Process Flow #:	4221-01 (Revision A17)	Date (Orig.) 12/01/2011	Date Rev. 11/20/2020
Item / Part #:	4221-01-00xA / 600x4221A01A / 800x4221A01A / 12	Prepared By	Alice Lossie / Dan Switzer
Program(s) / Part Name:	2 Way Female 1.5mm Assembly		



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POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS (Process FMEA)

ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11**

FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
Molded Components in the Assembly Shell Spacer CPA	No molding defects, underfill, burn, warp, broken cores, etc	Inadequately molded part that will not comply with the print specifications	1. Dimensional inconsistency 2. Physical properties inadequate for design requirements 3. Part incomplete or deformed 4. Broken / chipped core	8		1. Machine parameters set up incorrectly on the molding machine 2. Tooling Failures 3. Machine Failures 4. Operational failures	2	1. See Individual pFMEA for the component. 2. See Systems pFMEA for molding 3. See control plan for molding	1. See Individual pFMEA for the component. 2. See Systems pFMEA for molding 3. See control plan for molding	5	80	8D WDP4280 chipped core on shell, send tool for repair	SB 07/24/2020	TMR 35545 for repair of chipped core. 7/30/20 re-start verification acceptable. No change to RPN. AL				
Process 10 Receive material & purchased components	Material is labeled correctly with the correct quantity	Incorrectly labeled material or components from supplier Incorrect quantity of material or components	1. Inaccurate inventory 2. Possible line shut down	8		1. Supplier system failure 2. Labels not properly bar coded	3	1. Supplier is minimum ISO 9001 certified 2. Inventory scanning work instructions	1. Inventory scanning system	2	48	None						
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. Receiving inspection 2. Material cerification with each shipment	3	48	None						
Process 20 Receiving Inspection Of Purchased Component Seal	PPAP on file, no defects, all parts meet drawing specifications	No PPAP on file Components not made to print specifications Components damaged, tears, etc.	1. Possible line shut down 2. Unable to build assemblies 3. Customer reject 4. Product on hold until PPAP is completed	8		1. Error in suppliers manufacturing process 2. Inadequate receiving inspection 3. Receiving inspection does not detect defects	2	1. Suppliers process controls 2. Suppliers submit PPAP package to WDP 3. Suppliers are ISO 9001 certified at minimum 4. Receiving inspection instructions	1. Receiving inspection 2. AQL sampling plan	6	96	None						
Process 30 Assemble Spacer To Connector Automated Assembly	No molding defects, spacer present & seated properly	Spacer missing	1. Open circuit in the finished application 2. Customer rejection 3. Product verification sorting	7		1. Machine misfed 2. Part detection sensor failure	2	1. Master sample error proof verification 2. Machine logic does not cycle without part presence detection 3. Inspector and operator training to the procedures 4. 100% vision system inspection programmed at designated stations 5. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	42	None						
		Spacer mis-oriented	1. Open circuit in the finished application 2. Customer rejection 3. Product verification sorting	7		1. Machine misfed 2. Part detection sensor failure	2	1. Part design allows spacer assembly symmetrical 180° 2. Inspector and operator training to the procedures 3. 100% vision system inspection programmed at designated stations 4. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	42	None						

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POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)

ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11**

FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
		Spacer damaged / broken	1. Not capture the terminals 2. Customer rejection 3. Product verification sorting	7		1. Machine misfed 2. Molding issues	2	1. Camera is in line to verify that spacers are not broken 2. Fixtures and cylinder stroke have been designed to assemble to locked position - positive stop in equipment 3. Inspector and operator training to the procedures 4. 100% vision system inspection programmed at designated stations	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	42	Systemic for 8D WDP2478, add to inprocess to fully seat spacer & verify no breakage or issues.	CS/AL 1/12/18	1/12/18 Systemic for WDP2478 broken spacer. Added to inprocess to fully seat spacer & verify no breakage or issues. No change to RPN. AL				
		Spacer fully engaged from prestaged position (seated)	1. Requires wire harness assembler to pull spacer out to prestage position prior to assembling terminals 2. Customer rejection 3. Product verification sorting	3		1. Machine cylinder over stroke	2	1. Cylinder stroke position sensor 2. Fixtures and cylinder stroke have been designed to assemble to locked position - positive stop in equipment 3. Inspector and Operator Training to the procedures 4. 100% vision system inspection programmed at designated stations. 5. Verification test parts the beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	18	None						
Process 30 Assemble Seal To Connector Automated Assembly	No defects, one seal present & seated properly	Seal missing	1. Connector leak causing open circuit 2. Customer Rejection 3. Product Verification Sorting	8		1. Machine miss feed 2. Part detection sensor failure	2	1. Master sample error proof verification 2. Machine logic does not cycle without part presence detection 3. Inspector and operator training to the procedures 4. 100% vision system inspection programmed at designated stations. 5. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	48	None						
		Interfacial Seal Underfilled / Torn	1. Connector leak causing open circuit 2. Customer Rejection 3. Product Verification Sorting	8		1. Underfilled / Damaged Seal received from supplier 2. Seal damaged during assembly	2	1. Supplier process controls 2. Inspector and operator training to the procedures 3. 100% vision system inspection programmed at designated stations 4. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	48	None						

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ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11**

FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
		Double Interfacial Seal	1. Connector leak causing open circuit 2. Customer Rejection 3. Product Verification Sorting 4. Unable to mate to mating part	8		1. Machine miss feed 2. Part detection sensor failure	2	1. Inspector and operator training to the procedures 2.100% vision system inspection at designated stations 3. 100% vision system inspection programmed at designated stations. 4. Test verification parts beginning of each shift 5. Sensors on seal mandrel head stop machine & give error message that 2 seals are present	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	48	WDP1747 / 1770,1776, update machine proxy guard sensor logic	EW / RB 2/12/16	2/9/16, Machine proxy guard sensor logic updated. Added an additional camera to verify product at spacer station. No change to RPN.				
		Seal Rolled	1. Connector leak causing open circuit 2. Customer Rejection 3. Product Verification Sorting 4. Unable to mate to mating part	8		1. Machine miss feed 2. Part detection sensor failure	2	1. Inspector and operator training to the procedures 2. 100% vision system inspection programmed at designated stations 3. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	48	None						
		Mis-placed seal	1. Connector leak causing open circuit 2. Customer Rejection 3. Product Verification Sorting 4. Unable to mate to mating part	8		1. Machine miss feed 2. Part detection sensor failure	2	1. Inspector and operator training to the procedures 2. Machine is programmed for 100% In-line vision system inspection 3. Test verification parts beginning of each shift	1. 100% In-line vision system inspection 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	48	Add camera inspection for seal height	BC 5/12/17	5/5/17 Moved camera 10 degrees & programmed it to verify seal height, added test verification part to checkhead verification. No change to RPN. AL				
Process 30 Assemble CPA To Connector (If Applicable) Automated Assembly	No defects, CPA present & seated properly	CPA missing	1. Customer Rejection 2. Unable to lock to mating part 3. Product Verification Sorting	5		1. Machine miss feed 2. Part detection sensor failure	2	1. Machine logic does not cycle without part presence detection 2. Inspector and operator training to the procedures 3. 100% vision system inspection programmed at designated stations 4. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	30	None						
		CPA mis-oriented	1. Customer Rejection 2. Unable to lock to mating part 3. Product Verification Sorting	5		1. Machine miss feed 2. Part detection sensor failure	2	1. Inspector and operator training to the procedures 2. 100% vision system inspection programmed at designated stations 3. Test verification parts beginning of each shift	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	2	20	None						

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ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

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FMEA Date (Orig.): **12/1/11** FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
		CPA damaged / broken	1. Customer Rejection 2. Unable to lock to mating part 3. Product Verification Sorting	5		1. Broken / Damaged CPA received from molding 2. CPA damaged during assembly 3. Misalignment of the gripper heads when picking & placing the part	2	1. Molding process controls (PFMEA) 2. Inspector and operator training to the procedures 3. 100% vision system inspection programmed at designated stations 4. Test verification parts beginning of each shift 5. Predictive / Preventative Maintenance on the gripper heads	1. 100% vision system inspection at designated stations 2. First article inspection 3. Inprocess inspection 4. Final audit inspection 5. Operator inspection	3	30	None						
Process 30 Place Identification Mark On Part (1-43 only)	Identification mark on all acceptable parts	Parts don't get marked or mark is illegible	1. Unable to identify which machine produced parts	1		1. Machine malfunction 2. Under stroke on machine cylinder	2	1. Operator training 2. Visual inspection by operators, in-process inspection & final audit.	1. First article inspection 2. Inprocess inspection 3. Final audit inspection 4. Operator inspection	7	14	None						
Process 40 First Article Inspection	All In-process steps completed, no molding defects, no missing or mis-seated components, proper carton identification	Inspection process does not detect defects	1. Dimensional inconsistency 2. Poor fit to mating part causing an open or incomplete circuit 3. Missing or incomplete features 4. Validation sorting 5. Customer reject	8		1. Inspection Instructions not adequate 2. Inspection instructions not followed 3. Operator error	2	1. Training for all inspectors to the work instructions 2. Cross functional team creates inspection instructions	1. First article inspection 2. Inprocess inspection 3. Final audit inspection 4. Operator inspection	5	80	None						
		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. First article inspection work instruction 2. Inprocess inspection work instruction 3. Final audit inspection work instruction 4. Supervisor review of In-process inspections being performed 5. Cross functional team creates inspection instructions 6. Training to all work instructions 7. Gaging guides	1. Inspection entry into the WDP Database 2. Evidence of parts on First Article board & molding machine 3. Final Audit Inspection	5	80	None						

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ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11** FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
		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. First article inspection work instruction 2. Inprocess inspection work instruction 3. Final audit inspection work instruction 4. Supervisor review of In-process inspections being performed 5. Cross functional team creates inspection instructions 6. Training to all work instructions 7. Gaging guides	1. Non-conforming pictures in WDP Database 2. Alerts in WDP Database 3. Final audit inspection 4. Inprocess inspection	5	80	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. Printing Production Labels work instruction 2. First article inspection work instruction 3. Inprocess inspection work instruction 4. Label ID & Use work instruction 5. Final audit inspection work instruction 6. Training to all work instructions	1. Label Verification Master 2. First article inspection 3. Inprocess inspection 4. Final audit inspection	5	80	None						
Process 50 100% Inspection Of Assembly Automated Assembly	All components one of each, spacer, seal, CPA, present & seated properly	Parts mis-assembled (wrong or missing components)	1. Cause loss of designed functionality	8		1. Vision system not detecting mis-assembled parts 2. Parts not going into reject chute	2	1. Training on setup of equipment. 2. Computer controlled system. 3. Test verification parts beginning of each shift	1. First article inspection 2. Inprocess inspection 3. Final audit inspection 4. Operator Inspection 5. Vision system at 3 stations that 100% inspection each part	3	48	None						
Process 60 In-Process Inspection	Visual inspection of parts, no molding defects, no missing, mis-seated components, proper carton identification	See First Article Inspection See control plan in database	See First Article Inspection See control plan in database	8		See First Article Inspection See control plan in database	2	See First Article Inspection See control plan in database	See First Article Inspection See control plan in database	5	80	None						
Process 70 Manufacturing Packaging Verification	Correct quantity must be packaged	Incorrect quantity packaged	1. Customer rejection 2. Potential customer line shut down 3. Component damaged during 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 4. Weigh count using final audit scale	6	72							0

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ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11**

FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control: CURRENT DESIGN /PROCESS CONTROL PREVENTION	Current Control: CURRENT DESIGN /PROCESS CONTROL DETECTION	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS: ACTION TAKEN	ACTION RESULTS: SEV	ACTION RESULTS: OCC	ACTION RESULTS: DET	ACTION RESULTS: RPN
	Correct label affixed to packaging	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 5. Mutiple part numbers running at same work station & labels not separated	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	6	72	8D WDP1484, Add additional label carts for each assy machine	EW 6/30/15	6/9/15, Added label carts for each assy machine. No change to RPN. AL				0
	Correct parts in the package	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 QWI010 2. In Process inspection QWI026 3. Final Audit inspection QWI016 4. Operator Inspection MWI004 Label ID & Use / Label verification card	7	84	Systemic for WDP0855 update instructions to tape inside box flaps closed to ensure no parts trapped inside	4/29/13 A. Lossie	Systemic for WDP0855 Instructions updated to include taping the inside box flaps closed. No changes to RPN. 5-8-13 A. Lossie				0
Process 80 Final Audit Inspection	Visual inspection of parts, no molding defects, no missing or mis-seated components, correct carton label	Inspection process does not detect defects	1. Dimensional inconsistency 2. Poor fit to mating part causing an open or incomplete circuit 3. Missing or incomplete features 4. Validation sorting 5. Customer reject	8		1. Inspection Instructions not adequate 2. Inspection instructions not followed 3. Operator error	2	1. Inspection instructions reviewed during the PDP Process. 2. Inspector and Operator Training to the procedures.	1. First Article Inspection 2. Control plan in the WDP database 3. Past defective boundary sample pics in the database	7	112	None						
		Visual Inspection not 100% effective	1. Visual Defects go undetected	8		1. Inspection Instructions not adequate 2. Inspection instructions not followed 3. Operator error	2	1. Inspector and Operator Training to the procedures. 2. Past defective boundary sample pictures in the database	1. First Article Inspection 2. In Process inspection 3. Operator Inspection 4. Past defective boundary sample pictures in the database	7	112	None						
Process 90 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	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	None						0

WDP
Western Diversified Plastics

53150 N. Main Street
Mattawan MI 49071
Phone: (269) 668-3393
Fax: (269) 668 -4694

POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(Process FMEA)

ITEM: **4221-01-00xA / 600x4221A01A / 800x4221A01A / 1200X4221A01A / 1300X4221A01A**

Process Responsibility: **WDP Mfg. Engineering**

FMEA Number: **4221-01 (Revision A17)**

MODEL YEAR(s) / PROGRAM(s): **2 Way Female 1.5mm Assembly**

Key Date: **09/27/2012**

Prepared by: **Alice Lossie / Dan Switzer**

CORE TEAM: **PM - Mike Davidson , ME - Dan Switzer, QE - Alice Lossie , Plant Super. - Teri Jameson, QC Super. - Patty Glynn**

FMEA Date (Orig.): **12/1/11**

FMEA Date (Rev): **11/20/20**

PROCESS STEP / FUNCTION	REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECTS OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/ MECHANISM OF FAILURE	OCC	Current Control		DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY &TARGET COMPLETION DATE	ACTION RESULTS				
								CURRENT DESIGN /PROCESS CONTROL PREVENTION	CURRENT DESIGN /PROCESS CONTROL DETECTION					ACTION TAKEN	SEV	OCC	DET	RPN
Process 100 Ship To Customer	Correct carton Correct label Correct parts in carton	Wrong product shipped to customer	1. Product non-functional for the customers application 2. Potential customer Mfg. shut down 3. Customer dissatisfaction	8		1. Mis-labeled cartons 2. Operator not following label instructions 3. Improper shipping instructions	2	1. Operator training with shipping instructions 2. Work instruction for scanning product for shipment 3. Customer specific label training	1. Bar code ERP system 2. Pick process by WHS utility 3. Shipping clerk matches packing list with order and applies BOL & Packing List if they agree 4. WHS utility verifies load to paper work, physically loads it and stamps/initials paper work for accountability	3	48	None						
		Product shipped to wrong customer	1. Product non-functional for the customers application 2. Potential customer Mfg. shut down 3. Customer dissatisfaction	8		1. Mis-labeled cartons 2. Operator not following label instructions 3. Improper shipping instructions	2	1. Operator training with shipping instructions 2. Work instruction for scanning product for shipment 3. Customer specific label training	1. Bar code ERP system 2. Pick process by WHS utility 3. Shipping clerk matches packing list with order and applies BOL & Packing List if they agree 4. WHS utility verifies load to paper work, physically loads it and stamps/initials paper work for accountability	3	48	None						

Control Plan

Western Diversified Plastics

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[ ] Pre-Launch [X] Production [ ] Assembly [ ] Safe Launch				Key Contact / Phone	Date (Orig.)	Date (Rev.)
Job Number 4221 Part				Alice Lossie 269.668.3393	12/01/2011	11/20/2020
Part Number	Rev.	Engineering Number	Rev.	Core Team	Customer Engineering Approval / Date (If Req'd)	
600x4221A01A	A17	4221-01	A17	A. Lossie, D. Switzer, T. Jameson, M. Davidson, P. Glynn		
Part Name / Description				Quality Engineering	Customer Quality Approval / Date (If Req'd)	
2 W F 1.5 Conn Hardshell						
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 Size	Sample Freq.	Control Method	
1	10	Receiving	Supplier	Purchased Components			Components Purchased	Visually Verify Correct Quantity Received		Each Lot / Shipment	WHI007 Warehouse Receiving Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
2	20	Receiving Inspection	Supplier	Purchased Seal 3750-50-001A			Verify PPAP is on file and not more than 1 year old	Supplier Database - Purchased Components		Each Lot / Each Shipment	QWI022 / Receiving Inspection	Reject Per QWI001 / Notify Supervisor / Request PPAP From Supplier
3	20	Receiving Inspection	Supplier	Purchased Seal 3750-50-001A			Inspect for any defects, underfill, flash, tears, etc.	Visual	Sampling Plan AQL 1	Each Lot / Shipment	QWI022 / Receiving Inspection	Reject Per QWI001 / Request RMA & 8D From Supplier / Reduce Sampling Plan T
4	20	Receiving Inspection	Supplier	Purchased Seal 3750-50-001A			Verify parts have sufficient silicone	Visual / Verify Not Dry	Sampling Plan AQL 1	Each Lot / Shipment	QWI022 / Receiving Inspection	Reject Per QWI001 / Request RMA & 8D From Supplier / Reduce Sampling Plan T
5	20	Receiving Inspection	Supplier	Purchased Seal 3750-50-001A			Place OK TO USE on acceptable cartons	Use OK TO USE stamp	Each Acceptable Carton	Each carton per shipment	QWI022 / Receiving Inspection	Re-inspect cartons with no label
6	30	Automated Assembly	Assembly Step #1	Assembly (1-34)			Shell Placement	Camera Vision System Station #3	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
7	30	Automated Assembly	Assembly Step #2	Assembly (1-34)			Seal Placement	Camera Vision System Station #3	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
8	30	Automated Assembly	Assembly Step #3	Assembly (1-34)			Seal Check & Color Verification	Camera Vision System Station #3 & #6 For Seal	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
9	30	Automated Assembly	Assembly Step #4	Assembly (1-34)			Spacer Placement	Camera Vision System Station #6	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
10	30	Automated Assembly	Assembly Step #5	Assembly (1-34)			CPA Placement	CPA Sensors (2) Station #6	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
11	30	Automated Assembly	Assembly Step #6	Assembly (1-34)			Verify Spacer and CPA are Seated Properly	Camera Vision System Station #6 & Fiber Optic Eyes (2)	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
12	30	Automated Assembly	Assembly Step #7	Assembly (1-34)			Eject Good Assembly	Camera Vision System Stations 3 & 6 & Fiber Optic Eyes (2)	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
13	30	Automated Assembly	Assembly Step #8	Assembly (1-34)			Eject Bad Assembly in Reject Bin	Camera Vision System Stations 3 & 6 & Fiber Optic Eyes (2)	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
14	30	Automated Assembly	Assembly Machine Station #1	Assembly (1-43)			Shell Placement	Fiber Optice Eye	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
15	30	Automated Assembly	Assembly Machine Station #2	Assembly (1-43)			Seal Placement	Camera Vision System Station #3	Each Part	Each Assembly	Camera Vision System Operartor Instructions	Reject Per QWI001 / Notify Supervisor / Re-Program / Re-Qualify Vision Syst
16	30	Automated Assembly	Assembly Machine Station #4	Assembly (1-43)			Spacer Placement	Camera Vision System Station # 6	Each Part	Each Assembly	Camera Vision System Operartor Instructions	Reject Per QWI001 / Notify Supervisor / Re-Program / Re-Qualify Vision Syst

Control Plan

Western Diversified Plastics

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[ ] Pre-Launch [X] Production [ ] Assembly [ ] Safe Launch				Key Contact / Phone	Date (Orig.)	Date (Rev.)
Job Number 4221 Part				Alice Lossie 269.668.3393	12/01/2011	11/20/2020
Part Number	Rev.	Engineering Number	Rev.	Core Team	Customer Engineering Approval / Date (If Req'd)	
600x4221A01A	A17	4221-01	A17	A. Lossie, D. Switzer, T. Jameson, M. Davidson, P. Glynn		
Part Name / Description				Quality Engineering	Customer Quality Approval / Date (If Req'd)	
2 W F 1.5 Conn Hardshell						
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 Size	Sample Freq.	Control Method	
17	30	Automated Assembly	Assembly Machine Station #5	Assembly (1-43)			Place Identificaiton Mark (Bee Sting) On Parts	Automated	Each Part	Each Assembly	Operator Instructions	Reject Per QWI001 / Notify Supervisor / Adjust Process
18	30	Automated Assembly	Assembly Machine Station #7	Assembly (1-43)			Good Eject / Place Into Production Carton	Camera Vision Systems At Stations # 3 & 6	Each Part	Each Assembly	Verification Test Beginning Of Each Shift	Reject Per QWI001 / Notify Supervisor / Re-Program / Re-Qualify Vision Syst
19	30	Automated Assembly	Assembly Machine Station #8	Assembly (1-43)			Bad Eject / Place Parts Into Reject Bin	Camera Vision Systems At Stations # 3 & 6	Each Part	Each Assembly	Verification Test Beginning Of Each Shift	Reject Per QWI001 / Notify Supervisor / Re-Program / Re-Qualify Vision Syst
20	40	First / Last Piece Inspection	Automated Assembly	Assembly (1-34, 1-43)			All Control Plan In-Process Inspection steps listed	See steps listed	2 Parts	At start up	QWI010 First / Last Article	Reject Per QWI001 / Notify Supervisor / Adjust Process
21	50	100% Inspection Automated Assembly	Automated Assembly	Assembly (1-34, 1-43)			Verify Presence & Placement Of Components	Vision systems / Fiber Optic Eyes	Each Assembly	Each Cycle	Verification Test Parts Beginning Of Each Shift	Reject Per QWI001 / Notify Supervisor / Adjust Process
22	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Verify Part Matches Picture In Upper Right Hand Corner	Visual Part To Picture	5 Parts	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
23	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Proper Asssembly	Visual	5 Parts	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
24	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Fully Seat Spacer / Verify No Breakage Or Issues	Manually Seat / Visually Verify No Breakage Or Issues	5 Parts from Production Carton / Dispose Of After Review	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
25	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Review Machine Table For Any Plastic Chips	Visually Review Machine Table		Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
26	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Verify No Molding Defects, Underfill, Flash, Burn, Warp, etc.	Visual Parts From Assembly Hoppers	5 Parts	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
27	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Verify No Purchased Component Defects, Flash, Underfill, Tears,etc.	Visual Parts From Assembly Hoppers	5 Parts	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
28	60	In-Process Inspection	Automated Assembly	Assembly (1-43)			Verify Acceptable (Bee Sting) On Parts	Visual Parts / See Conforming Picture In Database	8 Parts / 1 From Each Nest	Every 4 hours	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
29	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Verify Operator Is Following Instructions & Aware Of Any Alerts	Verbally Verify With The Operator	Each Operator	At start up / Once A Shift	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process

Control Plan

Western Diversified Plastics

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Part Name / Description				Quality Engineering	Customer Quality Approval / Date (If Req'd)	
2 W F 1.5 Conn Hardshell						
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				Control Method	Reaction Plan
				Product	Process		Product/Process Specification/ Tolerance	Evaluation Measurement Technique	Sample Size	Sample Freq.		
30	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Verify Check Head Verification Was Completed & Documented	Visual Verification Log / Look For No Failures		Beginning of each shift equipment is used	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
31	60	In-Process Inspection	Automated Assembly	Assembly (1-34, 1-43)			Carton Identification / Proper Label	Visual	All Labels At Point Of Use	At start up / Once A Shift	QWI026 In-Process Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
32	70	Manufacturing Packaging Verification	Automated Assembly	Assembly (1-34, 1-43)			Proper package and label	Visual	Each Label	Each Carton	MWI004 Label ID & Use / Label Verification Card	Reject Per QWI001 / Notify Supervisor / Re-Print Labels
33	80	Final Audit	Automated Assembly	Assembly (1-34, 1-43)			Proper Assembly	Visual Part To Picture, From Top, Middle & Bottom Of Carton	10 Parts	Each carton	QWI016 Final Audit Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
34	80	Final Audit	Automated Assembly	Assembly (1-43)			Verify Acceptable Mark (Bee Sting) Is Present On Parts	Visual Parts / See Conforming Picture In Database	10 Parts	Each Carton	QWI016 Final Audit Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
35	80	Final Audit	Automated Assembly	Assembly (1-34, 1-43)			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
36	80	Final Audit	Automated Assembly	Assembly (1-34, 1-43)			Verify No Purchased Component Defects, Flash, Underfill, Tears,etc.	Visual Parts From Top, Middle & Bottom Of Carton	10 Parts	Each carton	QWI016 Final Audit Inspection	Reject Per QWI001 / Notify Supervisor / Adjust Process
37	80	Final Audit	Automated Assembly	Assembly (1-34, 1-43)			Carton Identification / Proper Label	Visual	Each Label	Each carton	QWI016 Final Audit Inspection	Reject QWI001 / Notify Supervisor / Re-print labels
38	90	Store In-House	Automated Assembly	Assembly (1-34, 1-43)	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
39	100	Shipping	Automated Assembly	Assembly (1-34, 1-43)	Load Matches Shipper		Scanning System	WHI001	100%	Each Shipment	WHI001 Scanning Product For Shipment	Notify Supervisor / Adjust Process
40	500	Annual Requirement	Layout Equipment	Dimensional			Print Dimensions	Layout	5 Parts	Annual	PDP 21 Annual Layout	Reject Per QWI001 / Notify Supervisor / Adjust Process

This assembly is processed on automated assembly equipment. The process includes the use of machine vision which verifies each step of the assembly process. The equipment is verified each shift to ensure it's continues to detect any defects. Because of the nature of the process we do not have a CPK or Gage study for this assembly.

WDP
Western Diversified Plastics

Dimensional Layout Inspection Report

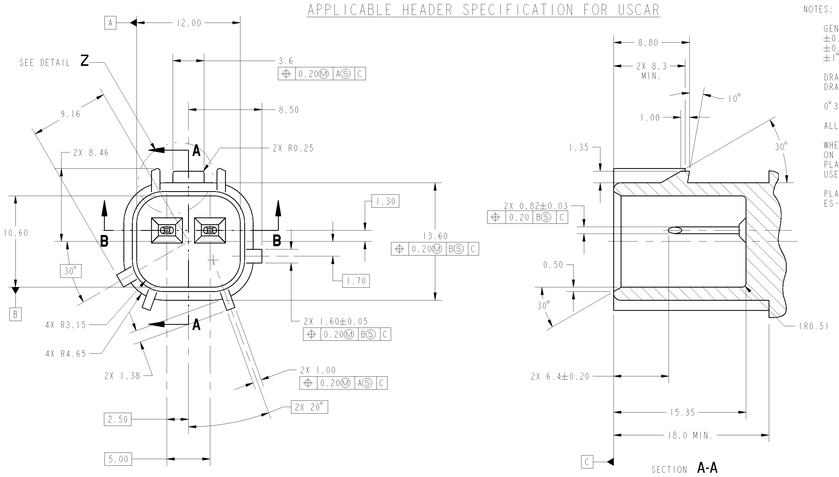
W-No. **W-4221**
Part No. **See Below**
Part Name **SLV ASY WIR CONN FEM**

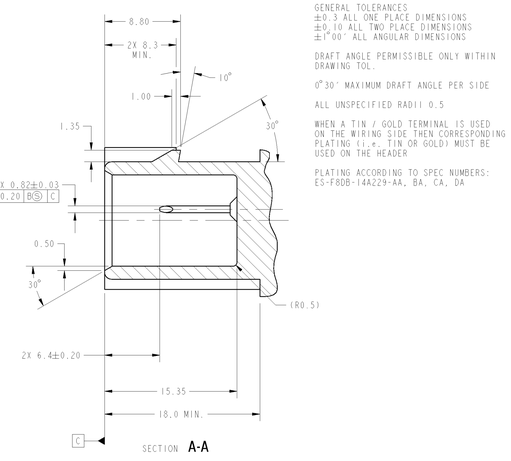
Run Date **07/08/20**
Print No. **EU5T-14A464-JAA**
Revision / Date **Rel. (AELE-E-12035198-277) 02/26/14**

Material **See List of parts**
Insp. Date **07/22/20**
Insp. By **Tammy Aerts**

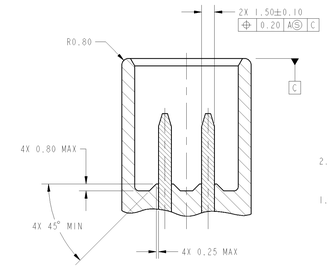
					Sample Number									
Dim.	**Specification**	**Tol. ±**	**Lo Lim**	**Hi Lim**	**1**	**2**	**3**	**4**	**5**					
	Part No.'s													
	EU5T-14A464-JAA, 60014221A01A													
	EU5T-14A464-KAA, 60024221A01A													
1	5.00	0.10	4.90	5.10	5.03	5.02	5.03	5.06	5.03					
2	2.50	0.10	2.40	2.60	2.57	2.57	2.58	2.47	2.54					
3	13.8	0.5	13.30	14.30	13.94	13.95	13.89	13.88	13.97					
4-1	1.30	0.10	1.20	1.40	1.38	1.40	1.39	1.39	1.34					
4-2	1.30	0.10	1.20	1.40	1.40	1.39	1.40	1.37	1.40					
5	20.3	0.5	19.80	20.80	20.12	20.14	20.09	20.10	20.18					
6	10.3	0.3	10.00	10.60	10.14	10.15	10.12	10.34	10.17					
7	7.00 +0.10 / -0.30	-	6.70	7.10	6.74	6.72	6.73	6.72	6.70					
8	20.3	0.5	19.80	20.80	20.12	20.14	20.09	20.10	20.18					
9	11.70	0.10	11.60	11.80	11.67	11.69	11.69	11.70	11.69					
10	31.0	0.3	30.70	31.30	30.96	30.95	30.99	30.99	30.96					
11	3.6	0.3	3.30	3.90	3.52	3.54	3.47	3.49	3.54					
12	27.4	0.3	27.10	27.70	27.44	27.40	27.52	27.50	27.42					
13	0.2	0.3	-0.10	0.50	-0.09	-0.06	0.06	0.06	-0.05					
14	7.00 +0.10 / -0.30	-	6.70	7.10	6.89	6.87	7.01	6.84	6.92					
15	10.30	0.10	10.20	10.40	10.32	10.36	10.39	10.30	10.33					
16-1	23.5	0.5	23.00	24.00	23.41	23.40	23.35	23.37	23.45					
16-2	23.5	0.5	23.00	24.00	23.41	23.36	23.38	23.42	23.36					
17	R0.3 Max Edges	Note	0.00	0.30	0.30	0.30	0.30	0.30	0.30					

APPLICABLE HEADER SPECIFICATION FOR USCAR





SECTION **A-A**



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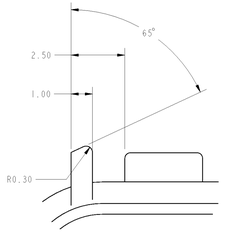
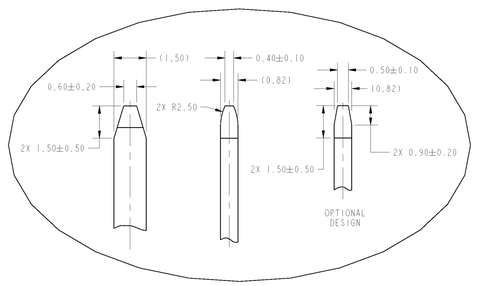


DETAIL **Z**
SCALE 10:1
(2) PLACES



TERMINAL BLADE DETAIL
MATERIAL: C260 BRASS (3/4 HARD) OR EQUIVILENT
FINISH 0.003 ±0.001 TIN PLATING
SCALE = 10:1

NOTES: UNLESS OTHERWISE SPECIFIED

GENERAL TOLERANCES
±0.3 ALL ONE PLACE DIMENSIONS
±0.10 ALL TWO PLACE DIMENSIONS
±1°00' ALL ANGULAR DIMENSIONS

DRAFT ANGLE PERMISSIBLE ONLY WITHIN DRAWING TOL.

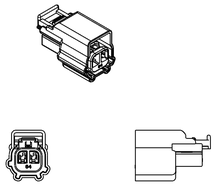
0°30' MAXIMUM DRAFT ANGLE PER SIDE

ALL UNSPECIFIED RADII 0.5

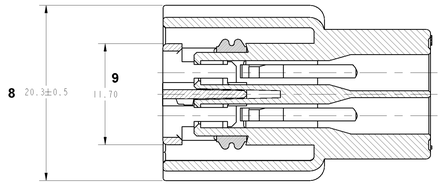
WHEN A TIN / GOLD TERMINAL IS USED ON THE WIRING SIDE THEN CORRESPONDING PLATING (i.e. TIN OR GOLD) MUST BE USED ON THE HEADER

PLATING ACCORDING TO SPEC NUMBERS:
ES-F8DB-14A229-AA, BA, CA, DA

EU5T-14A464-KA♦ SAME AS
EU5T-14A464-JA♦ EXCEPT AS SHOWN
(WITHOUT CPA)



FULL SIZE VIEWS



SECTION **B-B**

NOTES: UNLESS OTHERWISE SPECIFIED

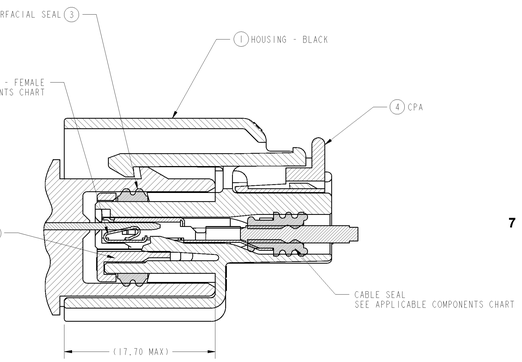
GENERAL TOLERANCE:
±0.3 ALL ONE PLACE DIMENSIONS
±0.10 ALL TWO PLACE DIMENSIONS
±1°00' ALL ANGULAR DIMENSIONS

17 0.3mm MAXIMUM RADIUS PERMISSIBLE ON EDGES AND FILLETS SHOWN AS SHARP FOR PLASTIC PARTS.

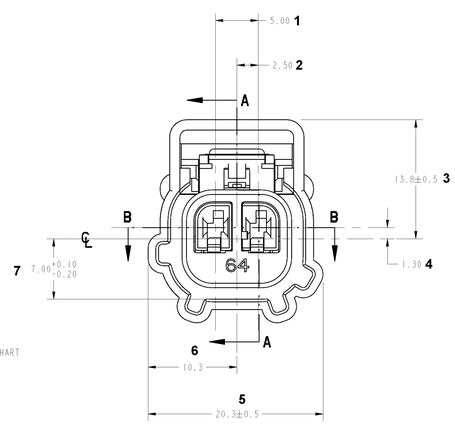
PART MUST CONFORM TO THE ELECTRICAL CONNECTOR SYSTEM DESIGN SPECIFICATION (SDS) VER. 20 REL. JAN-2011
EXCEPT: USCAR-2 REV. 5
5.4.5.4: TPA FULL INSTALLED TO PRESET POSITION - 10N MIN. AFTER INITIAL REMOVAL

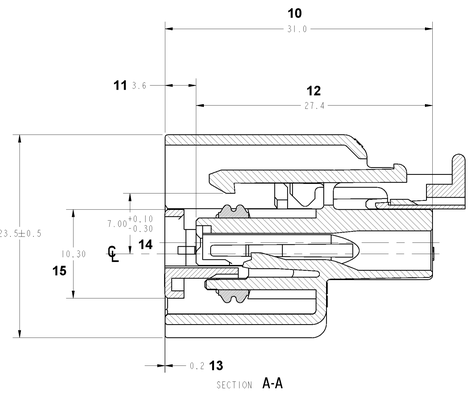
EXPECTED MATING FORCES:
TIN TERMINALS = (21 N)
GOLD TERMINALS = (18 N)

LTRS	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MAT'L APP	
RELEASED AELE E 12035198 277		20140226		
FINSTROM	ENSING	JPITTENT	WDP	

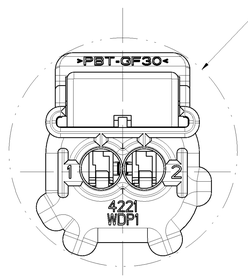


ASSEMBLY SECTION
SHOWING MATING COMPONENTS
FOR REFERENCE ONLY





SECTION **A-A**



RECEIVED
By Mike Davidson at 3:26 pm, Feb 28, 2014

REFERENCE APPLICABLE COMPONENTS - 1.5mm TERMINAL

TERMINAL					WIRE SEAL			
DESCRIPTION	FORD COMPONENT PART NUMBER	MATERIAL/SPECIFICATION NUMBER	APPLICABLE WIRE SIZES	FORD COMPONENT MATING PART NUMBER	FORD PART NUMBER	WIRE OUTER DIAMETER RANGE	COLOR	MATERIAL
TERMINAL-FEMALE (SN)	97BG-14474-ADA	COPPER ALLOY/TIN PLATE	0.35-0.50 mm² OR 20-22 AWG	97BG-14421-ADA	97BG-10C930-SB	1.19 - 1.64 O.D.	PINK	E5B-M2D280-A7 SILICONE RUBBER DUROMETER = 40
TERMINAL-FEMALE (AU)	97BG-14474-AHA	COPPER ALLOY/GOLD PLATE	0.35-0.50 mm² OR 20-22 AWG	97BG-14421-AHA	97BG-10C930-SB	1.19 - 1.64 O.D.	PINK	
TERMINAL-FEMALE (SN)	97BG-14474-ADA	COPPER ALLOY/TIN PLATE	20 AWG	97BG-14421-ADA	XW43-14603-A	1.65 - 2.10 O.D.	GREEN	
TERMINAL-FEMALE (SN)	97BG-14474-AEA	COPPER ALLOY/TIN PLATE	0.75-1.00 mm² OR 16-18 AWG	97BG-14421-AEA	XW43-14603-A	1.65 - 2.10 O.D.	GREEN	
TERMINAL-FEMALE (AU)	97BG-14474-AHA	COPPER ALLOY/GOLD PLATE	20 AWG	97BG-14421-AHA	XW43-14603-A	1.65 - 2.10 O.D.	GREEN	
TERMINAL-FEMALE (AU)	97BG-14474-AJA	COPPER ALLOY/GOLD PLATE	0.75-1.00 mm² OR 16-18 AWG	97BG-14421-AJA	XW43-14603-A	1.65 - 2.10 O.D.	GREEN	
TERMINAL-FEMALE (SN)	97BG-14474-AEA	COPPER ALLOY/TIN PLATE	16 AWG	97BG-14421-AEA	XW4T-14603-F	2.11 - 2.50 O.D.	YELLOW	
TERMINAL-FEMALE (AU)	97BG-14474-AJA	COPPER ALLOY/GOLD PLATE	16 AWG	97BG-14421-AJA	XW4T-14603-F	2.11 - 2.50 O.D.	YELLOW	
TERMINAL-FEMALE (SN)	97BG-14474-AKA	COPPER ALLOY/TIN PLATE	1.50 mm² OR 14 AWG	NONE	XW4T-14603-F	2.11 - 2.50 O.D.	YELLOW	
TERMINAL-FEMALE (SN)	98BG-14474-AKA	COPPER ALLOY/TIN PLATE	1.50 mm² OR 14 AWG	NONE	XW4T-14603-MA	2.69 - 2.54 O.D.	LIGHT GRAY	E5B-M2D280-A2 SILICONE RUBBER

LIST OF PARTS

TEMPERATURE RANGE = -40°C TO 125°C (CLASS #3)

ITEM	DESCRIPTION	COLOR	WDP PART NUMBER	MATERIAL I.D. SYMBOL	NUMBER OF ITEMS REQUIRED	
1	HOUSING	BLACK	4221A-00-001A	>PBT-GF30<	1	1
2	SPACER	NATURAL	3571-00-001A	>PBT-GF33<	1	1
3	INTERFACIAL SEAL	RED/BROWN	3570-50-001A	>VMQ<	1	1
4	CPA	RED	4222-00-001A	>PBT-GF33<	1	

ASSEMBLY PART NUMBER	
FORD ASSEMBLY NO.	WDP ASSY NO.
EU5T-14A464-JA♦	60014221A01♦
EU5T-14A464-KA♦	60024221A01♦

USCAR

60024221A01A	EU5T-14A464-KAA
60014221A01A	EU5T-14A464-JAA
WDP ASSEMBLY NO.	FORD ASSEMBLY NO.

WDP W
Western Diversified Plastics
Phone: (269) 668-3393

REFERENCE

PART MUST COMPLY WITH RESTRICTED SUBSTANCE MANAGEMENT STANDARD WSS-M99P9999-A1 TO SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT

DRAFTED IN ACCORDANCE WITH FORD MOTOR COMPANY ENGINEERING CAD AND DRAFTING STANDARDS VERSION 24

3RD ANGLE PROJ. DIMENSIONS ARE IN MILLIMETERS

CAD TYPE X-PROE	CAD LOC. TCE	CAD FILE	DTMC / I.S. MASTER
OPER. NO.	UNIT	DRAWING	EU5T-14A464-JAA
DESIGN FINSTROM	DETAIL FINSTROM	TITLE	SLV ASY WIR CONN FEM
CHECKED ENSING	SAFETY		SHT 1 OF 1
SCALE 4:1	DATE 20140226	DIVISION	
		PLANT	FORD MOTOR COMPANY

Polyram Plastic Industries LTD
Moshav Ram On
M.P Gilboa 1920500
Israel
Tel.: 972-4-6599900, Fax: 972-4-6499763
Company Number: 515251593
VAT Number: 515251593
Withheld Tax File: 902248582

URL: https://www.polyram-group.com
E-mail: mail@polyram-group.com

Certificate of Analysis

acc. to ASTM D5927-03 TPES011G30

Grade Name: RAMSTER PF312G6BK401
Polyram Desc: PBT I GF30 HR BLACK
Customer PN#: MAT-089-BLK
Customer Desc: RAMSTER 620 BLK
LOT Number: 20110409
LOT Date: 12/23/20
Color: BLACK 401
Customer: WESTERN DIVERSIFIED PLASTICS

Properties	Test Method	Units	Designated Min	Designated Max	AVG RESULTS
HDT 1.8MPa	ISO-75	°C	200.0000	---	206.2000
Determination of ASH	ISO 3451-1	%	28.0000	32.0000	30.4000
SPIRAL FLOW	INTERNAL	in	35.0000	42.0000	36.3000
MFI (250/2.16kg)	ISO 1133	g/10min	12.0000	35.0000	17.5000
TENSILE STRENGTH	ISO 527-2/1A	MPa	115.0000	---	136.6667
TENSILE MODULUS	ISO 527-2/1A	MPa	7,500.0000	---	9,940.0000
NOTCHED CHARPY IMPACT	ISO179-1/1eA	kJ/m²	7.0000	---	11.8000

Grade Remarks

Layout inspection data:

HDT @1.8 MPa ISO-75 200C

This lot meets the mechanical requirements of FCA MS50103 CPN 4615 and Ford WSK-M4D725-B1 specification

No. 86 Version A

The test values reported are means of individual test values determined on samples taken in accordance with the testing plan of the day of production.
Thank you for deciding on Polyram product.

Yaara Avrahami
Quality Manager
Polyram Plastic Industries LTD

Polyram Plastic Industries LTD
Moshav Ram On
M.P Gilboa 1920500
Israel
Tel.: 972-4-6599900, Fax: 972-4-6499763
Company Number: 515251593
VAT Number: 515251593
Withheld Tax File: 902248582

URL: https://www.polyram-group.com
E-mail: mail@polyram-group.com

Certificate of Analysis

acc. to ASTM D5927-03 TPES011G33

Grade Name: RAMSTER PF316G33NT
Polyram Desc: PBT I GF33 HR NATURAL
Customer PN#: MAT-090-NAT
Customer Desc: RAMSTER 316 NATURAL
LOT Number: 20120657
LOT Date: 01/26/21
Color: NATURAL
Customer: WESTERN DIVERSIFIED PLASTICS

Properties	Test Method	Units	Designated Min	Designated Max	AVG RESULTS
MFI (250/2.16kg)	ISO 1133	g/10min	9.0000	16.0000	12.8000
HDT 1.8MPa	ISO-75	°C	194.0000	---	204.8000
Determination of ASH	ISO 3451-1	%	31.0000	35.0000	32.5500
TENSILE STRENGTH	ISO 527-2/1A	MPa	103.0000	---	143.5000
STRAIN AT BREAK	ISO 527-2/1A	%	2.0000	---	3.0500
TENSILE MODULUS	ISO 527-2/1A	MPa	9,000.0000	---	10,600.0000
NOTCHED CHARPY IMPACT	ISO179-1/1eA	kJ/m²	7.0000	---	13.4000

Grade Remarks

Layout inspection data:

HDT @1.8 MPa ISO-75 200C

This lot meets the mechanical requirements of Ford SPEC WSK-M4D608-A

No. 86 Version A

The test values reported are means of individual test values
determined on samples taken in accordance with the testing plan
of the day of production.
Thank you for deciding on Polyram product.

Yaara Avrahami
Quality Manager
Polyram Plastic Industries LTD

Certificate of Registration

This certificate has been awarded to

Polyram Plastic Industries Ltd

Ram-On, 1920500, Israel

in recognition of the organization's Quality Management System which complies with

IATF 16949:2016

The scope of activities covered by this certificate is defined below

Design and Manufacture of Thermoplastic Raw Material Compounds

Certificate Number:	Date of Issue of Certification Cycle:	
61487/B/0001/SM/En	22 June 2020	
Issue No:	**Expiry Date:**	**IATF No:**
4	21 June 2023	0368787

Issued by: *On behalf of the Schemes Manager*

Appendix to Certificate

Design and Manufacture of Thermoplastic Raw Material Compounds

Extended Manufacturing Location
Afula Site
1 Rabin Road
Tadiran Site
Afula
Israel

Scope: Manufacture of Thermoplastic Raw Material Compounds

Certificate Number:	Date of Issue of Certification Cycle:	
61487/B/0001/SM/En	22 June 2020	
Issue No:	**Expiry Date:**	**IATF No:**
4	21 June 2023	0368787

Certificate of Registration

This certificate has been awarded to

Polyram Plastic Industries Ltd

Ram-On, 1920500, Israel

in recognition of the organization's Quality Management System which complies with

ISO 9001:2015

The scope of activities covered by this certificate is defined below

Design and Manufacture of Thermoplastic Raw Material Compounds

Certificate Number:	Date of Issue: (Original)	Date of Issue:
61487/BB/0001/SM/En	04 July 2017	22 June 2020
Issue No:	**Expiry Date:**	
4	21 June 2023	

Issued by: *On behalf of the Schemes Manager*

UKAS MANAGEMENT SYSTEMS 0043

Avient Colorants USA LLC
926 Elliot Road
Albion, MI, 49224

WESTERN DIVERSIFIED PLASTICS
53150 NORTH MAIN ST
MATTAWAN MI 49071-8305

Repeat printout

C e r t i f i c a t e o f A n a l y s i s

Date: 02/04/2021

Your order from 12/21/2020
Order No. : 025771
Material No. : MAT-503-RED

Delivery no./Pos. : 52381731 / 900001
Order : 14843238
Material : CEA 3022A PE
Old Material No. : CEA-3022-A
Material-no. : PL3SAD
Batch No. : USPC044988
Quantity : 199.999 LB
On the batch, of which the consignment is a part, the following values were determined.

Inspection characteristic/-method	Specification	Result
COLOR - VISUAL		
CONTAMINATION - VISUAL		
COLOR - INSTRUMENTAL		0.67 CMC2:1
MELT FLOW INDEX		59.4 g/10´
MOISTURE		0.01 %
PELLET LENGTH		0.120 IN
PELLET DIAMETER		0.090 IN
Let Down Ratio (%)		1

Avient Colorants USA LLC
926 Elliot Road
Albion, MI, 49224

WESTERN DIVERSIFIED PLASTICS
53150 NORTH MAIN ST
MATTAWAN MI 49071-8305

Repeat printout

C e r t i f i c a t e o f A n a l y s i s

Date: 02/04/2021

Material : CEA 3022A PE
Material No. : PL3SAD
Batch No. : USPC044988
Old Material No : CEA-3022-A

Inspection characteristic/-method	Specification	Result

The above particulars do not release the customer from the obligation to carry out an inspection of goods received.

This report does not require a signature.
Management System Certified according to ISO 9001, ISO 14001 and OHSAS 18001

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SQS has issued an IQNet recognized certificate that the organization:

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

has implemented and maintains a

Management System

for the following scope:

Further sites according to appendix SQS

which fulfills the requirements of the following standard(s):

ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018

Issued on: 2020-10-01
Expires on: 2023-09-30

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number: CH-H60440

Alex Stoichitoiu
President of IQNet

Felix Müller
CEO SQS

IQNet Partners*:
AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany EAGLE Certification Group USA
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia Inspecta Sertifiointi Oy Finland INTECO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland
NYCE-SIGE México PCBC Poland Quality Austria Austria RR Russia SII Israel SIQ Slovenia
SIRIM QAS International Malaysia SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey YUQS Serbia

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

Certificate

The SQS herewith attests that the organisation named below has a management system that meets the requirements of the normative basis mentioned.

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Further sites according to appendix

Scope

Design and manufacture of colour and additive concentrates, thermoplastic resins and specialty compounds

Normative basis

ISO 9001:2015	Quality Management System
ISO 14001:2015	Environmental Management System
ISO 45001:2018	Occupational Health and Safety Management System

Reg. no. H60440

Validity 01.10.2020 – 30.09.2023
Issue 01.10.2020

A. Grisard, President SQS

F. Müller, CEO SQS

Swiss Association for Quality and Management Systems (SQS)
Bernstrasse 103, 3052 Zollikofen, Switzerland

sqs.ch

Swiss Made

Partner of IQNet

4024_2/June 2019/Version 2.0

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Central Function	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
Avient Central Functions Rothausstrasse 61 4132 Muttenz Switzerland	Design and manufacture of colour and additive concentrates, thermoplastic resins and specialty compounds	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
ARGENTINA				
Clariant Plastics & Coatings (Argentina) SA Av. José Garibaldi 2401 1832 Lomas de Zamora Argentina	Administration, Site management, Manufacture, Laboratory (QC and Colormatching), Procurement, Maintenance, Infrastructure, Warehouse and Transport, Sales	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
AUSTRIA				
Performance Masterbatches Austria GmbH Neustiftgasse 3 / 2 1070 Wien Austria	Administration	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
BELGIUM				
Clariant Plastics & Coatings (Belgium) SA Parc Scientifique Fleming, Fond Jean Pâques 1 1348 Louvain-la-Neuve Belgium	Site management, CSD – Customer Services, Manufacture, Laboratory, Supply Chain Management, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
BRAZIL				
Clariant Plastics & Coatings Brasil Indústria Química Ltda. Avenida Jorge Bei Maluf, 2.165 08686-000 Suzano Brazil	Manufacture, Laboratory (QC and Colormatching), CSD	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
CANADA				
Clariant Plastics & Coatings Canada Inc. 2 Lone Oak Court Toronto ON M9C 5A9 Canada	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
CHILE				
Performance Masterbatches (Chile) SpA Camino a Melipilla 15170 Maipú, Santiago Chile	Manufacture, Laboratory (QC and Colormatching), Sales	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
COLOMBIA				
Clariant Plastics & Coatings (Columbia) S.A.S Autopista Medellín KM 2.5 – Vía Parcelas KM 1, Vereda Sibéria COTA – Cundinamarca Colombia	Administration, Site management, Manufacture, Laboratory, Maintenance, Infrastructure, Warehouse and Transport, Sales	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
FRANCE				
Clariant Plastics & Coatings (France) 1995 route de la Vallée du Giffre 74490 Saint-Jeoire en Faucigny France	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
GERMANY				
Performance Masterbatches Germany GmbH Kornkamp 50 22926 Ahrensburg Germany	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Performance Masterbatches Germany GmbH Hohenrhein 1 56112 Lahnstein Germany	Administration, Site management, Manufacture, Laboratory, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
GUATEMALA				
Clariant (Guatemala) S.A. 27 Avenida 33–85, Zona 12 Parque Global Guatemala	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023

A. Grisard, President SQS

F. Müller, CEO SQS

sqs.ch

Swiss Association for Quality
and Management Systems (SQS)
Bernstrasse 103, 3052 Zollikofen, Switzerland

Swiss Made

Partner of IQNet

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
INDIA				
PolyOne Polymers India Private Limited WA-6 Renaissance Industrial & Warehousing Complex, Village: Vashere, Post: Padgha, Thane, Maharashtra 400 607 India	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse, Transport and Waste Water Treatment	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
PolyOne Polymers India Private Limited Survey No. 344/1–3 Sakarda Bhadarwa Road Rania, Taluka Savli, Vadodara District 39178 India	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse, Transport and Waste Water Treatment	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
PolyOne Polymers India Private Limited Shed No 18–22, GIDC Estate, Panchmahal, Kalol 389330, Gujarat India	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse, Transport and Waste Water Treatment	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
INDONESIA				
P.T. Clariant Plastics and Coatings Indonesia Gatot Subroto Km. 4, Jl. Kalisabi No. 1, Kec. Cibodas Kecamatan Cibodas Tangerang 15138 Indonesia	Administration, Site management (EHS), Manufacture and Infrastructure, Laboratory (QC and Technical Development), Maintenance, Warehouse and Transport, Demand Inventory Planning, Call-off, Waste Water Treatment Plant	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
IRELAND				
Clariant Plastics & Coatings (Ireland) Ltd. Monread Industrial Estate Naas Ireland	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
ITALY				
Clariant Plastics & Coatings (Italia) S.p.a. Via Piave, 12 23871 Lomagna (LC) Italy	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport Sales and Marketing	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Plastics & Coatings (Italia) S.p.a. Via Bergamo, 51/67 23807 Merate (LC) Italy	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport Sales and Marketing	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Plastics & Coatings (Italia) S.p.a. Via Lainate, 26 20010 Pogliano Milanese (MI) Italy	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport Sales and Marketing	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
JAPAN				
Performance Masterbatches Japan K.K. Bunkyo Green Court, 2-28-8, Honkomagome, Bunkyo-ku Tokyo 113-8662 Japan	Central Office, Administration, Site management (Facitilities, EHS), Marketing and Sales, SCM, Group Procurement Services, GBS and Logistics, GTI-Engineering and R&D, Technical Application Laboratories, Legal, Finance, HR, IT, RSRA, SMD and Learning, Communication	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
MALAYSIA				
Clariant Masterbatches (Malaysia) Sdn Bhd Lot 1732, MK. 15, Kaw. Industri Kecil & Sederhana Penang, Malaysia Simpang Ampat, 14120 S.P.S Malaysia	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
MEXICO				
Performance Masterbatch MX S.A. de C.V. Plasticos 28 Santa Clara Coatitla 55540 Ecatepec de Morelos, Estado de México Mexico	Administration, Manufacture, Laboratory, Warehouse	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
NEW ZEALAND				
Clariant (New Zealand) Ltd. 4 Rothwell Avenue, Albany Industrial Estate Albany New Zealand	Administration, Site management (Facitilities, EHS), Manufacture, Laboratory (QC and Technical Development), Maintenance and Infrastructure, Warehouse and Transport, SCM (DIP, Logistics, CSD, Call-off), QC, Product Stewardship	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
PAKISTAN				
Clariant Chemical Pakistan Pvt Ltd. 1–A1, Sector 20, Korangi Industrial Area Karachi-74900 Pakistan	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Chemical Pakistan Pvt Ltd. Katar Bund Road, Off Multan Road Thokar Niaz Baig Lahore-54500 Pakistan	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
POLAND				
Clariant Plastics & Coatings (Polska) Sp. z.o.o. Ul. Langiewicza 50 95-050 Konstantynów Łódzki Poland	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SAUDI ARABIA				
Clariant Masterbatches (Saudi Arabia) Ltd Riyadh, Saudi Arabia	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SINGAPORE				
Performance Masterbatches Singapore Pte. Ltd. 1 International Business Park #08-01-04 The Synergy Singapore 609917 Singapore	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
Performance Masterbatches Singapore Pte Ltd 8 Third Chin Bee Road Jurong Industrial Estate Singapore 618684 Singapore	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SOUTH AFRICA				
Clariant Plastics & Coatings Southern Africa (Pty) Ltd. Strydom Park 329 Thungsten Road 2194 Randburg South Africa	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SPAIN				
Clariant Plastics & Coatings (Iberica), S.A. C/Carretera. Martorell no. 124 08740 Sant Andreu de la Barca Spain	Administration, Site Management, Manufacture, Laboratory, Procurement, Supply Chain Management, Engineering and Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SWEDEN				
Clariant Plastics & Coatings (Nordic) AB Järnyxegatan 7 Box 9053 200 39 Malmö Sweden	Administration, Site management, Manufacture, Laboratory, Procurement, Sales, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
SWITZERLAND				
Performance Masterbatches Switzerland AG Rothausstrasse 61 4132 Muttenz Switzerland	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
TAIWAN				
Clariant Plastics & Coatings (Taiwan) Co. Ltd. 30, Hsing Pang Road 33068 Taoyuan Taiwan	Administration, Site management (Facitilities, EHS), Manufacture, Laboratory (QC and Technical Development), Maintenance and Infrastructure, Warehouse and Transport, SCM(DIP, Logistics, CSD, Call-off), QC, Product Stewardship	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
THAILAND				
Clariant Plastics & Coatings (Thailand) Ltd. Amata City Chonburi Industrial Estate 700/848 Moo 1, Tambol Phan Thong Amphur Phan Thong Chonburi 20160 Thailand	Administration, Site management (Facitilities, EHS), Manufacture, Laboratory (QC and Technical Development), Maintenance and Infrastructure, Warehouse and Transport, SCM (DIP, Logistics, CSD, Call-off), QC, Product Stewardship	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
TURKEY				
Clariant Turkey Plastik, Boya ve Kimyevi Maddeler Sanayi ve Ticaret A.S. Gebze Organize Sanayi Bolgesi, Ihsan Dede Cad. No: 149/1 Gebze/Kocaeli Turkey	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Turkey Plastik, Boya ve Kimyevi Maddeler Sanayi ve Ticaret A.S. 5. Organize Sanayi Bölgesi, 83539 No'lu Cadde No: 4 Sehitkamil/Gaziantep Turkey	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015	H60440	01.10.2020 30.09.2023
USA				
Clariant Plastics & Coatings USA LLC 926 Elliott Road Albion, MI, 49224 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Plastics & Coatings USA LLC 3023 Mayo Street Dalton, GA 30720 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Plastics & Coatings USA LLC 85 Industrial Park Holden, MA 01520 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023
Clariant Plastics & Coatings USA LLC 17 Foss Rd. Lewiston, ME, 04240 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01.10.2020 30.09.2023

A. Grisard, President SQS

F. Müller, CEO SQS

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

Locations	*Scope*	*Norm / Revision*	*Reg. no.*	*Validity*
Clariant Plastics & Coatings USA LLC 9101 International Parkway Minneapolis, MN, 55428 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Plastics & Coatings USA LLC 337 Timber Road Mooresville, NC 28115 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Plastics & Coatings USA LLC 4425 East Elwood Street, Suite 104 Phoenix, AZ 85040 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Plastics & Coatings USA LLC 675 Wegner Drive West Chicago, IL, 60185 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Plastics & Coatings USA LLC 382 Arbor Court Winchester, VA 22602 United States of America	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
VIETNAM				
Clariant (Vietnam) Ltd No. 3, Street 2, Vietnam Singapore Industrial Park Binh Duong Vietnam	Administration, Site management, Manufacture, Laboratory, Procurement, Maintenance, Infrastructure, Warehouse and Transport	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

A. Grisard, President SQS

F. Müller, CEO SQS

sqs.ch

Swiss Association for Quality
and Management Systems (SQS)
Bernstrasse 103, 3052 Zollikofen, Switzerland

Swiss Made

Partner of IQNet

Appendix

Appendix of main certificate Reg. no. H60440

Avient
Rothausstrasse 61
4132 Muttenz
Switzerland

China locations
Recognition of the certificate in China requires an additional approval in accordance with CNCA regulation (Certification and Accreditation Administration of the People's Republic of China – CNCA)

China locations	*Field of activity*	*Norm / Revision*	*Reg. no.*	*Validity*
Clariant Materials Science & Technology (Guangzhou) Ltd. No. 2 Nan Yun San Rd., Science City, Guangzhou Hi-Tech Industrial Development Zone 510663 Guangzhou People's Republic of China	Administration, Site management (Facitilities, EHS), Manufacture, Laboratory (QC and Technical Development), Maintenance and Infrastructure, Warehouse and Transport, SCM (DIP, Logistics, CSD, Call-off), QC, Product Stewardship	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023
Clariant Masterbatches (Shanghai) Ltd No 88 Lane 4377 Jindu Road 201108 Shanghai People's Republic of China	Administration, Site management (Facitilities, EHS), Manufacture, Laboratory (QC and Technical Development), Maintenance and Infrastructure, Warehouse and Transport, SCM (DIP, Logistics, CSD, Call-off), QC, Product Stewardship	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018	H60440	01. 10. 2020 30. 09. 2023

A. Grisard, President SQS

F. Müller, CEO SQS

FOREST CITY TECHNOLOGIES, INC.
INNOVATION BY DESIGN

Print Rev.: A14

MATERIAL: SAE J200 M2GE 303 G11 Z1-Z4
Z1 - SHORE A DUROMETER: 22-32
Z2 - ELONGATION: 450% MIN.
Z3 - COMPRESSION SET: 25% MAX.
Z4 - LUBRICANT BLEED MUST BE EVIDENT WITHIN 24 HOURS OF MOLDING
POST CURE - 3 HOURS AT 400° F
COLOR: RED/BROWN

DaimlerChrysler Ford General Motors

SUPPLIER	PART NUMBER
FOREST CITY TECHNOLOGIES	3570-50-001A
NAME OF LABORATORY	PART NAME
FOREST CITY TECHNOLOGIES	INTERFACIAL SEAL 2-WAY

JS#: 16-0262

	Test	MATERIAL SPECIFICATION SAE J200 M2GE 303 G11 Z1 - Z4	FCMS# 769 SPEC MIN.	SPEC MAX.	TEST RESULTS	UOM	OK	NOT OK
Z1 (GE30)	DUROMETER	ASTM-D2240, SHORE A	22	32	29	points		
(GE3)	TENSILE	ASTM-D412	3		5	Mpa		
Z2	ELONGATION @ BREAK	ASTM-D412, DIE C	450		575	%		
G11 (Grade2)	TEAR STRENGTH	ASTM-D624, DIE B	5		20	kN/m		
Z3	COMPRESSION SET	ASTM-D395, 70 hrs @ 150°C	0	25	13	%		
Z4	LUBRICANT BLEED		Evident Within 24 Hours		PASS			

IMDS # 88228312

Signature Joyce Cypher Date 11/12/2020

Reported by/Tilte: Joyce Cypher, Quality Lab Technician

SMITHERS
QUALITY ASSESSMENTS

CERTIFICATE OF APPROVAL

This is to Certify that the Quality Management System of:

Forest City Technologies, Inc.

299 Clay Street
Wellington, OH 44090
(Page 1 of 2; see Appendix)

has been assessed and approved by Smithers Quality Assessments, Inc., to the following quality management system standards and requirements:

ISO 9001:2015 without Design

The Quality Management System is Applicable to:
The manufacture of sealing devices and molded products and the application of sealants, coatings tapes and related services to both such as sorting/packing, and delivery for the fastener, automotive, infant care and other industries

Approval
Certificate Number: 97.127.1

Original Approval: May 7, 1997

Current Certificate: April 22, 2021

Certificate Expires: April 21, 2024

The use of the accreditation mark indicates accreditation in respect of those activities covered by the above certificate number.

on behalf of SQA - J. Michael Hochschwender, CEO

The approval is subject to the company maintaining its system to the required standards which will be monitored by Smithers Quality Assessments, Inc., 121 S. Main St. Suite 300, Akron, Ohio 44308, USA

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

APPENDIX A
TO THE CERTIFICATE
OF REGISTRATION NO. 97.127.1

SMITHERS QUALITY ASSESSMENTS, INC.

Forest City Technologies, Inc.
299 Clay Street
Wellington, OH 44090
Scope of activities: Corporate

The above site is certified by Smithers Quality Assessments, Inc. with regard to ISO 9001:2015 without Design. The following locations are included utilizing a Multi-site (Combination) approach.

Locations:
Forest City Technologies, Inc.
299 Clay Street
Wellington, OH 44090
Scope of activities: Manufacturing

Forest City Technologies, Inc.
232 Maple Street
Wellington, OH 44090
Scope of activities: Manufacturing

Forest City Technologies, Inc.
892 Southrock Drive
Rockford, IL 61102
Scope of activities: Manufacturing

Forest City Technologies, Inc.
401 Magyar Street
Wellington, OH 44090
Scope of activities: Manufacturing

Forest City Technologies, Inc.
22069 Fairgrounds Roads
Wellington, OH 44090
Scope of activities: Manufacturing

Forest City Technologies, Inc. - Novathane
228 TWP RD 931
Nova, OH 44859
Scope of activities: Manufacturing

This appendix applies only to those sites listed above. As other sites are assessed and approved, or as sites already approved are removed from active services, this appendix will be amended to show the current status. Sites not listed on this appendix shall not be viewed as approved.

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

SMITHERS
QUALITY ASSESSMENTS

CERTIFICATE OF APPROVAL

This is to Certify that the Environmental Management System of:

Forest City Technologies, Inc.

299 Clay Street
Wellington, OH 44090

(Page 1 of 2; see Appendix)

has been assessed and approved by Smithers Quality Assessments, Inc., to the following environmental management system standards and requirements:

ISO 14001:2015

The Environmental Management System is Applicable to:

The manufacture of sealing devices and molded products and the application of sealants, coatings tapes and related services to both such as sorting/packing, and delivery for the fastener, automotive, infant care and other industries.

Approval
Certificate Number: 10.328.2

Original Approval: November 24, 2010

Current Certificate: March 28, 2019

Certificate Expires: March 27, 2022

The use of the accreditation mark indicates accreditation in respect of those activities covered by the above certificate number.

on behalf of SQA - J. Michael Hochschwender, CEO

The approval is subject to the company maintaining its system to the required standards which will be monitored by Smithers Quality Assessments, Inc., 121 S. Main St. Suite 300, Akron, Ohio 44308, USA

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

APPENDIX A
TO THE CERTIFICATE
OF REGISTRATION NO. 10.328.2

SMITHERS QUALITY ASSESSMENTS, INC.

Forest City Technologies, Inc.
299 Clay Street
Wellington, OH 44090, U.S.A.

is certified by Smithers Quality Assessments, Inc. with regard to ISO 14001:2015.

In addition, the following sites have been assessed and found to be in compliance with the applicable requirements of ISO 14001:2015.

Locations:
Forest City Technologies, Inc.
299 Clay Street
Wellington, OH 44090
Scope: Manufacturing

Forest City Technologies, Inc.
401 Magyar Street
Wellington, OH 44090
Scope: Manufacturing

Forest City Technologies, Inc.
232 Maple Street
Wellington OH 44090
Scope: Manufacturing

Forest City Technologies, Inc.
22069 Fairgrounds Road,
Wellington OH 44090
Scope: Manufacturing

This appendix applies only to those sites listed above. As other sites are assessed and approved, or as sites already approved are removed from active services, this appendix will be amended to show the current status. Sites not listed on this appendix shall not be viewed as approved.

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

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
0312892

Certificate Number:
2007-0124

Certificate Issue Date:
28 June 2018 (Revised: 15 February 2021)

Certificate Expiry Date:
27 December 2021

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	**After-Sales, Calibration, Contract Review, Laboratory, Process Design, Product Design, Sales**
Western Diversified Plastics - 53301 N. Main Street, Mattawan, MI, 49071, USA	**Warehousing**

IATF Certificate Number
0312892

Certificate Number:
2007-0124

Certificate Issue Date:
28 June 2018 (Revised: 15 February 2021)

Certificate Expiry Date:
27 December 2021

Calin Moldovean
President, Business Assurance

Intertek – 4700 Broadmoor, Suite200
Kentwood MI 49512, USA

intertek
Total Quality. Assured.

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:

ISO 9001:2015

The management system is applicable to:

Design and Manufacture of Plastic Components and Assemblies

Certificate Number:
06-058e-01

Initial Certification Date:
02 June 2006

Date of Certification Decision:
28 June 2018

Issuing Date:
28 June 2018

Valid Until:
27 June 2021

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

Calin Moldovean
President Business Assurance

Intertek Testing Services NA, Inc. dba Intertek
900 Chelmsford Street, Lowell, MA, USA

WDP
Western Diversified Plastics

53150 N. Main St. • Mattawan, MI 49071
Phone 269-668-3393 • Fax 269-668-4694

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 PS-002	Instron 3342 5 to 500N Instron 3366 5 to10KN
Mechanical	Electrical and Mechanical Components	Torque	ES-GU5T-14A067-AB Ford Connector SDS WDP PS-001	Jetco ED-2501 Stanley E23lb-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 PS-002	Humboldt H30135E Thermotron SM-32& 4 Thermotron SE-600 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 PS-002	Thermotron DSX-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 PS-002	Thermotron ATS-320 H/V Fluke 54 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	Weiss DUGY2-015 ±15psi Fluke 700RG07 -14 - 500psi 29.9 in Hg to 350 psi ESPEC ETH-37 Water chbr Up to 1500 psi - 4 gpm IPX3/4 Spray Head Ashcroft 5000 psig gage 100, 2000, 4000ml Grad Cyl Control Co 1042 Stopwatch - 1/100th sec
Temperature	Electrical Components	Thermal Imaging	ES-GU5T-14A067-AB WDP PS-001 WDP PS-002	FLIR T620 FLIR E50 Up to 500°C

WDP W
Western Diversified Plastics

53150 N. Main St. • Mattawan, MI 49071
Phone 269-668-3393 • Fax 269-668-4694

Field of Test	Products or Items Tested	Specified Tests or Properties Measured	Specification, Standard, or Method Used	Equipment / Range
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 PS-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	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 PS-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 PS-002	Fluke 87, 287, 289 Keysight 34450A 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 PS-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 PS-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

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.

WDP W
Western Diversified Plastics

53150 N. Main St. • Mattawan, MI 49071
Phone 269-668-3393 • Fax 269-668-4694

1.3 Any required conditions, or deviations, are communicated to the customer as identified in the DVP&R and/or Test data sheet.