



POTENTIAL FAILURE MODE & EFFECTS ANALYSIS

Process FMEA - Injection Molding

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PART/PROCESS NAME: <u>GROM - WIR</u>		PART NUMBER: <u>DU5T-14603-ZA</u>		SUPPLIER & PLANT EFFECTED: <u>ParkOhio Industries (Qingdao)</u>		ORIGINAL FMEA DATE: <u>7/17/2012</u>		PART REVISION LEVEL: <u>A</u>	
MFG RESPONSIBILITY: <u>ParkOhio Industries (Qingdao)</u>		INTERNAL PART NUMBER: <u>75474</u>		MODEL YEAR/VEHICLE: <u>Ford</u>		REVISED FMEA DATE: <u>9/2/2015</u>		DRAWING REV. DATE: <u>9/2/2015</u>	
OTHER AREAS INVOLVED: <u>None</u>		KEY PRODUCT DATE: <u>N/A</u>		ENGINEERING RELEASE DATE: <u>N/A</u>					

Process Function Requirements	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEVERITY	CLASS	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	OCCUR.	CURRENT PROCESS CONTROLS PREVENTION	CURRENT PROCESS CONTROLS DETECTION	DETECT.	RPN	RECOMMENDED ACTIONS	AREA/INDIVIDUAL RESPONSIBLE & COMPLETION DATE	ACTION RESULTS				
													ACTION TAKEN	SEVERITY	OCCUR.	DETECT.	RPN
Raw Material 1 Receive raw compound 2 Move to storage / hold area 3 Raw material verification 4 Storage of compound 5 Move to pressroom	Missing batch label	Incorrect material used	8		Label not put on Label detached	2		100% lab test/identification	3	48	NONE						
	Wrong material Durometer	Material too hard/soft Functional problems	5		Poor vendor control	4		Vendor certification	3	60	NONE						
	Physical shipment damage	Functional problems at press	5		Poor vendor control Poor material handling	2		Lab review each carton	3	30	NONE						
	Certificate is not received	No certificate on file	3		Not requested Poor vendor control	4		Review vendor certification	5	60	NONE						
	Test data not received	No lab results to comparison	3		Not requested Poor vendor control	4		Review vendor certification	5	60	NONE						
Molded Grommet Manufacturing 6 Mold part (injection) 7 Trim part 8 Operator inspect	Missing lot/batch on label	No lot traceability	3		Not on material label Operator error	3		QA final inspection	3	27	NONE						
	Missing information on label	Wrong part identification Incorrect shipment	7		Operator error	3		QA final inspection	3	63	NONE						
	Wrong compound used	Functional problems	8		Operator error Poor material label, bad routing	1	Material sign-off / router	QA final inspection of label	3	24	NONE						
	No routing at press or deflash	Incorrect part molding Missing operations	7		Supervisor did not issue	1	Supervisor set up approval	QA final inspection	3	21	NONE						
	No setup approval	Additional scrap / reject %	7		Set up not approved	1	Supervisor set up approval	QA final inspection	3	21	NONE						
	No IP SPC checks	Additional scrap / reject %	7		QA missed check	1	QA control plan requirement		6	42	NONE						
	Part dimensionally incorrect	Difficulty in assembly	7		Tool deterioration	1	Non-abrasive rubber	Quality Auditor inspection	2	14	NONE						
	No final inspection prior to ship	Incorrect part shipped Substance part shipped	8		Hot shipment prior to check	3	100% QA audit		3	72	NONE						
	Mixed part in carton	Customer rejection	7		Partial carton mixed	1	Part mix prevention program, drop it scrap it carton closure	Final inspection	3	21	NONE						
	Mixed part on skid	Incorrect part shipped	7		Poor storage practice	1	Shipper Document Check Awareness training		3	21	NONE						
	Wrong mold setup	Additional mold change time	3		Miscommunication in maintenance department	2	Operator matches with job #	Setup Team w/Quality sign-off	2	12	NONE						
	Incorrect part routing	Additional scrap/reject percent	7		Wrong manufacturing. spec sheet distributed.	1	Bar code scan for labels.	Supervisor issues router to press.	3	21	NONE						
	Wrong part number on label	Incorrect part shipped	7		Operator error	3	Bar code scan for labels.	QA final inspection	3	63	NONE						
	Part dimensionally incorrect	Poor Part performance	7		Poor setup/tool/operation sheet distributed.	3		Operator inspect/QA inspect	2	42	NONE						
	Digital visual instruction book (DVS) not at the press	Substandard parts shipped	7		Operator lack of detection	2	Methodology book	QA audit	2	28	NONE						
	Process interruption	Additional scrap/reject	7		Strip stock too wide, non-feed	2	Supplier equipment control		2	28	NONE						
		Substandard parts shipped	7		Excess material talc	2	Vendor control, label review		2	28	NONE						
	Part splits Substandard parts	Substandard parts shipped	7		Too little material talc	2			2	28	NONE						
		Customer reject		7		Non-fills, blisters,excess flash,tears, distortion, undercure,poor gates.	4	in-process, visual inspection	QA audit	2	56	NONE					
	2						Digital visual inspection		3	21	NONE						
Application of lubricant to part 9 Lubricant application	Missing lubricant	Customer rejection - may impact assembly	5		Operator error	3		Operators visual inspection prior to putting part in carton and visual verification during dock audit	5	75	NONE						
	Lubrican in wrong area or not covered in all required areas	Customer rejection - may impact assembly	5		Operator error	3		Operators visual inspection prior to putting part in carton and visual verification during dock audit	5	75	None						
Part shipping,handling and storage	Carton handling damage	Part contamination Additional scrap / reject %	7		Poor material handling	3		Shipper review	4	84	NONE						

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10 Final inspection, Packing	Open carton shipped	Part contamination Additional scrap/reject%	7		Operator error	2		Shipper review	4	56	NONE						
11 Move to Shipping	wrong part shipped	Customer complaint	5		Operator error	3		shipper review	4	60	NONE						
12 QA final inspection	Wrong shipping location	Customer complaint	5		Wrong address label	2	Job ticket ship address		5	50	NONE						
13 ship to customer	Wrong skid	Lower truck quantity Additional scrap / reject %	3		Poor shipping instruction Operator error	2		Shipper review	4	24	NONE						