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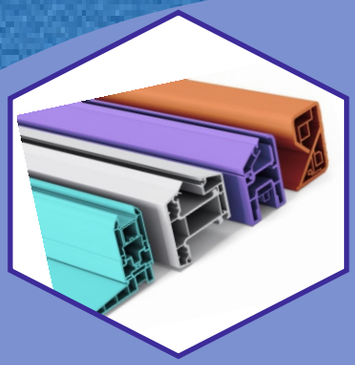
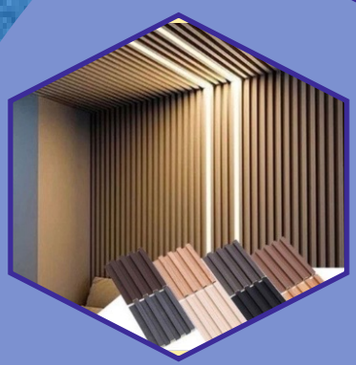
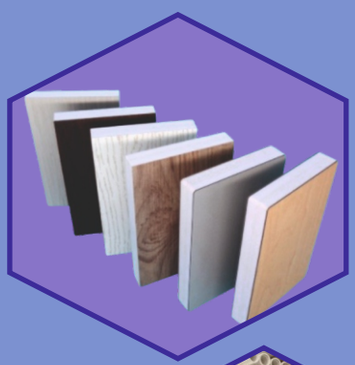
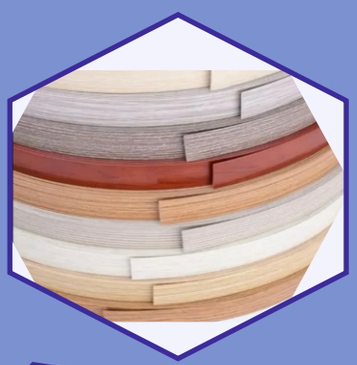
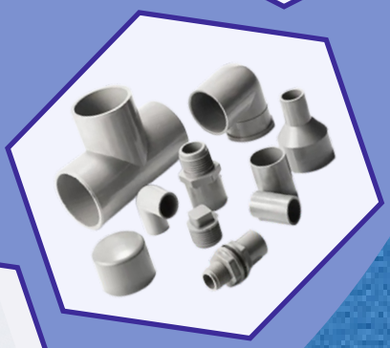
FRIENDS CHEMICAL CORPORATION











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ABOUT FRIENDS

FRIENDS CHEMICAL CORPORATION was established in 1997 as a marketing organization with the objective of serving a wide range of industries by supplying quality raw materials sourced from reliable and trusted manufacturers.

OUR VISION

Since its inception, Friends Chemical Corporation has been actively engaged in providing high – quality polymer raw materials from dependable sources, along with technical consultancy and solutions-particularly in the field of polymer additives and PVC application.

Managed by a team of experienced professionals, the company offers complete technical guidance to end users. This includes PVC compound formulations, machine rheology behavior, and optimization of end-product performance. Through close cooperation with suppliers from India and worldwide, we are able to meet diverse customer requirements with a comprehensive range of polymer additives.

To ensure prompt supply, we maintain ready stock availability at our Ahmedabad location for ex-stock deliveries.

OUR STRENGTHS

Our complete technical sales and service support, along with formulation expertise, helps clients select the most suitable products for their specific applications. Customer satisfaction lies at the core of all our business activities.

We are a customer-centric organization, fully committed to delivering world-class products and services. By working closely with our clients, we understand their challenges and specific requirements, enabling us to provide effective and reliable solutions.

Key factors that have helped us earn our clients' trust include:

- Prompt delivery of products and services
- Competitive pricing
- Experienced and skilled professionals
- Consistent quality product

CLIENTELE

Through our dedication, expertise and commitment, we have successfully established a strong presence in the market. Our clients, spread across various parts of the country, value us for our prompt service, reliable supplies and strong technical knowledge.

OUR TEAM

We are supported by a dedicated team of professionals and skilled personnel. Backed by extensive industry experience and in-depth technical knowledge, our team consistently meets evolving market requirements. Our technocrats combine technical excellence with streamlined processes, enabling us to exceed client expectations. This approach has helped us build long-term relationship and develop a strong and growing client base.

DISTRIBUTOR / STOCKIST & IMPORTERS:

- Goldstab Organics P. Ltd. - Mfg. of Lead, Liquid & Lead Free Stabiliser
- Cosmic Petrochem Ltd. – Mfg. of P E Wax
- Haryana Leather Chemical Ltd. – Mfg. of Processing Aid & Impact Modifier
- IMPORTER - CPE & P E WAX

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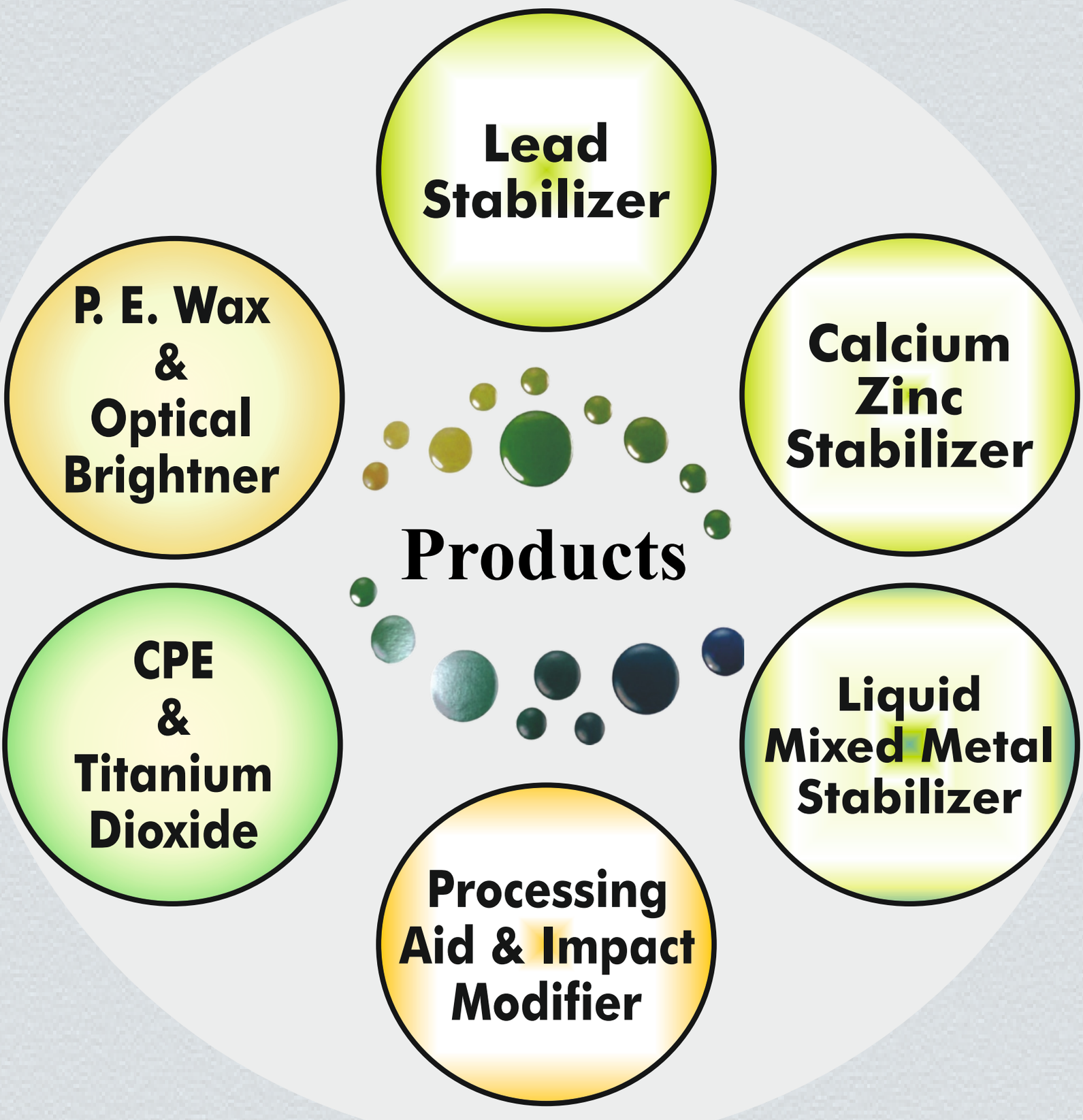

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FRIENDS CHEMICAL CORPORATION

PRODUCT	FORM	APPLICATION	GRADE
ONEPACK (LEAD BASE)	FLAKES / POWDER	PVC PIPE – ISI	GOLDSTAB 3182
			GOLDSTAB 3051 N
		COLUMN/ CASING PIPES	GOLDSTAB 3051 N V1
		PVC PIPE – COMMERCIAL	GOLDSTAB 3001 AP V1
		PVC SUCTION HOSE	GOLDSTAB 2008 M
		PVC FOAM BOARD	GOLDSTAB 3014
		PVC LAMINATES	GOLDSTAB 3550 N
		PVC PROFILES – HOLLOW / SOLID	GOLDSTAB 3018 P V1
		PVC CABLE COMPOUNDS	GOLDSTAB 2020 N
ONEPACK (LED FREE)	FLAKES / POWDER	PVC UPVC PIPES	GOLDSTAB CZ 53400
		SPC FLOORING	GOLDSTAB CZ 57004 SPC
		PVC PIPES – ISI / COMMERCIAL	GOLDSTAB CZ 5213 ND
		PVC FOAM BOARD	GOLDSTAB CZ 56004 FB
		CABLE COMPOUND – HIGH END	GOLDSTAB CZ 54099 RE
		CABLE COMPOUND – INSULATION	GOLDSTAB CZ 5093
		CABLE COMPOUND – SHEATING	GOLDSTAB CZ 5065
METALLIC STEARATES / COMBOS	POWDER	MASTER BATCH	CS / ZS
		PVC PAVER BLOCK	GOLDSTAB 6143
		ANTI STATIC AGENT	CS
		WEATHER STABILITY	GOLDSTAB DBL PHOSPHITE
LIQUID STABILISER	LIQUID	ARTIFICIAL LEATER CLOTH	GOLDSTAB 831
		PVC COATING LINES	GOLDSTAB 873
		PVC FLEX BANNER	GOLDSTAB 814
		PVC GARDEN HOSES	GOLDSTAB 985 GT
		PVC MATS	GOLDSTAB 811 XL
TIN STABILISER	LIQUID	PVC / CPVC FITTINGS	GOLDSTAB 975
		CPVC PIPE	
		PVC SUCTION HOSE	
		PVC FILM	
		PVC GARDEN HOSES	GOLDSTAB 985 GT
EPOXIDISED SOYBEAN OIL	LIQUID	PVC PIPES / FITTINGS	EPOXY
		PVC FILM	
		PVC PROFILES	
		CABLE COMPOUND	
F T WAX	PRILL	PROFILES / LAMINATES / FOAM BOARD	GOLDSTAB 501 F
STEARIC ACID	FLAKES / POWDER	PVC PIPES	STEARIC ACID
		PVC PROFILES	
POLY ETHYLENE WAX	FLAKES / POWDER	PVC PIPES / FITTINGS	P E WAX
		PVC PROFILES	
		PVC FOAM BOARD	
		PVC LAMINATES	
		CABLE COMPOUND	
TITANIUM DIOXIDE	POWDER	PVC PIPES / FITTINGS	TITANIUM
		PVC PROFILES	
		PVC LAMINATES	
		CABLE COMPOUND	
PROCESSING AIDS	POWDER	PVC / CPVC PIPES & FITTINGS	PA 120
		COLUMN/ CASING PIPES	
		PVC PROFILES	
		PVC LAMINATES	
IMPACT MODIFIERS	POWDER	PVC / CPVC PIPES & FITTINGS	IM 405
		COLUMN/ CASING PIPES	
		PVC LAMINATES	
OPTICAL BRIGHTENER	POWDER	UPVC PIPES	OB 1
		PVC LAMINATES	
		PVC PROFILES	
CHLORINATED PARAFFIN WAX (CPE)	POWDER	PVC PIPES / FITTINGS	CPE 135 A
		COLUMN/ CASING PIPES	

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PVC PIPE EXTRUSION TROUBLESHOOTING REFERENCE CHART

ROLE OF ADDITIVES	
Calcium Carbonate	Filler
	Offers Opacity
Titanium Dioxide	Pigment
Stabiliser	Heat Stability
Processing Aids	Improves Gelation of Resin & Additive
Impact Modifier	Improves Impact Strength
Internal Lubricant	Reduce Friction of Polymer Molecules
External Lubricant	Reduce Friction of Polymer & Metal Surface

MIXER & HOPPER	
Moisture in Compound	Insufficient Mixing Time - Run Mixer Longer
	Check Mixer Vent In Lid For Blocks
	Store Compound In Dry Area
Compound Temperature Is High	Agitate / Vibrate hopper
Metallic Impurities	Use Magnets To Remove Metal Objects
Interrupted Flow From Hopper	Reduce Moisture Content In Compound
	Agitate / Vibrate Hopper
	Check Cooling Water Supply In Throat

SCREW BARREL ZONE		
Powder In Vent	Incomplete Gelation	Increase Temperature in Barrel Zone
		High External Lubricant - Reduce Wax
		Reduce Screw Rpm
	High Calcium	Add Processing Aids
Melt In Vent	Block In Die Zone	Increase Die zone Temperature
High Load (Amp.)	High Melt Viscosity	Adjust Internal / External Lubricant Ratio
	Low Barrel Temperature	Increase Tempurtremperature In Barrel Zone 1 & 2
	Low Lubrication	Increase External Lubrication
	High Feed Into Barrel	Reduce Hopper Feeder Speed Or Increase Main Screw Speed
High Back Pressure	Resistance From Adapter And Die	Increase Adapter and Die Zone Temperature
Low Load	Screw Not Filled	Increase Hopper Feeder Speed Or Reduce Main Screw Speed
	Fusion Occurring Late	Increase Temperature In Barrel Zone 1 & 2
Fluctuating Load	Heating Not Steady	Calibrate Heater And Check Sensor
	Compounding Not Consistent	Check Batch To Batch Weighing & Mixing Consistency

PVC PIPE EXTRUSION TROUBLESHOOTING REFERENCE CHART

DIE & SIZING		
Brittle Pipe	Poor Gelation	Reduce External Lubrication (Wax)
Bubbles In Surface	Poor Gelation, Degradation	Reduce Barrel & Die Temperature
	Moisture In Material	Check Vent Vacuum & Heating
		Increase Heater Mixing Time
Rough Inner Surface	High Heat in Spider / Die Zone	Check And Adjust Spider And Die Temperatures
	Screw Marks In Inner Surface	Check and Improve Screw Cooling
	Moisture In Compound	Check Vent Vacuum
Rough Outer Surface	Material Sticking To Barrel Surface	Check Barrel Surface For Residue / Scaling
	Poor Surface Finish	Improve Surface Finish Of Die and Spider
	Die Temperature	Check Die Temperature Accuracy
	Moisture In Compound	Check Vent Vacuum
		Check Vent Port In Mixer
Spider Lines Visible	Die And Spider Temp. Too Low	Increase Die, Spider And Barrel Temperature Close To Die; Adjust Lubricant
Wavy Inner Surface	Uneven Flow From Screw Barrel	Adjust Temp. In Screw Zones To Even Flow
Wavy & Glossy		Reduce Barrel Zone Temp. / Reduce Wax
Uniform Discolouration	Low Stabiliser Level	Increase Stabiliser Dosage
	High Barrel Zone Temp	Reduce Overall Temp. / Check Temp. Sensors
	Insufficient Lubrication	Increase External Lubrication
	Difference Between Set & Actual Temp.	Increase Internal Lubrication
Inner Discolouration (Ripples)	Increase Internal lubricant, Increase Barrel Temp., Increase Extruder RPM	
Inner Discolouration (Bubbles)	Reduce Barrel Temp, Increase Level of Stabiliser	
Pipe Slips in Haul Off	Maintain Correct Pressure In Haul Off / Change Bunk Position In Pressure Sizing	

PVC PIPE EXTRUSION TROUBLESHOOTING REFERENCE CHART

APPEARANCE		
Pipe Too Thin	Pipe Pulled Too Fast	Reduce Hall Off Speed
	High Die Temp.	Reduce Die Temp. Slightly
	Gap Between Die Zone & Vacuum Tank	Decrease Distance Between Die & Vacuum Tank
Pipe Too Thick	Pipe Pulled Slowly	Increase Hall off Speed
Change In Thickness (Weight Variation)	Uneven Flow	Adjust Die Position to Centre It
		Check for Blocks in Hopper & Feeding zone
	Build Up In Sizing Sleeve	Check Sizing Sleeve From Deposits
	Insufficient Cooling	Checking Water Temp. & Flow in Vacuum Tank
	Change in Compounding	Check Weight of Resin And Additives
Low Gloss	High Lubrication	Reduce Internal Lubricants
	Insufficient Heating	Increase Process Temperature
	Incomplete Gelation	Increase Process Aid Level
Oval Shape	Haul Off Pressure Is High	Check Haul Off Gap
	Wet Pipe At Haul Off	Dry Pipe Before Entering Haul Off
Scratch Marks	Die or Sizing Sleeve Surface Damaged	Check Die And Sizing Sleeve
Specks Present In Pipe	Presence Of Impurities In Vent	Clean Vent thoroughly

TEST RESULTS		
Shattering	Pipe Too Brittle	Check formulation & Reduce filler
	Insufficient Impact Modifier	Adjust formulation To increase Impact Modifier
	External Lubricant Performance	Reduce quantity Or change quality of external lubricant
	Die Temperature	Reduce Initial Die Zone Temperature
	Melt Heated In Die Zones For Too Long	Reduce Residence Time Of Melt In Die Zone - Increase Screw RPM
	Sudden Cooling In Tank	Slightly Increase Water Temperature in Cooling bath
Line Defect	Pipe breaks In Straight Line	Check For Air Gape in heater joints
	Impurity or Scratch in Die Or Sizing Sleeve	Check Surface Of Die And Sizing Sleeve
Pressure Test - Ballooning	Voids / Gaps In Pipe	Check Vent Vacuum
		Check Moisture After High Speed Mixer
Heat Reversion	Low Back Pressure	Increase Temperature In Barrel Zone 1 & 2
		Increase Feeder Speed And Machine Load
	Low Machine Load	Increase Load By Increasing Screw RPM
	Excess Swelling	Reduce External Lubricant, Increase Internal Lubricant And Processing Aids
Discolouration Under Sunlight	Low UV Stabiliser	Adjust Stabiliser Level And If Required Add UV Stabiliser

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PVC FITTINGS TROUBLESHOOTING REFERENCE CHART BY ALKESH J PARIKH (8866109393)	
Causes	**Remedy**
BLACK SPOT & BROWN STEAKS	
Contamination	Check the material for Contamination
High Melt Temperature	Decrease Melt Temperature
High Cycle Time	Decrease overall Cycle Time
Material Sticking at Screw/barrel due to Wear & Tear	Purge or Clean Screw and Barrel
High Screw Speed	Decrease the Screw Speed
Too Much Regrind Material	Decrease Regrind Material Quantity
Less Stable Material	Use Higher Dosage of Heat Stabilizer
Improper Nozzle & Sprue Alignment	To do Proper Alignment of Sprue and Nozzle
High Residence Time or Shot Size is Too Small	Necessary to Move the Mould to a Machine with Less Injection Capacity
SPLAY MARKS, SILVER MARKS	
Contamination	Check the Material for Contamination
High Melt Temperature	Decrease Melt Temperature or Use More Heat Stable Compound
High Nozzle Temperature	Decrease Nozzle Temperature
Moisture in Compound / PVC Resin	Dry Compound Before Use
	Proper Storage of Raw Material at Dry Places
Water Leakage in Core or Cavity	Ensure the Mould is Leak Free & Increase Mould Temperature
Improper Gate Size and Location	Relocate Gate on or as Near to Thick Section or Increase Gate Area
High Cycle Time	Shorten Overall Cycle Time
DISCOLOURATION (DARKER SHADE)	
Contamination	Check Hopper and Feed Zone for Contamination
High Back Pressure	Decrease Back Pressure
High Melt Temperature	Decrease Melt Temperature / Increase Stabilizer Qty. to become Material more
High Nozzle Temperature	Decrease Nozzle Temperature
Small Shot Size	Move Mould to Smaller Size Injection Capacity Machine
Degrade Material Inside the Barrel	Purge or Clean Screw and Barrel
High Cycle Time	Shorten Overall Cycle Time
LOW VICAT SOFTENING TEMPERATURE	
High Plasticizer or Lubricant (Material more flexible)	Reduce Epoxy Dosage
	Increase Calcium Dosage
	Increase Stabilizer
DRY MARK / BUTTER FLY MARK	
Material Dry	Need to Increase the Material Melt Temperature (Barrel)
	Increase Screw Speed
	Decrease Stabilizer Dosage
Injection Speed Not Properly Set / Single Stage	Keep Injection Speed at First Stage Low & Fast at Second Stage
Material not Plasticized Properly	Increase Processing Aid and Epoxy Dosage
Excess Filler Dosage	Reduce Filler Dosage
Improper Gate Size	Increase Gate Size
FAIL IN SRT TEST	
Material Dry	Need to Increase the Material Melt Temperature (Barrel)
Less Injection Pressure	Increase Injection Pressure
Runner System	Decrease the Runner Feeding System
Material not Plasticized Properly	Increase Processing Aid Dosage
	Increase Epoxy Dosage
	Decrease External Lubricant
FAIL IN PRESSURE TESTING	
Material not Plasticized Properly	Increase Stabilizer Dosage
	Increase Screw Speed
	Add Impact Modifier
	Increase Processing Aid and Epoxy Dosage
	Reduce Lubricant Dosage
	Reduce Filler Dosage

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