

ULTRA PURGE™



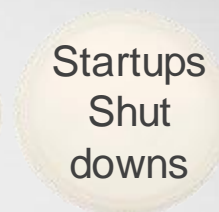
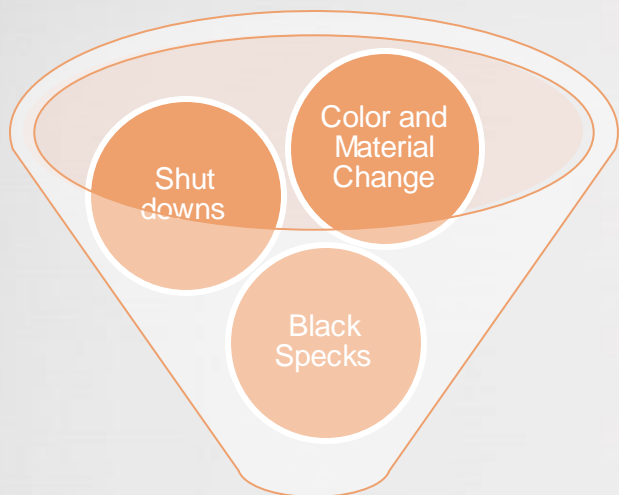
Ultra Purge™

Product and application overview, presented by Ultra Purge™ technical support staff

ULTRA PURGE™

1. WHY USE A COMMERCIAL PURGE COMPOUND
2. WHEN DO YOU NEED TO PURGE?
3. PURGING BENEFITS
4. PURGING OPTIONS
5. COST ANALYSIS
6. DIFFERENCES BETWEEN PURGING COMPOUNDS
7. WHAT IS ULTRA PURGE™?
8. HOW ULTRA PURGE™ WORKS
9. HOW MUCH ULTRA PURGE™?
10. SOAKING TIME
11. COMPETITION
12. ULTRA PURGE™ PRODUCT LINE
13. ULTRA PURGE™ PROCEDURES (IM)

WHEN/WHY USE A PURGE COMPOUND?



Increase
Productivity

Reduce
scrap

Increase
Profits

Reduce
downtime

**MORE
COMPETITIVE
IN THE
MARKET**

- **Reduce scrap:** Decrease the amount of resin and purging compound used to clean the machine
- **Reduce downtime:** Cut down the time used to clean the machine. This is inclusive of:
 - Loss of production
 - Energy used to run the machine while purging
 - Manpower
- **Works on:**
 - Injection molding
 - Extrusion
 - Blow molding
 - Film extrusion

- Scrap is normally the smallest component of the purging cost but it is definitely the most visible.
- Many companies monitor this as an indicator of efficient production.
- Reducing scrap during a color change can only be achieved by using a purging compound.



- Downtime is normally largest component of the purging cost when analyzing the purging process.
- Fast purging means gaining production up time as well as reducing the cost of energy and manpower.
- Purging compound are designed to reduce down time making color and material changes faster.

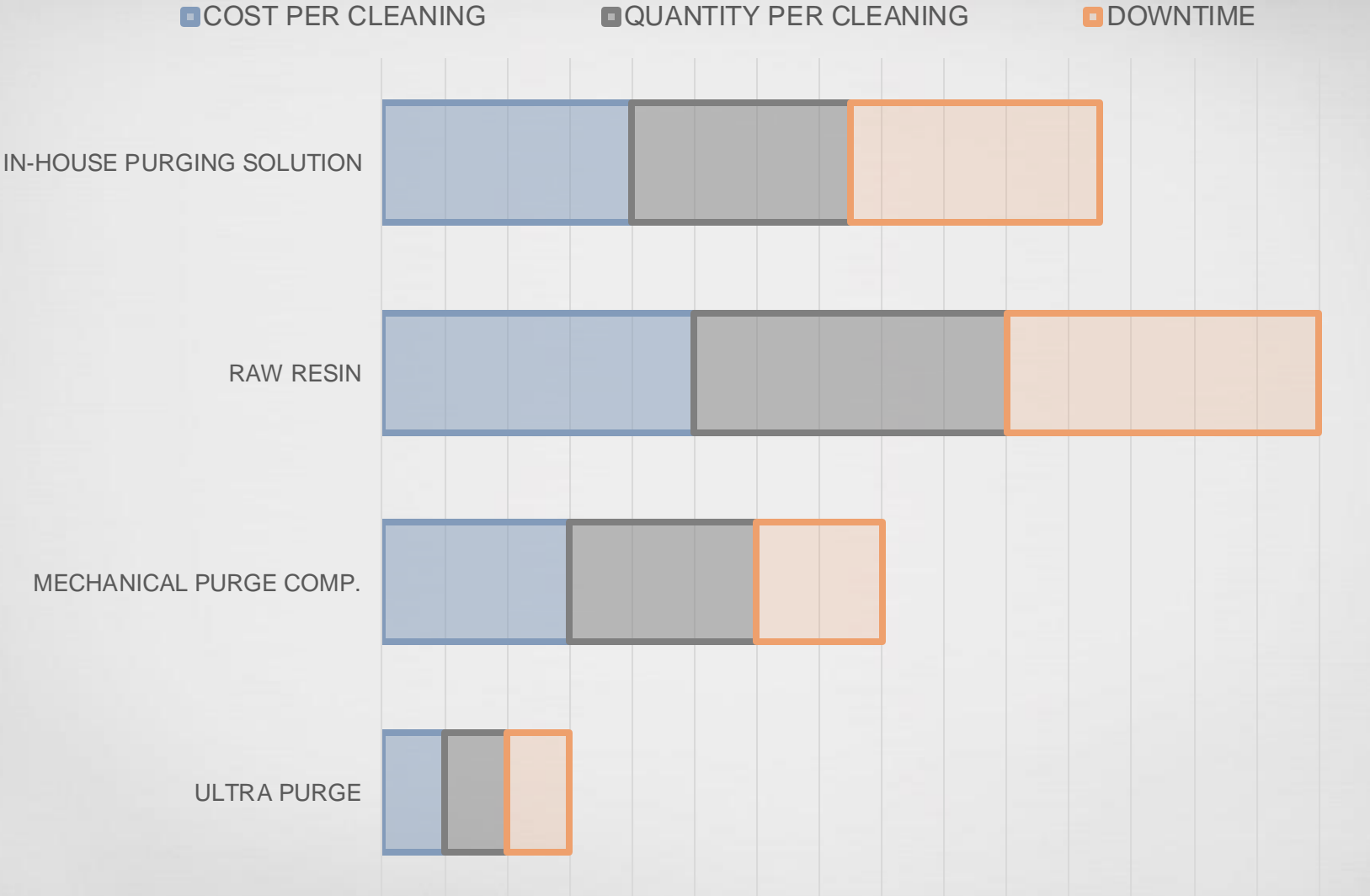


Using Ultra Purge™:

- Will reduce the rejects due to black specks and color streaking.
- Will eliminate 100% of all remnants of color and resin that can potentially generate black specks or color streaking during production.
- Will remove carbon deposits generated from thermo-sensitive resins.



PURGING OPTIONS



Purging Cost

EXAMPLE

COST ANALISYS

Description	Units	Other solution	Ultra Purge™
Resin quantity	kg	130	12
Resin price	€/kg	1,20	1,20
Purging compound quantity	kg	0	2,5
Purging compound price	€/kg	0,00	7,60
Total material cost	€	156,00	33,40
Purging time	min	150	20
Hourly down-time cost	€/h	100,00	100,00
Total downtime cost	€/h	250,00	33,33
TOTAL COST PER PURGING	€	406,00	66,73

The purging cost has
been reduced by:

84%



€ 339



2,2 h

Commercial purging compounds (CPCs)

Old solutions

New solutions

MECHANICAL
scrubbing action

CHEMICAL
chemical reaction

HYBRID
Chemical reaction with
ultra-X™ technology

TIME
CONSUMING

NOT SAFE
FOR HOT
RUNNERS

BAD SMELL

REQUIRES
SETTING
ADJUSTMENTS

TIME
EFFICIENT

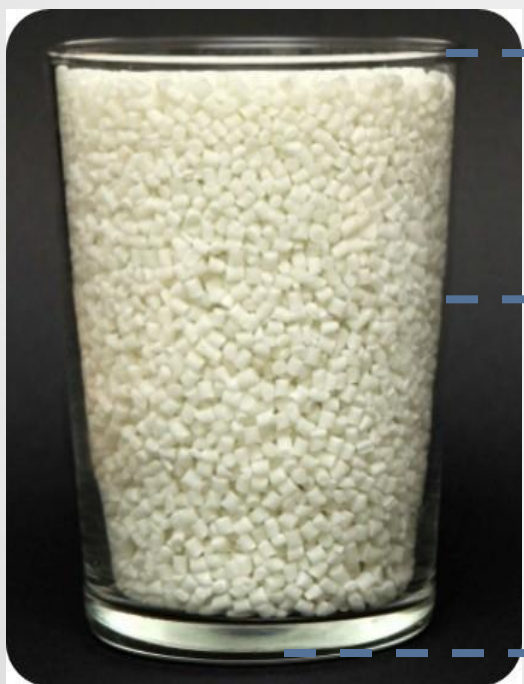
SAFE FOR
HOT
RUNNERS

LESS ODOR

LESS SETTING
ADJUSTMENTS

PURGING OPTIONS

Compared to mechanical purging compounds, small amounts of Ultra Purge™ are required to effectively purge the equipment.



Conventional mechanical purge



Ultra Purge™

WHAT IS ULTRA PURGE™?

Ultra Purge™ is ready-to-use or concentrated purging compounds that comes in a pellet form, which includes chemical and hybrid grades. We also offer one mechanical grade for high temperature applications.

HOW ULTRA PURGE™ WORKS

Ultra Purge™ works through a chemical reaction and/or hybrid action. With the presence of a chemical components, color incrustation and black specks are softened, removed and ejected from machines.

HOW ULTRA PURGE™ WORKS

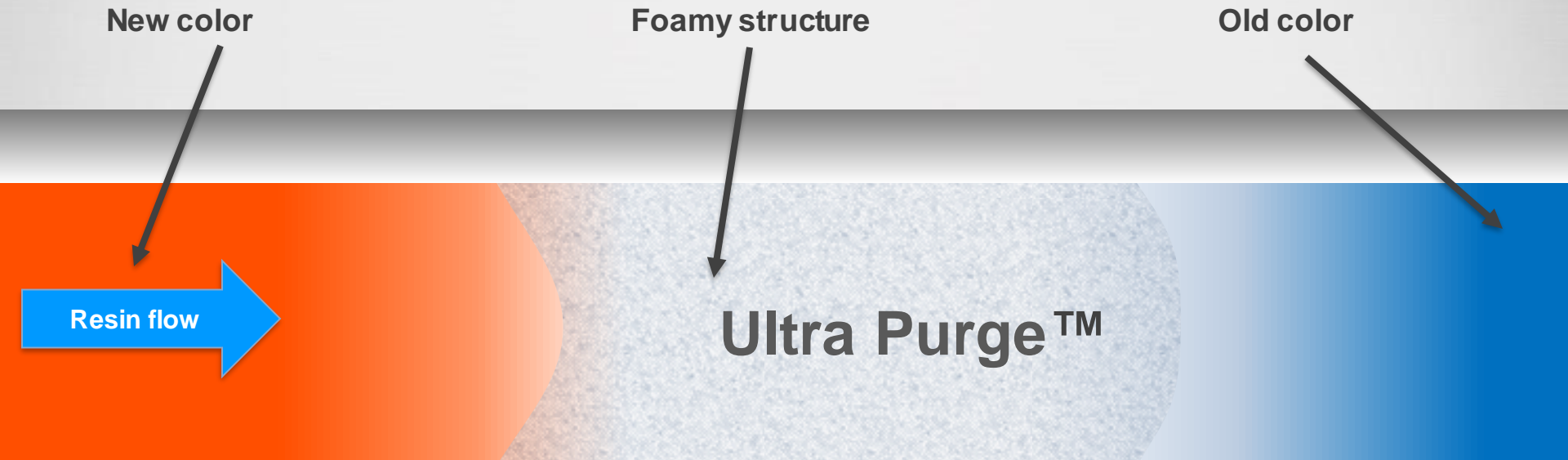
Ultra Purge™ efficiency is a combination of

- polymer viscosity and/or
- presence of foaming agents and/or
- presence of specialty additives and/or
- presence of special fillers, that only in case of hybrid grades, enhances all the other features adding scrubbing power

HOW ULTRA PURGE™ WORKS

Injection molding:

1 full barrel (= 3 times max shot size)

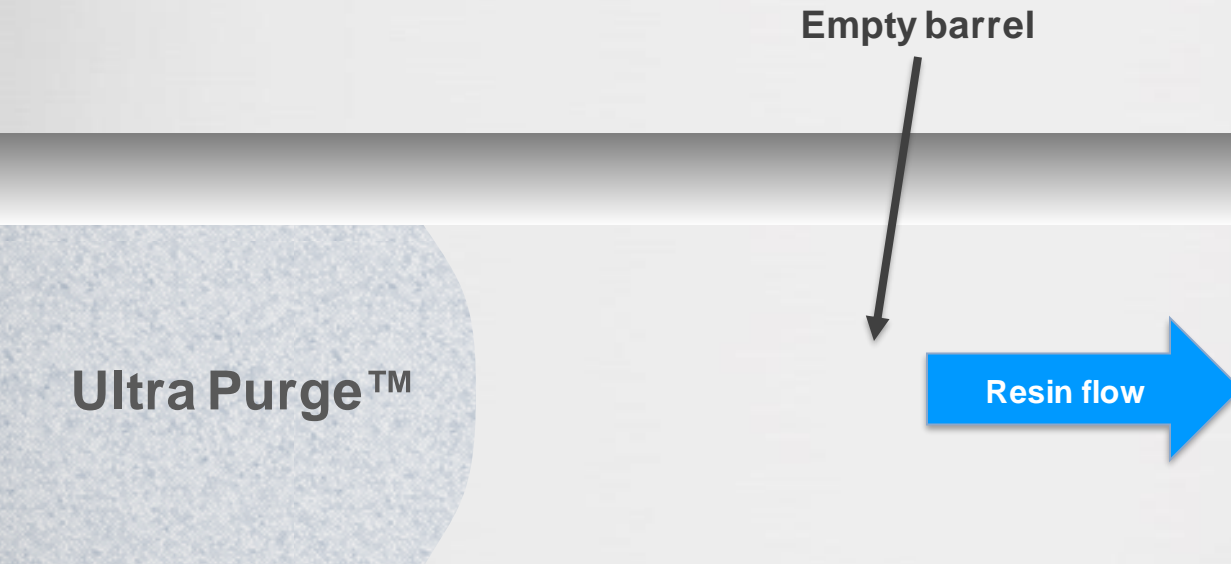


1. Expansion

2. Removal

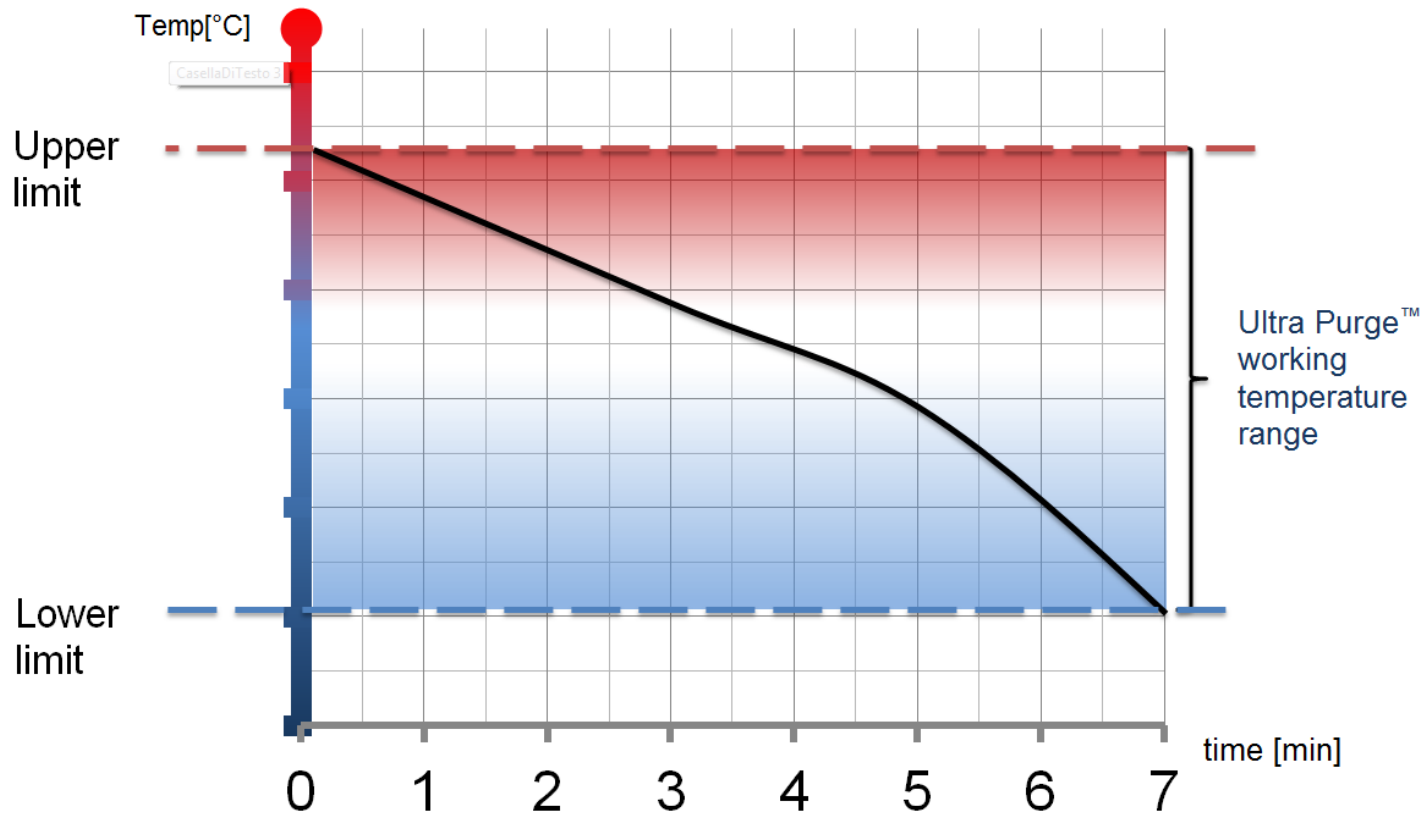
WHAT IF... the barrel is empty

The expansion effect will be less efficient. Especially difficult-to-reach areas will not be purged properly.



**Expansion phase
...no sandwich!**

Ultra Purge™ - soaking time



In case of purging into the closed mold soaking time is needed only for cycle times below 40s.

MAJOR COMPETITORS

Product	ULTRA PURGE™	ASACLEAN® Purging Compound Asai Kasei - Velox	Dyna-Purge® Shuman Plastics	CORATEX® Saint-Gobain	PurgeX™ Purging Compounds Neutrex Inc.
	Active part + carrier	Compounded	Compounded	Liquid	Active part + carrier
Kind	Chem, Hybrid	Chem, Mech	Mech	Hybrid	Hybrid, Mech
Efficiency	100	80	80	50-110	90
Dangerous gases	No	No	Yes	Ammonia	No
Hot runners	Yes	Y/N	Yes	Yes	Yes
Preform molding	Yes	No	No	No	No
Caps molding	Yes	Yes	Yes	Yes	Yes
Thin-Wall stack mold	Yes	No	No	No	No
Easy removable	Yes	Y/N	Yes	Yes	Yes
Mixing ratio	Ready-to-use	Ready-to-use	Ready-to-use	2-4%	Ready-to-use
Quantity per cleaning	1	2	2	2	1.5
Shutdown	Yes	Yes	Yes	No	Yes
Soak time min	up to 5 min	No	No	No	No
notes		<ul style="list-style-type: none"> - Not all grades are safe for hot runners - no chemical reaction - lots of residue 	<ul style="list-style-type: none"> - not cost effective - based on methacrylate salts (hazardous) - no chemical reaction - high viscosity 	<ul style="list-style-type: none"> - contains ammonia - hazardous to handle - Inhaling may be damaging to health - corrosive - could not be used on mirror polished surfaces - may cause excessive wear on the critical tolerances of the processing equipment 	<ul style="list-style-type: none"> - no options for engineering and high temperature resins - produces lots of dust

Ultra Purge™ product line



Product line

Family	T min °C	T max °C	Carrier	Type	Filler	Industry area	Resins	Note
PO	170	300	Olefin	Chemical	- -	Automotive interiors/exterior, packaging, housewares	PP, PE, PS	Simplest Ultra Purge™ product
5150	160	350	Olefin	Hybrid	ultra-X™	Automotive interiors/exterior, packaging Custom molding	PP, PE, PS, POM, PA, ABS, TPE	
5160	190	320	Engineering polymer	Hybrid	ultra-X™	Automotive interiors/exterior, packaging Custom molding Packaging: PET preforms	ABS, ABS/PC, ASA, PA, SAN, PS, PET, PBT, TPE	
HT	200	380	Olefin	Hybrid	Glass fibers	Automotive and aerospace: high performance resins	PAI, PPA, PPO (PPE), PSU	Wide temperature range grade ideal for material changes
HT+	250	400	Engineering Polymer	Mechanical	Glass fibers	Automotive and aerospace: high performance resins	PPS, PSU, PEEK, ULTEM (PEI)	Highly stable, high heat resistant grade

Other ready-to-use options available / Also available as concentrate

Samples available in 2,5 kg and 7 kg.

Standard Bucket size from 11 kg to 20 kg.

Larger packaging Octabin with 300 kg.

Injection molding



MOLDING SYSTEM CONSIDERATIONS

Hot Runner:

- Reduced hot runner volume
- No-mismatches
- No hang-up spots
- Uniform thermal profile
- Mixing capability

Screw/Barrel:

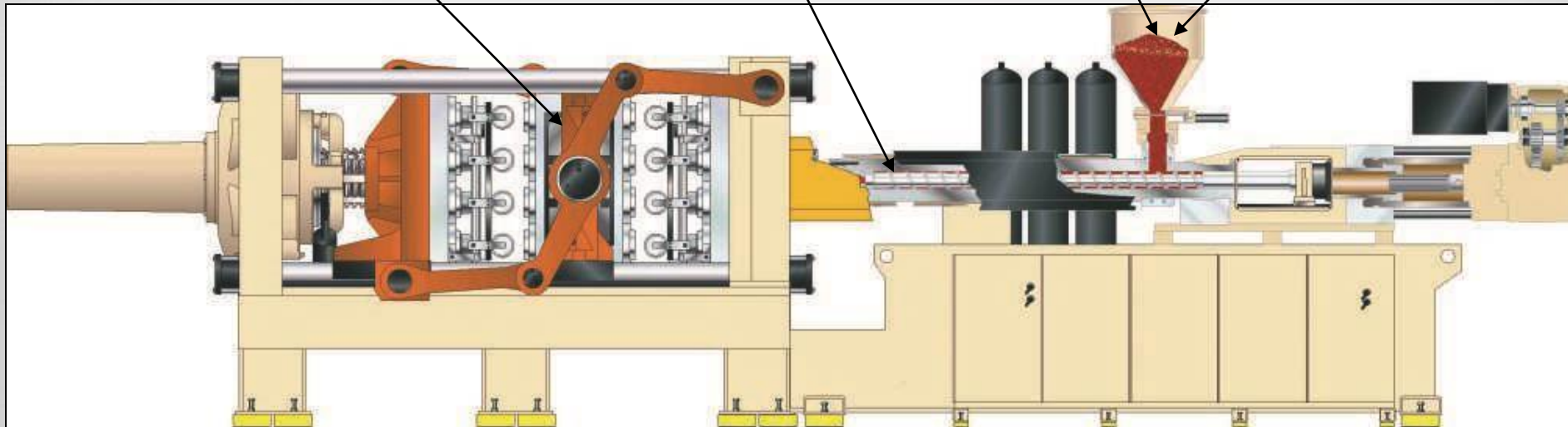
- Good mixing capability
- No bridging in feed zone
- No mismatches (nozzle)
- No hang-up spots (check valve)

Color Dosing:

- Easy/fast cleaning
- No hang-up spots
- Repeatable dosing

Resin Conveying:

- Easy/fast cleaning
- No hang-up spots



Shut-down / start-up



GENERIC PROCEDURES FOR INJECTION AND EXTRUSION

SHUT DOWN

- We recommend keeping the barrel full of resin when adding Ultra Purge™ in the machine.
- Add half barrel capacity of Ultra Purge™.
- Purge until the barrel is completely empty. **DO NOT ADD RESIN AFTER ULTRA PURGE™!**
- Turn off the machine completely (do not leave heaters in “Maintenance/Idle” mode).

START-UP

- Turn on the machine to production settings, load half barrel capacity of Ultra Purge™ followed by your production resin and begin normal production.
- If contamination persists, follow the standard cleaning procedure. It is normal to see contamination being flushed out on startup.



Release Innovation™

a brand of
 **FREUDENBERG**