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Disco Purge / Transition

- procedure for use in a "extrusion coating" line:

Changeover of "PE" to "Resin" or... "Resin" to "PE":

- "Resin" examples would be Surlyn®, Nucrel®, Elvax®, Elvaloy-AC®, Appeel®, Bynel® or similar ethylene copolymer resins. (***) See special comments with regards to PA, PET, and EVOH within the document.)

- "PE" examples would be LDPE, HDPE, MDPE, LLDPE, m-LLDPE.

Note that instead of "PE", sometimes PP is used.

The "Disco" 10 minute cycle:

In the below table, the max RPM is presumed to be 100 RPM:

- If max RPM of the given extruder is different, then please adjust the individual RPM numbers up or down by the correct ratio.
- Additionally, if the extruder is found to be amperage limited using the new resin, then please establish a max RPM based upon max amperage allowable. Then adjust the varying RPMs accordingly.

For extruder with 100 RPM max.

Time Length:

1 minute at	30 RPM
1 minute at	90 RPM
1 minute at	50 RPM
1 minute at	10 RPM
1 minute at	70 RPM
5 minutes at	15 RPM

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The following are examples of general temperature extrusion profiles for use on a "smooth feed section" type extruder barrel.

(For a temp profile to use in a "grooved feed section" type extruder barrel, please consult your DuPont technical advisor. Grooved feed designs vary considerably in section length, and the temperature profile needs to be adjusted accordingly. Water temperature through the grooved feed section also needs to be controlled.)

Nucrel®, Surlyn®, Elvaloy-AC®:

(common processing temps for extrusion coating, however some of these resins can be extruded hotter as needed. Consult product data sheets for max temps for each grade)

| | | | | | | |
|------|-------|-------|-------|-------|-------|-------|
| c1 | /c2 | /c3 | /c4 | /c5 | /Adp | /Die |
| 160C | /210C | /235C | /260C | /285 | /285C | /285C |
| 275F | /410F | /455F | /500F | /545F | /545F | /545F |

NOTE:

Elvax® EVA resins (max processing temp of 235C / 455F):

| | | | | | | |
|------|-------|-------|-------|-------|-------|-------|
| c1 | /c2 | /c3 | /c4 | /c5 | /Adp | /Die |
| 135C | /185C | /210C | /235C | /235C | /235C | /235C |
| 275F | /365F | /410F | /455F | /455F | /455F | /455F |

***** Please use temperature profile appropriate for each resin as per recommendation from data sheet or your resin supplier technical advisor.**

Precautions :

Keep feed zone temperature low to avoid bridging.
Use 35C to 60C cooling water in the hopper feed section jacketing around the barrel. Avoid chilled water, as this could lead to condensation forming in the hopper feed throat area.
Also use 35C to 60C cooling water in the "screw root cooling" lance if the extruder is so equipped.

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Changeover procedures from PE to "polymer":

- 1) With PE still in the machine, **reduce the temp profile to "polymer" conditions per the data sheet.**
- 2) When the machine is fully reduced in temperature to the "polymer" profile, then empty all of the PE from the hopper and replace it with the "polymer" resin.
- 3) Fully open the deckles (if applicable).
- 4) Run RPM to about 50% of max RPM until the new resin starts to appear coming out of the die, displacing PE. Then, start Disco Purge.
- 5) Use Disco Purging procedure to purge out PE for 2 cycles of 10 minutes each. (If the die has internal deckles, move these in and out to aid in cleaning. During the 5 minutes of slow RPM, shim the die with soft metal to clean off die lines on the die lips.)
Inspect the web. If it is clear and free from gel and other impurities then start to run the production.
- 6) If not, repeat another **10 minute cycle** of Disco Purging.

Changeover procedures from "polymer" to PE:

- A) Empty all the "polymer" resin from the hopper and replace it with LDPE resin. ***** Keep temperature profile at "polymer" conditions.**
- B) Fully open the deckles (if applicable).
- C) Run about 50% of max RPM until you see the LDPE start to come out of the die.
- D) Carry out Disco Purging, **for at least 2 cycles** of 10 minutes each. Usually 3 cycles are needed for purging out of specialty resins back to PE.
(If the die has internal deckles, move these in and out to aid in cleaning. During the 5 minutes of slow RPM, shim the die with soft metal to clean off die lines on the die lips.)
- E) Inspect the web. If impurities still exist in the layer being transitioned, repeat another **10 minute Disco Purge cycle.**
- F) Once web looks good, and all "polymer" is out, **ONLY** then should you raise temperature profile to PE conditions. If you raise the temperatures too soon before the "polymer" is properly purged, you run the risk of creating crosslinking gels.

NOTE: The web may start to look good after one disco cycle, but there will still be a thin layer of copolymer on the metal surfaces. You need to go through the disco cycle at least twice at the lower temperatures to help clean the thin layer of copolymer off of the inner metal surfaces.

Precautions :

NEVER shutdown the extruder with a specialty "polymer" in the machine. Always change over to PE using the Disco Purge Procedure, and shutdown the extruder with only PE in the machine. (PP can also be used for shutdown when appropriate.)

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The technical data contained herein is a guide to the use of DuPont films or resins. The advice contained herein is based upon tests and information believed to be reliable, but users should not rely upon it absolutely for specific applications since performance properties will vary with processing conditions. It is given and accepted at user's risk and confirmation of its validity and suitability in particular cases should be obtained independently. The DuPont Company makes no guarantees of results and assumes no obligation or liability in connection with its advice. This publication is not to be taken as a license to operate under, or recommendation to infringe, any patents.