



### **Softflex® Overmold Quality Procedure Recommendation:**

Manufacturing Quality Control Procedure for Softflex® Overmolding Applications:

1. Proper molding techniques based on Diamond Polymers' recommendations are employed in the molding process (melt temp., mold temp., holding pressure, no spray on the overmold or substrate, thin cotton gloves are used to load and unload the substrate parts, etc.)
2. Overmolded finished parts are removed from the tool and set on a cooling table prior to being packed into the transportation carton. When the overmolded part is fresh out of the tool care must be taken not to smudge the surface. A hot overmold will smudge easily when rubbed with the human hand or hit against the tool etc. Overmolded parts should be left on the cooling table for a minimum of 15 minutes prior to being packed into the transportation carton.
3. Production quality control personnel should set aside finished parts once every hour and allow them to cool for a minimum of 30 minutes prior to administering a modified GM thumbnail adhesion test. The adhesion test is administered to determine the extent of bond. The QC technician will gently force their thumbnail between the Softflex® TPE and substrate and try to dislodge the Softflex® TPE from the substrate with moderate "thumbnail pressure". This test is preformed along all critical bonding locations on the part.
4. If the overmold bond is determined to be sufficient the production parts produced the last half-hour are released for shipping. If the overmold bond is determined not to be sufficient then the production parts produced the last half hour are quarantined until further inspection can take place. If the overmold bond was determined to be insufficient then the floor technical personnel are contacted to resolve the bonding issues.
5. Quality control personnel also perform additional tests on the overmold bond, generally every other day depending on the production run length. The additional tests are conducted on finished parts that have cooled for a minimum of 12 hours. The cooled parts are cut into sections on a band saw and the overmold Softflex® TPE is peeled away from the substrate and the percentage of cohesive failure is determined. As a general rule a well-bonded product will leave 60 – 85 % TPE residue when the above test is preformed.

Cohesive failure is defined as a failure that leaves some of the Softflex® TPE material attached to the substrate after the overmold is peeled away from the substrate by brute force.

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