DAIMLER

High Solids Clear Coat **11/20/2020**

The goal of this plan is to determine the feasibility of using High Solids Clear coat at the Portland Truck Manufacturing Site. The Best Work Practices Agreement (BWPA) states: *C (3) Within 90 days of the date this BWPA is finalized, submit to DEQ for review and approval a plan for a study of the use of high solids clear coat. The plan must include specific metrics for measuring feasibility*.

Assessment of feasibility is dependent on a number of factors including but not limited to quality, adhesion, appearance, ability to spray and cost.

This study is to be completed within 180 days of the date the DEQ approves of this plan.

Path to High Solids Clearcoat

- Ways to increase solids.
    - Part A side- Clear coat paint.
        1. Rebalance solvent and reduce overall solvent amount.
        2. Modify resin composition to use higher solids materials.
    - Part B side- Activator
        1. Rebalance solvent and reduce overall solvent amount.
        2. Modify Isocyanate composition to use high solids materials.
- Attributes to consider
    - Viscosity
        1. Rebalancing will be key to minimize impact on viscosity.
        2. Heated lines may be needed to assist in pumping materials.
    - Application
        1. Solvent and resin package will have to be able to be properly atomized.
    - Appearance
        1. In combination with application, system will have to be balanced to optimize appearance.
    - Cost of equipment upgrades- heated lines, new tanks or paint distribution system.

Test Plan

- Temperature and viscosity curves for part A, part B, and Ready-to-Spray.
    - Vary the temperature from 50F-140F to measure response on viscosity.
    - This is to understand storage and pumping implications.
- Application Workability.
    - Once an acceptable viscosity is identified, application workability DOI (Depth of Images- a measure of gloss reflection) would be run to see the materials response on changing parameters.
    - Spray gun application.
    - Measure impacts on color and appearance.
- Properties testing. Test and Control Panels sprayed to evaluate criteria listed below. Current DTNA spray equipment with current and high solids paints. After panels are sprayed they will be placed in oven and then evaluated. If results are not passing, adjustments will be made to temperature/spray equipment and testing repeated until desired results are achieved or no further testing will accomplish task.
    - During development, key physical attributes will be used to check material performance.
        1. Adhesion
        2. Humidity resistance
        3. Chipping
        4. Quality Specs

Quality Spec	
R Value	> 5
DOI	> 80
DFT	> 3.4 mils
Gloss (NM)	> 80

R Value: Wave Scan, orange peel number
DOI: Depth of Images- a measure of gloss reflection
DFM: Dry Film Thickness

    - Full properties testing would be completed once material is identified that meets the previous attributes.

1. Spec 49-00023 is attached for reference.

Once feasibility study completed, full analysis of cost, performance, quality, adhesion and full properties testing is satisfied, Daimler will make determination, based on results of study on whether to move forward and implement a high solids clear coat. Daimler will submit report to DEQ so that DEQ can make an adequate determination.