



## Surface Preparation

### 1 Scope

**1.1 Material Description.** This specification defines the minimum performance and processing requirements for approval of all automotive exterior composite surface preparations and some interior composite preparations. The materials and processes used in surface preparation must be qualified as a system.

**1.1.1 Surface Preparation System.** The types of chemicals and their combination to be used in the surface preparation system define a system. The 3 distinct surface preparation systems are:

- Cleaner Only.
- Cleaner and Rinse Aid (Surfactant or Surface Modifying).
- Emerging Technologies.

Materials qualified and approved to this specification must also have General Motors Approved Paint on Plastics System (APOPS) approval prior to production release to an assembly plant or an outside source for application on parts. APOPS requirements are defined in GMW14797.

**1.2 Symbols.** Not applicable.

**1.3 Applicability.** Typical applications include the cleaning of plastic substrates prior to paint application.

### 2 References

**Note:** Only the latest approved standards are applicable unless otherwise specified.

#### 2.1 External Standards/Specifications.

ISO/TS 16949                      SAE J2527

#### 2.2 GM Standards/Specifications.

|          |          |          |          |
|----------|----------|----------|----------|
| GMW3059  | GMW14333 | GMW14729 | GMW14829 |
| GMW14124 | GMW14700 | GMW14797 | GMW14873 |

### 3 Requirements

The Manufacturing Engineering (ME) Vehicle Systems Paint materials engineer responsible for technology qualification shall be contacted prior to test initiation to determine potential usage for the product and to define the specific test protocol to be followed. The primary submission requirements as follows:

**Submission.** To initiate a material approval, the pretreatment supplier must provide a submission letter to the ME Vehicle Systems Materials group.

The submission letter must contain the following information:

- Purpose of the submission
- Description of the product(s)
- Comparison to current approved products
- Site of origin
- History of product evolution
- Material Safety Data Sheet (MSDS)
- Key data for evaluating environmental impact (Volatile Organic Compounds (VOC), Weight percent (Wt%), Volume percent (Vol%), discharge metals, pH, etc.)

- Substrate/paint layering combination to be used for evaluation (i.e., specific substrates, primer and/or topcoat system).

**Material Test Request.** After receipt of the submission letter, the responsible ME Vehicle Systems Paint materials engineer will issue a material test request number. No testing for qualification to this specification is to be performed unless a material test request number has been assigned.

**3.1 Panel Preparation.** The following procedures must be followed when preparing panels for material development.

**3.1.1 Substrate.** The substrates used to qualify the material must be approved by General Motors Company. Two substrates are to be used for all panels in the qualification process and agreed upon with the approving engineer.

**3.1.2 Surface Preparation.** The system to be qualified must be used.

**3.1.3 Adhesion Promoter.** A 998XXXX approved adhesion promoter must be used for Thermoplastic Polyolefin (TPO) substrates. The material is to be processed at the target bake and film build conditions as agreed upon with the approving engineer.

**3.1.4 Primer.** A 998XXXX approved primer must be used when required for adhesion and/or ultraviolet (UV) blocking to the substrate. The material is to be processed at the target bake and film build conditions as agreed upon with the approving engineer.

**3.1.5 Topcoat.** All panels must be topcoated with a 998XXXX approved topcoat system. The material is to be processed at the target bake and film build conditions as agreed upon with the approving engineer.

**3.1.6** The combination of substrate, adhesion promoter or primer (as required), and topcoat must be an APOPS approved combination.

**3.1.7** All pertinent processing information must be recorded including all washer parameters listed in Table 3, as well as paint film builds and bake chart profiles.

**3.2 Material Qualification Testing.** Material combinations are to be qualified according to their system identification. All testing is to be performed on 100 mm x 300 mm (4 in x 12 in) panels or surrogate parts as agreed upon with the approving engineer.

**3.2.1 System A – Cleaner Only.** Prepare panels per the cleaner variables listed in Table 1. Where typically Concentration Low (L) = 1% and High (H) = 5%; Temperature L = 50 °C and H = 67 °C; Time L = 60 s and H = 120 s. Deviations to the previous variables must be agreed upon with the approving engineer.

Table 1: System A Qualification

| Concentration | Temperature | Time |
|---------------|-------------|------|
| L             | L           | L    |
| H             | H           | H    |

H = High

L = Low

**3.2.2 System B – Cleaner and Rinse Aid (Surfactant or Reactive).** Prepare panels per the cleaner and rinse aid variables listed in Table 2. Where typically cleaner concentration L = 1% and H = 5%; cleaner temperature L = 50 °C and H = 67 °C; cleaner time L = 60 s and H = 120 s; rinse aid concentration L = 0.03% and H = 0.07%; rinse aid time L = 20 s and H = 60 s. Deviations to these variables must be agreed upon with the approving engineer.