Data Quality Requirements for Ford Asia Pacific Operations
Post Production Materials

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Introduction

The following two-step process will be used to gather information necessary to protect the health, safety, and environment of service personnel and consumers who utilize products distributed by Ford Motor Company and to assure Ford's continued regulatory compliance. **Step 1**/ Through initiation by Ford Motor Company requesters, suppliers must provide full compositional and other product information for post-production (service) non-dimensional and certain expendable dimensional materials via the Tier I Manufacturer Product Information Request (MPIR) Form. The form will be e-mailed to suppliers. **Step 2**/ (Material) Safety Data Sheet [(M)SDS] and product labeling statements or product label: Suppliers must submit a current, public product (M)SDS and, if available, product labeling statements or a product label along with any other required supporting documents. The documents in steps 1 and 2 must be forwarded directly to Ford Asia Pacific (Post Production)-Toxicology (chuan144@ford.com).

Step 1

Material Approval Process Requirements

1.1 Confidentiality Policy

Any (M)SDS, attachment or addendum marked "confidential", "proprietary", "trade secret" or words to that effect will not be accepted. Material marked "for Ford Motor Company use only" will be accepted but will not constitute a secrecy agreement on the part of Ford Motor Company.

1.2 Corporate Compliance

Suppliers must indicate material compliance with the current Ford Restricted Substance Management Standard (RSMS; WSS-M99P9999-A1; please refer to the current year's RSMS Rollout Package under "OEM Specific Information, Ford Motor Company" and accompanying Restricted Substance List (RSL) which will be e-mailed to suppliers. Suppliers must disclose whether "nanomaterials" (see Appendix 1 for definition) are present in a material. Nanomaterials that have not been assigned specific CAS numbers and are subject to PMN requirements under TSCA must be reported by PMN and/ or Accession Number (See Section 1.4).

1.3 Regulatory Compliance

All suppliers are expected to comply with local, regional, provincial, national and international regulations, e.g., Inventory of Existing Chemical Substances (IECSC), Japanese Existing and New Chemical Substances (ENCS), Australian Inventory of Chemical Substances (AICS), New Zealand Inventory of Chemicals (NZIoC), Philippines Inventory of Chemicals and Chemical Substances (PICCS), Taiwan Chemical Substance Inventory (TCSI), Korean Existing Chemicals List (ECL/KECL) and some developing national inventories in Thailand/Vietnam...etc. Suppliers must indicate compliance to the specified Substance Inventory Lists (SILs).

1.4 Full Disclosure of Material Composition

Ford Motor Company requires **full disclosure** of all ingredients found in a product according to the following criteria:

- Please note that Ford Motor Company now requires suppliers to declare ALL substances if present at or above 0.1 % (weight percent). Where suppliers are required to declare substances below 0.1%, those substances will be specifically listed in the RSMS/RSL for enhanced disclosure.

If a Chemical Abstract Services (CAS) registry number exists for an ingredient, it should be listed along with the proper chemical name or common chemical name or synonym. If a CAS registry number has not been issued for an ingredient, the following non-CAS identifiers may be used according to the manner specified:

- European INventory of Existing Commercial chemical Substances EINECS Number or European LIst of Notified Chemical Substances ELINCS Number (in parentheses following the chemical name), where ECHA has assigned a Number. If assigned as part of a previous material review using the GMAP e1291 system, also include a "FEIN" or "FOTH" prefix for chemical disclosure.
- Premanufacturing Notification (PMN) Number (in parentheses following the chemical name), where a Premanufacturing Notification application has been made and granted in the U.S. If assigned as part of a previous material review using the GMAP e1291 system, also include a "FPMN" or "FOTH" prefix for chemical disclosure.
- U.S. Environmental Protection Agency (EPA) Accession Number (in parentheses following the chemical name), where EPA has assigned an Accession Number. If assigned as part of a previous material review using the GMAP e1291 system, also include a "FEPA" or "FOTH" prefix for chemical disclosure.

1.5 Component Percentage

- Full disclosure (according to the previously stated criteria) is the requirement in all cases.
- The true concentration of a hazardous* ingredient must be disclosed when the ingredient is present in the mixture at a fixed concentration.
- The sum of exact percentages must equal 100%.
- When a hazardous* ingredient is not always present at the same concentration, then the true concentration range of the ingredient in the mixture is disclosed. When disclosing a true concentration range, the following conditions would apply:
    - The ingredient must be present in the mixture at a range of concentrations.
    - The range must accurately reflect the concentration variation.
    - The lower limiter value must not be zero.
    - The upper limiter of the true concentration range will be used in hazard classification.
- Percentage ranges are acceptable for non-hazardous* ingredients provided that:
    - The lower limiter values are not zero.
    - They are any of the following ranges:

0.1-1.0	If > 20%, report ± 5% (e.g., if 25% is the actual value, the acceptable, reportable range would be 20-30%)
0.5-1.5	
1-5	
3-7	
5-10	
7-13	
10-20	

    - Exceptions may be made in those situations where the aforementioned ranges will not accurately describe the product (e.g., when the base oils vary from batch to batch depending on crude oil availability).

- The sums of the percent ranges (for hazardous and non-hazardous ingredients) must comply with the following:
    - The sum of the lower limiter values must be equal to or less than 100%.
    - The sum of the upper limiter values must be at least 100%.
    - The sum of the midpoints of the reported ranges must be at least 85% and no larger than 115%.
    - They are any of the following ranges:
- Less than ("<") values may be reported for ingredients present below 0.1% (in general) and below 0.0001% (1 ppm) for California "Proposition 65" listed substances—not withstanding reporting obligations specified by the RSMS or RSL (see Section 1.2).
- Greater than (">") values are not acceptable.

It is not the intention of FCSD to obtain exact formulations of trade secret ingredients. It is the intention of FCSD to protect the environment and the health and safety of its customers, comply with regulatory reporting requirements and manage the chemical risks associated with the use of our products.

**As defined by local GHS substance classifications.*

1.6 Sub-Supplier Data

In the event that confidentiality restrictions prevent you from directly transferring proprietary chemical information or such information is not made available to you, (i) complete all fields (Sub-Supplier Name, Material Name, Email Address, and % Composition By Weight) in the Tier I Manufacturer Product Information Request Form, (ii) Send the Sub-Supplier Product Information Request (SPIR) Form that will be e-mailed to you along with the current Ford RSMS web link (please refer to the current year's RSMS Rollout Package under "OEM Specific Information, Ford Motor Company", RSL, and this document to the sub-supplier. In such cases, suppliers must not enter sub-supplier ingredients in the Tier I Manufacturer Product Information Request Form. The sub-supplier completes the form and submits it along with a copy of the current (M)SDS directly to FCSD (FAP-Post Production)-Toxicology (chuan144@ford.com). Suppliers are required to follow-up with their suppliers to ensure that they provide the necessary information to FCSD-Toxicology in a timely manner.

1.7 Regulatory Physical/ Chemical Properties

Provide data for the following physical and chemical properties of the material (must be consistent with values in the (M)SDS):

- Values *required* for the following properties:
    - Physical State
    - Form
    - Color
    - Odor
    - Odor Threshold
    - pH (required for water-based products)
    - Acid Reserve for pH of 1.0 - 3.0 (required for water-based products)
    - Alkali Reserve for pH of 11.0 - 13.0 (required for water-based products)
    - Flashpoint , as determined by the following methods:
        - ASTM D56 or ASTM D3828 for liquids with less than 5.8 mm^2/sec viscosity at 37.8 °C
        - ASTM D93 for liquids with greater than 5.8 mm^2/sec viscosity at 37.8 °C
        - ASTM D56 for flammable solids, pastes, or gels
    - Auto-ignition Temperature
    - Decomposition Temperature
    - Flame Projection (Required for spray aerosols)
    - Flashback (Required for spray aerosols)

- Boiling Point (Required for a liquid with a flash point < 23 °C)
- Melting /Freezing Point
- Vapor Pressure
- Vapor Density (Air = 1)
- Specific Gravity (Relative Density)
- Kinematic Viscosity at 40 °C / or 100 °F (required for all products containing 10% or more of ingredients that pose an aspiration hazard unless the viscosity is > 20.5 mm^2/s at 40 °C / or 100 °F).
- Volatile Organic Compound (VOC) (required for all products subject to VOC regulatory compliance)
- Product-Weighted Maximum Incremental Reactivity (PWMIR; required for pressurized coating products containing pigments or resins)
- Solubility in Water
- Partition Coefficient (n-octanol/ water)
- Evaporation Rate (n-Butylacetate = 1)
- Critical Temperature (for gases under pressure)
- Heat of Combustion (Required for flammable aerosols)
- Lower Explosive Limit (LEL)
- Upper Explosive Limit (UEL)

1.8 Hazardous Materials Identification System (HMIS®) and / National Fire Protection Association (NFPA) Hazard Class Ratings (Not mandatory, if applicable)

HMIS III or HMIS® Ratings

- Flammability
- Health
- Physical

NFPA Ratings 704

- Flammability
- Health
- Instability

4 - Severe Hazard; 3 - Serious Hazard; 2- Moderate Hazard; 1- Slight Hazard; 0- Minimal Hazard

1.9 Hazardous Materials/Dangerous Goods Transportation Information

Suppliers must provide accurate regulatory hazardous material/dangerous goods information concerning classification for shipping the material. It must include the classification pertaining to how the supplier is shipping the material to Ford Motor Company, dealerships, or other customers, or an indication that it is not regulated. It may include information for shipment into other countries. Required information includes Proper Shipping Name, Hazard Class, Subsidiary Hazard Class (if applicable), UN Number, and Packing Group (if applicable).

2.0 Material re-submittal

Prior to making any changes to the product (formula, name or other identifiers, etc.), please contact the appropriate FCSD engineer. Certain changes require a material re-submittal. Ford approval is required in advance of making changes to the product.

If any revisions will be/have been made to the supplier's (M)SDS (reclassification, change in ways to protect against the hazards, etc.) subsequent to submission to Ford, please contact the appropriate FCSD engineer for guidance, as these may also require a material re-submittal.

A material re-submittal for approval is required if any of the following occur (contact the appropriate FCSD engineer to generate a re-review request).

- Any change in an already-reported individual chemical constituent, including but not restricted to the following:
  - A change in the exact or range weight percentage of an already-reported individual chemical constituent

- A change in an individual chemical constituent previously reported as below the relevant minimum threshold that now places the constituent above reporting threshold.
- Any deletion of a previously reported individual chemical constituent.

- Any addition of a new individual chemical constituent.
- Any deletions or additions to the ingredients section of the supplier (M)SDS.
- Any change in the hazard statements in the supplier (M)SDS.
- Any change in the chemical/physical properties.
- Any change in transportation classifications.
- Any change in the regulatory classifications.

Step 2 / Supplier (M)SDS and Product Labeling Statements Requirements

2.1 File Format

- The submitted (M)SDS must be in PDF (non-password protected) format.
- Font, point type, margin width and format for an (M)SDS must allow for quality reproduction, copying, and faxing.
- The submitted (M)SDS must be compliant with Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Requirements of affected market(s).

2.2 Language

A copy of the (M)SDS and, if available, product labeling statements or a product label must be provided in English and in other languages (e.g. Simplified Chinese, Traditional Chinese, Japanese, Thai, Indonesian, Vietnamese, Korean..etc.) if requested.

2.3 Date

- (M)SDS
  - The (M)SDS date of preparation or effective/revision date must be less than 3 years old when initially received by Ford Motor Company.
  - The Print Date will not be considered the effective date.
- Labeling Statements/ Product Label
  - The submitted labeling statements, pictograms, or label should be current (up-to-date); i.e., relevant to the current formulation of the product and the current regulations.

2.4 Additional Ford Requirements for (M)SDSs by Specific Attribute

- Product Identification
  - Ensure that the product name on the (M)SDS matches the material name displayed in the Tier I MPIR Form. If there are inconsistencies, contact FCSD (FAP-Post Production)-Toxicology (chuan144@ford.com) for guidance.

- Exposure Controls/ Personal Protection
  - If appropriate, indicate engineering measures or controls recommended to reduce exposure including ventilation type.
  - On the (M)SDS or an e-mail PDF attachment to FCSD (FAP-Post Production)-Toxicology (chuan144@ford.com), supplier must provide any generally applicable personal protective equipment (PPE) recommendations in accordance with the intended use of the product including specific suitable materials (e.g., organic vapor respirator – not respirator; safety glasses – not eye protection; neoprene gloves – not impervious gloves) for respiratory, eye, hand, skin and/or

body protection. If applicable, include qualifiers such as processing conditions, quantities, concentrations, temperature and/or pressure conditions that warrant special and/or additional PPE precautions, as well as parameters (e.g., glove material selection) that may require additional professional expertise based on specific job conditions.
    - If appropriate, indicate any personal hygiene measures or practices that should be followed.

- Toxicological Information
    - On the (M)SDS or a note e-mailed as a PDF file to FCSD (FAP-Post Production)-Toxicology (chuan144@ford.com), supplier must provide a statement verifying that affected mineral oil base stocks (as denoted by CAS number in the RSL), if present, comply with the EI-346 (formerly IP-346) standard for polycyclic aromatics (PCA) content (see http://www.techstreet.com/products/1216825).

- Regulatory Information
    - List any Asia Pacific countries' health and safety and environmental regulations for ingredients contained in the product for the states or provinces where the material is manufactured or marketed.

- Other Information
    - Use this section for information that does not fit into a previous section. Examples of data to include here are: label text, hazard ratings, revision indicators, key/legend, references, recommended use, special training needs and possible restrictions.
    - Indicate the sections that have been revised or changed since the previous issue of the (M)SDS.

APPENDIX 1

Glossary

This term is used by Ford in this document in the sense of following examples of legal definitions, not excluding other legally binding definitions:

NANOMATERIAL:

Nanomaterials of interest are those which have structured components with at least one dimension in the size range 1 nm - 100 nm, because it is in this range (particularly at the lower end) that materials can have different or enhanced properties compared with the same materials at a larger size. Materials that may be smaller or larger than the nanoscale in all dimensions and exhibit one or more nanoscale property are also considered nanomaterials. These properties, which are attributable to size and their effects, are distinguishable from the chemical or physical properties of individual atoms, individual molecules and bulk material.

REVISION DATE	DESCRIPTION OF CHANGE
09/03/2015	Effective Date
09/03/2015	Major re-write to be consistent with Asia Pacific regional requirements
10/04/2015	Update RSMS website link to 2016 version
1/17/2017	Revised section 1.2-1.7 and 2.0.
11/03/2017	Revise section 1.4 – full disclosure criteria.