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Subject : Quality Certificate of SKC PG USP and DPG FG

Issue : Compliance with Japanese Standards of Quasi-drug
Ingredients 2006.

We hereby certified the product mentioned below is in compliance to Japanese Standards of Quasi-drug Ingredients 2006. Please make a note in the table below

Object products: PG USP (Propylene Glycol USP Grade)
DPG FG (Di-Propylene Glycol Fragrance Grade)

A handwritten signature in blue ink, appearing to read 'J.B. SONG'.

Quality Assurance Manager

J. B. SONG

Mar. 04, 2016

※ Table

1. SKC PG USP & JSQI specification

| Property | Typical Data | SKC PG USP | JSQI |
|--|------------------|---------------|---------------|
| APPEARANCE | Clear, Colorless | | Pass |
| IDENTIFICATION , by IR, GC, A,B,C | | IR, GC | Pass |
| ASSAY, MPG, wt.% | 99.95 | Min. 99.80 | - |
| EG, wt.ppm | LT 1.0 | Max 50 | - |
| DEG, wt.ppm | LT 1.0 | Max 50 | - |
| Relative Density (Sp. Gr.), 25/25°C | 1.036 | 1.035 - 1.037 | - |
| 20/20°C | 1.038 | 1.037 - 1.039 | 1.036 - 1.040 |
| Boiling Point (1atm), °C , DP | 186/187 | 186 - 189 | - |
| Acidity , ml, 0.1N NaOH | LT 0.02 | Max 0.05 | - |
| Oxidizing Substances, ml | Pass | Max 0.2 | - |
| Reducing Substances | Pass | Pass | - |
| Heavy metal (as Pb), wt.ppm | LT 1.0 | Max. 1.0 | Max 5 |
| Water, wt.ppm | 100 | Max. 700 | - |
| Sulfated Ash /Residue on Ignition, ppm | LT 20 | Max. 20 | Max 500 |
| Chlorides, wt.ppm | LT 1.0 | Max. 1.0 | Max 70 |
| Sulfate, wt.ppm | LT 1.0 | Max. 10 | - |
| Arsenic, wt ppm | LT 1.0 | Max. 1.0 | Max 2 |

2. SKC DPG FG & JSQI specification

| Property | Typical Data | SKC DPG FG | JSQI |
|-----------------------------------|--------------|---------------|---------------|
| Odor , Characteristic | Pass | Pass | Pass |
| Identification | | | |
| - Odor | Pass | Pass | Pass |
| - FTIR | Pass | Pass | Pass |
| DPG Assay, on a dry basis, wt.% | 99.95 | Min. 99.80 | - |
| MPG, wt.% | 0.02 | Max. 0.20 | - |
| Specific Gravity, 20/20°C | 1.024 | 1.020 – 1.025 | 1.021 - 1.027 |
| Color, APHA | 3 | Max. 10 | - |
| Water, wt.ppm | 70 | Max. 1,000 | - |
| Acidity as Acetic Acid, wt.ppm | 9 | Max. 30.0 | Pass |
| Fe, wt.ppm | 0.05 | Max. 0.10 | - |
| Chlorides, wt.ppm | 0.1 | Max. 1.0 | max 70 |
| Heavy metal as Pb, wt.ppm | LT 1.0 | Max. 20.0 | Max. 20.0 |
| Arsenic, wt.ppm | LT 1.0 | Max. 2.0 | Max. 2.0 |
| Residue on Ignition, wt.ppm | 5 | Max. 30 | Max. 500 |
| Distillation Range (1atm),IBP, °C | 230 | Min 228 | 220 - 240 |