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| <br>DOW FRANCE S.A.S. | UNIVAR SOLUTIONS SAS<br>ZAC DES HAULDRES/Z PARISUD II<br>BOULEVARD D'ESPAGNE<br>77127 LIEUSAIN<br><br>Ship From: Stade PO/PG<br>STADE<br>Germany |
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| Certificat d'analyses/<br>Certificate of Analysis  | Informations client/Customer Information   |
|--|--|
| Code Produit/Product Number<br>00000114880<br>Nom Produit/Product Name<br>Propyleneglycol USP/EP   | Nom du Client/Customer Name<br>UNIVAR SOLUTIONS SAS<br>Numéro de Commande Client/<br>Customer PO number<br>4500558125  |
| Numéro de Livraison/<br>Delivery No.<br>822152064 / 000010<br>Numéro De Commande/Order<br>Number<br>113055584  | Référence Produit Client/<br>Customer Product Code<br>0000000001002518   |
| Quantité/Shipping Units<br>23.000 MT<br>Date d'Expédition/Date<br>Shipped<br>2021-11-04 (YYYY-MM-DD)<br>Numéro d'Expédition/<br>Shipment No.<br>39793297 | Identification des<br>conteneurs/Container ID<br>BT 7266<br>Numéro du véhicule/<br>Vehicle#<br>KCP 426<br>Numéro de spécification/<br>Specification Number<br>000000059518 |

|   |   |
|---|---|
| Nom Produit (Anglais)/Product Name (English) Propylene Glycol USP/EP  |   |
| Numéro de lot/Batch Number  | F820LAQPI1                                    |
| Date d'expiration/Expiration Date   | 2023-10-26 (YYYY-MM-DD)                       |
| Date de Fabrication/Manufacturing Date  | 2021-10-26 (YYYY-MM-DD)                       |
| Quantité/Quantity   | 23.000 MT                                     |
| Poids Net/Net Weight  | 23000.000 KG                                  |
| Usine de fabrication/Manufacturing Plant  | Stade PO/PG                                   |
| Adresse du fabricant/Manufacturer Address   | BUETZFLETHERSAND<br>STADE<br>Basse-Saxe 21683 |
| It is hereby certified that the material indicated above has been inspected and tested in accordance with the conditions and requirements of the contract or purchase order and, unless agreed otherwise conforms in all respects to the specification relevant thereto and it meets all requirements of the current United States Pharmacopoeia, current Food Chemical Codex, current European Pharmacopoeia and current Pharmacopoeia of Japan. |   |

| Test/Test   | Unité/<br>Unit | Inférieure<br>Limite/Lower<br>Limit | Supérieure<br>Limite/Upper<br>Limit | Valeur/Value | Méthode<br>analytique/Method |
|---|----------------|-------------------------------------|-------------------------------------|--------------|------------------------------|
| Essai<br>Assay  | %              | 99,80                               | -                                   | 99,93        | Current USP                  |
| M Acidité<br>Acidity  | ml             | -                                   | 0,20                                | 0,02         | Current USP                  |
| M Chlorures<br>Chlorides                                      | ppm            | -                                   | 70                                  | < 70         | Current USP                  |
| M Résidu après combustion<br>Residue on Ignition<br>Pour 50 g | mg             | -                                   | 3,50                                | 1,61         | Current USP                  |
| M Densité relative<br>Specific Gravity<br>@ 25/25°C           |                | 1,035                               | 1,037                               | 1,036        | Current USP                  |



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| Densité relative à 20°C<br>Spec. Grav. @ 20C     |     | 1,0376 | 1,0389 | 1,0382 | ASTM D4052  |
| M Sulfate  | ppm | -      | 60     | < 60   | Current USP |
| Teneur en eau<br>Water Content                   | %   | -      | 0,200  | 0,006  | Current USP |
| M ID, test A                                     | -   | -      | -      | Pass   | Current USP |
| ID Test A  |     |        |        |        |             |
| Correspond à balayage IR                         |     |        |        |        |             |
| ID, test B                                       | -   | -      | -      | Pass   | Current USP |
| ID Test B  |     |        |        |        |             |
| Limite d'éthylène glycol                         |     |        |        |        |             |
| ID, test B                                       | -   | -      | -      | Pass   | Current USP |
| ID Test B  |     |        |        |        |             |
| Limite de diéthylène glycol                      |     |        |        |        |             |
| ID, test C                                       | -   | -      | -      | Pass   | Current USP |
| ID Test C  |     |        |        |        |             |
| Correspond à balayage CG                         |     |        |        |        |             |
| M Acidité<br>Acidity                             | ml  | -      | 0,05   | 0,02   | Current EP  |
| M Point d'ébullition<br>Boiling Point            | °C  | 184    | 189    | 184    | Current EP  |
| M Clarté<br>Clarity                              | -   | -      | -      | Pass   | Current EP  |
| M COULEUR<br>Color                               | -   | -      | -      | Pass   | Current EP  |
| O Point de fusion<br>Melting Point               | °C  | 121    | 128    | 126    | Current EP  |
| M Substances d'oxydation<br>Oxidizing Substances | ml  | -      | 0,20   | 0,08   | Current EP  |
| Thiosulfate de sodium à 0,05M                    |     |        |        |        |             |
| M Substances réductrices<br>Reducing Substances  | -   | -      | -      | Pass   | Current EP  |
| M Indice de réfraction<br>Refractive Index       |     | 1,431  | 1,433  | 1,433  | Current EP  |
| @ 20°C   |     |        |        |        |             |





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|---|-------|-------|--------|---------|-------------|
| <b>M</b> Densité relative<br>Relative Density<br>@ 20/20°C        |       | 1,035 | 1,040  | 1,038   | Current EP  |
| <b>M</b> Cendres sulfatées<br>Sulfated ash                        | %     | -     | 0,0100 | 0,0002  | Current EP  |
| Teneur en eau<br>Water Content                                    | %     | -     | 0,200  | 0,006   | Current EP  |
| Essai<br>Assay  | %     | 99,80 | -      | 99,93   | Current FCC |
| <b>M</b> Acidité<br>Acidity                                       | -     | -     | -      | Pass    | Current FCC |
| <b>M</b> Apparence<br>Appearance<br>Clair et incolore             | -     | -     | -      | Pass    | Current FCC |
| <b>M</b> Distillation, IBP  | °C    | 185,0 | -      | 185,8   | Current FCC |
| <b>M</b> Distillation, DP   | °C    | -     | 189,0  | 187,0   | Current FCC |
| <b>O</b> Plomb (Pb)<br>Lead (Pb)                                  | ppm   | -     | 1,0    | < 1,0   | Current FCC |
| <b>M</b> Identification<br>Correspond à balayage IR               | -     | -     | -      | Pass    | Current FCC |
| <b>M</b> Résidu après combustion<br>Residue on Ignition           | %     | -     | 0,0070 | 0,0006  | Current FCC |
| <b>M</b> Densité relative<br>Specific Gravity<br>@ 25/25°C        |       | 1,035 | 1,037  | 1,036   | Current FCC |
| Teneur en eau<br>Water Content                                    | %     | -     | 0,200  | 0,006   | Current FCC |
| <b>M</b> Acidité<br>Acidity                                       | -     | -     | -      | Pass    | Current JP  |
| <b>M</b> Arsenic  | ppm   | -     | 2,0    | < 2,0   | Current JP  |
| <b>M</b> Chlorures<br>Chlorides                                   | %     | -     | 0,007  | < 0,007 | Current JP  |
| <b>M</b> Plage de distillation<br>Distilling Range<br>184 - 189°C | % vol | 95    | -      | 96      | Current JP  |

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| M Glycérine (odeur)<br>Glycerine (Odor)  | -   | -  | -      | Pass     | Current JP  |
| M METAUX LOURDS<br>Heavy Metals  | ppm | -  | 5,0    | < 5,0    | Current JP  |
| O Point de fusion<br>Melting Point   | °C  | 174  | 178    | 176      | Current JP  |
| M ODEUR<br>Odor  | -   | -  | -      | Pass     | Current JP  |
| M Résidu après combustion<br>Residue on Ignition   | %   | -  | 0,0050 | 0,0002   | Current JP  |
| M Densité relative<br>Specific Gravity<br>@ 20/20°C  |     | 1,035  | 1,040  | 1,038    | Current JP  |
| M Sulfate  | %   | -  | 0,002  | < 0,002  | Current JP  |
| Teneur en eau<br>Water Content   | %   | -  | 0,500  | 0,006    | Current JP  |
| Acidité<br>Acidity<br>Sous la forme d'acide acétique   | %   | -  | 0,0020 | 0,0002   | DOWM 101370 |
| Apparence<br>Appearance<br>Clair, sans matière en suspension   | -   | -  | -      | Pass     | Visuel      |
| Chlorures<br>Chlorides   | ppm | -  | 1,0    | < 1,0    | DOWM 101867 |
| Couleur, Pt-Co<br>Color, Pt-Co   |     | -  | 10     | 2        | ASTM D5386  |
| Dimère, trimère<br>Dimer, Trimer<br>Et polymères supérieures   | %   | -  | 0,100  | 0,067    | DOWM 100687 |
| Éthylène glycol<br>Ethylene Glycol   | %   | -  | 0,0080 | < 0,0080 | DOWM 100687 |
| Diéthylène glycol<br>Diethylene Glycol   | %   | -  | 0,0080 | < 0,0080 | DOWM 100687 |

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| <p><b>ODEUR</b><br/><b>Odor</b></p> <p>Pratiquement inodore</p>  | -  | - | -           | <b>Pass</b> | <b>Olfactif</b>  |
| <p><b>Fer</b><br/><b>Iron</b></p>  | <b>ppm</b>   | - | <b>0,30</b> | <b>0,03</b> | <b>ASTM E394</b> |
| <p>Note 1:<br/>                 Values reported for Assay, Ethylene Glycol and Diethylene Glycol under USP and for Assay under FCC are obtained using the validated equivalent Dow GC Method DOWM 100687.</p> <p>M:Quarterly Sample<br/>                 O:Annual Sample</p> <p>Plant Quality Coordinator</p> <p>Pour information, contactez le Service Clientele ou le bureau des Ventes<br/>                 For inquiries please contact Customer Service or local sales</p> <p>©™Marque de The Dow Chemical Company ("Dow") ou d'une de ses sociétés affiliées<br/>                 ©™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow</p> |  |   |             |             |                  |