

 THE DOW CHEMICAL COMPANY	BRENNTAG MID-SOUTH INC KENNESAW BRANCH 3200 MOON STATION RD KENNESAW GA 30144-2767	14614 100160
	Ship From: PLAQUEMINE po/pg PLAQUEMINE Louisiana, United States	

Certificate of Analysis		Customer Information	
Product Number	00000360603	Customer Name	BRENNTAG MID-SOUTH INC
Product Name		Customer PO number	811422
PuraGuard™ Propylene Glycol USP/EP		Customer Product Code	682951
Delivery No.	813646475 / 000010	Container ID	DOWX071194
Order Number	108543168	Specification Number	000000133084
Shipping Units	83279.491 KG		
Date Shipped	2018-08-10 (YYYY-MM-DD)		
Shipment No.	32707636		

Batch Number	D207I88L05	
Seal Number	568848 568849 568998 568999 19778 19779 19788 19789	
Expiration Date	2020-08-07 (YYYY-MM-DD)	CUSTOMER _____
Manufacturing Date	2018-08-08 (YYYY-MM-DD)	PO # _____
Quantity	83279.491 KG	CODE # _____
Net Weight	183600.000 LB	* LOT # <u>144461378239</u>
Manufacturing Plant	PLAQUEMINE po/pg	BOL # _____
Manufacturer Address	21255 LA HWY 1 South PLAQUEMINE Louisiana 70764-5125	

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	Unit	Lower Limit	Upper Limit	Value	Method
Assay	%	99.80	-	99.94	Current USP
M Acidity	ml	-	0.20	0.02	Current USP
M Chlorides	ppm	-	70	< 70	Current USP
M Heavy Metals	ppm	-	5.0	< 5.0	Current USP
M Residue on Ignition per 50g	mg	-	3.50	0.76	Current USP
M Specific Gravity @ 25/25degC		1.035	1.037	1.036	Current USP
M Sulfate	ppm	-	60	< 60	Current USP
Water Content	%	-	0.200	0.010	Current USP

Date

2018-08-13 (YYYY-MM-DD)

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 KENNESAW BRANCH  
 3200 MOON STATION RD  
 KENNESAW GA 30144-2767

 Ship From: PLAQUEMINE po/pg  
 PLAQUEMINE  
 Louisiana, United States

M ID Test A	-	-	-	Pass	Current USP
matches IR scan	-	-	-	Pass	Current USP
ID Test B	-	-	-	Pass	Current USP
Limit of Ethylene Glycol	-	-	-	Pass	Current USP
ID Test B	-	-	-	Pass	Current USP
Limit of Diethylene Glycol	-	-	-	Pass	Current USP
ID Test C	-	-	-	Pass	Current USP
Matches GC Scan	-	-	-	Pass	Current USP
M Acidity	ml	-	0.05	0.01	Current EP
M Boiling Point	°C	184	189	184	Current EP
M Clarity	-	-	-	Pass	Current EP
M Color	-	-	-	Pass	Current EP
M Heavy Metals	ppm	-	5.0	< 5.0	Current EP
O Melting Point	°C	121	128	125	Current EP
M Oxidizing Substances	ml	-	0.20	0.05	Current EP
0.05M sodium thiosulfate	-	-	-	Pass	Current EP
M Reducing Substances	-	-	-	Pass	Current EP
M Refractive Index	-	1.431	1.433	1.433	Current EP
@ 20degC	-	-	-	-	-
M Relative Density	-	1.035	1.040	1.038	Current EP
@ 20/20degC	-	-	-	-	-
M Sulfated ash	%	-	0.0100	0.0008	Current EP
Water Content	%	-	0.200	0.010	Current EP
Assay	%	99.80	-	99.94	Current FCC
M Acidity	-	-	-	Pass	Current FCC
Appearance	-	-	-	Pass	Current FCC
clear & colorless	-	-	-	-	-
M Distillation, IBP	°C	185.0	-	187.2	Current FCC
M Distillation, DP	°C	-	189.0	188.2	Current FCC
O Lead (Pb)	ppm	-	1.0	< 1.0	Current FCC
M Identification	-	-	-	Pass	Current FCC
matches IR scan	-	-	-	-	-
M Residue on Ignition	%	-	0.0070	0.0022	Current FCC



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 PLAQUEMINE  
 Louisiana, United States

M Specific Gravity @ 25/25degC		1.035	1.037	1.036	Current FCC
Water Content	%	-	0.200	0.010	Current FCC
M Acidity	-	-	-	Pass	Current JP
M Arsenic	ppm	-	2.0	< 2.0	Current JP
M Chlorides	%	-	0.007	< 0.007	Current JP
M Distilling Range 184 - 189 degC	% vol	95	-	97	Current JP
M Glycerine (Odor)	-	-	-	Pass	Current JP
M Heavy Metals	ppm	-	5.0	< 5.0	Current JP
O Melting Point	°C	174	178	175	Current JP
M Odor	-	-	-	Pass	Current JP
M Residue on Ignition	%	-	0.0050	0.0031	Current JP
M Specific Gravity @ 20/20degC		1.035	1.040	1.038	Current JP
M Sulfate	%	-	0.002	< 0.002	Current JP
Water Content	%	-	0.500	0.010	Current JP
Acidity as acetic acid	%	-	0.0020	0.0001	DOWM 101370
Appearance clear, free of suspended matter	-	-	-	Pass	Visual
Chlorides	ppm	-	1.0	< 1.0	DOWM 101867
Color, Pt-Co	-	-	10	2	ASTM D5386
Dimer, Trimer & Higher Polymers	%	-	0.100	0.060	DOWM 100687
Ethylene Glycol	%	-	0.0080	< 0.0080	DOWM 100687
Diethylene Glycol	%	-	0.0080	< 0.0080	DOWM 100687
Odor practically odorless	-	-	-	Pass	Olfactory
M Spec. Grav. @ 20C		1.0376	1.0389	1.0380	ASTM D4052
Iron	ppm	-	0.30	0.07	ASTM E394

Note 1:  
 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.

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KENNESAW BRANCH  
3200 MOON STATION RD  
KENNESAW GA 30144-2767

Ship From: PLAQUEMINE po/pg  
PLAQUEMINE  
Louisiana, United States

M:Quarterly Sample  
O:Annual Sample

Plant Quality Coordinator

For inquiries please contact Customer Service or local sales

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