



**ORIGINAL**

## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130609B  
Production Date: 09-Jun-13  
Expiry Date: 08-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

For Further Questions, Please Contact Arrow:

China: Tele: 0086-532-89072278



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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130610B  
Production Date: 10-Jun-13  
Expiry Date: 09-Dec-14

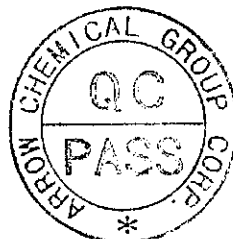
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130611B  
Production Date: 11-Jun-13  
Expiry Date: 10-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130612B  
Production Date: 12-Jun-13  
Expiry Date: 11-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130613B  
Production Date: 13-Jun-13  
Expiry Date: 12-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.66
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130614B  
Production Date: 14-Jun-13  
Expiry Date: 13-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130615B  
Production Date: 15-Jun-13  
Expiry Date: 14-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130616B  
Production Date: 16-Jun-13  
Expiry Date: 15-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.13
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130617B  
Production Date: 17-Jun-13  
Expiry Date: 16-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.67
Water	weight %		0.2	0.11
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130618B  
Production Date: 18-Jun-13  
Expiry Date: 17-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130619B  
Production Date: 19-Jun-13  
Expiry Date: 18-Dec-14

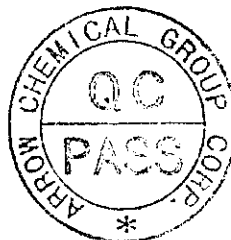
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130620B  
Production Date: 20-Jun-13  
Expiry Date: 19-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20 °C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130621B  
Production Date: 21-Jun-13  
Expiry Date: 20-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130622B  
Production Date: 22-Jun-13  
Expiry Date: 21-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.66
Water	weight %		0.2	0.11
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130623B  
Production Date: 23-Jun-13  
Expiry Date: 22-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.66
Water	weight %		0.2	0.11
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130624B  
Production Date: 24-Jun-13  
Expiry Date: 23-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130625B  
Production Date: 25-Jun-13  
Expiry Date: 24-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130626B  
Production Date: 26-Jun-13  
Expiry Date: 25-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130627B  
Production Date: 27-Jun-13  
Expiry Date: 26-Dec-14

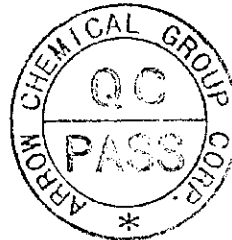
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.13
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130629B  
Production Date: 29-Jun-13  
Expiry Date: 28-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.67
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130629B  
Production Date: 29-Jun-13  
Expiry Date: 28-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.67
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130630B  
Production Date: 30-Jun-13  
Expiry Date: 29-Dec-14

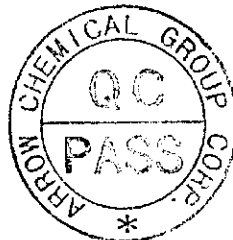
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.67
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130701B  
Production Date: 01-Jul-13  
Expiry Date: 30-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.67
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

For Further Questions, Please Contact Arrow:

China: Tele: 0086-532-89072278



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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130702B  
Production Date: 02-Jul-13  
Expiry Date: 31-Dec-14

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130703B  
Production Date: 03-Jul-13  
Expiry Date: 01-Jan-15

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130704B  
Production Date: 04-Jul-13  
Expiry Date: 02-Jan-15

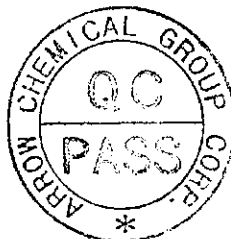
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.65
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130705B  
Production Date: 05-Jul-13  
Expiry Date: 03-Jan-15

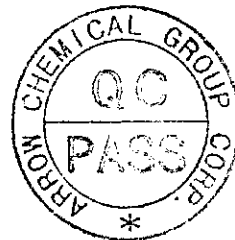
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.13
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130706B  
Production Date: 06-Jul-13  
Expiry Date: 05-Jan-15

Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.13
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20 °C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

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## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130707B  
Production Date: 07-Jul-13  
Expiry Date: 06-Jan-15

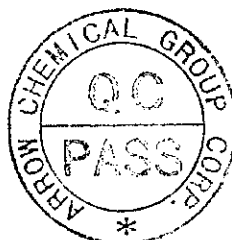
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.64
Water	weight %		0.2	0.13
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

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**ORIGINAL**

## Certificate of Analysis

Arrow Material: Propylene Glycol Tech Grade  
Batch Number: ACG/QD-130708B  
Production Date: 08-Jul-13  
Expiry Date: 07-Jan-15

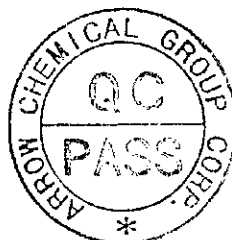
Test Description	Unit of Measure	Specifications		Test Result
		Minimum	Maximum	
Assay as PG on a dry basis	weight %	99.5		99.66
Water	weight %		0.2	0.12
Color, Pt-Co	APHA Color		10	5
Specific Gravity @20/20°C	-	1.0370	1.0390	1.0380
Refractive Index @25C	-	1.4310	1.4350	1.4330
Free acid, (CH <sub>3</sub> COOH)	weight ppm		75	26
Residue on Ignition	weight ppm		80	20
Distillation range (L),	degrees C	184	189	pass
Distillation range (U),	degrees C	184	189	pass
Distillation volume, Vol%	vol%	95		pass

\*\*\*End of Test Data\*\*\*

Specification Version: 20130507

For Further Questions, Please Contact Arrow:

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