



**CERTIFICATE OF ACCEPTED REFERENCE VALUE
 AS DETERMINED GRAVIMETRICALLY & ANALYTICALLY**

D4815 CALIBRATION SET MIXTURES 1-11

Spectrum Quality Standards

Spectrum Quality Standards is 17034 Accredited
 A2LA Certificate Number: 4903.01

ISSUED BY: Spectrum Quality Standards, Ltd. Analytical Uncertainty: +/- 1%	LOT #: 101018AAKKZ Internal Standard was added in accordance with EPA and ASTM Methods.	SET LOT#: 101018AAKKZ
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Supplied To: **SAO VIET TECHNOLOGIES CO., LTD.** ASTM Reference: D4815 SQS Part Number: SAO-4815CAL
HO CHI MINH CITY, VIETNAM Issue Date: 05-04-2020 Expiration Date: 05/2021

MIX #1	COMPONENTS	CONCENTRATION		GRAMS	MIX #2	COMPONENTS	CONCENTRATION		GRAMS
		[WT%]	[%LV]				[WT%]	[%LV]	
	METHANOL	1.26	1.20	3.967		METHANOL	4.99	4.81	15.68
	ETHANOL	1.26	1.21	3.965		ETHANOL	0.263	0.255	0.827
	MTBE	18.19	18.69	57.10		T-BUTANOL	9.03	8.95	28.37
	ETBE	4.99	5.10	15.68		MTBE	5.08	5.27	15.95
	N-BUTYL ALCOHOL	0.264	0.247	0.827		N-BUTYL ALCOHOL	0.526	0.498	1.650
	ISOPROPYL ALCOHOL	0.526	0.509	1.650		DIISOPROPYL ETHER	0.263	0.279	0.825
	N-PROPYL ALCOHOL	0.263	0.250	0.824		ISOPROPYL ALCOHOL	0.263	0.257	0.825
	ISO-BUTANOL	0.263	0.249	0.825		N-PROPYL ALCOHOL	0.525	0.504	1.649
	TERT AMYL ALCOHOL	0.263	0.248	0.825		ISO-BUTANOL	0.526	0.503	1.651
	DME	4.99	4.41	16.51		SEC-BUTANOL	2.52	2.39	7.928
						TERT AMYL ALCOHOL	1.52	1.45	4.798
						DME	5.04	4.49	16.68

MIX #3	COMPONENTS	CONCENTRATION		GRAMS	MIX #4	COMPONENTS	CONCENTRATION		GRAMS
		[WT%]	[%LV]				[WT%]	[%LV]	
	METHANOL	9.04	8.70	28.38		METHANOL	0.525	0.503	1.650
	T-BUTANOL	5.04	4.99	15.85		ETHANOL	4.99	4.79	15.67
	ETBE	9.03	9.30	28.38		MTBE	1.06	1.09	3.332
	TAME	1.26	1.26	3.980		ETBE	15.12	15.47	47.53
	TERT AMYL ALCOHOL	0.788	0.751	2.475		DIISOPROPYL ETHER	3.57	3.76	11.22
	DME	5.00	4.44	16.52		DME	4.99	4.41	16.52

MIX #5	COMPONENTS	CONCENTRATION		GRAMS	MIX #6	COMPONENTS	CONCENTRATION		GRAMS
		[WT%]	[%LV]				[WT%]	[%LV]	
	ETHANOL	9.55	9.21	30.04		METHANOL	15.79	15.21	49.51
	T-BUTANOL	0.504	0.498	1.585		MTBE	7.37	7.64	23.10
	MTBE	10.02	10.36	31.52		ISOPROPYL ALCOHOL	2.63	2.57	8.262
	ETBE	1.26	1.30	3.987		DME	5.00	4.45	16.53
	TAME	0.526	0.522	1.654					
	DIISOPROPYL ETHER	1.48	1.56	4.661					
	SEC-BUTANOL	0.260	0.246	0.817					
	DME	4.99	4.43	16.51					

MIX #7	COMPONENTS	CONCENTRATION		GRAMS	MIX #8	COMPONENTS	CONCENTRATION		GRAMS
		[WT%]	[%LV]				[WT%]	[%LV]	
	ETHANOL	15.87	15.39	49.83		T-BUTANOL	14.71	14.59	46.21
	TAME	10.04	10.02	31.52		N-BUTYL ALCOHOL	1.31	1.25	4.139
	DME	5.00	4.46	16.52		TAME	7.94	7.91	24.93
						ISOPROPYL ALCOHOL	1.58	1.54	4.964
						N-PROPYL ALCOHOL	2.63	2.52	8.258
						DME	4.99	4.45	16.51

MIX #9	COMPONENTS	CONCENTRATION		GRAMS	MIX #10	COMPONENTS	CONCENTRATION		GRAMS
		[WT%]	[%LV]				[WT%]	[%LV]	
	TAME	14.66	14.63	48.04		ETBE	12.61	12.97	39.62
	DIISOPROPYL ETHER	0.505	0.536	1.584		ISOPROPYL ALCOHOL	5.25	5.13	16.50
	N-BUTYL ALCOHOL	4.89	4.64	15.36		N-PROPYL ALCOHOL	5.25	5.03	16.50
	N-PROPYL ALCOHOL	1.52	1.46	4.793		ISOBUTANOL	1.57	1.50	4.954
	ISOBUTANOL	2.52	2.42	7.932		SEC-BUTANOL	1.58	1.50	4.963
	SEC-BUTANOL	0.499	0.476	1.568		DME	4.99	4.44	16.51
	TERT AMYL ALCOHOL	0.500	0.478	1.568					
	DME	4.99	4.46	16.51					

MIX #11	COMPONENTS	CONCENTRATION		GRAMS	BALANCE: 65% LV. ISO / 35% LV. XYL [GRAMS]			
		[WT%]	[%LV]		MIX 1	MIX 2	MIX 3	MIX 4
	T-BUTANOL	1.31	1.30	4.130	227.90	233.64	234.47	234.71
	DIISOPROPYL ETHER	4.99	5.30	15.67	234.15	239.36	232.66	234.71
	N-BUTYL ALCOHOL	2.63	2.49	8.260	232.16	225.06	234.71	
	ISOBUTANOL	5.03	4.81	15.79	231.02	245.87		
	SEC-BUTANOL	5.00	4.76	15.71				
	TERT AMYL ALCOHOL	2.62	2.51	8.252				
	DME	4.99	4.45	16.51				

Materials must be stored at a temperature between 20 °F and 90 °F.
 All designated PPE listed on the product label must be used.

APPROVED SIGNATORY: 
 Managing Partner of SQS, Gary Lew

NIST TRACEABLE BY WEIGHT - WEIGHT SET 005 - CAL LAB CERT# 476401-1 and 1346502 inspections and adjustments are performed in accordance to Allometrics, an NIST accredited company, work instruction 5-4W103 in compliance with ISO/IEC 17025, ANSI/NCSL Z540-1 and the principles of ISO 9001-2015. For Safety, Storage, Handling, Chemical Data and Hazardous Information, please consult the SDS associated with this item. This item for laboratory analysis only; proper handling and safety procedures must be followed at all times.



**CERTIFICATE OF ACCEPTED REFERENCE VALUE
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D4815 CALIBRATION SET MIXTURES 12-16

Spectrum Quality Standards
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 A2LA Certificate Number: 4903.01

ISSUED BY: Spectrum Quality Standards, Ltd. Analytical Uncertainty: +/- 1%	LOT #: 041918UUZZ Internal Standard was added in accordance with EPA and ASTM Methods.	SET LOT#: 041918UUZZ
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MIX #12	COMPONENTS	CONC. [WT%]	MIX #13	COMPONENTS	CONC. [WT%]
	METHYL ETHYL KETONE	0.100		METHYL ETHYL KETONE	0.250
	BUTYL ACETATE	0.100		BUTYL ACETATE	0.250
	ACETONE	0.100		ACETONE	0.250

MIX #14	COMPONENTS	CONC. [WT%]	MIX #15	COMPONENTS	CONC. [WT%]
	METHYL ETHYL KETONE	0.500		METHYL ETHYL KETONE	0.750
	BUTYL ACETATE	0.500		BUTYL ACETATE	0.750
	ACETONE	0.500		ACETONE	0.750

MIX #16	COMPONENTS	CONC. [WT%]
	METHYL ETHYL KETONE	1.00
	BUTYL ACETATE	1.00
	ACETONE	1.00

Materials must be stored at a temperature between 20 °F and 90 °F.

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APPROVED SIGNATORY: 
 Managing Partner of SQS, Gary Lew

NIST TRACEABLE BY WEIGHT – WEIGHT SET 005 – CAL LAB CERT# 476401-1 and 1346502 inspections and adjustments are performed in accordance to Alometrics, an NIST accredited company, work instruction 5-4WI03 in compliance with ISO/IEC 17025, ANSI/NCSL Z540-1 and the principles of ISO 9001-2015. For Safety, Storage, Handling, Chemical Data and Hazardous Information, please consult the SDS associated with this item. This item for laboratory analysis only; proper handling and safety procedures must be followed at all times.