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Quality of western Canadian wheat exports

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Quality of western Canadian wheat exports

February 1–July 31, 2011

Introduction

This bulletin reports quality data for cargoes of all classes of western Canadian wheat exported by ship from February 1 to July 31, 2011. Two types of information are presented:

- Distribution tables for moisture content, test weight and other grade determining factors assessed during grading of individual cargoes by Industry Services, Canadian Grain Commission (CGC), at time of vessel loading.
- Quality data (wheat and flour characteristics, milling, end-use quality) for weighted composite samples that represent all cargoes of a given grade (and protein segregate where appropriate) exported during the six-month period. Separate composites representing Atlantic and Pacific shipments are prepared and tested for Wheat, Canada Western Red Spring and Wheat, Canada Western Amber Durum. For the other wheat classes only one series of composites representing all cargoes (Atlantic and Pacific) exported from Canada during the period are reported. Quality data are not available for classes or protein segregates where insufficient sample was received for compositing due to low/no tonnage exported.

Variety registration and class designation lists ensure that a high degree of uniformity in quality is maintained in export shipments. Under the authority of the *Canada Grain Act*, the CGC establishes and maintains lists of wheat varieties eligible to be graded into each wheat class. A listing of varieties included in the CGC variety designation list for each class may be found on the CGC website at <http://grainscanada.gc.ca/legislation-legislation/orders-arretes/ocgcm-maccg-eng.htm>

Wheat, Canada Western Red Spring

Wheat, Canada Western Red Spring (CWRS) is well known for its excellent milling and baking quality. Four milling grades are available, the top two of which are further segregated according to protein content. Guaranteed minimum protein content is reported on a 13.5% moisture basis.

Higher protein CWRS wheat is highly suitable for blending and for the production of high volume pan bread. It is also commonly used alone or in blends with other wheat for the production of hearth bread, steamed bread, noodles, flat bread and common wheat pasta.

Currently, the predominant varieties of Wheat, Canada Western Red Spring grown are Lillian, Harvest, Kane, Superb, CDC Go, AC Barrie and McKenzie.

**Table 1 - Moisture content, test weight and other grade determining factors¹
Atlantic export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2010-2011**

	No. 1 CWRS		No. 2 CWRS		1 CWRS ²	2 CWRS ²	3 CWRS ²
	Guaranteed minimum protein content, %						
	12.0	13.5	13.0				
Number of cargoes	1	6	3		8	34	23
Thousands of tonnes	4	66	17		127	489	478
Moisture content, %							
Weighted mean	13.1	13.8	13.9		13.3	13.9	14.0
Standard deviation	0.00	0.08	0.23		0.16	0.26	0.17
Minimum	13.1	13.7	13.6		13.1	13.3	13.8
Maximum	13.1	13.9	14.0		13.5	14.3	14.3
Test weight, kg/hL							
Weighted mean	83.7	81.3	80.6		83.4	81.2	80.6
Standard deviation	0.00	0.43	1.13		0.53	0.73	0.49
Minimum	83.7	80.8	80.0		82.2	79.6	79.8
Maximum	83.7	81.9	82.0		83.8	82.6	81.8
Wheats of other classes, %							
Weighted mean	0.100	0.098	0.333		0.104	0.286	0.228
Cereal grains other than wheat, %							
Weighted mean	0.070	0.089	0.097		0.078	0.085	0.148

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

² Not segregated by protein content.

**Table 2 - Wheat, Canada Western Red Spring
Atlantic export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 1 CWRS	No. 2 CWRS		No. 3 CWRS
	1CWRS ²	Guaranteed minimum protein content, % 13.5	2CWRS ²	3CWRS ²
Wheat				
Weight per 1000 kernels, g	33.8	31.0	32.1	32.0
Protein content, %	13.6	13.8	13.8	13.6
Protein content, % (dry matter basis)	15.7	15.9	16.0	15.7
Ash content, %	1.58	1.67	1.65	1.66
Falling number, s	465	420	385	355
PSI	55	57	56	57
Milling Flour Yield				
Clean wheat basis, %	76.5	75.5	75.6	75.1
0.50% ash basis, %	76.0	75.5	75.6	74.1
Flour				
Protein content, %	13.0	13.1	13.1	12.9
Wet gluten content, %	35.6	35.9	36.2	35.7
Ash content, %	0.51	0.50	0.50	0.52
Grade colour, Satake units	-1.8	-1.4	-1.5	-1.3
Brightness, ³ L*	86.0	85.8	85.8	85.7
Redness, ³ a*	-0.23	-0.23	-0.23	-0.31
Yellowness, ³ b*	13.7	13.6	13.6	13.8
Starch damage, %	8.7	8.0	8.1	8.3
Amylograph peak viscosity, BU	600	480	465	255
Maltose value, g/100g	2.6	2.6	2.6	3.0
Farinogram				
Absorption, %	67.3	65.7	66.0	66.6
Development time, min	6.75	5.75	8.00	5.75
Mixing tolerance index, BU	25	20	25	25
Stability, min	11.0	11.0	11.5	9.5
Extensogram				
Length, cm	19	20	19	20
Height at 5 cm, BU	340	310	355	265
Maximum height, BU	565	510	575	430
Area, cm ²	135	135	145	110
Alveogram				
Length, mm	98	97	110	104
P (height x 1.1), mm	138	120	124	131
W, x 10 ⁻⁴ joules	447	404	446	437
Baking (Canadian Short Process baking test)				
Absorption, %	66	66	66	66
Mixing energy, W-h/kg	7.2	6.6	7.7	7.2
Mixing time, min	4.0	4.3	4.6	4.1
Loaf volume, cm ³ /100 g flour	1045	1080	1085	1080

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

² Not segregated by protein content.

³ Colour measured on flour/water slurry. See <http://www.grainscanada.gc.ca/wheat-ble/method-methode/wmtm-mmab-eng.htm>

**Table 3 - Moisture content, test weight and other grade determining factors¹
Pacific export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2010-2011**

	No. 1 CWRS		No. 2 CWRS			1CWRS ²	2CWRS ²	3CWRS ²
	Guaranteed minimum protein content, %							
	13.0	14.0	13.5	13.0	12.5			
Number of cargoes	2	1	13	6	2	16	13	58
Thousands of tonnes	44	11	302	174	40	435	288	1184
Moisture content, %								
Weighted mean	13.8	14.1	14.0	14.0	14.0	13.7	13.9	14.1
Standard deviation	0.14	0.00	0.15	0.23	0.07	0.19	0.20	0.16
Minimum	13.7	14.1	13.6	13.5	13.9	13.3	13.4	13.7
Maximum	13.9	14.1	14.2	14.2	14.0	13.9	14.0	14.5
Test weight, kg/hL								
Weighted mean	82.3	80.8	80.9	81.2	81.5	82.4	81.3	80.9
Standard deviation	0.00	0.00	0.32	0.49	0.57	0.35	0.38	0.54
Minimum	82.3	80.8	80.5	80.5	81.2	81.8	80.9	79.3
Maximum	82.3	80.8	81.5	82.0	82.0	83.0	82.2	81.8
Wheats of other classes, %								
Weighted mean	0.300	0.610	0.299	0.233	0.156	0.280	0.296	0.337
Cereal grains other than wheat, %								
Weighted mean	0.066	0.060	0.097	0.105	0.100	0.075	0.111	0.176

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

² Not segregated by protein content.

**Table 4 - Wheat, Canada Western Red Spring
Pacific export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 1 CWRS	No. 2 CWRS		No. 3 CWRS	
	1CWRS ²	Guaranteed minimum protein content, %		2CWRS ²	3CWRS ²
		13.5	13.0		
Wheat					
Weight per 1000 kernels, g	32.2	31.8	34.1	35.6	34.2
Protein content, %	13.3	13.8	13.3	13.2	13.3
Protein content, % (dry matter basis)	15.4	15.9	15.3	15.3	15.4
Ash content, %	1.51	1.62	1.59	1.56	1.61
Falling number, s	445	380	385	405	310
PSI	55	57	57	57	56
Milling Flour Yield					
Clean wheat basis, %	76.0	75.5	75.8	75.5	75.4
0.50% ash basis, %	77.0	75.5	75.3	76.0	75.4
Flour					
Protein content, %	12.7	13.1	12.7	12.7	12.6
Wet gluten content, %	35.4	36.9	35.8	35.4	36.5
Ash content, %	0.48	0.50	0.51	0.49	0.50
Grade colour, Satake units	-2.1	-1.7	-2.0	-2.0	-1.6
Brightness, ³ L*	86.2	85.9	86.0	85.7	85.9
Redness, ³ a*	-0.36	-0.24	-0.34	-0.36	-0.27
Yellowness, ³ b*	13.8	13.4	13.5	13.3	13.2
Starch damage, %	8.7	8.4	8.7	8.3	8.9
Amylograph peak viscosity, BU	575	465	500	550	270
Maltose value, g/100g	2.7	2.6	2.8	2.6	3.0
Farinogram					
Absorption, %	66.9	66.7	67.2	66.7	67.9
Development time, min	5.75	5.50	5.75	4.75	5.50
Mixing tolerance index, BU	25	15	25	15	30
Stability, min	10.5	10.5	9.0	11.0	8.5
Extensogram					
Length, cm	19	21	19	19	19
Height at 5 cm, BU	325	285	295	290	250
Maximum height, BU	515	485	465	440	405
Area, cm ²	125	130	120	115	100
Alveogram					
Length, mm	91	108	96	102	87
P (height x 1.1), mm	130	127	135	131	143
W, x 10 ⁻⁴ joules	396	438	423	434	412
Baking (Canadian Short Process baking test)					
Absorption, %	67	66	66	66	67
Mixing energy, W-h/kg	6.1	6.6	6.9	6.2	6.0
Mixing time, min	3.7	3.9	3.8	4.0	3.8
Loaf volume, cm ³ /100 g flour	1035	1055	1065	1015	1030

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

² Not segregated by protein content.

³ Colour measured on flour/water slurry. See <http://www.grainscanada.gc.ca/wheat-ble/method-methode/wmtm-mmab-eng.htm>

Wheat, Canada Western Amber Durum

Canada has an international reputation as a reliable supplier of high quality durum wheat, furnishing about two thirds of the world's exports in recent years. The attributes of Canadian durum that attract demand are reliability of supply, cleanliness, uniformity and consistency within and between shipments, and excellent end-product quality.

Canada has a strong commitment to quality. This extends to strict varietal control to protect the inherent quality of all grades of amber durum wheat and to strict adherence to wheat grade standards. The requirement that only durum varieties of high intrinsic quality are registered is a cornerstone of the Canadian grading system.

Currently, the predominant varieties of Wheat, Canada Western Amber Durum grown are Strongfield, AC Avonlea, AC Navigator and Kyle.

**Table 5 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Amber Durum
Third and fourth quarters 2010-2011**

	No. 1 CWAD		No. 2 CWAD		No. 3 CWAD	
	Atlantic	Pacific	Atlantic	Pacific	Atlantic	Pacific
Number of cargoes	7	11	12	6	23	5
Thousands of tonnes	116	111	206	27	350	46
Moisture content, %						
Weighted mean	12.1	12.1	12.8	12.5	13.2	13.2
Standard deviation	0.21	0.25	0.26	0.17	0.19	0.22
Minimum	11.9	11.5	12.1	12.3	12.9	12.9
Maximum	12.4	12.5	13.0	12.8	13.8	13.4
Test weight, kg/hL						
Weighted mean	82.9	83.0	82.7	82.6	81.8	81.6
Standard deviation	0.61	0.25	0.35	0.44	0.35	0.33
Minimum	82.3	82.4	81.8	82.1	81.2	81.0
Maximum	83.8	83.3	83.1	83.2	82.5	81.8
Vitreous kernels, %						
Weighted mean	87.8	89.4	82.0	85.1	75.5	76.2
Wheats of other classes, %						
Weighted mean	0.419	0.515	0.675	0.484	0.591	0.646
Cereal grains other than wheat, %						
Weighted mean	0.132	0.067	0.098	0.092	0.082	0.099

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 6a - Wheat, No. 1 and No. 2 Canada Western Amber Durum
Export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 1 CWAD		No. 2 CWAD	
	Atlantic	Pacific	Atlantic	Pacific
Wheat				
Test weight, kg/hL	83.5	83.1	82.3	82.8
Weight per 1000 kernels, g	43.7	45.4	42.7	42.8
Vitreous kernels, %	87	90	82	85
Protein content, %	13.1	13.3	12.9	12.9
Protein content, % (dry matter basis)	15.2	15.3	15.0	15.0
Ash content, %	1.51	1.52	1.55	1.54
Falling number, s	400	455	330	365
PSI, %	39.1	40.1	40.6	41.2
Milling				
Total Milling yield, %	76.4	76.5	76.0	76.6
Semolina yield, %	67.4	67.9	67.1	67.6
Semolina ash content, %	0.65	0.65	0.68	0.67
Speck count per 50 cm ²				
Total	35	42	62	54
Dark	17	22	24	24
Large (≥ 0.06 mm ²)	7	10	25	17
Semolina²				
Protein content, %	11.9	12.1	12.0	12.1
Wet gluten content, %	30.6	31.2	30.3	30.4
Gluten index, %	61	56	58	56
Alveogram				
Length, mm	86	90	92	87
P (height x 1.1), mm	65	64	67	67
P/L	0.76	0.71	0.73	0.77
W, x 10 ⁻⁴ joules	167	173	178	171
Yellow pigment content, ppm	8.5	8.4	8.6	8.4
Yellowness, b*	29.0	29.4	28.9	29.5
Dough sheet colour at (0.5 hrs) 24 hrs				
Brightness, L*	(80.1) 75.0	(80.1) 75.3	(79.7) 75.7	(80.0) 75.3
Redness, a*	(-1.3) 0.1	(-1.0) 0.5	(-0.8) 0.6	(-1.0) 0.4
Yellowness, b*	(31.1) 30.6	(30.1) 29.3	(28.1) 27.3	(29.4) 29.0
Falling number, s	475	500	390	440
Spaghetti - Dried at 85°C				
Brightness, L*	71.0	70.8	69.6	70.2
Redness, a*	5.4	5.4	6.4	5.8
Yellowness, b*	59.7	60.0	58.8	59.3
Strand diameter, mm				
Dry	1.84	1.83	1.83	1.81
Cooked	2.67	2.69	2.68	2.69
Texture - Cutting force (g) at				
0.8 mm	174	177	175	177
1.2 mm	369	374	371	373
25% diameter	126	129	127	129
50% diameter	453	464	455	463

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for semolina.

² Semolina analysis is conducted using granular products with a constant extraction rate of 70%.

**Table 6b - Wheat, No. 3 and No. 4 Canada Western Amber Durum
Export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 3 CWAD	No. 4 CWAD
	Atlantic	Atlantic
Wheat		
Test weight, kg/hL	82.0	81.3
Weight per 1000 kernels, g	39.1	40.7
Vitreous kernels, %	76	79
Protein content, %	13.0	12.9
Protein content, % (dry matter basis)	15.0	15.0
Ash content, %	1.63	1.68
Falling number, s	240	220
PSI, %	41.9	41.3
Milling		
Total Milling yield, %	75.8	76.2
Semolina yield, %	66.4	67.0
Semolina ash content, %	0.72	0.75
Speck count per 50 cm ²		
Total	77	93
Dark	26	34
Large (≥ 0.06 mm ²)	31	38
Semolina²		
Protein content, %	11.9	12.0
Wet gluten content, %	29.8	29.9
Gluten index, %	64	60
Alveogram		
Length, mm	85	82
P (height x 1.1), mm	71	74
P/L	0.84	0.90
W, x 10 ⁻⁴ joules	181	180
Yellow pigment content, ppm	8.7	8.7
Yellowness, b*	28.5	28.0
Dough sheet colour at (0.5 hrs) 24 hrs		
Brightness, L*	(78.1) 74.7	(78.3) 73.6
Redness, a*	(-0.6) 0.5	(-0.6) 1.1
Yellowness, b*	(30.1) 30.4	(29.7) 28.2
Falling number, s	310	285
Spaghetti - Dried at 85°C		
Brightness, L*	68.4	68.1
Redness, a*	7.4	7.6
Yellowness, b*	56.8	57.3
Strand diameter, mm		
Dry	1.83	1.83
Cooked	2.66	2.69
Texture - Cutting force (g) at		
0.8 mm	179	174
1.2 mm	378	370
25% diameter	129	127
50% diameter	457	458

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for semolina.

² Semolina analysis is conducted using granular products with a constant extraction rate of 70%.

Wheat, Canada Western Hard White Spring

Wheat, Canada Western Hard White Spring (CWHWS) is a hard white spring wheat with superior milling quality producing flour with excellent colour. It is suitable for bread and noodle production.

There are three milling grades in the CWHWS class.

The most commonly grown varieties of CWHWS are Snowstar and Snowbird.

**Table 7 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Hard White Spring
Third and fourth quarters 2010-2011**

	No. 2 CWHWS	No. 3 CWHWS
Number of cargoes	1	3
Thousands of tonnes	3	28
Moisture content, %		
Weighted mean	13.9	13.8
Standard deviation	0.00	0.06
Minimum	13.9	13.8
Maximum	13.9	13.9
Test weight, kg/hL		
Weighted mean	82.5	82.5
Standard deviation	0.00	0.81
Minimum	82.5	81.4
Maximum	82.5	82.9
Wheats of other classes, %		
Weighted mean	0.800	0.664
Cereal grains other than wheat, %		
Weighted mean	0.080	0.033

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 8 - Wheat, Canada Western Hard White Spring
Export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 3 CWHWS
Wheat	
Weight per 1000 kernels, g	28.3
Protein content, %	12.6
Protein content, % (dry matter basis)	14.6
Ash content, %	1.54
Falling number, s	375
PSI	58
Milling Flour Yield	
Clean wheat basis, %	76.1
0.50% ash basis, %	78.1
Flour	
Protein content, %	11.9
Wet gluten content, %	32.8
Ash content, %	0.46
Grade colour, Satake units	-2.7
Brightness, ² L*	86.4
Redness, ² a*	-0.46
Yellowness, ² b*	12.7
Starch damage, %	8.8
Amylograph peak viscosity, BU	360
Maltose value, g/100g	2.9
Farinogram	
Absorption, %	66.0
Development time, min	5.25
Mixing tolerance index, BU	20
Stability, min	11.5
Extensogram	
Length, cm	18
Height at 5 cm, BU	335
Maximum height, BU	520
Area, cm ²	115
Alveogram	
Length, mm	70
P (height x 1.1), mm	157
W, x 10 ⁻⁴ joules	415
Baking (Canadian Short Process baking test)	
Absorption, %	65
Mixing energy, W-h/kg	9.0
Mixing time, min	5.5
Loaf volume, cm ³ /100 g flour	975

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

² Colour measured on flour/water slurry. See <http://www.grainscanada.gc.ca/wheat-ble/method-methode/wmtm-mmab-eng.htm>

Wheat, Canada Prairie Spring Red

Wheat, Canada Prairie Spring Red (CPSR), used alone or in blends, has quality characteristics suitable for the production of various types of hearth bread, flat bread, noodles and related products.

The most commonly grown varieties eligible for milling grades of CPSR for the 2010-11 crop year are AC Foremost, 5700PR, AC Crystal and 5701PR.

**Table 9 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Prairie Spring Red
Third and fourth quarters 2010-2011**

	No. 1 CPSR	No. 2 CPSR
Number of cargoes	2	12
Thousands of tonnes	19	114
Moisture content, %		
Weighted mean	13.9	14.2
Standard deviation	0.14	0.16
Minimum	13.8	13.8
Maximum	14.0	14.4
Test weight, kg/hL		
Weighted mean	80.7	80.5
Standard deviation	0.21	0.57
Minimum	80.5	79.5
Maximum	80.8	81.3
Wheats of other classes, %		
Weighted mean	0.559	0.483
Cereal grains other than wheat, %		
Weighted mean	0.326	0.238

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 10 - Wheat, Canada Prairie Spring Red
Export cargo composites
Third and fourth quarters 2010-2011**

Quality parameter ¹	No. 2 CPSR
Wheat	
Weight per 1000 kernels, g	41.7
Protein content, %	11.7
Protein content, % (dry matter basis)	13.5
Ash content, %	1.42
Falling number, s	315
PSI	59
Milling Flour Yield	
Clean wheat basis, %	74.9
0.50% ash basis, %	76.4
Flour	
Protein content, %	10.9
Wet gluten content, %	28.2
Ash content, %	0.47
Grade colour, Satake units	-2.0
Brightness, ² L*	86.0
Redness, ² a*	-0.26
Yellowness, ² b*	12.5
Starch damage, %	8.1
Amylograph peak viscosity, BU	365
Maltose value, g/100g	2.7
Farinogram	
Absorption, %	63.5
Development time, min	7.75
Mixing tolerance index, BU	30
Stability, min	11.0
Extensogram	
Length, cm	17
Height at 5 cm, BU	395
Maximum height, BU	630
Area, cm ²	135
Alveogram	
Length, mm	105
P (height x 1.1), mm	114
W, x 10 ⁻⁴ joules	389
Baking (Remix-to-Peak baking test)	
Absorption, %	61
Mixing energy, W-h/kg	4.6
Remix time, min	2.7
Loaf volume, cm ³ /100 g flour	840

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

² Colour measured on flour/water slurry. See <http://www.grainscanada.gc.ca/wheat-ble/method-methode/wmtm-mmab-eng.htm>

Wheat, Canada Western Red Winter

Wheat, Canada Western Red Winter (CWRW) is a hard wheat exhibiting excellent milling quality. It is available in two milling grades. Flour produced from high grade CWRW wheat performs well in the production of hearth bread (such as French-style bread) and certain types of noodles, and is also suitable for the production of various types of flat bread, steamed bread and related products.

The most commonly grown varieties eligible for milling grades of CWRW for the 2010-11 crop year were CDC Falcon, Radiant, CDC Buteo and AC Bellatrix.

**Table 11 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Red Winter
Third and fourth quarters 2010-2011**

	No. 2 CWRW
Number of cargoes	17
Thousands of tonnes	133
Moisture content, %	
Weighted mean	13.3
Standard deviation	0.62
Minimum	12.0
Maximum	14.4
Test weight, kg/hL	
Weighted mean	82.3
Standard deviation	0.90
Minimum	80.6
Maximum	83.6
Wheats of other classes, %	
Weighted mean	0.886
Cereal grains other than wheat, %	
Weighted mean	0.111

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 12 - Wheat, Canada Western Red Winter
Export cargo composites
Third and fourth quarter 2010-2011**

Quality parameter ¹	No. 2 CWRW
Wheat	
Weight per 1000 kernels, g	31.6
Protein content, %	10.6
Protein content, % (dry matter basis)	12.3
Ash content, %	1.46
Falling number, s	360
PSI	63
Milling Flour Yield	
Clean wheat basis, %	76.9
0.50% ash basis, %	78.9
Flour	
Protein content, %	9.7
Wet gluten content, %	24.7
Ash content, %	0.46
Grade colour, Satake units	-2.0
Brightness, ² L*	86.2
Redness, ² a*	-0.6
Yellowness, ² b*	13.9
Starch damage, %	6.8
Amylograph peak viscosity, BU	365
Maltose value, g/100g	2.3
Farinogram	
Absorption, %	56.8
Development time, min	2.25
Mixing tolerance index, BU	10
Stability, min	9.0
Extensogram	
Length, cm	17
Height at 5 cm, BU	305
Maximum height, BU	465
Area, cm ²	105
Alveogram	
Length, mm	117
P (height x 1.1), mm	72
W, x 10 ⁻⁴ joules	266
Baking (Remix-to-Peak baking test)	
Absorption, %	55
Mixing energy, W-h/kg	4.3
Remix time, min	2.9
Loaf volume, cm ³ /100 g flour	780

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

² Colour measured on flour/water slurry. See <http://www.grainscanada.gc.ca/wheat-ble/method-methode/wmtm-mmab-eng.htm>

Wheat, Canada Western Extra Strong

Wheat, Canada Western Extra Strong (CWES) is a red spring wheat. The most widely grown varieties are Bluesky, Burnside, Glencross VB and Glenlea.

Flour milled from this wheat is characterized by very strong gluten. Dough made from CWES wheat flour cannot be properly developed at the normal farinograph speed of 63 rpm and must be tested at the higher speed of 90 rpm to obtain a true mixing peak.

The strong physical dough properties of CWES wheat make it ideal for blending and for specialty products in which very high gluten strength is needed.

Two milling grades have been established for this class.

**Table 13 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Extra Strong
Third and fourth quarters 2010-2011**

	No. 2 CWES
Number of cargoes	2
Thousands of tonnes	11
Moisture content, %	
Weighted mean	13.8
Standard deviation	0.07
Minimum	13.8
Maximum	13.9
Test weight, kg/hL	
Weighted mean	80.8
Standard deviation	0.64
Minimum	80.4
Maximum	81.3
Wheats of other classes, %	
Weighted mean	0.100
Cereal grains other than wheat, %	
Weighted mean	0.130

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

Wheat, Canada Western Soft White Spring

Wheat, Canada Western Soft White Spring (CWSWS) is a lower protein, soft wheat with weak dough properties. Flour milled from this wheat is suitable for producing cookies, cakes, biscuits and related products. Alone or in blends with stronger wheat, CWSWS wheat can also be used to produce crackers, flat bread, steamed bread and certain types of noodles.

The most commonly grown variety of CWSWS is AC Andrew.

**Table 14 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Soft White Spring
Third and fourth quarters 2010-2011**

	No. 2 CWSWS	No. 3 CWSWS
Number of cargoes	1	3
Thousands of tonnes	3	28
Moisture content, %		
Weighted mean	13.9	13.8
Standard deviation	0.00	0.06
Minimum	13.9	13.8
Maximum	13.9	13.9
Test weight, kg/hL		
Weighted mean	82.5	82.5
Standard deviation	0.00	0.81
Minimum	82.5	81.4
Maximum	82.5	82.9
Wheats of other classes, %		
Weighted mean	0.800	0.664
Cereal grains other than wheat, %		
Weighted mean	0.080	0.033

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.