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Quality of western Canadian wheat exports

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Table of contents

Introduction	4
Wheat, Canada Western Red Spring	5
Wheat, Canada Western Amber Durum.....	11
Wheat, Canada Western Hard White Spring.....	13
Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White	15
Wheat, Canada Western Red Winter	17
Wheat, Canada Western Extra Strong.....	19
Wheat, Canada Western Soft White Spring	21

Tables

Table 1 - Moisture content, test weight and other grade determining factors Atlantic export cargoes of Wheat, Canada Western Red Spring Third and fourth quarters 2009-2010	6
Table 2 - Wheat, Canada Western Red Spring Atlantic export cargo composites Third and fourth quarters 2009-2010	7
Table 3 - Moisture content, test weight and other grade determining factors Pacific export cargoes of Wheat, Canada Western Red Spring Third and fourth quarters 2009-2010	8
Table 4a - Wheat, No. 1 Canada Western Red Spring Pacific export cargo composites Third and fourth quarters 2009-2010	9
Table 4b - Wheat, No. 2 and No. 3 Canada Western Red Spring Pacific export cargo composites Third and fourth quarters 2009-2010	10
Table 5 - Moisture content, test weight and other grade determining factors Export cargoes of Wheat, Canada Western Amber Durum Third and fourth quarters 2009-2010	11
Table 6 - Wheat, Canada Western Amber Durum Export cargo composites Third and fourth quarters 2009-2010	12
Table 7 - Moisture content, test weight and other grade determining factors Export cargoes of Wheat, Canada Western Hard White Spring Third and fourth quarters 2009-2010	13
Table 8 - Wheat, Canada Western Hard White Spring Export cargo composites Third and fourth quarters 2009-2010	14
Table 9 - Moisture content, test weight and other grade determining factors Export cargoes of Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White Third and fourth quarters 2009-2010	15
Table 10 - Wheat, Canada Prairie Spring Red Export cargo composites Third and fourth quarters 2009-2010	16

Table 11 - Moisture content, test weight and other grade determining factors Export cargoes of Wheat, Canada Western Red Winter Third and fourth quarters 2009-2010	17
Table 12 - Wheat, Canada Western Red Winter Export cargo composites Third and fourth quarters 2009-2010	18
Table 13 - Moisture content, test weight and other grade determining factors Export cargoes of Wheat, Canada Western Extra Strong Third and fourth quarters 2009-2010	19
Table 14 - Wheat, Canada Western Extra Strong Export cargo composites Third and fourth quarters 2009-2010	20

Quality of western Canadian wheat exports

February 1–July 31, 2010

Introduction

This bulletin reports quality data for cargoes of all classes of western Canadian wheat exported by ship from February 1 to July 31, 2010. 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, Superb, AC Barrie, McKenzie and Kane.

**Table 1 - Moisture content, test weight and other grade determining factors¹
Atlantic export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2009-2010**

	No. 1 CWRS			1 CWRS ²		
	Guaranteed minimum protein content, %					
	14.5	13.5	13.0			
Number of cargoes	2	10	10	37		
Thousands of tonnes	5	92	252	681		
Moisture content, %						
Weighted mean	13.6	13.6	13.4	13.5		
Standard deviation	0.35	0.15	0.24	0.25		
Minimum	13.4	13.4	13.0	12.8		
Maximum	13.9	13.8	13.7	13.9		
Test weight, kg/hL						
Weighted mean	82.3	83.4	83.6	83.2		
Standard deviation	0.92	0.44	0.46	0.47		
Minimum	81.6	82.4	82.7	81.7		
Maximum	82.9	84.0	84.1	84.1		
Wheats of other classes, %						
Weighted mean	0.249	0.127	0.122	0.087		
Cereal grains other than wheat, %						
Weighted mean	0.060	0.071	0.070	0.100		
	No. 2 CWRS				2 CWRS ²	No. 3 CWRS ²
	Guaranteed minimum protein content, %					
	14.5	13.5	13.0	12.5		
Number of cargoes	1	9	2	3	19	1
Thousands of tonnes	3	101	38	10	333	6
Moisture content, %						
Weighted mean	13.8	13.7	13.7	13.6	13.7	13.6
Standard deviation	0.00	0.22	0.57	0.10	0.18	0.00
Minimum	13.8	13.4	13.0	13.5	13.4	13.6
Maximum	13.8	14.0	13.8	13.7	14.1	13.6
Test weight, kg/hL						
Weighted mean	81.0	82.6	83.1	82.5	82.6	81.8
Standard deviation	0.00	0.59	0.42	0.10	0.69	0.00
Minimum	81.0	81.3	83.0	82.4	80.2	81.8
Maximum	81.0	83.2	83.6	82.6	83.5	81.8
Wheats of other classes, %						
Weighted mean	0.200	0.255	0.100	0.177	0.140	0.200
Cereal grains other than wheat, %						
Weighted mean	0.050	0.088	0.064	0.052	0.112	0.090

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 2009-2010**

Quality parameter ¹	No. 1 CWRS			No. 2 CWRS		
	Guaranteed minimum protein content, %					
	14.5	13.5	13.0	13.5	13.0	12.5
Wheat						
Weight per 1000 kernels, g	33.1	34.8	34.7	34.4	35.4	35.4
Protein content, %	14.8	13.9	13.4	14.0	13.5	13.1
Protein content, % (dry matter basis)	17.2	16.0	15.5	16.2	15.6	15.1
Ash content, %	1.66	1.58	1.55	1.63	1.59	1.62
Falling number, s	505	510	465	465	470	435
PSI	53	53	52	53	53	52
Milling						
Flour yield						
Clean wheat basis, %	75.9	76.4	76.6	76.4	76.3	76.3
0.50% ash basis, %	75.9	77.4	77.6	76.9	76.8	76.3
Flour						
Protein content, %	14.2	13.3	12.9	13.3	12.9	12.5
Wet gluten content, %	39.7	36.8	35.2	36.0	34.5	33.3
Ash content, %	0.50	0.48	0.48	0.49	0.49	0.50
Grade colour, Satake units	-1.5	-1.9	-1.9	-1.7	-1.9	-2.0
AGTRON colour, %	71	74	74	71	74	74
Starch damage, %	8.6	8.9	9.2	9.1	9.1	9.1
Amylograph peak viscosity, BU	620	580	560	460	460	445
Maltose value, g/100g	2.6	2.7	2.8	2.9	2.9	2.9
Farinogram						
Absorption, %	69.2	69.2	69.3	67.9	67.3	67.2
Development time, min	6.75	6.50	5.25	6.00	6.25	5.50
Mixing tolerance index, BU	25	25	30	25	20	25
Stability, min	9.0	10.5	8.5	9.5	11.0	10.0
Extensogram						
Length, cm	20	19	18	20	19	17
Height at 5 cm, BU	315	325	300	275	325	340
Maximum height, BU	515	540	475	460	515	520
Area, cm ²	130	125	110	115	130	110
Alveogram						
Length, mm	118	100	78	107	99	86
P (height x 1.1), mm	128	145	149	134	134	139
W, x 10 ⁻⁴ joules	460	472	406	460	430	404
Baking (Canadian Short Process baking test)						
Absorption, %	69	69	69	68	67	66
Mixing energy, W-h/kg	6.6	5.9	6.3	6.8	6.5	6.5
Mixing time, min	3.9	3.9	3.9	4.1	4.2	4.1
Loaf volume, cm ³ /100 g flour	1060	1050	1040	1055	1040	1050

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

**Table 3 - Moisture content, test weight and other grade determining factors¹
Pacific export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2009-2010**

	No. 1 CWRs						1CWRs ²	
	Guaranteed minimum protein content, %							
	14.0	13.5	13.0	12.5	12.0	11.5		
Number of cargoes	10	12	13	34	35	11	46	
Thousands of tonnes	127	319	220	662	921	200	890	
Moisture content, %								
Weighted mean	12.7	13.0	12.9	13.1	13.2	12.9	12.6	
Standard deviation	0.19	0.41	0.57	0.44	0.38	0.37	0.39	
Minimum	12.5	12.3	12.0	12.2	12.0	12.3	11.9	
Maximum	13.1	13.4	14.1	13.6	13.7	13.5	13.8	
Test weight, kg/hL								
Weighted mean	83.5	83.3	83.1	83.2	83.2	83.8	83.6	
Standard deviation	0.45	0.35	0.96	0.58	0.75	0.41	0.33	
Minimum	83.3	83.0	80.2	81.8	79.7	83.1	82.4	
Maximum	84.8	84.3	83.9	84.5	84.0	84.3	84.2	
Wheats of other classes, %								
Weighted mean	0.299	0.281	0.202	0.260	0.297	0.198	0.275	
Cereal grains other than wheat, %								
Weighted mean	0.180	0.180	0.159	0.162	0.153	0.155	0.175	
	No. 2 CWRs						2CWRs ²	No. 3 CWRs ²
	Guaranteed minimum protein content, %							
	14.0	13.5	13.0	12.5	12.0	11.5		
Number of cargoes	2	10	5	8	4	2	7	12
Thousands of tonnes	25	237	52	177	89	22	97	131
Moisture content, %								
Weighted mean	13.0	13.0	13.1	13.7	13.6	13.5	13.2	13.6
Standard deviation	0.49	0.28	0.31	0.15	0.21	0.14	0.42	0.31
Minimum	12.7	12.8	12.6	13.4	13.4	13.5	12.2	13.0
Maximum	13.4	13.6	13.4	13.8	13.8	13.7	13.4	14.0
Test weight, kg/hL								
Weighted mean	83.0	82.8	82.5	82.7	83.0	82.5	82.6	81.1
Standard deviation	0.14	0.64	0.37	0.98	1.13	0.28	0.91	0.91
Minimum	82.9	81.5	82.0	80.6	81.2	82.5	80.6	79.7
Maximum	83.1	83.9	82.9	83.5	83.2	82.9	83.4	82.2
Wheats of other classes, %								
Weighted mean	0.294	0.314	0.283	0.309	0.198	0.191	0.316	0.540
Cereal grains other than wheat, %								
Weighted mean	0.215	0.241	0.264	0.174	0.155	0.163	0.239	0.457

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

² Not segregated by protein content.

**Table 4a – Wheat, No. 1 Canada Western Red Spring
Pacific export cargo composites
Third and fourth quarters 2009-2010**

Quality parameter ¹	No. 1 CWRs					
	Guaranteed minimum protein content, %					
	14.0	13.5	13.0	12.5	12.0	11.5
Wheat						
Weight per 1000 kernels, g	37.0	35.4	35.8	35.5	37.2	37.1
Protein content, %	14.1	13.8	13.3	12.6	12.3	12.0
Protein content, % (dry matter basis)	16.3	15.9	15.3	14.5	14.3	13.9
Ash content, %	1.50	1.49	1.54	1.54	1.53	1.54
Falling number, s	475	455	475	420	480	480
PSI	51	52	51	50	50	49
Milling						
Flour yield						
Clean wheat basis, %	75.7	75.8	75.8	75.8	75.9	76.1
0.50% ash basis, %	77.2	78.3	75.8	75.8	76.9	76.1
Flour						
Protein content, %	13.8	13.4	12.7	12.2	11.8	11.3
Wet gluten content, %	39.4	37.8	35.6	33.4	32.0	30.4
Ash content, %	0.47	0.45	0.50	0.50	0.48	0.50
Grade colour, Satake units	-1.8	-1.9	-2.0	-2.2	-2.4	-2.5
AGTRON colour, %	71	73	74	76	77	78
Starch damage, %	9.5	9.7	9.9	10.2	10.3	10.6
Amylograph peak viscosity, BU	610	560	570	575	575	590
Maltose value, g/100g	2.9	3.0	3.1	3.1	3.2	3.4
Farinogram						
Absorption, %	71.4	70.9	70.9	69.0	69.4	69.5
Development time, min	6.00	6.50	6.00	5.00	4.00	5.25
Mixing tolerance index, BU	20	25	25	25	20	25
Stability, min	10.0	10.0	10.0	8.5	10.5	10.5
Extensogram						
Length, cm	19	19	18	17	18	16
Height at 5 cm, BU	280	295	335	310	290	380
Maximum height, BU	455	465	510	475	430	505
Area, cm ²	115	110	115	105	100	105
Alveogram						
Length, mm	98	95	84	70	61	53
P (height x 1.1), mm	165	157	167	169	174	187
W, x 10 ⁻⁴ joules	512	485	464	420	396	382
Baking (Canadian Short Process baking test)						
Absorption, %	70	69	70	68	69	69
Mixing energy, W-h/kg	5.7	5.8	5.7	6.9	6.3	5.9
Mixing time, min	3.6	3.7	3.6	4.1	4.0	3.9
Loaf volume, cm ³ /100 g flour	1045	1075	1055	1025	1005	965

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

**Table 4b – Wheat, No. 2 and No. 3 Canada Western Red Spring
Pacific export cargo composites
Third and fourth quarters 2009-2010**

Quality parameter ¹	No. 2 CWRS				No. 3 CWRS ²	
	Guaranteed minimum protein content, %					
	14.0	13.5	13.0	12.5	12.0	
Wheat						
Weight per 1000 kernels, g	35.8	36.7	35.7	35.5	36.0	37.3
Protein content, %	14.0	13.7	13.2	12.7	12.3	12.9
Protein content, % (dry matter basis)	16.2	15.8	15.2	14.7	14.2	14.9
Ash content, %	1.55	1.56	1.54	1.54	1.54	1.52
Falling number, s	430	440	460	460	475	450
PSI	53	52	51	52	51	52
Milling						
Flour yield						
Clean wheat basis, %	76.1	76.0	75.7	76.2	76.0	75.4
0.50% ash basis, %	76.6	76.5	76.2	76.7	76.5	75.9
Flour						
Protein content, %	13.5	13.1	12.6	12.1	11.8	12.4
Wet gluten content, %	38.1	37.3	35.4	33.8	32.0	33.9
Ash content, %	0.49	0.49	0.49	0.49	0.49	0.49
Grade colour, Satake units	-1.4	-1.5	-1.8	-2.2	-2.3	-1.8
AGTRON colour, %	69	69	73	74	77	74
Starch damage, %	9.2	9.5	9.4	9.4	9.9	8.9
Amylograph peak viscosity, BU	480	480	465	535	540	410
Maltose value, g/100g	3.0	3.1	3.0	2.9	3.0	2.9
Farinogram						
Absorption, %	69.8	70.3	69.1	68.5	68.6	67.8
Development time, min	6.75	6.50	5.00	5.50	5.00	6.25
Mixing tolerance index, BU	25	25	30	20	30	20
Stability, min	10.5	10.0	8.5	10.0	9.5	11.5
Extensogram						
Length, cm	20	19	19	17	18	17
Height at 5 cm, BU	270	290	300	350	290	385
Maximum height, BU	475	470	440	510	455	570
Area, cm ²	120	135	110	110	105	125
Alveogram						
Length, mm	101	95	92	83	72	86
P (height x 1.1), mm	146	154	151	153	161	151
W, x 10 ⁻⁴ joules	488	475	453	424	400	436
Baking (Canadian Short Process baking test)						
Absorption, %	68	70	69	68	67	67
Mixing energy, W-h/kg	6.4	5.5	5.7	5.6	5.8	5.4
Mixing time, min	3.9	3.7	3.8	3.7	3.8	3.7
Loaf volume, cm ³ /100 g flour	1050	1080	1030	1015	995	1035

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.

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 2009-2010**

	No. 1 CWAD		No. 2 CWAD		No. 3 CWAD	
	Atlantic	Pacific	Atlantic	Pacific	Atlantic	Pacific
Number of cargoes	37	12	27	11	1	0
Thousands of tonnes	558	109	399	78	8	0
Moisture content, %						
Weighted mean	12.1	11.5	12.6	12.1	13.5	-
Standard deviation	0.24	0.32	0.39	0.59	0.00	-
Minimum	11.6	10.7	11.8	11.3	13.5	-
Maximum	12.7	11.9	13.4	13.1	13.5	-
Test weight, kg/hL						
Weighted mean	83.2	83.2	82.8	83.1	81.6	-
Standard deviation	0.49	0.39	0.43	0.44	0.00	-
Minimum	82.3	82.5	81.8	82.4	81.6	-
Maximum	84.2	83.7	83.4	83.9	81.6	-
Vitreous kernels, %						
Weighted mean	87.6	90.7	82.8	83.9	73.9	-
Wheats of other classes, %						
Weighted mean	0.550	0.550	0.809	0.691	1.070	-
Cereal grains other than wheat, %						
Weighted mean	0.089	0.144	0.105	0.251	0.310	-

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

**Table 6 – Wheat, Canada Western Amber Durum
Export cargo composites
Third and fourth quarters 2009-2010**

Quality parameter ¹	No. 1 CWAD		No. 2 CWAD		No. 3 CWAD
	Atlantic	Pacific	Atlantic	Pacific	Atlantic
Wheat					
Weight per 1000 kernels, g	45.0	44.8	46.6	45.8	45.2
Protein content, %	13.1	13.3	12.8	13.1	13.0
Protein content, % (dry matter basis)	15.1	15.4	14.8	15.2	15.0
Ash content, %	1.50	1.51	1.51	1.55	1.57
Yellow pigment content, ppm	8.8	8.9	8.9	9.1	8.9
Falling number, s	475	475	435	455	390
Milling yield, %	75.9	76.5	75.9	75.9	76.6
Semolina yield, %	67.8	68.1	67.8	68.1	68.1
PSI, %	37	37	38	38	40
Semolina					
Protein content, %	12.3	12.4	12.1	12.2	12.3
Wet gluten content, %	31.2	32.9	31.4	31.1	31.7
Dry gluten content, %	10.8	10.9	10.7	11.0	11.1
Ash content, %	0.63	0.64	0.64	0.65	0.67
Yellow pigment content, ppm	8.3	8.3	8.2	8.5	8.1
AGTRON colour, %	76	75	75	73	71
Minolta colour:					
L*	86.5	86.7	86.5	86.7	86.4
a*	-2.9	-2.9	-2.8	-2.9	-2.8
b*	32.6	33.0	32.3	32.8	31.8
Speck count per 50 cm ²	33	26	41	20	46
Falling number, s	510	535	485	535	440
Spaghetti – Dried at 70°C					
Minolta colour:					
L*	77.4	77.5	77.3	76.9	76.7
a*	1.5	1.5	1.5	2.0	2.0
b*	58.2	57.4	57.5	59.1	53.3

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

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 2009-2010

	No. 1 CWHWS	No. 2 CWHWS
Number of cargoes	6	3
Thousands of tonnes	40	18
Moisture content, %		
Weighted mean	12.8	12.7
Standard deviation	0.65	1.23
Minimum	12.0	11.6
Maximum	13.7	14.0
Test weight, kg/hL		
Weighted mean	84.3	84.2
Standard deviation	0.54	0.87
Minimum	83.4	83.1
Maximum	84.8	84.8
Wheats of other classes, %		
Weighted mean	0.348	1.046
Cereal grains other than wheat, %		
Weighted mean	0.040	0.141

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 2009-2010**

Quality parameter ¹	No. 1 CWHWS	No. 2 CWHWS
Wheat		
Weight per 1000 kernels, g	30.7	31.8
Protein content, %	12.5	12.7
Protein content, % (dry matter basis)	14.5	14.7
Ash content, %	1.46	1.49
Falling number, s	485	520
PSI	51	51
Milling		
Flour yield		
Clean wheat basis, %	76.8	76.8
0.50% ash basis, %	78.8	79.3
Flour		
Protein content, %	11.8	12.1
Wet gluten content, %	31.9	32.5
Ash content, %	0.46	0.45
Grade colour, Satake units	-3.3	-3.0
AGTRON colour, %	86	84
Starch damage, %	9.2	9.3
Amylograph peak viscosity, BU	615	720
Maltose value, g/100g	3.0	2.9
Farinogram		
Absorption, %	67.5	67.7
Development time, min	5.75	5.75
Mixing tolerance index, BU	20	25
Stability, min	12.0	11.0
Extensogram		
Length, cm	18	18
Height at 5 cm, BU	370	365
Maximum height, BU	585	570
Area, cm ²	135	125
Alveogram		
Length, mm	72	60
P (height x 1.1), mm	172	163
W, x 10 ⁻⁴ joules	465	380
Baking (Canadian Short Process baking test)		
Absorption, %	65	65
Mixing energy, W-h/kg	6.7	7.6
Mixing time, min	4.9	5.2
Loaf volume, cm ³ /100 g flour	1020	1035

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

Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White

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 2009-10 crop year are 5700PR, AC Foremost, AC Crystal and 5701PR.

Wheat, Canada Prairie Spring White (CPSW), used alone or in blends, has the quality characteristics suitable for the production of various types of flat bread, noodles, chapatis, crackers and similar products.

**Table 9 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White
Third and fourth quarters 2009-2010**

	No. 1 CPSR	No. 2 CPSR
Number of cargoes	4	19
Thousands of tonnes	31	189
Moisture content, %		
Weighted mean	13.2	13.5
Standard deviation	0.33	0.21
Minimum	12.8	13.0
Maximum	13.5	13.9
Test weight, kg/hL		
Weighted mean	83.0	82.6
Standard deviation	0.55	0.39
Minimum	82.3	82.0
Maximum	83.5	83.4
Wheats of other classes, %		
Weighted mean	0.477	0.490
Cereal grains other than wheat, %		
Weighted mean	0.310	0.610

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 quarter 2009-2010**

Quality parameter ¹	No. 1 CPSR	No. 2 CPSR
Wheat		
Weight per 1000 kernels, g	42.6	42.3
Protein content, %	11.7	11.8
Protein content, % (dry matter basis)	13.6	13.6
Ash content, %	1.38	1.38
Falling number, s	450	415
Flour yield, %	75.5	76.2
PSI	51	52
Flour		
Protein content, %	11.0	11.1
Wet gluten content, %	28.4	28.7
Ash content, %	0.48	0.48
Grade colour, Satake units	-2.2	-1.6
AGTRON colour, %	75	70
Starch damage, %	9.2	9.1
Amylograph peak viscosity, BU	675	590
Maltose value, g/100g	2.9	2.9
Farinogram		
Absorption, %	66.6	66.8
Development time, min	7.50	6.50
Mixing tolerance index, BU	25	30
Stability, min	12.5	9.5
Extensogram		
Length, cm	17	18
Height at 5 cm, BU	460	380
Maximum height, BU	690	600
Area, cm ²	145	135
Alveogram		
Length, mm	91	85
P (height x 1.1), mm	153	143
W, x 10 ⁻⁴ joules	460	403
Baking (Remix-to-Peak baking test)		
Absorption, %	63	63
Remix time, min	2.6	2.6
Loaf volume, cm ³ /100 g flour	790	810

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

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.

Table 11 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Red Winter
Third and fourth quarters 2009-2010

	No. 1 CWRW	No 2 CWRW
Number of cargoes	3	9
Thousands of tonnes	18	84
Moisture content, %		
Weighted mean	12.6	12.9
Standard deviation	0.74	0.57
Minimum	11.5	12.1
Maximum	12.9	13.9
Test weight, kg/hL		
Weighted mean	83.5	83.4
Standard deviation	0.36	0.57
Minimum	83.4	82.2
Maximum	84.1	84.1
Wheats of other classes, %		
Weighted mean	0.167	0.343
Cereal grains other than wheat, %		
Weighted mean	0.071	0.123

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 2009-2010**

Quality parameter ¹	No. 1 CWRW	No. 2 CWRW
Wheat		
Weight per 1000 kernels, g	34.3	34.2
Protein content, %	10.9	11.1
Protein content, % (dry matter basis)	12.6	12.8
Ash content, %	1.37	1.35
Falling number, s	360	360
Flour yield, %	76.8	75.9
PSI	55	57
Flour		
Protein content, %	10.1	10.4
Wet gluten content, %	26.6	26.7
Ash content, %	0.44	0.43
Grade colour, Satake units	-2.4	-2.6
AGTRON colour, %	78	79
Starch damage, %	7.3	7.0
Amylograph peak viscosity, BU	350	380
Maltose value, g/100g	2.5	2.3
Farinogram		
Absorption, %	59.5	58.9
Development time, min	6.00	7.00
Mixing tolerance index, BU	35	30
Stability, min	8.5	10.5
Extensogram		
Length, cm	15	15
Height at 5 cm, BU	420	470
Maximum height, BU	565	660
Area, cm ²	105	120
Alveogram		
Length, mm	107	118
P (height x 1.1), mm	93	91
W, x 10 ⁻⁴ joules	308	339
Baking (Remix-to-Peak baking test)		
Absorption, %	57	58
Remix time, min	2.6	3.0
Loaf volume, cm ³ /100 g flour	715	770

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

Wheat, Canada Western Extra Strong

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

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 2009-2010**

	No. 1 CWES
Number of cargoes	2
Thousands of tonnes	11
Moisture content, %	
Weighted mean	13.8
Standard deviation	0.07
Minimum	13.7
Maximum	13.8
Test weight, kg/hL	
Weighted mean	80.2
Standard deviation	2.26
Minimum	78.4
Maximum	81.6
Wheats of other classes, %	
Weighted mean	0.474
Cereal grains other than wheat, %	
Weighted mean	0.089

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

**Table 14 – Wheat, Canada Western Extra Strong
Export cargo composites
Third and fourth quarter 2009-2010**

Quality parameter ¹	No. 1 CWES
Wheat	
Weight per 1000 kernels, g	42.3
Protein content, %	13.1
Protein content, % (dry matter basis)	15.1
Ash content, %	1.60
Falling number, s	445
Flour yield, %	76.9
PSI	47
Flour	
Protein content, %	12.6
Wet gluten content, %	30.4
Ash content, %	0.57
Grade colour, Satake units	-1.4
AGTRON colour, %	69
Starch damage, %	10.6
Amylograph peak viscosity, BU	515
Maltose value, g/100g	3.4
Farinogram (90 rpm)	
Absorption, %	64.6
Development time, min	9.00
Mixing tolerance index, BU	15
Stability, min	17.0
Extensogram	
Length, cm	20
Height at 5 cm, BU	500
Maximum height, BU	825
Area, cm ²	205
Alveogram	
Length, mm	84
P (height x 1.1), mm	173
W, x 10 ⁻⁴ joules	577
Baking (Remix-to-Peak baking test)	
Absorption, %	68
Remix time, min	5.7
Loaf volume, cm ³ /100 g flour	920

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

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.