



Certification of the USP Moisture Permeation Test

Prepared for:

Health Care Logistics
450 Town Street
Circleville, Ohio 43113-0025

Objective:

To quantify moisture permeation, according to the USP Standards, for the **HCL#7019 Class A 1-Year Dating Condensed Blister with Class A 1-Year Condensed Laser Label HCL#6123 Lot# S125779** of Health Care Logistics

Summary:

Ten sample blisters were packaged with dried desiccant tablets and sealed using moderate force with a sealing roller on a foam tray with pre-formed compartments. Ten empty blisters served as the control. All blisters were placed in a temperature and humidity controlled environment; taken out to equalize to room temperature and weighed on an electronic balance per USP Testing Standard Method I from Section <671> Containers-Permeation. Testing was performed for a 30-day duration. The following formula for moisture permeation was used to calculate the mg gained per day:

$$\text{Moisture Permeation} = (1/N) [W_f - W_i] - (C_f - C_i)$$

Results:

For the 30 day testing program, this package configuration was effective in preventing moisture permeation and meets the parameters provided by the USP to warrant a "**Class A**" package classification.

Tested by:
DevelopMed Ltd.

A handwritten signature in black ink that reads 'Kenneth F. Bober'.

Kenneth F. Bober, R.Ph.
President

USP Package Testing April/May 2015
 Blister: HCL#7019 Class A 1-Yr Dating Condensed Blister
 Lidding:HCL#:6123-Class A 1-Yr Dating Condensed| Label- Lot #: S125779
 Test Pkg

	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	23-Apr	27-Apr	1-May	5-May	9-May
Initial Wt.															
1	0.6260	0.6290	0.6290	0.6310	0.6310	0.6310	0.6310	0.6310	0.6310	0.6310	0.6320	0.6320	0.6320	0.6320	0.6350
2	0.5900	0.5940	0.5940	0.5940	0.5950	0.5950	0.5950	0.5950	0.5950	0.5950	0.5950	0.5950	0.5960	0.5950	0.6000
3	0.5660	0.5690	0.5690	0.5690	0.5690	0.5690	0.5690	0.5700	0.5690	0.5690	0.5700	0.5700	0.5710	0.5710	0.5750
4	0.5640	0.5670	0.5670	0.5670	0.5680	0.5680	0.5680	0.5690	0.5690	0.5690	0.5700	0.5700	0.5710	0.5710	0.5750
5	0.5930	0.5960	0.5960	0.5960	0.5970	0.5970	0.5970	0.5980	0.5970	0.5970	0.5980	0.5980	0.5980	0.5980	0.6020
6	0.5890	0.5920	0.5930	0.5920	0.5920	0.5920	0.5920	0.5920	0.5920	0.5930	0.5930	0.5930	0.5940	0.5940	0.5970
7	0.5620	0.5650	0.5650	0.5650	0.5650	0.5650	0.5650	0.5660	0.5650	0.5650	0.5660	0.5660	0.5670	0.5670	0.5700
8	0.5630	0.5650	0.5650	0.5650	0.5650	0.5650	0.5650	0.5660	0.5650	0.5650	0.5660	0.5660	0.5670	0.5670	0.5710
9	0.5680	0.5710	0.5710	0.5720	0.5720	0.5720	0.5720	0.5730	0.5720	0.5730	0.5740	0.5740	0.5750	0.5750	0.5800
10	0.5940	0.5970	0.5980	0.5990	0.5990	0.5990	0.6000	0.6010	0.6010	0.6020	0.6040	0.6050	0.6050	0.6050	0.6100

Control

	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	23-Apr	27-Apr	1-May	5-May	9-May
Initial Wt.															
1	0.4900	0.4940	0.4940	0.4940	0.4940	0.4940	0.4940	0.4940	0.4940	0.4940	0.4950	0.4950	0.4950	0.4950	0.4990
2	0.4630	0.4660	0.4660	0.4660	0.4660	0.4670	0.4670	0.4670	0.4670	0.4670	0.4680	0.4680	0.4680	0.4670	0.4720
3	0.4570	0.4600	0.4610	0.4610	0.4610	0.4610	0.4610	0.4620	0.4610	0.4610	0.4620	0.4620	0.4620	0.4610	0.4660
4	0.4600	0.4690	0.4690	0.4700	0.4700	0.4700	0.4700	0.4710	0.4700	0.4700	0.4700	0.4700	0.4700	0.4690	0.4740
5	0.4660	0.4630	0.4630	0.4640	0.4640	0.4640	0.4640	0.4640	0.4640	0.4640	0.4650	0.4650	0.4650	0.4650	0.4690
6	0.4600	0.4630	0.4630	0.4640	0.4640	0.4640	0.4640	0.4640	0.4640	0.4640	0.4650	0.4650	0.4650	0.4640	0.4680
7	0.4640	0.4670	0.4680	0.4680	0.4680	0.4680	0.4680	0.4680	0.4680	0.4690	0.4690	0.4690	0.4690	0.4680	0.4730
8	0.4660	0.4690	0.4690	0.4690	0.4690	0.4700	0.4700	0.4710	0.4700	0.4700	0.4700	0.4700	0.4700	0.4700	0.4750
9	0.4650	0.4680	0.4680	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4690	0.4740
10	0.4710	0.4760	0.4760	0.4760	0.4760	0.4760	0.4760	0.4770	0.4760	0.4760	0.4760	0.4760	0.4760	0.4760	0.4810
Sum	4.6620	4.6950	4.6970	4.7010	4.7010	4.7030	4.7030	4.7070	4.7030	4.7040	4.7090	4.7090	4.7090	4.7040	4.7510
Ave	0.4662	0.4695	0.4697	0.4701	0.4701	0.4703	0.4703	0.4707	0.4703	0.4704	0.4709	0.4709	0.4709	0.4704	0.4751

USP Package Testing April/May 2015

Blister: HCL#7019 Class A 1-Yr Dating Condensed Blister

Lidding:HCL#6123-Class A 1-Yr Dating Condensed Label- Lot #: S12577 (Wt. E xpressed in Grams) (Moisture Gain expressed in milligrams)

DAY OF TEST	DAY DATE	CONTROL WEIGHT (GMS)	CONTROL AVG WEIGHT (GMS)	DIFF = (Cf-Ci)	S-1 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-2 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-3 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-4 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-5 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)
1	3/11/2015	4.6620	4.4662	++++++	0.6260	++++++	0.5900	0.5900	++++++	0.5660	0.5660	++++++	0.5640	0.5640	++++++	0.5930	0.5930	++++++	0.5930
2	3/12/2015	4.6950	4.4695	0.0000	0.6290	0.0000	0.00	0.5940	0.0000	0.00	0.5690	0.0000	0.00	0.5670	0.0000	0.00	0.5960	0.0000	0.00
3	3/13/2015	4.6970	4.4697	0.0000	0.6290	0.0000	-0.07	0.5940	0.0000	-0.07	0.5690	0.0000	-0.07	0.5670	0.0000	-0.07	0.5960	0.0000	-0.07
4	3/14/2015	4.7010	4.4701	0.0006	0.6310	0.0020	0.35	0.5940	0.0000	-0.15	0.5690	0.0000	-0.15	0.5670	0.0000	-0.15	0.5960	0.0000	-0.15
5	3/15/2015	4.7010	4.4701	0.0006	0.6310	0.0020	0.28	0.5950	0.0010	0.08	0.5690	0.0000	-0.12	0.5680	0.0010	0.08	0.5970	0.0010	0.08
6	3/16/2015	4.7030	4.4703	0.0008	0.6310	0.0020	0.20	0.5950	0.0010	0.03	0.5690	0.0000	-0.13	0.5680	0.0010	0.03	0.5970	0.0010	0.03
7	3/17/2015	4.7030	4.4703	0.0008	0.6310	0.0020	0.17	0.5950	0.0010	0.03	0.5690	0.0000	-0.11	0.5680	0.0010	0.03	0.5970	0.0010	0.03
8	3/18/2015	4.7070	4.4707	0.0012	0.6310	0.0020	0.10	0.5950	0.0010	-0.02	0.5700	0.0010	-0.02	0.5690	0.0020	0.10	0.5980	0.0020	0.10
9	3/19/2015	4.7030	4.4703	0.0008	0.6310	0.0020	0.13	0.5950	0.0010	0.02	0.5690	0.0000	-0.09	0.5690	0.0020	0.13	0.5970	0.0010	0.02
10	3/20/2015	4.7040	4.4704	0.0009	0.6310	0.0020	0.11	0.5950	0.0010	0.01	0.5690	0.0000	-0.09	0.5690	0.0020	0.11	0.5970	0.0010	0.01
14	3/24/2015	4.7090	4.4709	0.0014	0.6320	0.0030	0.11	0.5950	0.0010	-0.03	0.5700	0.0010	-0.03	0.5700	0.0030	0.11	0.5980	0.0020	0.04
18	3/28/2015	4.7090	4.4709	0.0014	0.6320	0.0030	0.09	0.5950	0.0010	-0.02	0.5700	0.0010	-0.02	0.5700	0.0030	0.09	0.5980	0.0020	0.03
22	4/1/2015	4.7090	4.4709	0.0014	0.6320	0.0030	0.07	0.5960	0.0020	0.03	0.5710	0.0020	0.03	0.5710	0.0040	0.12	0.5980	0.0020	0.03
26	4/5/2015	4.7040	4.4704	0.0009	0.6320	0.0030	0.08	0.5950	0.0010	0.00	0.5710	0.0020	0.04	0.5710	0.0040	0.12	0.5980	0.0020	0.04
30	4/9/2015	4.7510	4.4751	0.0056	0.6350	0.0060	0.01	0.6000	0.0060	0.01	0.5750	0.0060	0.01	0.5750	0.0080	0.08	0.6020	0.0060	0.01

S-6 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-7 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-8 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-9 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)	S-10 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, WT GAIN (Mg)
0.5890	++++++	0.5620	0.5620	++++++	0.5630	0.5630	++++++	0.5680	0.5680	++++++	0.5940	0.5940	++++++	0.5940
0.5920	0.0000	0.00	0.5650	0.0000	0.00	0.5650	0.0000	0.00	0.5710	0.0000	0.00	0.5970	0.0000	0.00
0.5930	0.0010	0.27	0.5650	0.0000	-0.07	0.5650	0.0000	-0.07	0.5710	0.0000	-0.07	0.5980	0.0010	0.27
0.5920	0.0000	-0.15	0.5650	0.0000	-0.15	0.5650	0.0000	-0.15	0.5720	0.0010	0.10	0.5990	0.0020	0.35
0.5920	0.0000	-0.12	0.5650	0.0000	-0.12	0.5650	0.0000	-0.12	0.5720	0.0010	0.08	0.5990	0.0020	0.28
0.5920	0.0000	-0.13	0.5650	0.0000	-0.13	0.5650	0.0000	-0.13	0.5720	0.0010	0.03	0.5990	0.0020	0.20
0.5920	0.0000	-0.11	0.5650	0.0000	-0.11	0.5650	0.0000	-0.11	0.5720	0.0010	0.03	0.6000	0.0030	0.31
0.5920	0.0000	-0.15	0.5660	0.0010	-0.02	0.5660	0.0010	-0.02	0.5730	0.0020	0.10	0.6010	0.0040	0.35
0.5920	0.0000	-0.09	0.5650	0.0000	-0.09	0.5650	0.0000	-0.09	0.5720	0.0010	0.02	0.6010	0.0040	0.36
0.5930	0.0010	0.01	0.5650	0.0000	-0.09	0.5650	0.0000	-0.09	0.5730	0.0020	0.11	0.6020	0.0050	0.41
0.5930	0.0010	-0.03	0.5660	0.0010	-0.03	0.5660	0.0010	-0.03	0.5740	0.0030	0.11	0.6040	0.0070	0.40
0.5930	0.0010	-0.02	0.5660	0.0010	-0.02	0.5660	0.0010	-0.02	0.5740	0.0030	0.09	0.6050	0.0080	0.37
0.5940	0.0020	0.03	0.5670	0.0020	0.03	0.5670	0.0020	0.03	0.5750	0.0040	0.12	0.6050	0.0080	0.30
0.5943	0.0023	0.05	0.5670	0.0020	0.04	0.5670	0.0020	0.04	0.5750	0.0040	0.12	0.6050	0.0080	0.27
0.5970	0.0050	-0.02	0.5700	0.0050	-0.02	0.5710	0.0060	0.01	0.5800	0.0090	0.11	0.6100	0.0130	0.25