



## 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#7015 Class A 1-Year Dating Large Blister with Class A 1-Year Dating Laser Label HCL#6121 - Lot# S126483** 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

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Dated: April, May, June 2015

USP Package Testing March/April 2015  
HCL#7015 Class A 1-Year Dating Large Blister  
Lidding:HCL#6121-Class A 1-Yr Dating Large Label - Lot #: S126483

Test Pkg

	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	24-Mar	28-Mar	1-Apr	5-Apr	9-Apr
<b>Initial Wt.</b>	1.0840	1.0880	1.0880	1.0880	1.0880	1.0880	1.0880	1.0880	1.0890	1.0890	1.0920	1.0920	1.0920	1.0950	1.0950
1	1.1550	1.1590	1.1590	1.1590	1.1590	1.1590	1.1590	1.1590	1.1590	1.1590	1.1620	1.1620	1.1620	1.1650	1.1650
2	1.0950	1.0990	1.0990	1.0990	1.0990	1.0990	1.0990	1.0990	1.0990	1.0990	1.1010	1.1010	1.1020	1.1040	1.1040
3	1.1440	1.1480	1.1490	1.1480	1.1480	1.1480	1.1480	1.1480	1.1490	1.1490	1.1510	1.1510	1.1520	1.1540	1.1540
4	1.1500	1.1540	1.1540	1.1540	1.1540	1.1540	1.1540	1.1540	1.1540	1.1540	1.1560	1.1560	1.1560	1.1570	1.1580
5	1.1500	1.1550	1.1550	1.1550	1.1550	1.1550	1.1550	1.1550	1.1550	1.1550	1.1580	1.1580	1.1580	1.1590	1.1600
6	1.1460	1.1500	1.1500	1.1510	1.1510	1.1510	1.1510	1.1520	1.1520	1.1520	1.1540	1.1540	1.1550	1.1570	1.1570
7	1.1870	1.1910	1.1910	1.1910	1.1910	1.1910	1.1920	1.1920	1.1920	1.1920	1.1940	1.1940	1.1950	1.1970	1.1970
8	1.1340	1.1370	1.1370	1.1380	1.1380	1.1380	1.1380	1.1380	1.1380	1.1380	1.1400	1.1400	1.1410	1.1430	1.1440
9	1.1440	1.1490	1.1490	1.1490	1.1490	1.1490	1.1490	1.1490	1.1490	1.1490	1.1510	1.1520	1.1530	1.1550	1.1560
10															

Control

	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	24-Mar	28-Mar	1-Apr	5-Apr	9-Apr
<b>Initial Wt.</b>	0.7960	0.8000	0.8000	0.8000	0.8010	0.8010	0.8010	0.8020	0.8020	0.8020	0.8040	0.8040	0.8050	0.8070	0.8070
1	0.7480	0.7520	0.7520	0.7520	0.7520	0.7520	0.7520	0.7520	0.7520	0.7520	0.7560	0.7560	0.7560	0.7560	0.7560
2	0.7490	0.7540	0.7540	0.7540	0.7540	0.7540	0.7540	0.7540	0.7550	0.7550	0.7570	0.7570	0.7570	0.7570	0.7570
3	0.7410	0.7460	0.7460	0.7460	0.7460	0.7460	0.7460	0.7460	0.7460	0.7460	0.7480	0.7480	0.7490	0.7490	0.7490
4	0.7410	0.7460	0.7460	0.7470	0.7470	0.7470	0.7470	0.7470	0.7470	0.7470	0.7480	0.7480	0.7490	0.7490	0.7490
5	0.7380	0.7410	0.7420	0.7430	0.7430	0.7430	0.7430	0.7430	0.7430	0.7430	0.7450	0.7450	0.7450	0.7450	0.7450
6	0.7440	0.7480	0.7480	0.7480	0.7480	0.7480	0.7490	0.7490	0.7490	0.7490	0.7500	0.7500	0.7500	0.7500	0.7510
7	0.7490	0.7520	0.7520	0.7530	0.7530	0.7530	0.7540	0.7540	0.7540	0.7540	0.7550	0.7550	0.7550	0.7560	0.7560
8	0.7390	0.7420	0.7420	0.7430	0.7430	0.7440	0.7440	0.7440	0.7440	0.7440	0.7450	0.7450	0.7450	0.7470	0.7470
9	0.7800	0.7830	0.7830	0.7840	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7870	0.7870	0.7870	0.7870	0.7870
10															
<b>Sum</b>	7.5250	7.5640	7.5650	7.5700	7.5720	7.5730	7.5750	7.5760	7.5770	7.5770	7.5950	7.5950	7.5980	7.6030	7.6040
<b>Ave</b>	0.7525	0.7564	0.7565	0.7570	0.7572	0.7573	0.7575	0.7576	0.7577	0.7577	0.7595	0.7595	0.7598	0.7603	0.7604

USP Package Testing March/April 2015

HCL#7015 Class A 1-Year Dating Large Blister

Lidding:HCL#:6121-Class A 1-Yr Dating Large Label - Lot #: S126483

(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, GAIN (Mg)	S-2 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-3 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-4 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-5 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)
1	3/11/2015	7.5250	0.7525	+++++	1.0840	+++++	0.0000	1.1550	+++++	0.0000	1.0950	+++++	0.0000	1.1440	+++++	0.0000	1.1500	+++++	0.0000
2	3/12/2015	7.5640	0.7564	0.0000	1.0880	0.0000	0.0000	1.1590	0.0000	0.0000	1.0990	0.0000	0.0000	1.1480	0.0000	0.0000	1.1540	0.0000	0.0000
3	3/13/2015	7.5650	0.7565	0.0001	1.0880	0.0000	-0.0300	1.1590	0.0000	-0.0300	1.0990	0.0000	-0.0300	1.1490	0.0010	0.3000	1.1540	0.0000	-0.0300
4	3/14/2015	7.5700	0.7570	0.0006	1.0880	0.0000	-0.1500	1.1590	0.0000	-0.1500	1.0990	0.0000	-0.1500	1.1480	0.0000	-0.1500	1.1540	0.0000	-0.1500
5	3/15/2015	7.5720	0.7572	0.0008	1.0880	0.0000	-0.1600	1.1590	0.0000	-0.1600	1.0990	0.0000	-0.1600	1.1480	0.0000	-0.1600	1.1540	0.0000	-0.1600
6	3/16/2015	7.5730	0.7573	0.0009	1.0880	0.0000	-0.1500	1.1590	0.0000	-0.1500	1.0990	0.0000	-0.1500	1.1480	0.0000	-0.1500	1.1540	0.0000	-0.1500
7	3/17/2015	7.5750	0.7575	0.0011	1.0880	0.0000	-0.1600	1.1590	0.0000	-0.1600	1.0990	0.0000	-0.1600	1.1480	0.0000	-0.1600	1.1540	0.0000	-0.1600
8	3/18/2015	7.5760	0.7576	0.0012	1.0880	0.0000	-0.1500	1.1590	0.0000	-0.1500	1.0990	0.0000	-0.1500	1.1480	0.0000	-0.1500	1.1540	0.0000	-0.1500
9	3/19/2015	7.5770	0.7577	0.0013	1.0890	0.0010	-0.0300	1.1590	0.0000	-0.0300	1.0990	0.0000	-0.0300	1.1490	0.0010	-0.0300	1.1540	0.0000	-0.0300
10	3/20/2015	7.5770	0.7577	0.0013	1.0890	0.0010	-0.0300	1.1590	0.0000	-0.0300	1.0990	0.0000	-0.0300	1.1490	0.0010	-0.0300	1.1540	0.0000	-0.0300
14	3/24/2015	7.5950	0.7595	0.0031	1.0920	0.0040	0.0600	1.1620	0.0030	0.0600	1.1010	0.0020	-0.0800	1.1510	0.0030	-0.0100	1.1560	0.0020	-0.0800
18	3/28/2015	7.5950	0.7595	0.0031	1.0920	0.0040	0.0500	1.1620	0.0030	0.0500	1.1010	0.0020	-0.0600	1.1510	0.0030	-0.0100	1.1560	0.0020	-0.0600
22	4/1/2015	7.5980	0.7598	0.0034	1.0920	0.0040	0.0300	1.1620	0.0030	0.0300	1.1020	0.0030	-0.0200	1.1520	0.0040	0.0300	1.1560	0.0020	-0.0600
26	4/5/2015	7.6030	0.7603	0.0039	1.0950	0.0070	0.1200	1.1650	0.0060	0.0800	1.1040	0.0050	0.0400	1.1540	0.0060	0.0800	1.1570	0.0030	-0.0300
30	4/9/2015	7.6040	0.7604	0.0040	1.0950	0.0070	0.1000	1.1650	0.0060	0.0700	1.1040	0.0050	0.0300	1.1540	0.0060	0.0700	1.1580	0.0040	0.0000

S-6 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-7 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-8 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-9 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)	S-10 TEST WT	DIFF = (Wf-Wi)	PER DAY MOIST, GAIN (Mg)
1.1500	+++++	0.0000	1.1460	+++++	0.0000	1.1870	+++++	0.0000	1.1340	+++++	0.0000	1.1440	+++++	0.0000
1.1550	0.0000	0.0000	1.1500	0.0000	0.0000	1.1910	0.0000	0.0000	1.1370	0.0000	0.0000	1.1490	0.0000	0.0000
1.1550	0.0000	-0.0300	1.1500	0.0000	-0.0300	1.1910	0.0000	-0.0300	1.1370	0.0000	-0.0300	1.1490	0.0000	-0.0300
1.1550	0.0000	-0.1500	1.1510	0.0010	0.1000	1.1910	0.0000	0.1000	1.1380	0.0010	0.1000	1.1490	0.0000	-0.1500
1.1550	0.0000	-0.1600	1.1510	0.0010	0.0400	1.1910	0.0000	-0.1600	1.1380	0.0010	0.0400	1.1490	0.0000	-0.1600
1.1550	0.0000	-0.1500	1.1510	0.0010	0.0200	1.1920	0.0010	0.0200	1.1380	0.0010	0.0200	1.1490	0.0000	-0.1500
1.1550	0.0000	-0.1600	1.1510	0.0010	-0.0100	1.1920	0.0010	-0.0100	1.1380	0.0010	-0.0100	1.1490	0.0000	-0.1600
1.1550	0.0000	-0.1500	1.1520	0.0020	0.1000	1.1920	0.0010	0.1000	1.1380	0.0010	0.1000	1.1490	0.0000	-0.1500
1.1550	0.0000	-0.1400	1.1520	0.0020	0.0800	1.1920	0.0010	0.0800	1.1380	0.0010	0.0800	1.1490	0.0000	-0.1400
1.1550	0.0000	-0.1300	1.1520	0.0020	0.0700	1.1920	0.0010	0.0700	1.1380	0.0010	0.0700	1.1490	0.0000	-0.1300
1.1580	0.0030	-0.0100	1.1540	0.0040	0.0600	1.1940	0.0030	0.0600	1.1400	0.0030	0.0600	1.1510	0.0020	-0.0800
1.1580	0.0030	-0.0100	1.1540	0.0040	0.0500	1.1940	0.0030	0.0500	1.1400	0.0030	0.0500	1.1520	0.0030	-0.0100
1.1580	0.0030	-0.0200	1.1550	0.0050	0.0700	1.1950	0.0040	0.0700	1.1410	0.0040	0.0700	1.1530	0.0040	0.0300
1.1590	0.0040	0.0000	1.1570	0.0070	0.1200	1.1970	0.0060	0.0800	1.1430	0.0060	0.0800	1.1550	0.0060	0.0800
1.1600	0.0050	0.0300	1.1570	0.0070	0.1000	1.1970	0.0060	0.0700	1.1440	0.0070	0.1000	1.1560	0.0070	0.1000