



28 DAY CHEMICAL COMPATIBILITY TEST



NAPA SAE 5W30 MOTOR OIL

TEST REPORT: 08-1221

TESTING PERFORMED FOR:

CDF CORPORATION
77 Industrial Park Road
Plymouth, MA 02360

ATTN: Iris Kennedy

TESTING PERFORMED BY:

TEN-E PACKAGING SERVICES, INC.
1666 County Road 74
Newport, MN 55055
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August 15, 2008



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OBJECTIVE

To subject the CDF Corporation 10 Liter Cheertainer Bag Packaging filled with **NAPA SAE 5W30 Motor Oil** to chemical compatibility and rate of permeation testing. Testing will be conducted under the guidelines of the Department of Transportation's Title 49 Code of Federal Regulations (CFR); Appendix B to Part 173, Test Method #2.

OVERALL SUMMARY OF RESULTS

The CDF Corporation Cheertainer Packaging filled with NAPA SAE 5W30 Motor Oil (regular & synthetic) met the Chemical Compatibility requirements outlined in Appendix B to Part 173 of the Department of Transportation's Title 49 Code of Federal Regulations



Sample #	% Weight Loss (Regular)	% Weight Loss (Synthetic)
1	0.154	0.168
2	0.152	0.168
3	0.153	0.168

Note: Maximum allowable weight loss: 2% based on DOT Appendix B test standards

TEST PROCEDURES & RESULTS

PART I: PERMEATION EVALUATION

SAMPLE SIZE:	TEST DURATION:
<ul style="list-style-type: none"> 3 Samples / Variable 	<ul style="list-style-type: none"> 28 Days
CONDITIONING:	FILL CAPACITY:
<ul style="list-style-type: none"> 122°C (50°F) 	<ul style="list-style-type: none"> Rated Capacity
CLOSURE APPLICATION TORQUE:	TEST PRODUCT
<ul style="list-style-type: none"> 19 In-Lbs. 	<ul style="list-style-type: none"> Motor Oil
TEST EQUIPMENT:	TEST DATES:
<ul style="list-style-type: none"> Vollrath Chamber #201 Sartorius 150 Lbs. Scale #107 	<ul style="list-style-type: none"> Start Date: July 10, 2008 Stop Date: August 7, 2008
EVALUATION FREQUENCY AND PROCEDURE:	
<ul style="list-style-type: none"> Samples were inspected weekly for evidence of cracking, crazing, swelling, etc. Weights were recorded at the start, 7 days, 14 days, 21 days and 28 days. 	

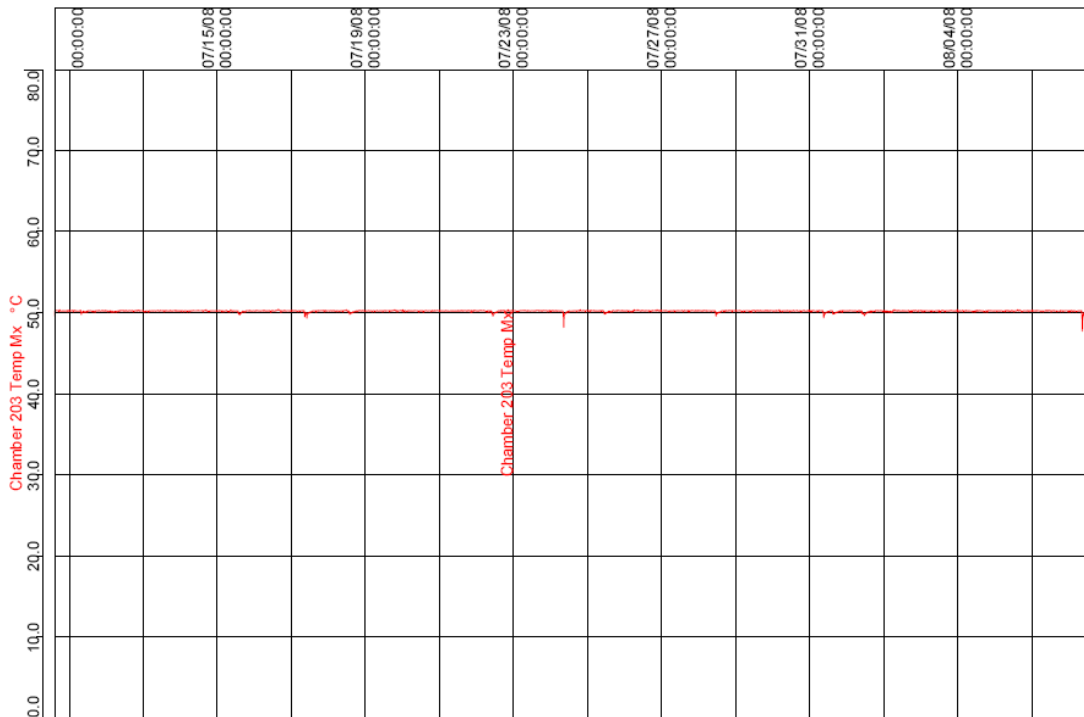
PERMEABILITY TEST SET-UP PHOTOS		OBSERVATIONS
		Samples were left upright throughout test.
Regular	Synthetic	

TEST PROCEDURES & RESULTS - REGULAR

PART I – PERMEATION EVALUATION
 Weight Change after days at 122* F (50°C)

Sample	Initial Weight (Grams)	7 Days (Grams)	14 Days (Grams)	21 Days (Grams)	28 Days (Grams)	% Weight Change (Loss) After 28 Days	Result
1	8,461	8,449	8,448	8,448	8,448	0.154	Pass
2	8,538	8,527	8,525	8,525	8,525	0.152	Pass
3	8,472	8,462	8,459	8,459	8,459	0.153	Pass




REPRESENTATIVE CHAMBER TEMPERATURE GRAPH



CRITERIA FOR PASSING

A Container Shall be Considered to Have Passed if:

- There is no visible evidence of permanent deformation due to vapor pressure build up or collapse of walls, deterioration, swelling, crazing, cracking, excessive corrosion, oxidation, embrittlement, leakage, rupture or other defects likely to cause premature failure or a hazardous condition.
- For materials meeting the definition of a poison, the rate of permeation does not exceed 0.5% determined over the test period. For all other hazardous materials, the rate of permeation does not exceed 2% determined over the test period.

7 DAY PHOTOS			OBSERVATIONS
			Weight loss in the range of 10 to 12 grams was experienced by the containers. There was no visible evidence of deformation to the containers.

14-DAY OBSERVATIONS
Additional weight loss in the range of 1 to 3 grams was experienced by the containers. There was no visible evidence of deformation to the containers.

21-DAY OBSERVATIONS
No additional weight loss or evidence of deformation to the containers.

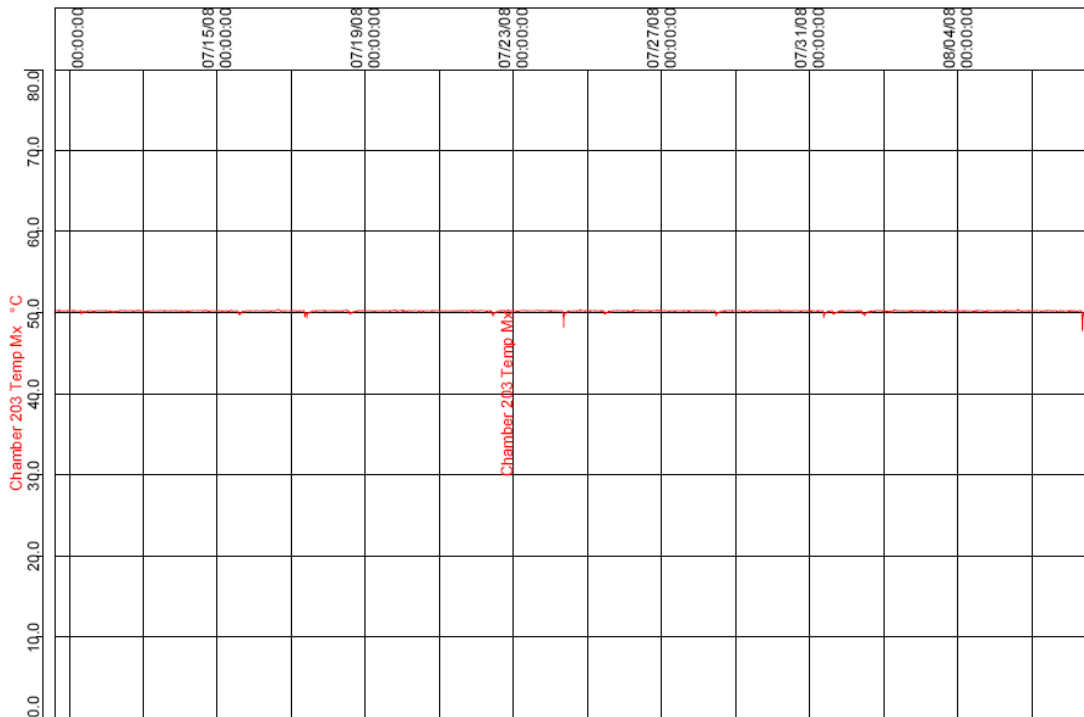
28 DAY PHOTOS			OBSERVATIONS
			No additional weight loss or evidence of deformation to the containers.

TEST PROCEDURES & RESULTS - SYNTHETIC

PART I – PERMEATION EVALUATION
 Weight Change after days at 122° F (50°C)

Sample	Initial Weight (Grams)	7 Days (Grams)	14 Days (Grams)	21 Days (Grams)	28 Days (Grams)	% Weight Change (Loss) After 28 Days	Result
1	8,344	8,330	8,330	8,330	8,330	0.168	Pass
2	8,342	8,328	8,328	8,328	8,328	0.168	Pass
3	8,344	8,330	8,330	8,330	8,330	0.168	Pass




REPRESENTATIVE CHAMBER TEMPERATURE GRAPH



CRITERIA FOR PASSING

A Container Shall be Considered to Have Passed if:

- There is no visible evidence of permanent deformation due to vapor pressure build up or collapse of walls, deterioration, swelling, crazing, cracking, excessive corrosion, oxidation, embrittlement, leakage, rupture or other defects likely to cause premature failure or a hazardous condition.
- For materials meeting the definition of a poison, the rate of permeation does not exceed 0.5% determined over the test period. For all other hazardous materials, the rate of permeation does not exceed 2% determined over the test period.

7 DAY PHOTOS			OBSERVATIONS
			Each container lost 14 grams during the first seven days. There was no visible evidence of deformation.

14-DAY OBSERVATIONS
No additional weight loss or evidence of deformation to the containers.

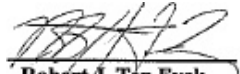
21-DAY OBSERVATIONS
No additional weight loss or evidence of deformation to the containers.

28 DAY PHOTOS			OBSERVATIONS
			No additional weight loss or evidence of deformation to the containers.

DISCLAIMER OF WARRANTIES

TEN-E PACKAGING SERVICES, INC. certifies that the previously described testing services have been performed in accordance with standard good laboratory practices and under the guidelines of the test procedures outlined in the Department of Transportation's Title 49 CFR; Part 173 Appendix B. **ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE OR FIT FOR A PARTICULAR PURPOSE, ARE DISCLAIMED.** In no event shall TEN-E Packaging Services, Inc. liability exceed the total amount paid by **CDF Corporation** for services rendered.

In the event of future changes to the above referenced test standard, it is the responsibility of **CDF Corporation** to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.



Robert J. Ten Eyck
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