PLAINTIFF'S EXHIBIT
UC-5309

MILITARY QUALIFICATION TEST REPORT NO. 4

BMMA-5441 BK 25

By

A. W. Korenyi

JANUARY 1970

UNION CARBIDE CORPORATION
Chemicals & Plastics
Bound Brook, New Jersey

QUALIFICATION TEST REPORT NO. 4
BMMA-5441 BK 25

Specification

MIL-M-14F dated 15 January 1960, "Molding Plastics and Molded Plastics Parts, Thermosetting."

Classification: Phenolis Resin Type CFG

Manufacturer

Union Carbide Corporation
Chemicals & Plastics
270 Park Avenue
New York, New York

Phenolic Manufacturing Plant
1 River Road
Bound Brook, New Jersey

Testing Authorization

Letter from Dept. of the Navy, Naval Ship Engineering Center, Hyattsville, Maryland dated 26 November 1969. Reference 4123/14 Ser 1363-6124B.

Testing Laboratories

1. Union Carbide Corporation
   Chemicals & Plastics Laboratory
   1 River Road
   Bound Brook, New Jersey

2. United States Testing Company
   1415 Park Avenue
   Hoboken, New Jersey

Purpose of Tests

Qualification

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ABSTRACT

This report summarizes the results of the tests which have been conducted on Union Carbide Corporation's phenolic molding material designated BMMA-5441 BK 25. The material was tested under MIL-M-14F Military Specification Type CFG.

All of the physical tests, including those for water absorption, tensile, flexural and compressive strengths, izod impact strength, heat distortion temperature, ignition time and burning time were completed satisfactorily. Three out of five individual samples on flexural strength failed to meet the specification requirements but the average of the five samples met the 9000 psi minimum average. One out of five individual samples on tensile strength failed to meet the specification requirements but the average of the five samples met the 6000 psi minimum average. All other individual samples passed the required physical tests satisfactorily.

All Dielectric Breakdown tests were completed satisfactorily and all individual specimens met the specification requirements.

Two out of three individual samples tested for dielectric strength, short time at E 48/50 + C 96/23/50 failed to meet the specification requirements of 300 volts/mil minimum average and the average of the three tests was slightly below the required value. The balance of the dielectric strength tests at both E 48/50 + C 96/23/50 and E 48/50 + D 48/50 more than adequately met the specification requirements and all individual specimens were within limits.

The samples tested during this qualification were molded in August 1969 and our preliminary testing at that time showed Dielectric Strength, short time at E 48/50 + C 96/23/50 to be satisfactory. Values of 299, 303 and 325 volts/mil which averaged 309 volts/mil were obtained. The average value of 297 volts/mil obtained during these qualification tests represents a 4% testing difference which is felt to be most insignificant. In view of the fact that this test is not one of the routine batch acceptance tests which were all satisfactory, we solicit approval.

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TEST EQUIPMENT

Property to be Tested	Test Method Specification, LP-406	Modified by	Equipment	Accuracy	Date & Place of Calibration	Frequency of Calibration
Compressive strength, Endwise	1021.1	--	Baldwin Universal Tester Type BTE, Serial No. 36035	0.5%	12/17/68[1]	Annual
Flexural Strength	1031.1	4.5.2.2	Baldwin Universal Tester Type PTE, Serial No. 040-2178	0.5%	12/19/68[1]	Annual
Tensile Strength	1012	--	"	0.5%	12/19/68[1]	Annual
Dielectric Strength	4031	4.5.2.1	Sovenson & Co., Inc.;	"		
Dielectric Breakdown	4031	4.5.2.1.3	10 KVA power supply, Model 7150-10, property No. 6563-408	1%	10/23/69[2]	Annual
Impact Strength, Side	1071	--	Baldwin Impact Tester Serial No. 1022	1%	10/17/69[3]	Annual
Water Absorption	7031	4.5.2.4	Mettler Instrument Corp. Gram-Atic Balance, Model 1-910 Property No. 6040-513	1 mg	9/16/69[3]	Semi-Annual
Heat Distortion Temp., Side	2011.1	4.5.2.3	Tinius Olsen Five Specimen Deflection Temp. Testing Machine, Property No. 6563-280	1%	1/29/69[3]	Annual

1. By Five Star Field Service Co., Inc., 407 Market St., Chester, Pa. in UCC Laboratories, Bound Brook, N. J.
2. By Electrical Instrument Service Co., Mt. Vernon, N. Y. in UCC Laboratories, Bound Brook, N. J.
3. By laboratory personnel in UCC Laboratories, Bound Brook, N. J.

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COMPRESSIVE STRENGTH

WC-97F F

SAMPLE DESIGNAT.	TESTED BY	CHECKED BY	DATE
BMMA 5441 BLK 25	L. Woods	W.A. Cagle	1-16-70

Codes: 97E - 330 ✓ 97F, Comp. Str. Only - 333
Comp. Str. & Modulus - 331
Comp. Str., Modulus & Offset Yield - 332

Decimal Position Indicated By V

SAMPLE IDENT.	WIDTH W	DIA., D or THICK. T	LOAD P	P1	SPAN S	Y	OFFSET YIELD Py	COMP. STR. C	MODULUS OF ELAS. E
1 BMMA-	5.09	5.08	7.900					31 000	
2 5441-	5.09	5.08	7.920					30 200	
3 BLK	5.09	5.09	7.905					30 500	
4 25	5.09	5.08	7.920					30 500	
5	5.09	5.06	7.803					31 200	
								AVERAGE	30700
CONDITIONING		ELAS-50			1-9-70			#1	
IN		ELAS-50			1-11-70			7900 / .509 X .508	= 31000
OUT		ELAS-50			1-15-70			#2	
IN	5.09	5.08			1-11-70			7820 / .509 X .508	= 30200
TENSILE	5.09	ELAS-50			1-15-70			#3	
								7905 / .509 X .509	= 30500
FLEXURE		10.00			1-16-70			#4	
FLEXURE			3603					7820 / .509 X .504	= 30500
TEMPERATURE			72°F					#5	
HUMIDITY			49%					8030 / .509 X .506	= 31200

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E 48/50 IN 11:59 AM 1/11/70
E 48/50 Out 11:59 PM 1/11/70
C 96/23/50 IN 11:59 PM 1/11/70
READY TO TEST 11:59 PM 1/15/70

LP 406 METHOD 4031

DC 77 A/6/1

-441-238

Method Data Sheet

ELECTRIC STRENGTH

sted By William L. Pinal	Date 1/16/70	Temp. 24 °C	Tested in OIL
ecked By [illegible]	Date 1/16/70	Conditioning	E 48/50 + C 96/23/50

Sample Identification	Type of Test	Diameter of Electrodes inches.	Breakdown Voltage,	Corrected Breakdown Voltage, V	Thickness, Mils T	Volts/Mil V_o	Thickness, Correction Factor F	Volts/Mil Corrected for in., V_1	Remarks
BMMA 5441	S/t	1" #24	38,000	39,000	1.25	312			500 Volts per Sec.
B/K .25		.25	35,000	36,000	127	283			
		26	36,000	37,000	125	296			
			AVG	37,300	AVG	297			
		39,000 / 125	= 312	36,000 / 127	= 283	37,000 / 125	= 296		

$V_o = \frac{V}{T}$ $V_1 = V_o \times F$

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E 48/50 IN 11:59 PM 1/9/70
E 48/50 OUT 11:59 PM 1/11/70
C 96/23/50 IN 11:59 PM 1/11/70
READY TO TEST 11:59 PM 1/15/70

LD 406 METHOD 4C

MC 77 1/7/
Method
Data Sheet

M1-238

ELECTRIC STRENGTH

ed By [illegible] L. Price	Date 1/16/70	Temp. 24°C	Tested in Oil
ked By [illegible]	Date 1/16/70	Conditioning E 48/50 + C 96/23/50	

Sample Identification	Type of Test	Diameter of Electrodes: ____ inches	Breakdown Voltage,	Corrected Breakdown Voltage, V	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ____ in., V_1	Remarks
WH 5441	S/S	1" DIA	36,000	37,000	126	294			STARTED AT 18,000
BK25		25A	36,000	37,000	126	294			VOLTS
		26A	36,000	37,000	127	291			INCREASED IN 2000
		27	36,000	37,000	125	296			VOLT STEPS EACH
		28	38,000	39,000	126	310			MINUTE TO BREAKDOWN
			AVG	37,400	AVG	297			
		37,000 / 126	= 294	37,000 / 127	= 291	37,000 / 125	= 296		
		39,000 / 126	= 310						

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E 48/50 IN 10:00 AM 1/12/70
D 48/50 IN 10:00 AM 1/14/70
READY TO TEST 10:00 AM 1/16/70

LP 406 METHOD 4031

-441-238
ELECTRIC STRENGTH

MC 77 A/3/1
Method
Data Sheet

sted By William L. Reinl	Date 1/16/70	Temp. 50°C	Tested in Oil
ecked By [illegible]	Date 1/16/70	Conditioning	E 48/50 + D 48/50

Sample Identification	Type of Test	Diameter of Electrodes ____ inches.	Breakdown Voltage,	Corrected Breakdown Voltage, V	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ____ in., V_1	Remarks
BMMA 5441	S/T	1" 29	32,000	33,000	127	260			500 VOLTS PER SEC
BK 25		30	33,000	34,000	127	268			
		31	32,000	33,000	125	264			
			AVG	33,300	AVG	264			
		33,000	260	34,000	268	32,000	264		
		127		127		125			

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E 48/50 IN 10:00AM 1/12/70
D 48/50 IN 10:00AM 1/14/70
READY TO TEST 10:00AM 1/16/70

LP406 METHOD 4031

HC 77 4/4/1
Method
Data Sheet

.041-238
ELECTRIC STRENGTH

ted By William L. Pinak	Date 1/16/70	Temp. 50°C	Tested in OIL
ecked By [illegible]	Date 1/16/70	Conditioning E 48/50 + D 48/50	

Sample Identification	Type of Test	Diameter of Electrodes inches	Breakdown Voltage,	Corrected Breakdown Voltage, V	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ____in., V_1	Remarks
BMP 5441	S/S	1" #18	18,000	19,000	127	150			STARTED AT 16,000
BK 25		19	18,000	19,000	122	156			VOLTS.
		20	18,000	19,000	126	151			INCREASED IN 2000
		21	18,000	19,000	126	151			VOLT STEPS FAC
		22	18,000	19,000	126	151			1 MINUTE TO BREAKDOWN
			AVG	19,000	AVG	152			
		19,000 / 127	= 150	19,000 / 122	= 156	19,000 / 126	= 151		

$V = V_o \times F$

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E 48/50 IN 11:59 PM 1/9/70
E 48/50 out 11:59 PM 1/11/70
C 96/23/50 IN 11:59 PM 1/11/70
Ready To Test 11:59 PM 1/15/70

LP 406 METHOD 431

EC 71 A-18/1
Method
Data Sheet

1-441-238

ELECTRIC STRENGTH

Tested By William L. Perrault. Date 1/16/70 Temp. 24°C Tested in Oil

Checked By [illegible] Date 1/16/70 Conditioning E 48/50 + C 96/23/50

Sample Identification	Type of Test	Diameter of Electrodes ____ inches	Breakdown Voltage, Kilovolts	Corrected Breakdown Voltage, Kilovolts	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ____ in., V_1	Remarks
BMMA 5441	S/T	pins #5	46	47	.505				500 volts per sec.
BK 25			66	67	.503				
			59	60	.501				
			448	58					

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E 48/50 IN 11:5, PM 1/9/70
E 48/50 OUT 11:59 1/11/70
C 96/23/50 IN 11:59 PM 1/11/70
READY TO TEST 11:59 PM 1/15/70

LP406 METHOD 405 (MC 77A181) Method Data Sheet

MIL-238

ELECTRIC STRENGTH

Tested By [illegible] L. [illegible] Date 1/16/70 Temp. 24°C Tested in OIL

Checked By [illegible] Date 1/16/70 Conditioning E 48/50 + C. 96/23/50

Sample Identification	Type of Test	Diameter of Electrodes ____ inches	Breakdown Voltage, Kilovolts	Corrected Breakdown Voltage, Kilovolts	Thickness, Mils T	Volts/Mil V_0	Thickness Correction Factor F	Volts/Mil Corrected for ____ in., V_1	Remarks
MMA 5441 BIK 25	S/S	PINS #6	53.5	57.5	501				STARTED AT 28.5 Kilo
			53.5	54.5	503				Volts
			63.5	64.5	495				INCREASED IN 500
			Avg	57.8					Volt STEPS EACH
									MINUTE TO BREAKDOWN
MMA 5441 BIK 25	S/S	PINS #7	58.5	59.5	504				
			53.5	54.5	504				
			63.5	64.5	500				
			Avg	59.5					
MMA 5441 BIK 25	S/S	PINS #8	53.5	54.5	499				
			58.5	59.5	501				
			63.5	64.5	495				
			Avg	59.5					

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E 48/50 IN 10:00 AM 1/12/70
D 48/50 IN 10:00 AM 1/14/70
READY TO TEST - 10:00 AM 1/16/70

LP 406 METHOD 4036

UC 77 A 5/1
Method
Data Sheet

-441-238

ELECTRIC STRENGTH

ted By William L. Black	Date 1/16/70	Temp. 50°C	Tested in Oil
ecked By [illegible]	Date 1/16/70	Conditioning E 48/50 + D 48/50	

Sample Identification	Type of Test	Diameter of Electrodes ____ Inches.	Breakdown Voltage, Kilovolts	Corrected Breakdown Voltage, Kilovolts	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ____ In., V_1	Remarks
BMA 5441	S/H	PINS #1	39	41.0	505				500 VOLTS PER SEC.
BK 25			41	42	505				
			41	42	507				
			AVG	41.3					

V $V_o = V$ Y F

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E 48/50 IN 10:00 AM 1/12/70
D 48/50 IN 10:00 AM 1/14/70
READY TO TEST 10:00 AM 1/16/70

LP406 METHOD 31 (MC 77 A/S/1 Method Data Sheet)

DA-441-238

DIELECTRIC STRENGTH

Tested By William L. Spinelli | Date 1/16/70 | Temp. 50°C | Tested in Oil

Checked By JJF 1/16/70 | Date 1/16/70 | Conditioning E 48/50 + D 48/50

Sample Identification	Type of Test	Diameter of Electrodes, inches	Breakdown Voltage, Kilo Volts	Corrected Breakdown Voltage, KiloVolts	Thickness, Mils T	Volts/Mil V_o	Thickness Correction Factor F	Volts/Mil Corrected for ___ in., V_1	Remarks
Bmma 5441 BK 25	S/S	PINS #2	22	23	506				STARTED AT 20 KILO VOLTS
			22	23	504				INCREASED IN 2000 VOLT STEPS EACH MINUTE TO BREAKDOWN
			22	23	506				
			AVG	23					
Bmma 5441 BK25	S/S	pins #3	24	25	505				
			24	25	506				
			26	27	504				
			AVG	25.8					
Bmma 5441 BK 25	S/S	pins #4	24	25	504				
			22	23	504				
			24	25	505				
			AVG	24.3					

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ESTABLISHED 1880

United States Testing Company, Inc.

HOBOKEN, N. J. 07030
201-792-2400

REPORT

NUMBER
39078
(Refer to this number)

January 21, 1970

Client: Union Carbide Corp.
River Road
Boundbrook, New Jersey 08805

Subject: Two (2) samples of thermosetting molding plastic (5 molded test bars ½" x ½" x 5" each) sampled and identified by Client for specification tests. P. O. #312-49048

Sample Identification

#1 - BMMA - 5441 Black 25 (Type CFG)
#2 - BMGA - 3700 Green 155 (Type MFH)

Test Procedure:

The submitted samples were tested for flame resistance in accordanc with the procedures specified in Military Specifications MIL-M-14F Amendment 5 dated 30 December 1965.
"Molding Plastics and Molded Plastic Parts, Thermosetting."

Test Monitored On A Surveillance Basis By _____
Howard Katzman, DCAS
QAR, S3101A

The appearance of the defense contract administration services quality assurance representative's signature on this report does not indicate that the material or produce or test results are acceptable to the government for qualification of the product but only indicates the factuality of the data contained herein.

Summary:

The test results listed herein show that the submitted samples meet the requirements of MIL-M-14F for flame resistance for the types indicated.

Supervised by P.H. Monsarrat

United States Testing Company, Inc.

BY F. Razzuoli

bm

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C-11 AR10-11.66 5 LOOSE

UNITED STATES TESTING COMPANY, INC.

Union Carbide Corp. 39078

Test Results:

FLAME RESISTANCE

BMMA-5441 Black 25

Specimen	Ignition Time, Seconds	Burning Time, Seconds
1	122	183
2	126	151
3	143	159
4	130	174
5	144	154
Average	133	164
Type CFG Requirement	60 Minimum	270 Maximum
		BMMA-3200 GN155
1	220	111
2	200	92
3	196	86
4	208	84
5	185	78
Average	202	90
Type MFH Requirement	120 Minimum	150 Maximum

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FLEXURAL STRENGTH — WC-21A

Sample Designation: BMMA 5441 BK 25 | Tested By: J. Lorenz | Checked By: A.W. Adams, Jr. | Date: 1-16-70

Codes: 051 - Flex. Str. & Modulus; 052 - Yield Str. & Modulus; 053 - Flex. Str., Modulus, 13H-A; 054 - Flex. Str., Modulus, TPL

Decimal Position Indicated by V

Sample Ident.	Width B	Thickness D	Load or Yield P	Span L	P1	Y	Flexural Strength PSI	Area A	Pounds Per Inch PI	In. Defl. Per Inch I	Nominal Thickness N	Maximum Deflection
1	.501	.259	.53	4.0			9,310					
4	.501	.257	.52	4.0			9,280					
6	.501	.256	.49	4.0			8,710					
7	.501	.257	.50	4.0			8,910					
8	.501	.257	.50	4.0			8,920					
					Average =		9,010					

Flexural Strength

.501 × D² × P = L

3 × .501 × (.259)² × .53 = 5.310

3 × .501 × (.257)² × .52 = 5.280

3 × .501 × (.256)² × .49 = 4.910

3 × .501 × (.257)² × .50 = 5.010

3 × .501 × (.257)² × .50 = 5.020

Universal # 240-3178

Temperature = 72°F

Humidity = 49%

Tested = 9:50 AM 1-16-70

Load Range = 200 lb.

Speed = .10"/min.

Conditioning	E	H	T	C	H	Date
In	E	48/50		11:59	PM	1-9-70
Out	E	48/50		11:59	PM	1-11-70
In	C	96/23	50	11:59	PM	1-11-70
Ready to Test				11:59	PM	1-15-70

Flex Str = K_n P/D² L K_n = 3 L/W Modulus = P1/Y K_n = 13

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D4441-66

HEAT DISTORTION TEMPERATURE

WC-65
METHOD C
DATA SHEET

TESTED BY: Gawrelski | DATE: 1-16-70 | CHECKED BY: [illegible] | DATE: 1.16.70 | SPAN LENGTH, L: 4"

SAMPLE DESIGNATION	SPECIMEN NUMBER	WIDTH INCHES B	DEPTH INCHES D	BD^2	FIBER STRESS P.S.I. S	LOAD IN GRAMS G	AV. HEATING RATE °C. PER MIN.	IMMERSION MEDIUM	HEAT DISTORT. TEMP. °C.	REMARKS
BMMA 5441 BK 25	1	.505	.510		264	2513	2°C	silicone	177.6	Condition "A"
	2	.505	.510		264	2513	2°C	silicone	179.2	
	3	.505	.510		264	2513	2°C	silicone	179.6	
									178.7	avg'c
TESTER PROP #	USED 6563-280									

$P = \frac{2500^2}{3L}$

WHERE P = LOAD IN POUNDS

FOR 264 P.S.I. $G_{264} = KBD^2$

WHERE $K = 20{,}000$, $\frac{\text{GRAMS}}{\text{IN}^3}$

FOR 66 P.S.I. $G_{66} = K^1BD^2$

WHERE $K^1 = 5{,}000$

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FORM OR ... IZOD IMPACT

SAMPLE IDENTIFICATION	TESTED BY	CHECKED BY	DATE
BMMA 5441 BK 25 (SIDE)	J. Woods	W. H. Hayes Jr.	1-16-70

DECIMAL POSITION INDICATED BY V

SAMPLE IDENT.	NOTCH DEPTH THICK.	SCALE VALUE TO BREAK S	CORR. FACTOR D	RANGE R	READING WITH POINTER A	READING WITHOUT POINTER B	ENERGY TO BREAK PER INCH OF NOTCH EN
1 BMMA	.510	.200	.045	2	.050	.025	.304
2 5441	.509	.195	.045	2	.050	.025	.295
3 BK-25	.509	.190	.045	2	.050	.025	.285
4	.509	.195	.045	2	.050	.025	.295
5 (SIDE)	.509	.190	.045	2	.050	.025	.285
							AVERAGE .293

#1
(.200 - .045) / .510 X 2/2 = .30

#2
(.195 - .045) / .509 X 2/2 = .29

#3
(.190 - .045) / .509 X 2/2 = .28

#4
(.195 - .045) / .509 X 2/2 = .29

#5
(.190 - .045) / .509 X 2/2 = .28

CONDITIONING	E48/50 + C96/23/50
IN E48-50	11:59 P.M. 1-9-70
OUT E48-50	11:59 P.M. 1-11-70
IN C96/23/50	11:59 P.M. 1-11-70
READY TO TEST	11:59 P.M. 1-15-70
TESTED	10:30 A.M. 1-16-70
TESTER	BLI-1022
TEMPERATURE	72°F
HUMIDITY	49%

BA 441-152B

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WO 666

Sample Identification: BMMA 5441 BIK25 | Tested By: J. Mauney | Checked By: W. Mauney | Date: 1-16-70

Codes: 060 - Yield Str. | 061 - Yield Str., Elong. | 062 - Tensile Str., Elong. | 063 - Tensile Str., Elong., Modulus | 064 - 063 Plus TPL | 065 - Tensile Str., Elong, Yiled Str. | 066 - 065 Plus Elong. at Yield

Decimal Position Indicated By V

Sample Ident.	Width W	Thick T	Load P	Extension L_e	Span L_1	Y	Yield Load PY	Extension at Yield EY	TPL
6	1.004	.251	1740			59.0			
7	1.004	.252	1800			61.1			
8	1.005	.252	1750			59.4			
9	1.004	.252	1553			52.8			
10	1.004	.253	1510			51.4			
						Average	56.10		
Tensile Strength P							Universal	6.0 - .2178	
W T							Temperature	73°F	
#6	1.220		5,900				Humidity	49%	
1.004 X .251							Tested	11:25 AM	1-16-70
#7	1.220		7,110				Load Range	5000 lbs	
1.004 X .252							Speed	.05 in/min	
#8	1.230		6,050				Conditions	73°F 50%	
1.004 X .253							IN	73°F 50%	11:52 AM 1-9-70
#10	1.210		5,940				OUT	73°F 50%	11:55 AM 1-11-70
							IN	73°F 50%	11:57 AM 1-11-70
							Ready For Test		11:59 AM 1-13-70

Tens. Str. = $\frac{P}{WT}$ Mod. = $\frac{P_1 L_1}{}$ Elong. = $\frac{L_e}{}$ (100) TPL = $\frac{TPL}{}$ Yield Str. = Py

BA 1411-1710

Re Desiccator 23°C 3pm 1-13-70 10:10 out water @ 50°C oven

WATER ABSORPTION OF PLASTICS Desiccator 23°C 10AM 1-10-70

WC-78-A,

SAMPLE DESIGNATION	TESTED BY	CHECKED BY	DATE
BMMA 5441 BLK 25	[illegible]	[illegible] 1/16/70	1-12-70

CODES: 75A/a - 430
% WGT. CHANGE ONLY - 420

DECIMAL POSITION INDICATED BY V

SAMPLE IDENT.	CONDITIONED WEIGHT GRAMS W_1	WEIGHT AFTER IMMERSION GRAMS W_2	RECONDITIONED WEIGHT GRAMS W_3	~~WEIGHT DIFF~~	WT. INCR. % WATER ABSORBED
1 BMMA	3.7233	3.8310		#1 3.8310	.1072 x100
5441				3.7233	3.7233
				.1077	
2 BLK 25					
3	3.7615	3.8677		#2 3.9266	.1053 x100
				3.8203	3.8203
				.1053	
				#3 3.8677	.1062 x100
				3.7615	3.7615
				.1062	
					Avg. 1.1

Ea 330-24C

~~% Water Absorbed = $\frac{\text{Weight Diff}}{W_1}$ x 100~~

% Water Absorbed = $\frac{W_2 - W_1}{W_1}$ x 100

Union Carbide trial exhibit UC-5309: A. W. Korenyi, Military Qualification Test Report No. 4 on BMMA-5441 BK 25...
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COMPARATIVE DATA SHEET

PROPERTY	SPECIFICATION REQUIREMENTS MIL-M-14F, TYPE CFG	ACTUAL RESULTS, BMMA-5441 BK 25
Compressive Strength	25,000 psi (min. ave.)	30,700
Dielectric Strength		
E 48/50 + C 96/23/50, S/T	300 v/mil (min. ave.)	297
E 48/50 + C 96/23/50, S/S	200 v/mil (min. ave.)	297
E 48/50 + D 48/50, S/T	75 v/mil (min. ave.)	264
E 48/50 + D 48/50, S/S*	45 v/mil (min. ave.)	152
Dielectric Breakdown		
E 48/50 + C 96/23/50, S/T	-- KV	58
E 48/50 + C 96/23/50, S/S	30 KV (min. ave.)	58.9
E 48/50 + D 48/50, S/T	-- KV	41.3
E 48/50 + D 48/50, S/S	2.5 KV (min. ave.)	24.4
Flame Resistance:		
Ignition Time	60 sec. (min. ave.)	133
Burning Time	270 sec. (max. ave.)	164
Flexural Strength, face*	9000 psi (min. ave.)	9010
Heat Distortion Temperature, side	115 °C (min. ave.)	178.7
Impact Strength, side	0.24 (ft.-lbs./in. notch) (min. ave.)	0.293
Tensile Strength	6000 psi (min. ave.)	6610
Water Absorption*	3.0% (max. ave.)	1.21

*Identifies Batch Acceptance Tests

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CERTIFICATION BY TESTING LABORATORY

I hereby certify that the tests included in this report on BMMA-5441 BK 25 were performed in accordance with the requirements as set forth in the MIL-M-14F specifications, dated 15 January 1960, "Molding Plastics and Molded Plastic Parts, Thermosetting," Type CFG.

W. A. Shedden
Laboratory Supervisor
Union Carbide Corporation
Chemicals & Plastics
Bound Brook, New Jersey

WAS:smk
2/10/70

CERTIFICATION OF GOVERNMENT REPRESENTATIVE

Qualification Test - CFG Phenolic Molding Material
Sample Designation - BMMA-5441 BK 25

1. I, hereby, certify that I, personally, observed the following tests on the samples designated BMMA-5441 BK 25. The results given in the report are identical with my own readings of the testing instruments or equipment involved in the test. Observation was on a full time basis except for the conditioning of the samples, which required several days.

Test	Test Method LP406	Modified By
Compressive Strength	1021.1	--
Flexural Strength	1031.1	4.5.2.2
Tensile Strength	1021	--
Dielectric Strength	4031	4.5.2.1
Dielectric Breakdown	4031	4.5.2.1.3
Impact Strength	1071	--
Water Absorption	7031	4.5.2.4
Heat Distortion Temp.	2011.1	4.5.2.3

2. The flame resistance test was conducted by the United States Testing Companu, Inc., Hoboken, N.J. and was witnessed by Howard Katzman DCAS QAR S3101A.

3. I, therefore, have affixed my stamp to each page of the test results incorporated into this report, indicating that the results given thereon are correct and valid for the tests performed in my presence.

Edward Weisenbach
Q.A.R. - D.C.A.S.D., Springfiel