July 19, 2019

▪TEST REPORT▪

PN 147195A

PO wire transfer

PHYSICAL TESTING DEPARTMENT

Prepared For:

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Lot 3850-3855, Chembong Phase II
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July 19, 2019
Norwahida Yusof
GB Industries SDN BHD

SUBJECT: Physical Testing on material submitted by the above company to ASTM D 120 Class 00 test specification.

RECEIVED: Six (6) NOVAX rubber insulating gloves identified as Class 00

DIMENSIONS, PARA. 17.1 - 17.3.1^
Three gloves tested.
Average of four readings reported.

REQUIREMENTS: Thickness Crotch, mm = 0.20-0.75
Thickness Palm & Back, mm = 0.25-0.75

	LENGTH, mm	WIDTH, mm	PALM, mm	CROTCH, mm	BACK, mm
Glove 1	360	125	0.75	0.68	0.75
Glove 2	360	125	0.74	0.71	0.74

ORIGINAL PHYSICAL PROPERTIES, ASTM D 412, D 2240
Die C dumbbells tested at 20 in/min.

	RESULTS	REQUIREMENTS	PASS/FAIL
Durometer A, points	40	47 max.	Pass
Tensile Strength, MPa	24.0	17.2 min.	Pass
Ultimate Elongation, %	738	600 min.	Pass
200% Modulus, MPa	0.99	2.1 max.	Pass
Tension Set @ 400%, %	1.8	25 max.	Pass

TEAR RESISTANCE, ASTM D 624, DIE C
Specimens tested at 20 in/min.

	RESULTS	REQUIREMENTS	PASS/FAIL
Tear Strength, kN/m	44.5	21 min.	Pass

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PUNCTURE RESISTANCE, ASTM D 120
Palm area punctured at 20 in/min.

	RESULTS	REQUIREMENTS	PASS/FAIL
Puncture Resistance, kN/m	30.3	18 min.	Pass

HEAT-AGED PROPERTIES, ASTM D 573
Specimens aged 168 hrs. @ 70°C in a forced air oven.

	RESULTS	REQUIREMENTS	PASS/FAIL
Tensile Strength, % of original	97.9	80 min	Pass
Elongation, % of original	92.1	80 min.	Pass

A-C PROOF, ASTM D 120, PARA 18.4.2
Preconditioning: See below.

Test Procedure: Each glove shall be submitted to a proof voltage test as specified in Table 2. The A.C. voltage shall be initially applied at a low voltage value and gradually increased at a constant rate-of-rise of approximately 1000 V/s until the specified test voltage level is reached or failure occurs. The current is measured during the test period, either continuously or at end of the period. The test voltage shall be reduced at the same rate. The test period shall be equal to 3 min, considered to start at the instant the specified proof voltage is reached. Unless an electrical failure occurred during the period test, the applied voltage should be reduced at least to half value before opening the test circuit.
The glove was filled with tap water and immersed in water to the specified depth. A metal rod was lowered inside the glove as one electrode and a metal rod placed in the water tank outside the glove as the other electrode. A voltage was applied to the electrodes at an increasing rate of 1000 V/s until specified voltage for each class of glove was reached. The specified voltage was applied for a period of 3 minutes after which the voltage was lowered to 0 V.

REQUIREMENTS:

Class	Glove Length (mm)	Exposed Cuff Length (mm)	Test Voltage (VAC)	Maximum Current (mA)
00	360	64	2,500	12

RESULTS:

Preconditioning: Gloves were preconditioned as follows:

Sample	Pre-Conditioning	Measured Current (mA)	Pass/Fail
Class 00 (1)	None	2	Pass

A-C MOISTURE ABSORPTION/PROOF, ASTM D 120, PARA 18.4.4

The A.C. voltage shall be applied as specified in 5.6.1.4.2 until the specified withstand voltage is reached in accordance to Table 6, then reduced.

REQUIREMENTS:

Class	Glove Length (mm)	Exposed Cuff Length (mm)	Test Voltage (VAC)	Maximum Current (mA)
00	360	64	2,500	12

RESULTS:

Sample	Pre-Conditioning	Measured Current (mA)	Pass/Fail
Class 00 (2)	16 hours water	2.5	Pass

A-C BREAKDOWN, ASTM D120-14, PARA 18.4.3

The glove was filled with tap water and immersed in water with an exposed cuff length according to Table 6. A metal rod was lowered inside the glove as one electrode and a metal rod placed in the water tank outside the glove as the other electrode. A voltage was applied to the electrodes at an increasing rate of 1000 V/s until specified voltage for each class of glove was reached.

REQUIREMENTS:

Class	Glove Length (mm)	Exposed Cuff Length (mm)	Test Voltage (VAC)
00	360	64	4,000

RESULTS:

Sample	Voltage Applied (VAC)	Pass/Fail
Class 00 (1)	4,000	Pass

OZONE RESISTANCE, ASTM D 120, PARA 18.6.2 METHOD B

The ozone resistance test shall be made on a 100 x 150 mm (4 x 6 inch) specimen. The specimen should be draped over a 25 mm (1 inch) diameter grounded metal tube. The free ends of the specimen shall be clamped beneath the tubing electrode so that intimate contact is established between the specimen and the tubing along the upper half of the electrode. A piece of flat aluminum sheet foil, approximately 50 x 100 mm (2 x 4 inch) shall be placed over the draped specimen so as to provide adequate separation distance to prevent flashover. An electrode wire shall be connected to the aluminum foil. The outer electrode (aluminum foil) shall be energized to 15kV ac (rms). After 1-hour exposure, inspect specimen for any visible defects. Two specimens are to be tested.

RESULTS:

Sample	Pass/Fail
Class 00 (1)	Pass. No visible defects
Class 00 (2)	Pass. No visible defects

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