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### TEST REPORT

REPORT NO.: 2019EA1707

PAGE : 1 OF 14

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Applicant : NONFEROUS METALCAST SDN. BHD  
LOT PT 3963, BATU KARANG  
31900 KAMPAR  
PERAK

Manufacturer : NONFEROUS METALCAST SDN. BHD  
LOT PT 3963, BATU KARANG  
31900 KAMPAR  
PERAK

Product : RIGID ALUMINIUM CONDUIT FITTING FOR CABLE MANAGEMENT

Reference Standard / : MS IEC 61386 - 21: 2010  
Method of test

Description of sample : Brand Name : NMC  
Model / Size : (See page 2)  
Ø 20 mm & Ø 25 mm  
Classification : -

Date received : 30 AUG. 2019

Job No./Ref. No. : J20191421182


Overall test result : **COMPLIED (see page 2 & 3 for details)**

Issue date : 08 NOVEMBER 2019

Approved Signatories:

  
.....  
(DANIAL NAIM BIN MAT RASHID)  
Testing Executive



  
.....  
(M.ZAMRI BIN MUSTAFFA)  
Head  
Electrical & Electronic 1 Section  
Testing Services Department

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### SUMMARY OF TESTS:

1. This is a partial test report as requested by the applicant.
2. The samples submitted for testing has been checked in accordance to MS IEC 61386-21: 2010.
3. All samples were describe as below:

Brand / Size	Model
NMC/ 20mm & 25mm	1-Way Terminal Box
	2-Way Through Box
	Angle Box
	3-Ways Tee Box
	4-Way Cross Box
	Dome Cover
	Inspection Bend
	Inspection Elbow
	Inspection Tee
	Flexible Tube Adaptor
	Lock nut
	Extension Ring
	Screw Reducer

4. Unless otherwise specified, tests were conducted at ambient temperature of  $25 \pm 5^\circ \text{C}$ .
5. The abbreviation used in this test report denotes as follows;

**Pass:** Complied with the requirement

**NA:** Not Applicable with the requirement

**Fail:** Did Not Comply with the requirement



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**SUMMARY OF RESULT/S:**

1. The submitted test samples as described in this test report complied with the requirements of MS IEC 61386-21: 2010.

**ADDITIONAL INFORMATION:**

1. Tested by: Izzat Bin Abdul Hakim
2. Checked by: Danial Naim Bin Mat Rashid
3. Date of test sample(s) received;
  - a) 1<sup>st</sup> submission: 30 AUG. 2019



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Clause	Requirement	Remark	Results
<b>4</b>	<b>General requirements</b>		
4.1	Conduit and conduit fittings shall be designed and constructed to provide;		Pass
	- Mechanical protection for the cable inside		Pass
	- Electrical protection		Pass
4.2	The mfg shall give instructions on how to install the system to comply with this standard.		NA
<b>5</b>	<b>General conditions for tests</b>		
	Conduit are classified the same type if only varies in the colour.		NA
	Test are carried out at $(25 \pm 5)^{\circ}\text{C}$		Pass
	Test shall be carried out on three new samples		Pass
<b>6</b>	<b>Classification</b> Note: The sequence of the following sub clauses is based on numerals marked on sample (in order) in accordance to requirement of clause 6 and annex A of this standard.		NA
6.1	According to mechanical properties		Pass
6.1.1	Resistance to compression ( $X_1$ )	Not marked on sample	NA
6.1.2	Resistance to impact ( $X_2$ )		NA
6.2.1	Lower temperature range ( $X_3$ )		NA
6.2.2	Upper temperature range ( $X_4$ )		NA
6.1.3	Resistance to bending ( $X_5$ )		NA
6.3	Electrical characteristics ( $X_6$ )		NA
6.4.1	Protection against ingress of solid object ( $X_7$ )		NA
6.4.2	Protection against ingress of water ( $X_8$ )		NA
6.4.3	Resistance against corrosion ( $X_9$ )		NA
6.1.4	Tensile strength ( $X_{10}$ )		NA
6.5	According to resistance to flame propagation ( $X_{11}$ )		NA
6.1.5	Suspended load capacity ( $X_{12}$ )		NA
<b>7</b>	<b>Marking and documentation</b>		
7.1	Each conduit shall be marked with		Pass
	- Manufacturer's name	NMC	Pass
	- Product identification mark	NMC	Pass





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Clause	Requirement	Remark	Results
7.1.1	Marked with classification code; shall be as in annex A, with at least <b>first four digits</b> .		NA
7.1.2	Indication of compatibility parts.		NA
7.1.3	Classification type shall be marked in instruction sheets.		NA
7.2	Marking shall be on the product or if not practical shall be on package.		Pass
7.3	Flame propagating material shall be orange in color, it shall not be painted.		NA
7.4	Earth marking		NA
7.6	Marking shall be durable and legible		Pass
7.1.101	For rigid conduits the above marking shall be marked along the entire length with interval of not more than 3 m.		NA
<b>8.</b>	<b>Dimensions</b>		
8.1	Threads and external diameters shall comply with IEC 60423.	20mm & 25 mm	Pass
	Checked by gauges		Pass
8.2	Other dimensions shall comply with pt. 2 of this standard. BS EN 61386-21 -Non-threadable conduit fittings, except fittings which are part of a conduit system declaring tensile strength shall comply with table 102 of BS EN 61386-21	Only applicable for conduit fitting	NA
<b>9.</b>	<b>Construction</b>		
9.1	No sharp edges that can damage insulation of cables		Pass
	After cutting the samples there shall be no sharp projections		Pass
9.2	Screw used for attaching components shall not damage insulation of cable.		Pass
	Thread cutting screws shall not be used		Pass
9.3	Screws used with preformed threads shall be tightened and loosened 10 times		Pass
9.4	Thread forming screws are tightened and loosened 10 times		Pass
9.5	Any material (rubber, fiber, etc.) used in joints shall have the same level of resistance to external influences as that of the conduit or the conduit fittings.		NA



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Clause	Requirement	Remark		Results
9.6	Conduit system that are assembled by means other than threads.			NA
10	<b>Mechanical properties</b>			
10.3	<b>Impact test</b>	20mm	25mm	Pass
		See Table 1	See Table 1	
10.3.1	12 samples shall be tested			Pass
	- Apparatus as in fig. 2			Pass
10.3.2	-the samples kept in refrigerator ( as in table 1)	-5 °C		Pass
	Impact test values as in table 5	2.0 kg		Pass
10.3.3	After the test and when the conduit are at ambient temperature tested with gauge which shall be passed through the conduit in vertical position	300mm±1% Fall height		Pass
	Gauges ( IEC 61386 parts 21, 22, 23, etc)			Pass
	There shall be no cracks or disintegration.	No crack		Pass
	At least 9 samples shall pass this test.	> 9 samples		Pass
10.7	Tensile test			Pass
10.7.1	For conduit system declaring tensile strength			Pass
	The samples as prepared by mfg.			Pass
	The length between two conduit fittings at least 200 mm			Pass
	The tensile force is applied on the assembly as given in table 6			Pass
	The force maintained for 2 mins.			Pass
10.7.3	If tensile is not declared then the joint shall joint shall meet requirement of part 2.			Pass
10.7.4	There shall be no damage	No damage		Pass
10.8	Suspended load test	Only for conduit		NA
	The conduit fittings suitable for suspended loads			NA
	Secured to rigid structure (prepared by mfg.)			NA
	The load ( as in table 7) is suspended			NA
	Load (N)			NA
	Duration ( 48 hrs)			NA



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Clause	Requirement	Remark		Results
	There shall be no cracks or deformation.			NA
	For composite and non metallic material, the test carried out in a heating cabinet.			NA
<b>11</b>	<b>Electrical properties</b>			
11.2	Bonding test			Pass
	Conduit and conduit fittings, consisting 10 pieces of conduit coupled together (see photograph for the arrangement)			Pass
	The fitting shall be spaced between 100 mm and 150 mm apart.			Pass
	A current of 25A, having a frequency of 50Hz derived from an a.c source having a no-load voltage not exceeding 12V passed through the assembly for 1 minute.			Pass
	The resistance shall not exceed 0.1Ω.	20mm See Table 2	25mm See Table 2	Pass
<b>14</b>	<b>External influences</b>			
14.1.2	Degree of protection – Ingress of foreign solid objects			Pass
	An assembly is made of conduit and conduit fitting using all conduit entries			Pass
	Any open ends of the assembly shall be tested to IP 30 test	IP 40		Pass
	The sample is considered pass if the test finger did not pass through the assembly			Pass



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**Table 1: Impact Test Result**

No.	Model	Size (mm)	Height (mm)	Load (kg)	Result
1	1-Way Terminal Box	20	300	2	Pass
2	2-Way Through Box	20	300	2	Pass
3	Angle Box	20	300	2	Pass
4	3-Ways Tee Box	20	300	2	Pass
5	4-Way Cross Box	20	300	2	Pass
6	Dome Cover	20	300	2	Pass
7	Inspection Bend	20	300	2	Pass
8	Inspection Elbow	20	300	2	Pass
9	Inspection Tee	20	300	2	Pass
10	Flexible Tube Adaptor	20	300	2	Pass
11	Lock nut	20	300	2	Pass
12	Extension Ring	20	300	2	Pass
13	Screw Reducer	25	300	2	Pass
14	1-Way Terminal Box	25	300	2	Pass
15	2-Way Through Box	25	300	2	Pass
16	Angle Box	25	300	2	Pass
17	3-Ways Tee Box	25	300	2	Pass
18	4-Way Cross Box	25	300	2	Pass
19	Dome Cover	25	300	2	Pass
20	Inspection Bend	25	300	2	Pass
21	Inspection Elbow	25	300	2	Pass
22	Inspection Tee	25	300	2	Pass
23	Flexible Tube Adaptor	25	300	2	Pass
24	Lock nut	25	300	2	Pass
25	Extension Ring	25	300	2	Pass
26	Screw Reducer	25	300	2	Pass





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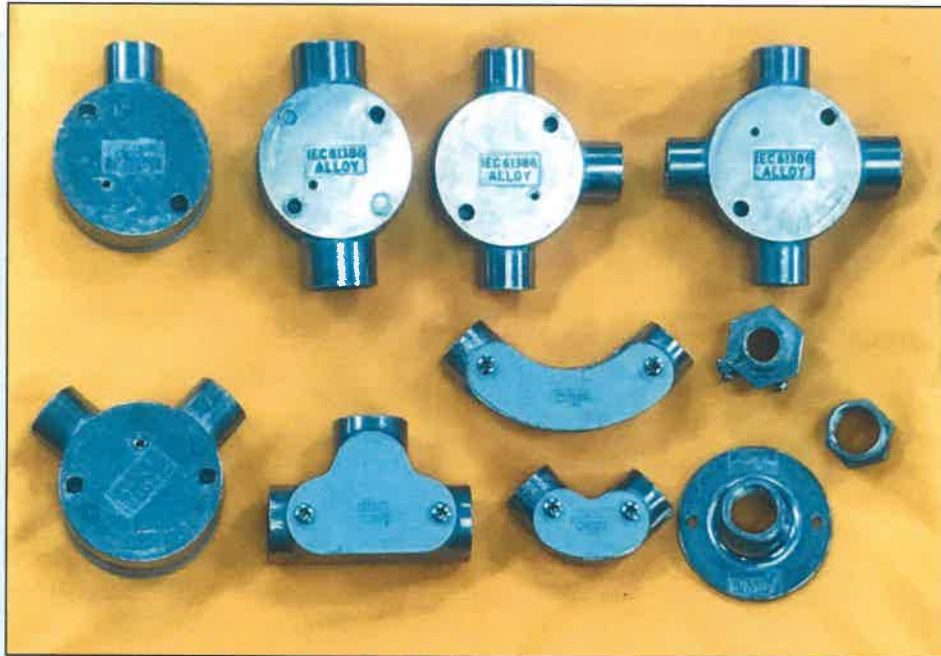
**Table 2: Resistance Test Result**

No.	Model	Size (mm)	Current (A)	Earth Continuity (0.1Ω)	Result
1	1-Way Terminal Box	20	-	-	NA
2	2-Way Through Box	20	25A	0.036	Pass
3	Angle Box	20	25A	0.041	Pass
4	3-Ways Tee Box	20	25A	0.039	Pass
5	4-Way Cross Box	20	25A	0.037	Pass
6	Dome Cover	20	-	-	NA
7	Inspection Bend	20	25A	0.039	Pass
8	Inspection Elbow	20	25A	0.040	Pass
9	Inspection Tee	20	25A	0.037	Pass
10	Flexible Tube Adaptor	20	25A	0.037	Pass
11	Lock nut	20	-	-	NA
12	Extension Ring	20	25A	0.037	Pass
13	Screw Reducer	25	-	-	NA
14	1-Way Terminal Box	25	-	-	NA
15	2-Way Through Box	25	25A	0.034	Pass
16	Angle Box	25	25A	0.040	Pass
17	3-Ways Tee Box	25	25A	0.041	Pass
18	4-Way Cross Box	25	25A	0.036	Pass
19	Dome Cover	25	-	-	NA
20	Inspection Bend	25	25A	0.040	Pass
21	Inspection Elbow	25	25A	0.039	Pass
22	Inspection Tee	25	25A	0.034	Pass
23	Flexible Tube Adaptor	25	25A	0.039	Pass
24	Lock nut	25	-	-	NA
25	Extension Ring	25	25A	0.034	Pass
26	Screw Reducer	25	-	-	NA



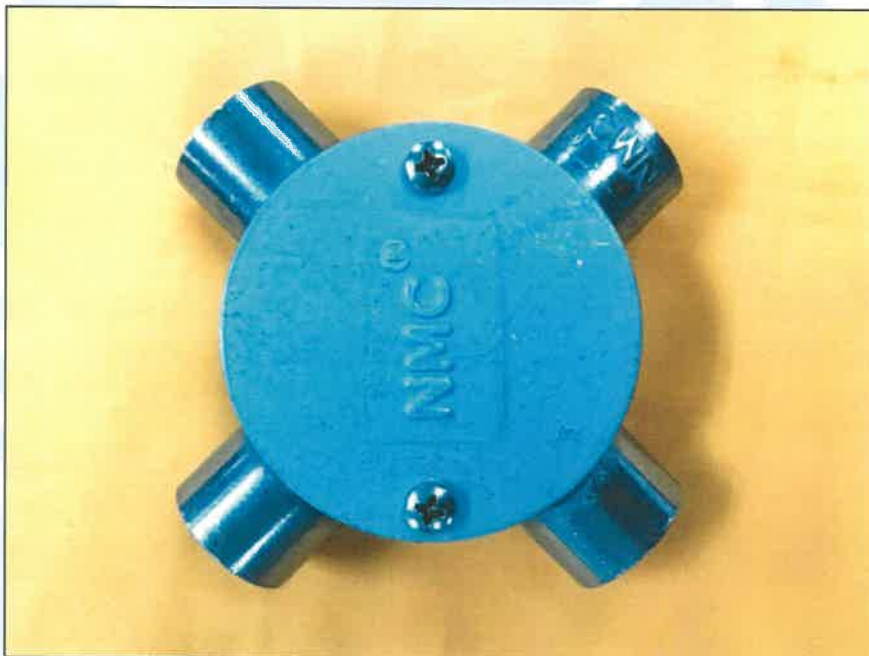
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### PHOTOGRAPHS OF TEST SAMPLES



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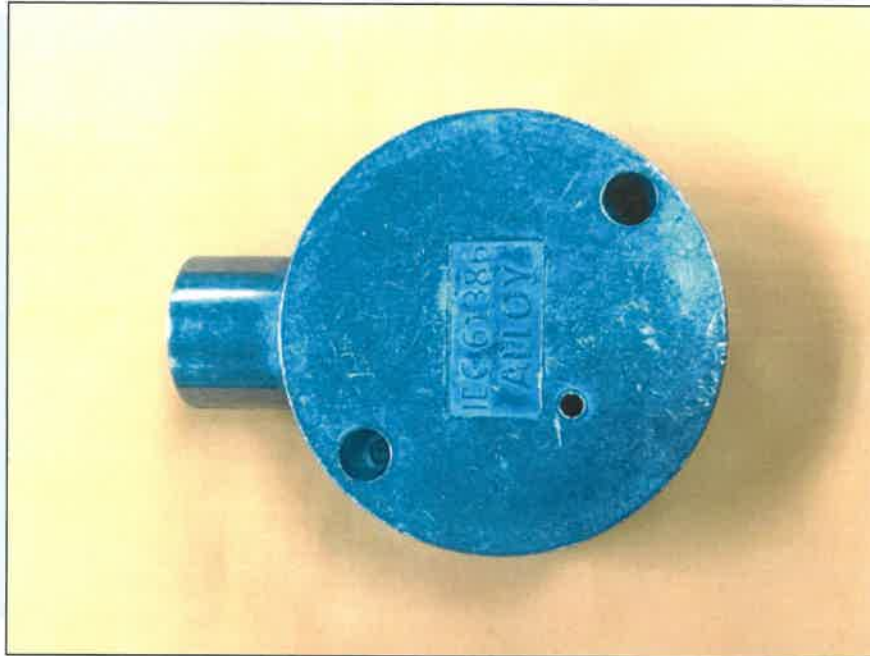
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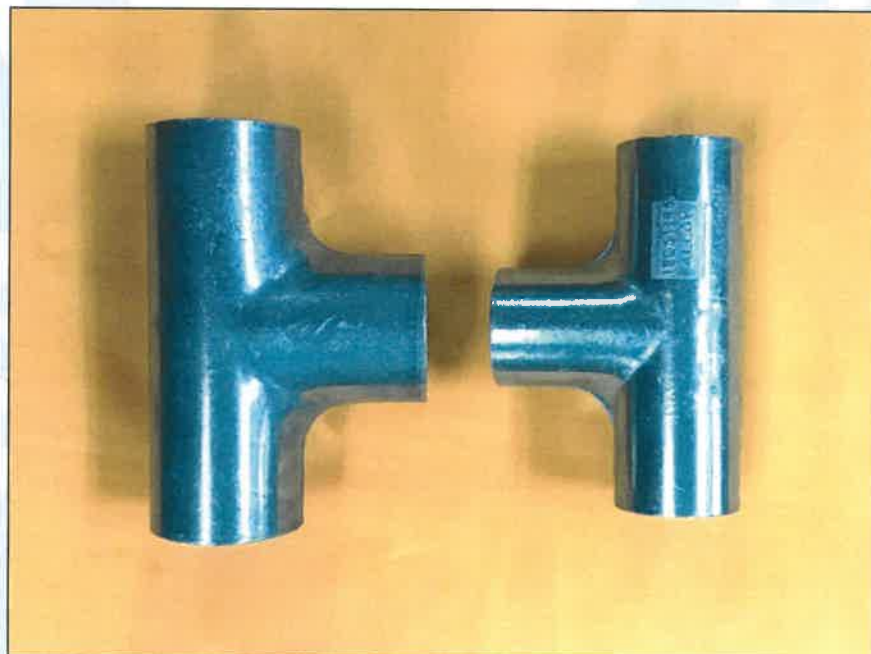
### PHOTOGRAPHS OF TEST SAMPLES





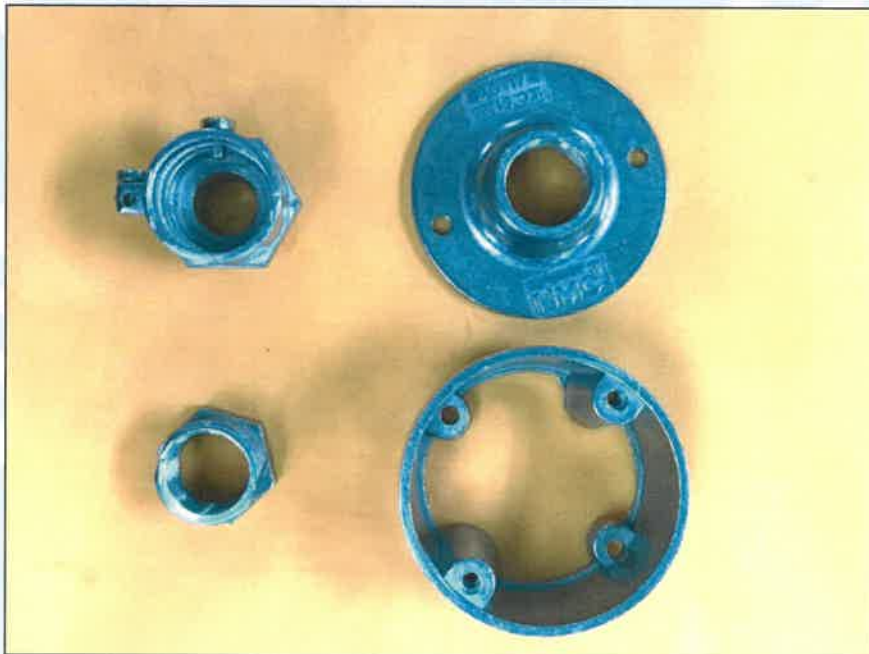
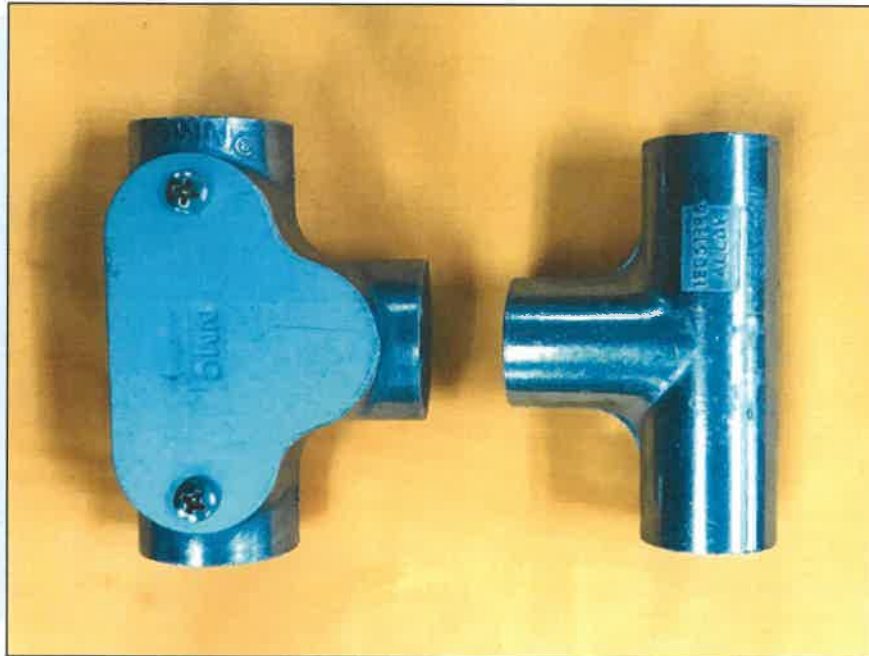
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1. A Test Report will be issued in respect of Testing Services conducted and shall relate only to the Sample actually tested. SIRIM QAS International makes no warranty whatsoever and the Applicant shall not represent in any manner that any duplication or mass production of the Product is same as the Sample actually tested or that SIRIM QAS International has tested any of the duplicated or mass produced Product.
2. The Test Report shall not be amended, changed, varied or modified in any manner whatsoever by the Applicant or otherwise.
3. If the Test Report is to be furnished to any third party or to the public, each such Test Report shall be furnished in full, legible and in its entirety.
4. The Test Report shall not be reproduced and shall not in any event be used for any advertising purposes or whatsoever without written approval from the Managing Director of SIRIM QAS International of No 1, Persiaran Dato' Menteri, Building 8, Section 2, P.O. Box 7035, 40700 Shah Alam, Selangor Darul Ehsan.
5. Customer (Applicant/Manufacture/Factory, etc.) is not permitted to use any SIRIM QAS International, SIRIM or other SIRIM's subsidiaries logo or words on packaging, sample's manual, technical specification, brochures/flyers or any other means without the prior written approval from the Managing Director of SIRIM QAS International.
6. If such approval is obtained from the Managing Director of SIRIM QAS International, the Applicant may only include the phrase, "A sample of this product has been tested by SIRIM QAS International ... (Test Report No) ... (dated) .... (for what test) ... (to which standard)" or such similar words which stress that only the Sample was actually tested. This phrase shall only be used for the purpose of product advertisement or product promotion (eg; brochures). For avoidance of doubt, the statement shall not be used on the sample and packaging of the sample.
7. In the event there is an investigation from a Government Regulatory Agency concerning the Applicant's Test Report, SIRIM QAS International may disclose the information pertaining to the Test Report for purposes of such investigation.
8. Further or in the alternative, it is strictly forbidden unless with prior written approval from the Managing Director of SIRIM QAS International, to represent in any manner whatsoever that SIRIM QAS International, SIRIM and/or other SIRIM's subsidiaries has endorsed, approved or validated the Product of the Applicant in any manner whatsoever.
9. In the event the Applicant is found in breach of this provision, SIRIM QAS International, SIRIM and/or other SIRIM's subsidiaries without prejudice to any other rights and remedies may take whatever action necessary including but not limited to:
  - a) Informing and placing a notice in the media;
  - b) Obtaining an injunction from Court (cost on a solicitor-client basis to be borne by the Applicant);
  - c) Refusing to accept any further Product for Testing Services from the Applicant or whosoever related to the Applicant, whether subsidiary or otherwise;
  - d) Instructing the Applicant to withdraw and recall the advertisement, statement or document in question and advertise a clarification and apology to SIRIM QAS International, SIRIM and/or other SIRIM's subsidiaries twice in a national publication of SIRIM QAS International's choice at the Applicant's sole cost; and
  - e) Informing or lodging a report pertaining the Applicant's Test Report with the relevant authorities.
10. Certified true copies of the Test Report may be issued upon request by the Applicant upon payment of the relevant fee.
11. Corrections to test report shall only be allowed within 6 months from issuance date of the test report and shall be limited to maximum 3 times, after either case whichever occurs earlier, a new test report shall be issued and replace the previous one (having error(s) or lack of information). Issuance of Supplementary Report to the original Test Report shall be for the followings;
  - a) Misprints and typo errors
  - b) Missing technical information
  - c) Test data not reported
  - d) Mistake in reporting of test data