



AL AFIAH ROADS CONT L.L.C.
ROAD MARKING DIVISION
PRE QUALIFICATION



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INTRODUCTION



INTRODUCTION

AL AFIAH CONTRACTING L.L.C. was formed in August 2006 as the INFRASTRUCTURE DEVELOPING COMPANY. With the fast changing environment, we commit ourselves to continuous development and change. AL AFIAH CONTRACTING is having its own strong team with machineries and highly equipped manpower to execute the projects to international standards.

From just being a road construction contractor, on 2012, the company has diversified into another division of **Road Marking Division** and **Traffic Safety Solution**. ARC has earned a remarkable reputation in trustworthiness, all because of a strong customer focused approaches and the continuous quest world class quality maintaining.

The company is managed by professionals who are qualified and have rich expertise in building **of infrastructure services** of simple to complex systems with committed time frame and duly adhering to established safety norms.

Some of our reputed clients are as follows:-

- **ADNOC** – Construction of Exit & Entry Roads for ADNOC filling stations at various locations in Abu Dhabi, Al Ain and Western Region.
- **D.O.T.** – Entry & Exit Roads connected to D.O.T. Highways.
- **YAHSAT** (Military College)- Antenna Base & Internal Roads at Shk. Zayed Military College, Al Ain & Abu Dhabi.
- **RTA**- Infrastructure Work at bus depots.
- **RAK PROPERTY**- Infrastructure Work for Mina Al Arab at RAK.
- **DUBAI MUNICIPALITY** – Drainage Services and Road Works.
- **SEWA**-Roads and Infrastructure works for Power Stations & Sub Stations at various locations.
- **PACIFIC CONTROL** – Access Road Works.
- **ADSSC** – Road Crossing Works.

OUR VISION

To be an innovative organization committed to the pursuit CHAIN of excellence. We aim to make significant contributions to nation building through our work in the field of construction.

OUR MISSION

To provide services and products with the highest quality and to deliver customer satisfaction



AL AFIAH ROADS CONT. L.L.C.

QUALITY POLICY

PERFECT TEAMWORK TO PROVIDE HIGH QUALITY SERVICE TO OUR VALUABLE

CUSTOMERS AS PER THEIR REQUIREMENTS ON TIME, EVERY TIME

OBJECTIVES

- **Quality checking at every stage.**
- **Be always with our client requirement & satisfaction.**
- **Adoption of update knowledge for the enhancement of performance.**



General Manager



Al AFIAH ROADS CONT. L. L. C.
SAFETY POLICY

We are committed to the protection of the health and safety of our workers and take all reasonable measures to achieve this goal, by providing awareness training of all employees in safe working methods before the assumption of duty.

Promote personal responsibility on the part of everyone to avoid and prevent health hazards as well as injuries to themselves also for others who may be affected by their acts or omissions and to co-operate with the organization to comply with its duties, requirements and statutory obligations.

In order to fulfill this commitment to protect both people and property we provide and maintain a safe and healthy work environment according to the acceptable industry standards and in compliance with the legislative requirements.

Ensure that safety is a line management responsibility.

Monitor effectiveness of safety policy.



General Manager

Contract: M-1002/5 B Road Marking Maintenance Works.

Subject: Sub-Contractor Approval

Reference to the above mentioned subject and your letter Ref. No. ARRM/RTA/014 dated on the 2nd of November 2014, kindly be informed that we have no objection regarding appointing "Al-Aflah Roads Contracting LLC" as a Sub-Contractor of you for the contract mentioned above, where this will be under your responsibility.

This is for your Information.

Regards,



Eng. Ali Abdulkareem

Traffic Signs & Road Marking Maintenance Manager

Cc:

File

Attachments:

As mentioned above

PLN #000 8559 OK



سلطة واحة دبي للسيليكون
Dubai Silicon Oasis Authority

Planning & Design Department

Planning Section

Permit to Work inside DSO

تصريح عمل داخل واحة دبي للسيليكون

Date: 20/11/2017

التاريخ:

Project Details

تفاصيل المشروع

Project Title: DSO Open Area Road Marking

عنوان المشروع:

Plot # / Project #: Road No.6, 7, 8, 10, 11,12,14,15 & 16

رقم الأرض / رقم المشروع:

Site Contact #: 0528998400

رقم هاتف الموقع:

Work Description & Undertaking

وصف العمل والتعهد

We Al Afiah Roads Contracting LLC with P.O Box 63186 No UAE, hereby request your permission to allow us to undertake the following works inside your property

نحن ص.ب الإمارات العربية المتحدة، نتعهد بتحمل مسؤولية الأعمال القائمة داخل ممتلكات الواحة

Period of Work:

مدة العمل

1-22/11/2017-

Internal Road Marking

-1

5/12/2017

Work

-2

2-

This request would also allow us to use our equipment /tools/ machineries and manpower as per the attached list. Approved NOC's are also attached herewith.

هذا الطلب سوف يتيح لنا أيضا استخدام المعدات / الأدوات / الأجهزة والقوى العاملة الخاصة بنا وفقا للقائمة المرفقة وقد أرفقنا شهادات عدم الممانعة المعتمدة.

We would be fully responsible for any damages of your property, existing utilities around the plot and inside DSO (Gas Pipe Line & Fuel Jet Line), and the works of other Contractors during our contract period and would undertake the repair of the same on our account.

نتعهد بتحمل المسؤولية عن أية أضرار في الممتلكات الخاصة، والمرافق الموجودة حول قطعة الأرض المذكورة وداخل واحة دبي للسيليكون (مجرى أنبوب الغاز ومجرى الوقود)، وأعمال المقاولين الآخرين خلال فترة العقد وسوف نكون مسئولين عن الأضرار وإصلاحها.

Note: Coordination with DSOA - EM, Facility Management Team is required in all the activities related to Construction.

ملاحظة: جميع الأعمال الإنشائية تتطلب التنسيق مع سلطة واحة دبي للسيليكون - الإدارة الهندسية، قسم المرافق والصيانة.

[Signature]
20/11

DSOA - O&F DEPT.

(الاستشاري المصرح به - التوقيع والختم)

(Approved Consultant - signature and stamp)

[Signature]
P.O. Box: 63186
DUBAI
U.A.E.

(المقاول المصرح به - التوقيع والختم)

(Approved Contractor - signature and stamp)

For DSO Use

لاستخدام سلطة واحة دبي

Comments:

☐ Approved

☐ Approved with Comments

☐ Rejected

Notes:

1. This approval by DSO shall not relieve the Consultant or Contractor in any way from their responsibilities of the design and construction in accordance with regulations and standard, and both consultant and contractor shall bear the full liability of these.
2. Please contact DSO / Engineering Management on 04-501 5206 for any Technical Inquiries.

للمزيد من المعلومات: هاتف: +971 4 501 5000 / +971 4 501 5206 . فاكس: +971 4 501 5277 . الموقع الإلكتروني: www.dso.ae . البريد الإلكتروني: ral@dso.ae
For more information: Call +9714 5015000 / 5015206, Fax: +9714 5015277 Email: ral@dso.ae www.dso.ae



Jouzy Axiata

CITY OF ARABIA
IMG Theme Park
CONSTRUCTION OF THEME PARK INFRASTRUCTURE and
ANCILLARY ROADS, DUBAI, U.A.E.
Project No.: 784-14054-C0103



City of Arabia
 THE HEART OF DUBAI

SUB-CONTRACTOR APPROVAL REQUEST

S M 0 4 4	R G C	J C E	S C A	C I V	1 3 0	0	13/12/2015
CONTRACT NO.	FROM	TO	DOC. TYPE	DISCIPLINE	DTS NO.	REV.	DATE

FROM: **RANYA - RGC**
 RGC Project Manager

TO : **IMGTP-JOUZY Engineering Consultant**
 ATTENTION : **MATT AITCHISON - Design Manager**
 Contact No. :

NOTE: Acknowledge the Copy by stamped and signed by the receiving party and returned to the sender.

WE ARE FORWARDING HERewith/UNDER SEPARATE COVER, THE ITEMS LISTED BELOW:

THIS SUBMITTAL IS INTENDED FOR
 (TICK AS APPROPRIATE)

☒ APPROVAL/COMMENT ☐ INFORMATION / RECORD

WORKS RELATED TO
 (TICK AS APPROPRIATE)

☐ ARCHITECTURAL ☐ STRUCTURAL ☐ ELECTRO-MECHANICAL

SUBCONTRACTOR SUBMITTAL LOG REFERENCE NO. : **SCAS-14**

SUB-CONTRACTOR'S NAME / DESCRIPTION : **AL AFIAH (FOR ROAD MARKINGS)**

ADDRESS & CONTACT NOS. : PO Box 63186. Dubai, TEL. NO.: 04-2596781

CONTACT PERSON & MOBILE NO.: MOBILE NO.:

E-MAIL ADDRESS: info@afiahgroup.com

Is the company certified against quality standards : refer to attach documents

Adherence to Quality System

Adherence to HSE

Is the company OHSAS 18001 (Health and Safety Certified) : refer to attach documents

Submittal Checklist : **TICK WHERE APPLICABLE**

OTHER ATTACHMENT:

[Three (3) Hardcopy +1 Soft Copy]

RANYA GEN. CONT. CO. LLC			
Received:	13/12	Time: 5:00	
Designation	Action	Info	
OP. DIRECTOR			
C.M.			
CONTRACTS			
PROC.			
PLANNING			
QA / QC			
ACCT. FAX NO.	04-2596782		
MEP			
ESTIMATION			
SAFETY			
PERSONNEL			
SITE			
OTHERS			

☒ COMPANY PROFILE ☒ CERTIFICATES/REGISTRATION ☐ TRAININGS

☐ KEY PERSONNEL & MANPOWER ☒ LIST OF EQUIPMENT, MACHINES

☒ LIST OF PROJECT COMPLETED/ON-GOING ☐ PREVIOUS APPROVALS

☐ PRODUCT/MATERIAL DATA SHEET ☐ SAMPLES ☐ SHOP DRAWING

Contractor's STAMP

PREPARED BY **QA/QC**

SIGNATURE:

DATE: **13/12/2015**

I CERTIFY THAT THE ABOVE SUBMITTED ITEMS HAVE BEEN REVIEWED IN DETAIL AND ARE CORRECT AND IN STRICT COMPLIANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS EXCEPT AS OTHER WISE STATED.

APPROVED BY **NIRMAL PRASAD** - Project Manager

SIGNATURE:

DATE: **13/12/2015**

TO: **CONTRACTOR** YOUR SUBMITTAL HAVE BEEN REVIEWED AND GIVEN THE COMMENT OR APPROVAL BY AS NOTED BELOW.
 FOR DETAILS OF OUR COMMENTS, REFER TO THE ATTACHED COMMENTS ☐ TICK IF ATTACHED OR APPLICABLE

COMMENTS:

Reviewed and found no objection based on his previous experience - to carry out the work for this job, subject to perform with best results as required in the spec.

(ANY APPROVAL OR COMMENT HEREIN SHALL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATIONS AS STIPULATED IN THE CONTRACT DOCUMENTS)

APPROVAL CODES:

AA APPROVED

AN APPROVED as Noted

RR Revise and Resubmit

NA Not Approved

JOUZY CONSULTANT SIGNATURE		IMGTP MANAGEMENT SIGNATURES	
Designation Resident Engineer	Name: AHMED AMER	Designation Infrastructure Manager	Name: MOHD. NASRUL ANSARI
Signatures		Signatures	
Date: 13/12/2015		Date: 15/12/2015	
Designation Project Director	Name: KELLY GATES	Designation Project Director	Name: KELLY GATES
Signatures		Signatures	
Date: 15/12/2015		Date: 15/12/2015	

REFERENCE OUT: **JOUZY CONSULTING ENGINEERS** BO. Box: 14357 Dubai - UAE

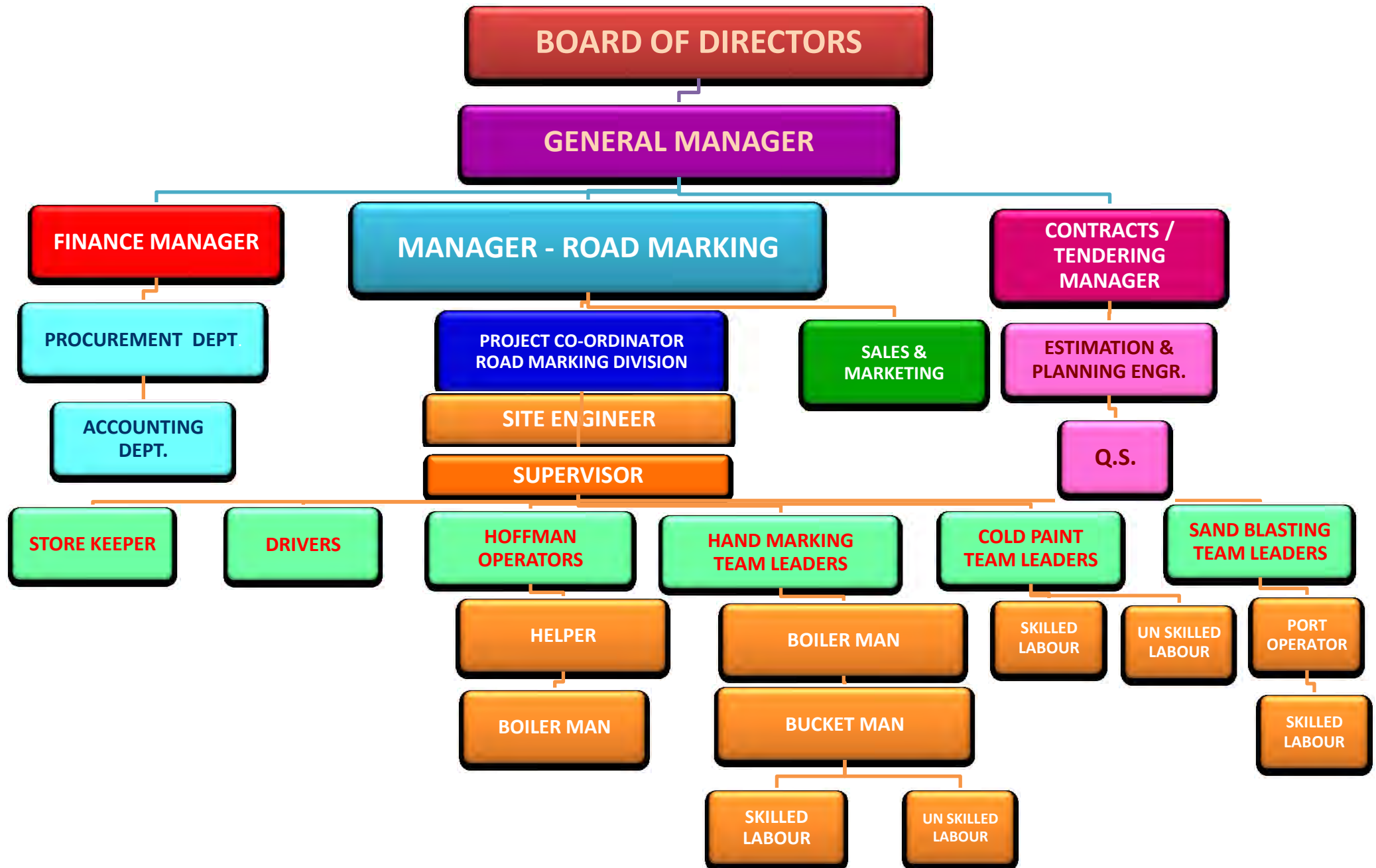
Received back by: RANYA Date: / / 2015

Received by: **13 DEC 2015**

BY: **13 DEC 2015**

Construction Form No: 002

Revision 'E'





LINE OF ACTIVITY



LINE OF ACTIVITIES

1	Road & Pavement Marking
2	Road Signage
3	Removal of Road Pavement Marking & Signage
4	Sand Blasting of Metal Pipes & HYSD Bars
5	Ship Sand Blasting
6	Construction of Road & Pavement
7	Electrical/Telephone Duct Line Works
8	Storm Water Lines with Manhole
9	Sewerage Lines with Manhole
10	Pumping Station
11	House Connections
12	STP's
13	Chambers
14	Bulk Quantity of Earth Works



OUR PROJECTS



LIST OF MAJOR PROJECTS



S. No.	Description of Project	Main Contractor	Status
1	Construction of Filling Stations in Abu Dhabi Emirates Al Mearad Service Station - Abu Dhabi	M/s. Ginco	On Going
2	Construction of Additional Facilities for the Existing Ruwais Recreation Centre at Abu Dhabi – UAE	M/s. Condor	On Going
3	Maintenance Work for Wasit Power Station at Sharjah	Al Afiah Roads Cont.	On Going
4	Reinstatement & Rehabilitation of Infrastructure Works at Ruwais Housing Complex for ADNOC	M/s. CHEC	On Going
5	YAHSAT – Additional Car Parking & Outdoor Sports Fields works	Al Afiah Roads Cont	Completed
6	Crossing Road Work at Al Ain for ADSSC	M/s. GCC	Completed
7	Construction of Proposed Filling Station for ADNOC Distribution at Jreen Al Aish Abu Dhabi - UAE	M/S. Halla & Dolphin J.V.	Completed
8	Ad-376 : Construction of ADNOC Filling Station in Abu Dhabi Al Jarf Service Station	M/s. Eastern International	Completed
9	Ad-377 : Construction of ANNOC Filling Station In Abu Dhabi Khalifa Industrial City Service Station	M/s. Eastern International	Completed
10	Construction of Al Naimah Filling Station in Al Ain	M/s. Ginco	Completed
11	Approach Road Works For M/s. ADNOC Filling Station in Al Hayer	M/s. Ginco	Completed
12	Road Works for SSTC Warehouse at SGS YAHSAT Abu Dhabi - Phase - II	M/s. Condor	Completed
13	Approach Road Works For M/s. ADNOC Filling Station in Al Nahel	M/s. Ginco	Completed



LIST OF MAJOR PROJECTS



S. No.	Description of Project	Main Contractor	Status
14	Road Works for SGS YAHSAT at Al Sewhain Abu Dhabi - Phase - I	M/s. Condor	Completed
15	Enabling Works at Shk. Zyed Military University - Al Ain	M/s. Future Mark Cont.	Completed
16	House Connections & Miscellaneous Works for Dubai Municipality	M/s. Arabtec Engineering	Completed
17	Access Road to Pacific Control	M/s. Al Afiah Roads Cont..	Completed
18	Storm Water Drainage Services (Main Pipelines & Manholes) at Al Ruwayyah Bus Depot - Dubai	M/s. Ranya	Completed
19	Internal Roads & Surface Water Drainage at Hamriyah Power Station For Phase II R.O.Plant	M/s. Aqua Engineering.	Completed
20	Surface Water Drainage System Installation Works at Layyah Power Station - Sharjah	M/s. Actco General Contracting Co. L.L.C.	Completed
21	ETISALAT Services At Al Quzais Industrial Area - Dubai	M/s. Bin Saifan	Completed
22	Du-Services At Jumerah Park Infrastructure Project - Dubai	M/s. Nurol	Completed
23	Construction of 6.6kv Sub Stations for Jumerah Park Infrastructure Project - Dubai	M/s. Nurol	Completed
24	Surface Water Drainage & Infrastructure Works for Labour Camp - Sharjah	M/s. Al Kauther Cont. Co.	Completed
25	Surface Water Drainage & 11kv Cable Civil Work at Mina Al Arab - RAK	M/s. Darwish Engineering	Completed
26	Construction of 33kv Sub Station at Mina Al Arab - RAK	M/s. Darwish Engineering	Completed
27	Civil Works for 33kv & 11kv Sub Stations at Al Tai - Sharjah	M/s. Al Kauther Cont. Co.	Completed



LIST OF MAJOR PROJECTS



S. No.	Description of Project	Main Contractor	Status
28	Internal Roads & Grading Works for Al Tai Sub Station - Sharjah	M/s. Al Kauther Cont. Co.	Completed
29	Internal Roads & Foot Path Works for Hamriya Power Station - Sharjah	M/s. Al Kauther Cont. Co.	Completed
30	Contract R671-Al Batayeh Access Roads - Sharjah	Darwish Engineering	Completed
31	Printing Press and Store – Mussafah – Abu Dhabi	Genco Arab Korean	Completed
32	Hosi Housing Area - Sharjah	Darwish Engineering	Completed
33	Road Marking Work at Rashidiya Parking - Dubai	Port Saeed Transport	Completed
34	Road Marking Work in Jabel Ali Free Zone - Dubai	Pax-Kent International	Completed
35	Road Marking - Dubai	Mehraj Building	Completed
36	Roads in Al Nouf Area - Sharjah	Darwish Engineering	Completed
37	Road Marking at Warsan Ambulance Centre - Dubai	Port Saeed Transport	Completed
38	DEGD Luxury Apartment in Jumeria Village in Jabel Ali	Intermass Engineering	Completed
39	PJ 2104/2 – Road Marking at Bicycle & Jogging Track, Al Warqaa - Dubai	Port Saeed Transport	Completed
40	Markings at Wadha Mall, Abu Dhabi	Ali & Sons Contracting	Completed
41	Sweden Driving and Traffic Awareness Institute Umm Al Quwain	Sweden Driving Institute	Completed
42	Road Marking at Various Locations in U.A.E.	Darwish Engineering	Completed
43	M 1006/10 Un Paved Roads and Earth Works Nad Al Shiba	Port Saeed Transport	Completed
44	Sheik Mokammed Mejren Sulthan Villa Project Nad Al Shiba	Al Baraha Land	Completed



LIST OF MAJOR PROJECTS



S. No.	Description of Project	Main Contractor	Status
45	Road Markings at Saif Zone - Sharjah	Darwish Engineering	Completed
46	Mina Al Arab Phase 1 Infrastructure Works - RAK	Darwish Engineering	Completed
47	Construction, Completion & Maintenance of Abu Dhabi University – Housing Project	Al Meraikhi General Cont.	Completed
48	Road Marking at Various Locations in U.A.E.	Darwish Engineering	Completed
49	Lokavastha Multi Storey Building in Sports City Jabel Ali	Intermass Engineering	Completed
50	Construction of Building for Dolphin Energy at Taweelah – Abu Dhabi	Intermass Engineering	Completed
51	Office complex (135) Commercial Building Zone E19/02 Plot No. 52-61 & Plot No. 213-218 Abu Dhabi	Ali & Sons Contracting	Completed
52	M-1011 Maintenance of Nadd Al Hammar – Beirut Road Tunnel (Airport Tunnel)	Waagner Biro Gulf LLC	Completed
53	UAE Contract No. 1 Dhadna, Taween, Khailibeh, Idhen	Saif Bin Darwish	Completed
54	M2104 Maintenance & Improvements in DM Facilities site : Vegetable & Fish Market – Various Locations	Port Saeed Transport	Completed
55	SAS Al Nakhil – 217 Villas – Abu Dhabi	Pivot Engineering	Completed
56	Ruwais Housing Complex Phase III, Bachelors Flats, Abu Dhabi	Pivot Engineering	Completed
57	UAE Armed Forces MW-AF-319R-200 Al Hamra, Abu Dhabi	Code Contracting	Completed
58	Internal Road Upgrading of Main Road – Falaj Al Moalla	Pranav Contracting	Completed
59	R 80 Leveling & Roads in al Barsha	Saif Bin Darwish	Completed
60	R 815 – Local Roads in Al Qusais	Saif Bin Darwish	Completed



PHOTOGRAPHS





AL HAYER FILLING STATION IN AL AIN



AL NAIMAH FILLING STATION IN AL AIN – ROAD WORKS



AL NAIMAH FILLING STATION IN AL AIN – ROAD WORKS



AL HAYER FILLING STATION IN AL AIN



ROAD CROSSING - TRUCK ROAD AL AIN



YAHSAT- ADDITIONAL CAR PARKING, & OUTDOOR SPORTS FIELDS WORKS



ROAD CROSSING - TRUCK ROAD AL AIN



AL HAYER FILLING STATION IN AL AIN



AL HAYER FILLING STATION IN AL AIN



AD-377 : ADNOC FILLING STATION IN ABU DHABI – KHALIFA INDUSTRIAL CITY



AD-377 : ADNOC FILLING STATION IN ABU DHABI – KHALIFA INDUSTRIAL CITY



ROAD CROSSING - TRUCK ROAD AL AIN



AD-376 : ADNOC FILLING STATION IN ABU DHABI – AL JARF



AD-376 : ADNOC FILLING STATION IN ABU DHABI – AL JARF



YAHSAT SSTC WAREHOUSE



**FILLING PUMP STATION FOR ADNOC DISTRIBUTION
AT JREEN AL AISH IN ABU DHABI, UAE**



YAHSAT ROAD WORK IMPROVEMENT



AL HAYER FILLING STATION IN AL AIN



AD-376 : ADNOC FILLING STATION IN ABU DHABI – AL JARF



**FILLING PUMP STATION FOR ADNOC DISTRIBUTION
AT JREEN AL AISH IN ABU DHABI, UAE**









DROP ON BEADS IN OUR PLANT



THERMOPLASTIC MATERIAL IN OUR PLANT



SILICA SAND IN OUR PLANT



THERMOPLASTIC



WORK FACILITIES



WORK FACILITIES

MACHINERY & VEHICLES

● HOFFMAN H 33-3	1 NO.
● HOFFMAN H 33-1	1 NO.
● LINE LAZAR (CRACO)	3 NOS.
● SAND BLASTING PORT	4 NOS.
● AIR COMPRESSOR- 367CFM	2 NOS.
● AIR COMPRESSOR- 187CFM	1 NO.
● 3 TON DOUBLE CABIN WITH PRE-HEATER	2 NOS.
● 3 TON PICK UP SINGLE CABIN	3 NOS.
● 1 TON DOUBLE CABIN PICK UP WITH SAFETY EQUIPMENT	3 NOS.
● 3.5 TON SINGLE CABIN WITH SAFETY SIGNS	1 NO.
● SAFETY TROLLEY LIGHT	10 NOS.
● 7.5 TON WITH PRE-HEATER	1 NO.
● PAJERO 4 X 4	1 NO.
● YARIS SALOON	1 NO.
● COROLLA SALOON	1 NO.
● 10 TON TROLLEY	1 NO.
● BUS – 30 SEATER	3 NOS.
● MINI BUS – 15	2 NOS.
● 6 WHELL TRUCKS	4 NOS.
● JETTING PUMP	1 NO.
● CHAIN EXCAVATOR-CAT 320	3 NOS.
● CATTERPILLER EXCAVATOR	4 NOS.
● WHEEL LOADER CAT-966	2 NOS.
● WHEEL LOADER CAT-950	2 NOS.
● GRADER	2 NOS.



● LIFTING CRANE	1 NO.
● MOBILE CRANE	1 NO.
● BOBCAT	2 NOS.
● PLATE COMPACTOR	6 NOS.
● COMPACTION ROLLER.	2 NOS.
● BABY ROLLER	2 NOS.
● COMPRESSOR WITH JACK HAMMER	1 NO.
● ASPHALT CUTTER	2 NOS.
● GENERATOR 100KV	1 NO.
● GENERATOR 50KV	2 NOS.
● WATER TANKER	2 NOS.
● DEWATERING PUMPS	5 NOS.
● ASPHALT SUPPLYING AND LAYING CREW	1 CREW.
● TOTAL STATION	5 NOS.
● THEODOLITE	3 NOS.
● LEVEL MACHINE	6 NOS.



TECHNICAL SUBMITTAL

FOR

THERMOPLASTIC
ROAD MARKING BS-3262:1985



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



PRODUCT SPECIFICATION FOR THERMOPLASTIC ROAD MARKING MATERIAL MANUFACTURED TO COMPLY WITH BS 3262 : 1981 PART 1

<u>COMPOSITION</u>	<u>PERCENTAGE</u>
Binder	18 – 22
Pigment and Extender	18 – 20
Pre mix Glass Beads	20 min.
Aggregate	40

BINDER COMPOSITION:

A blend of synthetic C5 Hydrocarbon Resin / Rosin plasticized with oil and polymer.

PIGMENT:

White – Titanium Dioxide type A (Anatase) or type R (Rutile) complying with BS 1851

Yellow – Lead Chromate (shall not exceed 5% w/w of the product)

EXTENDER :

Selected grades of white Calcium Carbonate powders

PRE MIX GLASS BEADS:

Glass Beads to BS 6088 Class A

AGGREGATE

Crushed Calacite & Silica Sand

THERMOPLASTIC SPECIFICATION :

All tests are in accordance with BS 3262 : 1989 Part 1

1. Luminance	: White – 78% min. & Yellow – 50% min. when compared with Magnesium Oxide using the CE “Y” Filter.
2. Softening Point	: Ring & Ball softening point, minimum 95°C
3. Flow Resistance	: Not more than 25% when tested @ 40°C
4. Skid Resistance	: Minimum 45 units
5. Heat Stability	: Not less than 65°C – White & 45°C Yellow
6. Specific Gravity	: 2.0 ± 0.1 approx.
7. Application Temp	: 220°C max.
8. Max Safe Heating Temp	: 230°C
9. Coverage	: Aprox.3 kg/m2 @ 1.5mm application Thickness excluding drop on Glass Beads



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Composition of “Thermoplastic Road Marking Material”

Sl. No.	Component	White Specific.	Yellow Specific.
1	Binder Content	18 Min.	18 Min.
2	Glass Beads	30-40 Min.	30-40 Min.
3	Titanium Dioxide	10 Min	See Note
4	Calcium Carbonate, Insert Filler & Yellow Pigments	42	See Note

Amount of Yellow Pigment, Calcium Carbonate and Insert Fillers is the option of the manufactures provided all other equipment of these specifications is met.

Compliance Statement For BS 3262 1989-1 THERMOPLASTIC

CLAUSE	SPECIFICATION	NOTATION	COMMENT
1	Scope		Noted
2	Definitions		Noted
3	Aggregate	Silica sand	Comply
4	Pigment	Titanium dioxide Rutile/ Anatase as desired Lead Chromate	Comply
5	Binder	CS Resin or Resin as desired	Comply
6	Reflectorization	BS6088 (a) and BS6088	Comply
7	Composition		Comply
8	Properties		Comply
9	Containers		Comply
10	Markings		Comply
	Appendix A	Method of testing is note	Comply
	Appendix B	Samples to be taken from Pre Heater	Comply
	Appendix C	Test procedure	Noted
	Appendix D	Test procedure	Noted
	Appendix E	Test procedure	Noted
	Appendix F	Test procedure	Noted
	Appendix G	Test procedure	Noted
	Appendix H	Test procedure	Noted
	Appendix J	Test procedure	Noted
	Appendix K	Packaging Label	Comply



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Manufactures Test Results

SL. NO.	PHYSICAL PROPERTIES	BS 3262 1989 PART 1 SPECIFICATION	WHITE LF 80/20 REF	YELLOW LF 50/20 REF
1	BINDER CONTENT (%)	18 - 22	19.05%	19.05%
2	GLASS BEADS	20% MIN.	20	20
3	SOFTENING POINT (°C)	65 °C	102	102
4	INITIAL LUMINANCE	WHITE->70%	80	-
		YELLOW->50%	-	53
5	LUMINANCE-HEAT STABILITY	WHITE->65%	76	
		YELLOW->45%		48
6	FLOW RESISTANCE	MAX. 25%	<1%	<1%
7	FLASH POINT C.O.C.(°C)	>235°C	240°C+	240°C+
8	SPECIFIC GRAVITY	2±0.1gm/cc	2.0	2.0

Binder Composition

A Blend of Synthetic Aliphatic Resins

Plasticized with mineral Oil incorporating dispersing agents

Pigments

White Titanium Dioxide Rutile/anafase

Yellow Lead Cromate

Extender

Whitening to BS 1795

ballotini

Glass Beads to BS6088 Class A

Aggregate

Crushed Calciate and Silica Sand



TECHNICAL SUBMITTAL

FOR

ROAD MARKING

DROP ON BEADS BS-6088 TYPE A&B



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Commodity : Glass Beads BS 6088 A

Physical and Chemistry Function

Item	Standard
Specific Gravity (g/cm ²)	2.4-2.6
Reflective Index	≥ 1.5
Spherical beads (%)	>70

The Sieve Analysis

Diameter (μm)	Standard Retain (%)
>1180	0
1180--850	5--20
850--425	65--95
<425	0--5

Remarks:

1. The Manufacturer's test certificate mentioning compliance of material shipped as per specification BS 6088 A Uncoated
2. All Packaging to be printed Glass Beads, Batch Number and Manufacturing Date in Blue Ink.

CERTIFICATE OF ANALYSIS



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



S/C NO. ARC/RMD/001/'13

DATE: 27th July 2013

COMODITY : 72MT GLASS BEADS BS6088 CLASS A

STANDARD: BS6088 CLASS A

ORIGIN: CHINA

GUARANTEE SPECIFICATIONS:

DENSITY	2.4 – 2.6G/CM ³	
REFRACTIVE INDEX	1.5 MIN.	
GLOMERATION RATE	70% MIN.	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	1180 MICRON UP	0-3%
	1180-850 MICRON	5-20%
	850-425 MICRON	65-95%
	425 MICRON BELOW	0-10%

ANALYSIS RESULTS:

DENSITY	2.5G/CM ³	
REFRACTIVE INDEX	1.51.	
GLOMERATION RATE	80.4%	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	1180 MICRON UP	0%
	1180-850 MICRON	14.7%
	850-425 MICRON	84.1%
	425 MICRON BELOW	1.2%



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Compliance Statement for BS 6088 Type B Drop on Beads

BS:6088 CLASS "B" (180-850)			MODE OF TEST								RETAIN	
Sieve	Specification		1262	3272	3272	3272	3272	3272	3272	3272	5272	5272
Micron	Min	Max	01	02	03	04	05	06	07	08	09	10
850 μ	0	5	00	00	00	00	00	00	00	00	00	00
600 μ	5	20	13	11	14	12	10	11	17	13	14	13
300 μ	30	75	64	68	51	63	67	63	65	67	56	64
180 μ	10	30	20	18	26	23	20	23	15	17	27	21
<180 μ	0	15	3	3	9	2	3	3	3	3	3	2
Roundness %			82	....	82	....	82	82	....	82	....	82
Hydrophoban			OK	....	OK	...	OK	OK	....	OK	....	OK

COMPLIANCE STATEMENT FOR BS6088 TYPE B DROP ON BEADS			
CLAUSE	SPECIFICATION	NOTATION	COMMENT
1	Scope		Noted
2	References		Noted
3	Definitions		Noted
4	Glass of beads	Class A and B applies	Noted
5	Sampling and testing		Comply
6	Properties	Table 1 and 2 only, table 3 not apply	Comply
7	Containers	Bags 25kg +/-5%	Comply
8	Markings		Comply
	Appendix A	1 x 25kg bag to be returned after test	Comply
	Appendix B	Test procedure	Noted
	Appendix C	Test procedure	Noted
	Appendix D	Optional test procedure	Noted
	Appendix E	Test procedure	Noted
	Appendix F	Test procedure	Noted
	Appendix G	Test procedure Type B only	Noted
	Appendix H	Not applicable	N/A
	Appendix J	Test procedure	Noted
	Appendix K	Test procedure	Noted
	Appendix L	Test procedure	Noted
	Appendix M	Test procedure	Noted
	Appendix N	Dispute Procedure	Comply



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Material Specification

Commodity : Glass Beads On BS 6088 B Moisture Proof Coated

Physical and Chemistry Function

Item	Standard
Specific Gravity (g/cm ²)	2.4--2.6
Reflective Index	≥ 1.5
Spherical beads (%)	>80

The Sieve Analysis

Diameter (μm)	Standard Retain (%)
>850	0 -- 5
600--850	5--20
300--600	30--75
180--300	10--30
<425	0--5

Remarks:

1. The Manufacturer's test certificate mentioning compliance of material shipped as per specification Glass Beads On BS 6088 B Moisture Proof Coated
2. All Packaging to be printed BS 6088 B Drop On Glass Beads, Batch Number and Manufacturing Date in Blue Ink.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



CERTIFICATE OF ANALYSIS

S/C NO. ARC/RMD/003/'13

DATE: 27th July 2013

COMODITY : 24MT GLASS BEADS BS6088 CLASS B MP COATED

STANDARD: BS6088 CLASS B

ORIGIN: CHINA

GUARANTEE SPECIFICATIONS:

DENSITY	2.4 – 2.6G/CM ³	
REFRACTIVE INDEX	1.5 MIN.	
GLOMERATION RATE	80% MIN.	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	850 MICRON UP	0-5%
	850-600 MICRON	5-20%
	600-300 MICRON	30-75%
	300-180 MICRON	10-30%
	180 MICRON BELOW	0-15%

ANALYSIS RESULTS:

DENSITY	2.50G/CM ³	
REFRACTIVE INDEX	1.51.	
GLOMERATION RATE	82.7%	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	850 MICRON UP	2.4%
	600-850 MICRON	16.3%
	300-600 MICRON	65.1%
	180-300 MICRON	14.7%
	180 MICRON BELOW	1.5%



TECHNICAL SUBMITTAL

FOR

THERMOPLASTIC

ROAD MARKING AASHTO M-249



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



THERMOPLASTIC ROAD MARKING (AASHTO M249)

COMPARISON TABLE

Manufacturer:

A. Thermoplastic : Al Afiah Roads Cont. L.L.C. NS – Not Specified

B. Glass Beads : Al Afiah Roads Cont. L.L.C. NP – Not Provided

Supplier : Al Afiah Roads Cont. L.L.C. NM – Not Mentioned

Applicator : Al Afiah Roads Cont. L.L.C. NA – Not Applicable

Item	Properties	Contract Specification	Proposed Material (Data Sheet)		Test Report as of 23/8/2012		Evaluation
		(AASHTO M249)	White	Yellow	White	Yellow	
	Thickness (mm)						
1.	a. Hand Screed (by Mould)	NS	2.00 ± 0.20	2.00 ± 0.20	NM	NM	OK
	b. Machine Spray (Striping)	NS	1.80 ± 0.20	1.80 ± 0.20	NM	NM	OK
2.	Properties of constituent materials (% by mass of total mixture)						
	a. Binder (Resin + Oil)	18 % min.	18 % min.	18 % min.	24.1	21.1	Comply
	b. Solid glass bead content	30 – 40 %	30 – 40 %	30 – 40 %	34.4	36.1	Comply
	c. Resin Type	Alkyd/Hydrocarbon	Hydrocarbon	Hydrocarbon	NM	NM	Comply
	d. Titanium Dioxide	≥10.0 /NS	≥10.0	NP	10.8	NA	Comply
	e. Lead Chromate	NS	NA	As required by purchaser	NA	0	Comply
	f. Calcium Carbonate	42% max(W) /NS(Y)	42 max	NP	31.3	28.3	Comply
3.	Specific Gravity of the mix	≥2.15	≥2.15	≥2.15	1.8	1.8	OK
4	Grading of glass beads (passing) AASHTO M-247 (Intermix glass beads)						
Sieve No.	20 (0.850 mm)	100%	100%	100%	99.5	99.6	Comply
	30 (0.600 mm)	75 - 95%	75 - 95%	75 - 95%	87.4	84.8	Comply
	50 (0.300 mm)	15 - 35%	15 - 35%	15 - 35%	25.6	24.7	Comply
	100 (0.150 mm)	0 - 5%	0 - 5%	0 - 5%	1	2	Comply
5.	Reflective index of Glass beads	1.65 min.	1.50 min.		Acceptable		Complies to AASHTO M247
6.	Roundness of Glass beads	≥70%	≥70%	≥70%	90%	90%	Comply
7.	Softening point °C	102.5 ± 9.5	102.5 ± 9.5	102.5 ± 9.5	108	108	Comply
8.	Flow ability (Residue) W/Y	<18 / ≤21%	<18	<21	8.7	9.9	Comply
9.	Impact Resistance	≥1.13 Joules	≥1.13 Joules	≥1.13 Joules	Acceptable		Comply
10.	Lead Chromate	NS	NA	As required by purchaser	NA	0	Comply



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Item	Properties	Contract Specification	Proposed Material (Data Sheet)		Test Report as of 23/8/2012		Evaluation
11.	Drying Time at Air Temp. $32 \pm 2^{\circ}\text{C}$	<10 minutes	3– 5 minutes	3– 5 minutes	3	3	Comply
12.	Daylight Reflectance	75% (W) / 45% (Y)	75	45	79	49	Comply
13.	Storage Life	1 Year	1 Year	1 Year	NM	NM	Comply
14.	Cracking Resistance @ cooling to $-9.4 \pm 1.7^{\circ}\text{C}$	No cracks	No cracks	No cracks	Acceptable		Comply
15.	Colour of Glass Beads	Transparent	Transparent	Transparent	Acceptable		Comply
15.	Shape of Glass Beads	Spherical	Spherical	Spherical	Acceptable		Comply

Prepared & Reviewed by:

Approved by:

Date: 23/08/2012



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



THERMOPLASTIC ROAD MARKING PAINTS AASHTO M249

TECHNICAL DATA SHEET

WHITE & YELLOW

Thermoplastic road marking material conforming to AAASHTO M249 shall consist of light coloured aggregate, pigment and extender, bound together with aliphatic hydrocarbon resin plasticized with mineral oil. Glass beads (Ballotini) shall be in accordance with AASHTO M247 – TYPE I. The material shall be provided in granular form.

Composition of Constituents

<u>Constituent</u>	<u>WHITE</u>	<u>YELLOW</u>
• Binder	18 Min.	18 Mi.
• Glass beads (Ballotini)	30 - 40	30 - 40
• Titanium Dioxide	10 Min.	-
• Calcium Carbonate and Inert Filler	42 Max.	* Note
• Yellow Pigment	-	As Required

* Note : Amount of yellow pigment, calcium carbonate and inert filler shall be at the option of the manufacturer, providing all other requirements of this specification are met.

Physical Characteristic

	<u>WHITE</u>	<u>YELLOW</u>
• Softening Point °C	102.5 ± 9.5	102.5 ± 9.5
• Specific Gravity gm/cm ³	< 2.15	< 2.15
• Flowability %	18 Max.	21 Max.
• Flowability - Extended Heating	28 Max.	28 Max.
• Drying Time	3 – 5 min@3 2°C	3 – 5 min@3 2°C
• Yellow Index	Below 0.12	-
• Cracking Resistance	No Cracks	No Cracks
• Impact Resistance (Joules)	≥1.13	≥1.13
• Color Daylight Reflectance	75% min.	45% min.

Grading of Glass Beads (In Mix) AASHTO M247

<u>Sieve Size (mm)</u>	<u>% Passing</u>
0.850	100
0.600	75 - 95
0.300	15 - 35
0.150	0 - 5

Storage Life : One year when the material is properly stored under a covered area.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



THERMOPLASTIC PAVEMENT MARKING TO AASHTO – M249

METHOD OF STATEMENT

CLEANING AND PRE-MARKING

1. Cleans and pre-marks the pavement to be carried out.
2. Checks and approves the pre-marking by the concerned authority.

IDEAL CONDITIONS FOR APPLICATION

1. Asphalt pavement shall be fully cured before applying road marking.
2. Typically the wearing course shall be allowed to cure for at least 5-7 days before road marking application. Curing time may vary according to bitumen content of asphalt.
3. Road marking applied on fresh asphalt and in extreme hot weather are more prone to blacking out and dirt pickup.

PRE-HEATING OF PLASTIC TO APPLICATION TEMPERATURE

1. Thermoplastic road marking material is melted in purpose-built pre-heated to the application temperature of about 180 to 200°C while being continuously agitated.
2. Continuous agitation is to ensure a homogenous mix with the glass beads and other ingredients not separating.

MACHINE AND HAND APPLICATION

1. For machine applied pavement marking the hot molten Thermoplastic is transferred from the pre-heater through a filtering mesh to the self-propelled road marking machine. The machine then sprays the hot material to the pavement at the required thickness of $2.50 \text{ mm} \pm 0.50 \text{ mm}$ by pressure spray. Machine also sprays the glass beads immediately on the marking at a minimum rate of 500 gms/m^2 for instant surface retro-reflectivity.
2. For hand-applied pavement markings the hot molten Thermoplastic is applied manually using lipped steel bucket and mould at the required thickness of $2.50 \text{ mm} \pm 0.50 \text{ mm}$. Drop-on glass beads are manually dropped on the marking at a minimum rate of 500 gms/m^2 for instant surface retro-reflectivity.
3. Fresh marking shall be coned off to allow it to cool for about 6 to 8 hours before opening the road to traffic.



TECHNICAL SUBMITTAL

FOR

ROAD MARKING

DROP ON BEADS AASHTO M-247

TYPE I & II



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Material Specification

Glass Beads : (M247)

Scope : this specification covers Glass Beads to be dropped or sprayed upon pavement markings so as to produce a reflectorized pavement marking.

Type I shall be known as standard gradation. Type II shall be known as uniform gradation.

The Glass Beads will meet gradation requirement for type as given in table below:

Gradation of Glass Beads

<u>Sieve Designation</u>		<u>Mass Percentage Passing</u>	
Standard mm	Alternate No.	Type I	Type II
0.850	20	100	.....
0.600	30	75-95	100
4.425	40	.....	90-100
0.300	50	15-35	50-75
0.180	80	.....	0-5
0.150	100	0-5	-----

According to AASHTO M249 Glass Beads Premix: the beads shall be uncoated and conform to AASHTO M247-Type I

General Requirements: The beads shall be transparent, clean, colorless glass, smooth and spherically shaped, free from milkiness, pits and excessive air bubbles and conform to the following requirements:

1. **Roundness:** The Glass Beads shall have a minimum of 70% true spheres.
2. **Crushing Resistance:** Retained 0.425mm (No.40) sieve N (30 Lbs) minimum.
3. **Refractive Index :** The Glass Beads will have a minimum index of refraction of 1.5
4. **Moisture Resistance:** Flow characteristics: The beads shall not absorb moisture in storage. They will remain free from clusters and lumps and will flow freely from dispensing equipments.
5. **Flotation:** A minimum of 90% beads shall float in xylene.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



COMPLIANCE STATEMENT FOR AASHTO M247-08 GLASS BEADS : TYPE I & II

AASHTO M247-08 (Glass Beads) Type I a II

CLAUSE	SPECIFICATION	NOTATION	COMMENT
1	Scope		Noted
2	References		Noted
3	General Requirements		Noted
4	Special properties	Type I and Type II	Comply
5	Sampling and testing	1 kg retained sample collected from 1%	Comply
6	Packaging	Type I and II	Comply

AASHYO TYPE "I" (150-850)			MODE OF TEST									PASS
Sieve	Specification		4272	4272	4272	4272	4272	4272	4282	4282	4282	4282
Micron	Min	Max	01	02	03	04	05	06	07	08	09	10
850 μ	100	---	100	100	100	100	100	100	100	100	100	100
600 μ	75	95	86	87	79	87	89	88	76	87	84	85
300 μ	15	35	21	20	20	19	21	23	17	23	25	22
150 μ	0	5	2	1	0	2	3	2	2	2	3	2
Roundness %			82	....	.....	82	....	.....	82	....	...	82
Hydrophoban			OK	....	.....	OK	....	.....	OK	....	.....	OK



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



CERTIFICATE OF ANALYSIS

S/C NO. ARC/RMD/002/'13

DATE: 27th July 2013

COMODITY : GLASS BEADS AASHTO M247-81 TYPE I UNCOATED

STANDARD: AASHTO M247-81 TYPE I

QUANTITY 24MT

ORIGIN: CHINA

GUARANTEE SPECIFICATIONS:

DENSITY	2.4 – 2.6G/CM ³	
REFRACTIVE INDEX	1.5 MIN.	
GLOMERATION RATE	80% MIN.	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	1180 MICRON	100%
	850 MICRON	95-100%
	600 MICRON	75-95%
	300 MICRON	15-35%
	150 MICRON	0-5%

ANALYSIS RESULTS:

DENSITY	2.5G/CM ³	
REFRACTIVE INDEX	1.51.	
GLOMERATION RATE	82.3%	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	1180 MICRON	100%
	850 MICRON	99-1%
	600 MICRON	83-7%
	300 MICRON	20-4%
	150 MICRON	1-5%



**AL AFIAH ROADS CONT. L.L.C.
ROAD MARKING DIVISION**



CERTIFICATE OF ANALYSIS

S/C NO. ARC/RMD/004/'13

DATE: 27th July 2013

SAMPLE : GLASS BEADS AASHTO M247-81 TYPE II DROP ON MPCOATED

STANDARD: AASHTO M247-81 TYPE II

QUANTITY 24MT

ORIGIN: CHINA

GUARANTEE SPECIFICATIONS:

DENSITY	2.4 – 2.6G/CM ³	
REFRACTIVE INDEX	1.5 MIN.	
GLOMERATION RATE	80% MIN.	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	600 MICRON	100%
	425 MICRON	90-100%
	300 MICRON	50-75%
	180 MICRON	0-5%

ANALYSIS RESULTS:

DENSITY	2.5G/CM ³	
REFRACTIVE INDEX	1.51.	
GLOMERATION RATE	83.6%	
PARTICLE DISTRIBUTION	MESH DIAMETER	PERCENTAGE REMAINED
	600 MICRON	100%
	425 MICRON	97-2%
	300 MICRON	55-3%
	180 MICRON	3-5%



THERMOPLASTIC ROAD MARKING PAINT

MATERIAL SAFETY DATA SHEET



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



MATERIAL SAFETY DATA SHEET

IDENTIFICATION OF THE PREPARATION

Product Name : Thermoplastic Road Marking Paint (White, Yellow, Blue, Red & Black)
Intended use : Road Marking Product

2. HAZARDS IDENTIFICATION

This product is not classified as hazardous material.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances presenting a health hazard within the meaning of the dangerous substances directives 67/548/EC

Name	Concentration	Symbol	Risk-Phrase (s)

4. FIRST AID MEASURES

General In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.

Inhalation Remove to fresh air, keep patient warm and at rest, if breathing is irregular or stopped, administer give artificial respiration.
Give nothing by mouth. If unconscious place in recovery position and seek medical advice.

Eye Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart and seek medical advice.

Skin Skin that has been in contact with hot Thermolit, has to be flushed with cold running water for al least 10 minutes.

Ingestion If accidentally swallowed obtain immediate medical attention. Keep at rest.
Do not induce vomiting.

5. FIRE-FIGHTING MEASURES

Extinguishing media Recommended : Alcohol resistant foam, CO2, powders, water supply.
Unsuitable : Water jet.

Recommendations Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may required.
Cool closed containers exposed to fire with water.
Do not allow run-off from fire fighting to enter drains or water courses.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



6. ACCIDENTAL RELEASE MEASURES

Refer to protective measures listed in section 7 and 8.

Contain and collect spillage and place in container for disposal according to local regulations (see section 13). Do not allow to enter drains or watercourse.

Clean preferably with a detergent; avoid use of solvents. If this product contaminates lakes, rivers or sewerage, inform appropriate authorities in accordance with local regulations.

7. HANDLING AND STORAGE

Handling:

Smoking, eating and drinking should be prohibited in application area. Wash thoroughly after handling.

Always keep in container of the same material as the original one. Comply with the health and safety at work laws.

For personal protections see section 8.

Storage:

Keep away from oxidizing agents, from strongly alkaline and strongly acid materials.

Prevent unauthorized access.

8. EXPOSE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

For these products are no exposure limits available.

Personal Protection;

Respiratory	None
Hand	Heat resistance gloves when working with melted material.
Eye	Use safety eyewear designed to protect against dust.
Skin and body	Workers should wear antistatic clothing's made of natural fiber or of high temperature resistant synthetic fiber. All parts of the body should be washed after contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid, fluid at temperature above 100°C.
Flash point	>230°C.
Viscosity	1000 – 6000 mPa.s. at 160-185°C.
Special gravity	Ca. 1,8 – 2,1 kg/l.
Lower explosion limit	... Upper explosion limit.
Solvent content	...
Solubility in water.	None



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



10. STABILITY AND REACTIVITY

Stable under recommended storage and handling conditions. (see section 7). When exposed to high temperature may produce hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen.

Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

11. TOXICOLOGICAL INFORMATION

There are no data available on the preparation itself.

The preparation is evaluated according the method of dangerous goods directives 1999/45/EC.

12. ECOLOGICAL INFORMATION

There are no data available on the preparation itself.

The product should be not be allowed to enter drains or water courses.

13. DISPOSAL CONSIDERATIONS

Do not allow into drains or water courses.

Wastes and emptied containers should be disposed in accordance to local regulations.

14. TRANSPORT INFORMATION

Land Transport:

ADR/RID:

Class: none

Etiquette--

UN-number--

Sea Transport:

IMDG:

Class: none

Etiquette--

UN-number--

Marine pollutant :No EmS:-- MFAG:--

Air Line Transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:

Transport/Additional information:

No dangerous good according to the above specification



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



15. REGULATORY INFORMATION

Labeling according to 199/45/EG directives.

Symbol(s) none

Contains --

R-phrases none

S-phrases none

16. OTHER INFORMATION

The information of this MSDS is based on the present state of our knowledge and on current EEC and national laws, as the users, working conditions are beyond our knowledge and control. The product is not to be used for other purposeless than those specified under section 1 without first obtaining written handling instructions. It is always the responsibility of the user to take all necessary steps in order to fulfill the demand laid down in the local rules and legislations. The information in this MSDS is meant as a description of the safety requirements of our product: it is not to be considered as a guarantee of the products properties.



**TECHNICAL SUBMITTAL
FOR
JOTUN/NATIONAL ACRYLIC PAINT
TRAFFIC PAINT**



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Technical Data

ROAD MARKING PAINT

Product Description

Road Marking Paint is an acrylic solvent based, quick drying paint.

Recommended use

For use on asphalt and concrete roads, primarily for kerbstone, speed humps or other areas with light traffic.

Film thickness and spreading rate

Minimum Maximum Typical

Film thickness, dry (μm) 40 80 60

Film thickness, wet (μm) 110 210 160

Theoretical spreading rate

(m^2/l)

9,25 4,5 6

Physical Properties

Colour White, Yellow and Black

Solid (vol %) * 37 ± 2

Flash point $250^\circ\text{C} \pm 2$ (Setaflash)

* Measured according to ISO 3233;1998 (E)

Surface Preparation

The substrate must be sound, clean, dry, free from dust, oil, grease and laitance etc. All traces of release agents must be removed. On chalky and dusty surfaces, all loose materials must be removed by shift bristle brushing.

Condition during application

The temperature of the substrate should be min. 10°C and min. 3°C above the dew point of the air, temperature and relative humidity measured in the vicinity of the substrate.

Application Methods

Spray Airless or conventional spray.

Brush recommended.

Roller recommended.

Application Data

Mixing ratio (volume) Single pack.

Thinner/Cleaner

Guiding data airless spray

ROAD MARKING PAINT Page 1

Pressure at nozzle 150 kg/cm^2 (2100 p.s.l)

Nozzle tip 0.018" – 0.021"

Spray angle 60° - 80°

Filter Check to ensure that filters are clean.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Drying Time

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with:

* Good ventilation (Outdoor exposure or free circulation of air).

* Typical film thickness.

* One coat on top of inert substrate.

Substrate temperature 10°C 23°C 40°C

Surface dry 20 min 10 min 7 min

Through dry 60 min 30 min 15 min

Dry to recoat, minimum 120 min 60 min 30 min

Dry to recoat, maximum

1. Recommended data given for recoating with the same generic type of paint.
2. In case of multi-coat application, drying times will be influenced by the number and sequence and by the total thickness of previous coats applied – reference is made to the corresponding system data sheet.
3. The surface should be dry and free from any contamination prior to application of the subsequent coat.

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying.

Paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

Typical Paint System

Road Marking Paint 2 Coats

* For reflective properties sprinkle Glass beads “Ballotini” over wet paint.

Other systems may be specified, depending on area of use.

Storage

The product must be stored in accordance with national regulations. The product must be kept in a cool and well-ventilated place, protected from heat and direct sunlight. Containers must be kept tightly closed.

Handling

Handle with care. Stir well before use.

Packing Size

1 US G and 5 US G

Packing may vary from country to country according to local requirements.

ROAD MARKING PAINT Page 2

Health and Safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not breathe or inhale mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

For detailed information on the health and safety hazards and precautions for use of this product, we refer to the Material Safety Data Sheet.

DISCLAIMER



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



METHOD STATEMENT

ROAD MARKING – COLD PAINT

Manufacture's recommendation:

1. Wet Film Thickness – 180 microns.
2. Dry film Thickness – 100 microns.

1.0 Material:

Cold Road Marking Paint

A high build road marking paint based on alkyd resin and chlorinated rubber being fast drying non bleeding as asphalt, with excellent resistance to water, oils and gasoline's.

Drying time: Touch dry 5 to 10 minutes (fully cured 4 to 6 hours) at ambient temp, dependant on humidity, air movement and film thickness.

1.1 Plant and Equipment:

Line Lazer Cold Paint Road Marking Paint machine.

1.2 Surface Preparation (Main Contractor)

Washed and dry, clean, clear dust-free virgin surface.

1.3:1 Machine Application:

- Mask the perimeter of the line with masking tape.
- Spray inside the Line Lazer with Line Lazer Machine at the rate of 300 microns – wet film thickness, i.e. 120 microns – dry film thickness.
- Spray Glass Beads at the rate of approximate 300g/m² (Drop-on Method)
- Remove the masking tape after 20 minutes.

1.3:2 Manual Application (Double Application)

- Mask the perimeter of the line with masking tape.
- Apply Paint with roller or brush after drying the first application. Repeat the same and apply glass beads.

ROAD MARKING PAINT

PRODUCT DESCRIPTION

A special thermoplastic, water repellent, quick drying paint based on modified acrylic resin containing Titanium Dioxide and other high grade color fast pigments. The specially formulated product is resistant to abrasion and chemicals, and ideal as Marking Paint on concrete and asphalt runway.

RECOMMENDED AREAS OF APPLICATION

- **Area of Use :** Interior & Exterior
- **Substrate :** Concrete, Asphalt, Paving blocks, Kerbs.

TECHNICAL DATA

Finish : Smooth, Medium sheen

Colours : White, Yellow, Black & Red oxide

% Volume Solids : 50 ± 2

Theoretical Covering Capacity	:	Recommended dry film thickness Per coat		Spread Rate
		Minimum	75 microns	6.67 M ² / Liter.
		Maximum	125 microns	4.00 M ² / Liter.
		Typical	100 microns	5.00 M ² / Liter.

Practical Covering Capacity : For estimation of practical covering capacity, following factors to be taken into account: surface profile, uneven application, losses in container and equipment etc.

Drying time	:	Substrate temp.	Touch dry	Overcoating interval	
				Minimum	Maximum
		25° C	20 minutes	16 Hours	Indefinite
		35° C	15 minutes	14 Hours	Indefinite
		45° C	12 minutes	10 Hours	Indefinite

APPLICATION DATA

- **Method of Application** :: Brush or Roller, Airless spray
- **Thinner** :: Solvalux 7 – 25 (Use 5% to 10% thinner for ease of application depending on the method of application
- **Flash Point** :: 30° C

SURFACE PREPARATION

The performance of this coating is directly related to the degree of surface preparation. .

- Ensure surface is clean, dry and free from all contaminants.
- Surface must be sound and free from laitance.
- Remove laitance by wire brush or sweep blast.
- Dusting or chalking surfaces should be consolidated using **Berger Plastaseal Penetrating Sealer**.

APPLICATION DETAILS

- The performance of the coating is directly related to the degree of surface preparation
- Ensure adequate ventilation during application and drying.
- Do not apply when humidity exceeds 85% and condensation is likely. Only apply coating when surface temperature is 3°C or more above dew point.
- Make sure that the moisture content of the substrate should not exceed 6% when measured with calibrated moisture meter
- Ensure surface is clean, dry and free from all contaminants.
- Stir the contents thoroughly before the use.
- **Brush or Roller** :: Apply an even coat taking care to avoid runs and sags.
- **Airless Spray** ::: May also be used.

TYPICAL PAINT SYSTEM

- 3 coats X Road Marking Paint.

For alternate system suggestion please contact Berger Paints Sales Representative

STORAGE, SAFETY INFORMATION AND PRECAUTIONS

- Keep out of reach of children.
- Store in cool, dry conditions; ensure adequate ventilation during application.
- Shelf life up to 12 months from the date of manufacture
- Avoid contact with skin and eyes; wear suitable protective clothing such as overalls, goggles, dust masks and gloves.

First-Aid

- Eyes: In the event of accidental splashes, flush eyes immediately with warm water and obtain medical advice.
- Skin: Wash skin thoroughly with soap and water, or with an approved industrial cleaner. Do not use solvents.
- Inhalation: Move patient to fresh air, loosen collar and keep patient rested.
- Ingestion: Do not induce vomiting. Obtain immediate medical attention.
- Dispose as per local regulation

DISCLAIMER

The information provided in this data sheet is not intended to be complete. It is the responsibility of the user to ensure that the product used is suitable for the purpose it is meant to serve. In view of various factors affecting the performance of the coating, we cannot assume responsibility for the product performance, nor do we accept any liability arising from use of this product, unless specifically agreed to in writing by us. The information provided in the datasheet may be modified by us without notice.

Technical Data

Road Marking Paint



Product description

Road Marking Paint is an acrylic solvent based, quick drying paint.

Recommended use

For use on asphalt and concrete roads, primarily for kerbstones, speed humps or other areas with light traffic.

Film thickness and spreading rate

	Minimum	Maximum	Typical
Film thickness, dry (µm)	40	80	60
Film thickness, wet (µm)	110	210	160
Theoretical spreading rate (m ² /l)	9,25	4,5	6

Physical properties

Colour	White, Yellow and black.
Solids (vol %)*	37 ± 2
Flash point	25°C ± 2 (Setaflash)

*Measured according to ISO 3233:1998 (E)

Surface preparation

The substrate must be sound, clean, dry, free from dust, oil, grease and laitance etc. All traces of release agents must be removed. On chalky and dusty surfaces, all loose material must be removed by stiff bristle brushing.

Other surfaces

The coating may be used on other substrates. Please contact your local Jotun office for more information.

Condition during application

The temperature of the substrate should be min. 10°C and min. 3°C above the dew point of the air, temperature and relative humidity measured in the vicinity of the substrate.

Application methods

Spray	Use airless spray or conventional spray
Brush	Recommended.
Roller	Recommended.

Application data

Mixing ratio (volume)	Single pack.
Thinner/Cleaner	Jotun Thinner No. 7
Guiding data airless spray	
Pressure at nozzle	150 kg./cm ² (2100 p.s.i.)
Nozzle tip	0.018" - 0.021"
Spray angle	60° - 80°
Filter	Check to ensure that filters are clean.

Drying time

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with:

- * Good ventilation (Outdoor exposure or free circulation of air)
- * Typical film thickness
- * One coat on top of inert substrate

Substrate temperature	10°C	23°C	40°C
Surface dry	20 min	10 min	7 min
Through dry	60 min	30 min	15 min
Dry to recoat, minimum ¹	120 min	60 min	30 min
Dry to recoat, maximum ^{2,3}			

1. Recommended data given for recoating with the same generic type of paint.
2. In case of multi-coat application, drying times will be influenced by the number and sequence and by the total thickness of previous coats applied – reference is made to the corresponding system data sheet.
3. The surface should be dry and free from any contamination prior to application of the subsequent coat.

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

Typical paint system

Road Marking Paint 2 Coats

* For reflective properties sprinkle Glass beads 'Ballotini' over wet paint.

Other systems may be specified, depending on area of use

Storage

The product must be stored in accordance with national regulations. Storage conditions are to keep the containers in a dry, cool, well ventilated space and away from source of heat and ignition. Containers must be kept tightly closed.

Handling

Handle with care. Stir well before use.

Packing size

1 US G and 5 US G.

Packing may vary from country to country according to local requirements.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not breathe or inhale mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

For detailed information on the health and safety hazards and precautions for use of this product, we refer to the Material Safety Data Sheet.

DISCLAIMER

The information in this data sheet is given to the best of our knowledge based on laboratory testing and practical experience. However, as the product can be used under conditions beyond our control, we can only guarantee the quality of the product itself. We also reserve the right to change the given data without notice. Minor product variations may be implemented in order to comply with local requirements.

If there is any inconsistency in the text the English (UK) version will prevail.

Jotun is a World Wide company with factories, sales offices and stocks in more than 50 countries. For your nearest local Jotun address please contact the nearest regional office or visit our website at www.jotun.com

ISSUED 26 NOVEMBER 2010 BY JOTUN
THIS DATA SHEET SUPERSEDES THOSE PREVIOUSLY ISSUED



**TECHNICAL SUBMITTAL
FOR
COLD PAINT
FAST DRY ACRYLIC TRAFFIC PAINT**



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Technical Data

ROAD MARKING PAINT

Product Description

Road Marking Paint is an acrylic solvent based, quick drying paint.

Recommended use

For use on asphalt and concrete roads, primarily for kerbstone, speed humps or other areas with light traffic.

Film thickness and spreading rate

Minimum Maximum Typical

Film thickness, dry (μm) 40 80 60

Film thickness, wet (μm) 110 210 160

Theoretical spreading rate

(m^2/l)

9,25 4,5 6

Physical Properties

Colour White, Yellow and Black

Solid (vol %) * 37 ± 2

Flash point $250^\circ\text{C} \pm 2$ (Setaflash)

* Measured according to ISO 3233;1998 (E)

Surface Preparation

The substrate must be sound, clean, dry, free from dust, oil, grease and laitance etc. All traces of release agents must be removed. On chalky and dusty surfaces, all loose materials must be removed by shift bristle brushing.

Condition during application

The temperature of the substrate should be min. 10°C and min. 3°C above the dew point of the air, temperature and relative humidity measured in the vicinity of the substrate.

Application Methods

Spray Airless or conventional spray.

Brush recommended.

Roller recommended.

Application Data

Mixing ratio (volume) Single pack.

Thinner/Cleaner

Guiding data airless spray

ROAD MARKING PAINT Page 1

Pressure at nozzle 150 kg/cm^2 (2100 p.s.l)

Nozzle tip 0.018" – 0.021"

Spray angle 60° - 80°

Filter Check to ensure that filters are clean.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Drying Time

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with:

* Good ventilation (Outdoor exposure or free circulation of air).

* Typical film thickness.

* One coat on top of inert substrate.

Substrate temperature 10°C 23°C 40°C

Surface dry 20 min 10 min 7 min

Through dry 60 min 30 min 15 min

Dry to recoat, minimum 120 min 60 min 30 min

Dry to recoat, maximum

1. Recommended data given for recoating with the same generic type of paint.
2. In case of multi-coat application, drying times will be influenced by the number and sequence and by the total thickness of previous coats applied – reference is made to the corresponding system data sheet.
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Paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

Typical Paint System

Road Marking Paint 2 Coats

* For reflective properties sprinkle Glass beads “Ballotini” over wet paint.

Other systems may be specified, depending on area of use.

Storage

The product must be stored in accordance with national regulations. The product must be kept in a cool and well-ventilated place, protected from heat and direct sunlight. Containers must be kept tightly closed.

Handling

Handle with care. Stir well before use.

Packing Size

1 US G and 5 US G

Packing may vary from country to country according to local requirements.

ROAD MARKING PAINT Page 2

Health and Safety

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For detailed information on the health and safety hazards and precautions for use of this product, we refer to the Material Safety Data Sheet.

DISCLAIMER



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



METHOD STATEMENT

ROAD MARKING – COLD PAINT

Manufacture's recommendation:

1. Wet Film Thickness – 180 microns.
2. Dry film Thickness – 100 microns.

1.0 Material:

Cold Road Marking Paint

A high build road marking paint based on alkyd resin and chlorinated rubber being fast drying non bleeding as asphalt, with excellent resistance to water, oils and gasoline's.

Drying time: Touch dry 5 to 10 minutes (fully cured 4 to 6 hours) at ambient temp, dependant on humidity, air movement and film thickness.

1.1 Plant and Equipment:

Line Lazer Cold Paint Road Marking Paint machine.

1.2 Surface Preparation (Main Contractor)

Washed and dry, clean, clear dust-free virgin surface.

1.3:1 Machine Application:

- Mask the perimeter of the line with masking tape.
- Spray inside the Line Lazer with Line Lazer Machine at the rate of 300 microns – wet film thickness, i.e. 120 microns – dry film thickness.
- Spray Glass Beads at the rate of approximate 300g/m² (Drop-on Method)
- Remove the masking tape after 20 minutes.

1.3:2 Manual Application (Double Application)

- Mask the perimeter of the line with masking tape.
- Apply Paint with roller or brush after drying the first application. Repeat the same and apply glass beads.



TEST REPORTS/APPROVALS
FOR
COLD PAINT
(KERB STONE / INTERLOCK)



الفطيم
Al Futtaim

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Bodycote

باريكوت ماتيريال تيستينغ سيرفيسز
MATERIALS TESTING SERVICES

REPORT OF TESTS

Description	One Sample of National Road Marker (Black)		
Tested for	National Paint Factories Co. Ltd, Post Box No.5822, Sharjah, U.A.E		
Lab Ref. No.	WR05-12655 (Page 1 of 1)	Request No.	WQ05-04615
Date Received	11.05.2005	Date Reported	14.05.2005

Client's ref. : NP/GK/NRK/132, Req dtd 10.05.2005
 Sample Reference : National Road Marker (Chlorinated Rubber Based - Black)
 Source : National Paint Factories Co. Ltd Sharjah
 AFBMTS Sample No. : W05-004615/02

1.0 Introduction

Further to the test work instructions received from M/s. National Paint Factories Co. Ltd Sharjah, dated 10.05.2005, the sample of National Road Marker (Black) provided has been tested for Solid Content by Al Futtaim Bodycote Materials Testing Services LLC;

2.0 Solid Content

Test Method : ASTM D 1644

Test	Results
Solid Content (% by wt.)	73.48
*Volume of Solids (%)	56

Remarks : * Calculated value as per client's request.

S.K. SAJI
Chemical Laboratory Supervisor

For and on behalf of Al Futtaim Bodycote
Materials Testing Services (L.L.C)

Tested by: KSLN, Date tested: 12.05.2005 - 13.05.2005

This report shall only be reproduced in full. Approval of the testing laboratory is required for partial reproduction.
 Samples will be retained for a period of one month only, unless otherwise requested.
 The test results relate only to the samples tested



AL FUTTAIM BODYCOTE MATERIALS TESTING SERVICES LLC

• P.O. BOX 34924 • DUBAI • UAE • TEL: +971 (0)4 3332201 • FAX: +971 (0)4 3332772 • E-MAIL: dubai.lab@bodycote.com • WEBSITE: www.middleeast.bodycote.com www.bodycote.com

REPORT OF TESTS

Description	One Sample of White National Road Marking Paint		
Tested for	National Paint Factories Co. Ltd, Post Box No.5822, Sharjah, U.A.E		
Lab Ref. No.	WR06-04317 (Page 1 of 1)	Request No.	WQ06-00076
Date Received	03.01.2006	Date Reported	05.02.2006

Client's ref. : NP/GK/001, Req dtd 03.01.2006
Sample Reference : White National Road Marking Paint
Source : National Paint Factories Co. Ltd, Sharjah
AFBMTS Sample No. : W06-000076/01

1.0 Introduction

Further to the test work instructions received from M/s. National Paint Factories Co. Ltd Sharjah, dated 03.01.2006, the sample of White National Road Marking Paint provided has been received for UV resistance test by Al Futtaim Bodycote Materials Testing Services LLC;

2.0 UV Resistance

Test Method: Test specimen was exposed to UV radiation as per ASTM G 53 for 200 hours.

Test		Observation
		After 200 hours of UV resistance test
UV Resistance	200 hours @ 50±3°C	Slight change in colour and surface cracking was observed after UV exposure

Remarks: Photograph attached.

For and on behalf of Al Futtaim Bodycote
Materials Testing Services (L.L.C)

Test subcontracted to BMTS Group Laboratory, Date completed : 31.01.2006

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Samples will be retained for a period of one month only, unless otherwise requested.

The test results relate only to the samples tested.



REPORT OF TESTS
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Description	One Sample of National Road Marker (White)		
Tested for	National Paint Factories Co. Ltd, Post Box No.5822,Sharjah, U.A.E		
Lab Ref. No.	WR05-12654 (Page 1 of 1)	Request No.	WQ05-04615
Date Received	11.05.2005	Date Reported	14.05.2005

Client's ref. : NP/GK/NRK/132,Req dtd 10.05.2005
Sample Reference : National Road Marker (Chlorinated Rubber Based- White)
Source : National Paint Factories Co. Ltd Sharjah
AFBMTS Sample No. : W05-004615/01

1.0 Introduction

Further to the test work instructions received from M/s. National Paint Factories Co. Ltd Sharjah, dated 10.05.2005, the sample of National Road Marker (White) provided has been tested for Solid Content by Al Futtaim Bodycote Materials Testing Services LLC;

2.0 Solid Content

Test Method : ASTM D 1644

Test	Results
Solid Content (% by wt.)	71.81
*Volume of Solids (%)	53

Remarks: *Calculated value as per client's request.

S.K. SAJI
Chemical Laboratory Supervisor

For and on behalf of Al Futtaim Bodycote
Materials Testing Services (L.L.C)

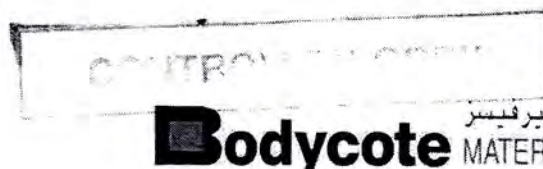
Tested by: KSLN, Date tested: 12.05.2005 - 13.05.2005

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Samples will be retained for a period of one month only, unless otherwise requested.
The test results relate only to the samples tested.





الفطيم
Al Futtaim



باديكوت ماتيريال تيستينغ سيرفيسيز
MATERIALS TESTING SERVICES

REPORT OF TESTS

Description	One Sample of National Road Marker (Yellow)		
Tested for	National Paint Factories Co. Ltd, Post Box No.5822, Sharjah, U.A.E		
Lab Ref. No.	WR05-12656 (Page 1 of 1)	Request No.	WQ05-04615
Date Received	11.05.2005	Date Reported	14.05.2005

Client's ref. : NP/GK/NRK/132, Req dtd 10.05.2005
 Sample Reference : National Road Marker (Chlorinated Rubber Based - Yellow)
 Source : National Paint Factories Co. Ltd Sharjah
 AFBMTS Sample No. : W05-004615/03

1.0 Introduction

Further to the test work instructions received from M/s. National Paint Factories Co. Ltd Sharjah, dated 10.05.2005, the sample of National Road Marker (Yellow) provided has been tested for Solid Content by Al Futtaim Bodycote Materials Testing Services LLC:

2.0 Solid Content

Test Method : ASTM D 1644

Test	Results
Solid Content (% by wt.)	71.90
*Volume of Solids (%)	53

Remarks : * Calculated value as per client's request.

S.K. SAJI
Chemical Laboratory Supervisor

For and on behalf of Al Futtaim Bodycote
Materials Testing Services (L.L.C)




Tested by: KSLN, Date tested: 12.05.2005 - 13.05.2005

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 RTAA مملكة الطرق والنقل ROADS & TRANSPORT AUTHORITY		 PARSONS DE LEUW, CATHIER OVERSEAS LIMITED		 TAISEI CORPORATION	
Client : Roads Department P.O. Box 118899 - Dubai, U.A.E.		Engineer: Parsons- De Leuw Cather Overseas Ltd. P.O. Box 9123 - Dubai, U.A.E.		Contractor: Taisei Corporation P.O. Box 31202 -Dubai, U.A.E.	
RAS AL KHOR CROSSING - CONTRACT R800/5					
MATERIAL SUBMITTAL					
NEW SUBMITTAL		<input type="checkbox"/>	RE-SUBMITTAL		<input checked="" type="checkbox"/>
		Document No.:		MS - EN - 0306-2 (R)	
		Date:		24 November 2008	
B.O.Q. ITEM REF.		d/6/9 F		<div style="border: 1px solid black; padding: 5px;"> RECEIVED 24 NOV 2008 DCOL SITE OFFICE Received by (PDCOL) ENCLOSURES: <input checked="" type="checkbox"/> B.O.Q. Pages <input checked="" type="checkbox"/> Specification Pages <input type="checkbox"/> Drawings/Sketch <input checked="" type="checkbox"/> Trade License <input checked="" type="checkbox"/> Paint System <input checked="" type="checkbox"/> Technical Data Sheets <input checked="" type="checkbox"/> Method Statement <input checked="" type="checkbox"/> Tests Results <input checked="" type="checkbox"/> ISO Certificate <input checked="" type="checkbox"/> Previous Approval Pre-qualification </div>	
MATERIAL DESCRIPTION		KERB PAINTING (Chlorinated rubber based quick drying paint)			
SPECIFICATION CLAUSE REF.		Vol. 2 Part I -General Specification - Clause GS 5 / 7.12 and 5/13			
DRAWINGS REF.					
MANUFACTURER		National Paints Factories Co. Ltd P. O. box 5822, Sharjah , UAE			
LOCAL SUPPLIER		National Paints Factories Co. Ltd P. O. box 5822, Sharjah , UAE			
Originator:		Date of Submission:		Approval Requested by:	
Mr. Gabby Ashour		24 November 2008		Mr. Hidehiko Toyama	
MATERIAL ENG.		Proposed Source is approved Subject to:- (1) Satisfactory test results for each colour at DCOL (2) All kerb shall be dry and thoroughly cleared of all extraneous materials prior to application. (3) The paint shall be supplied fresh and ready for use in sealed containers, storage shall be as per manufacturer's recommendations and shall be applied without any of thinner or other additives.			
ADDITIONAL COMMENTS		(4) Subject to performance of site and Engineer satisfaction (5) To be inspected prior to use at site.			
For Client / Engineer:		Status:			
Name: Hisham Ashour		<input type="checkbox"/> Approved		<input checked="" type="checkbox"/> Approved Except as noted	
Signature:		<input type="checkbox"/> Revise & Re-submit		<input type="checkbox"/> Not Approved	
		<input type="checkbox"/> Sample is Required			
		Date: 26/11/2008			

Material Approval Form (MAF)

Department: General Projects Department

Doc Owner: Head Of Section / Unit



Submittal No.	MS 58	Rev.	2	Date	22/11/2006	<input type="checkbox"/> New Submittal	<input checked="" type="checkbox"/> Re-submittal
Project No.	PJ-1093/2	Project Code	614-04	End User	Dubai Municipality		
Project Title	PJ-1093/2 USED CAR EXHIBITION CENTER - "Phase 2"						
Consultant	Robert Matthew & Johnson Marshall		Contractor	L Ghaflly General Contracting			
Sub-contractor			Trade	CIVIL			

Description / Technical Literature :

PAINTING TO KERBS

Chlorinated rubber based quick drying paint (black and white) applied in 2 coats to exposed faces of precast concrete kerbs.

Attachments	<input type="checkbox"/> Sample	<input checked="" type="checkbox"/> Technical Data	<input type="checkbox"/> QA/QC Reports	<input type="checkbox"/> Method Statement	<input type="checkbox"/> Others
Area of Application / Location					
Specs Ref.	Class 5/7.12	Dwg. Ref.	DX00165/H/LP/T/4.1	BOQ ref.	15/EW/2/NTT6/M
Origin	UAE	Manufacturer Name:		NATIONAL PAINTS	
Local Agent	NATIONAL PAINT FACTORIES CO. Ltd e-mail / Tel				
Contractor's Attestation					
Material / Submittal Comply with Specifications			<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> Alternative	
Details if Alternative:					

Certified By	22 NOV 2006	Signature / Date:	32/11/2006
--------------	-------------	-------------------	------------

For Consultant

BY: *[Signature]*

- ☐ Approved
☒ Approved with Comments
☐ Rejected

Date forwarded to DM 04/12/06

Date Received from DM 5/12/06

Comments:

No objection... Subject to submitting:-
 - Compliance statement
 - Test certificate from DCL
 - Mock up for approval
 - R.T.A. Project Reference (Recent)
 Not Submitting the above will result in rejection

Consultant Authorized:

Signature / Date:

Note:

For Dubai Municipality (DM)

- ☐ 1. Work may proceed
☒ 2. Review & comment, work may proceed subject to incorporation of comments.
☐ 3. Revise & re-submit, work may not proceed.
☐ 4. Review not required, work may proceed.

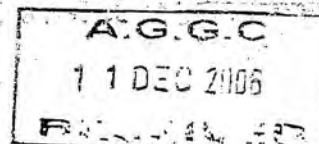
Comments:

Refer to Consultant's comments

DM Authorized:

Signature / Date:

Dubai municipality permission to proceed does not constitute acceptance or approval of materials developed or selected and does not absolve engineer/contractor and their subcontractors and suppliers from full compliance with contractual obligations including the quality of final product.



2007
 6
 Mr. Faruk Asaad

Abu Dhabi Municipality
Road Department
Central Laboratory

المختبر المركزي
لإدارة الطرق



إدارة الطرق
مختبر المركزي

إدارة الطرق
مختبر المركزي

Farouk ASAAD

مورد اعتماد المواد MATERIALS APPROVAL FORM

Date Submitted By Contractor: 24/02/04

Contract No.:

Name of Project: MAINTENANCE, REHABILITATION AND ADDITIONAL WORKS FOR
ROADS AND BRIDGES IN ABU DHABI ISLAND

Consultant: WS ATKINS & PARTNERS OVERSEAS

Contractor: ABU DHABI GENERAL TRANSPORT Co.

تاريخ التقديم من قبل المقاول:
رقم العقد:
اسم المشروع:
الاستشاري:
المقاول:

المراجع بالمواصفات Spec. Ref.	مواصفات المادة المقدمة Description	المراجع بجدول الكميات B.O.Q. Ref.
505.06	KERBSTONE PAINTS (WHITE, YELLOW & BLACK) (ALTERNATIVE)	5.06, 5.06a 5.07, 5.08a 5.08, 5.10
Manufacturer or Source:	NATIONAL PAINTS FACTORIES CO. LTD, SHARJAH	
Supplier:	NATIONAL PAINTS CO. ABUDHABI	

CONTRACTOR SIGNATURE:

CONSULTANT COMMENTS:

CONSULTANT SIGNATURE:

DATE: 25/02/04

Road Department's Comments:

THE ABOVE MATERIAL IS CONDITIONALLY APPROVED SUBJECT TO:-

- Adherence to the commitment provided by the manufacturer (copy attached)
- Method statement for application provided by the manufacturer should be strictly adhered to.
- Performance and furnishing the same in conformance with the intent and requirements of the contract documents.
- Routine QA/QC procedures.
- Consultant should make sure that the material is in full compliance with specification requirements immediately upon delivery to site whilst thoroughly checking the details of the delivery notes.
- The paint manufacturer & contractor should commit for the minimum thickness (DFT).

ملاحظات الاستشاري:
توقيع الاستشاري:
التاريخ:
ملاحظات إدارة الطرق:



Approval

G.T.C. - أبو ظبي
إدارة الطرق
مشروع الصيانة والتجديدات
مختبر المركزي
لإدارة الطرق

28/04

27/3/04

30/3/2004

CONDITIONAL APPROVAL

يعتمد: م. عبدالله سالم الكثيري
مدير إدارة الطرق

Municipalities and Agriculture Dept.
Abu Dhabi Municipality
Roads and Technical Services Sector



المدينة والرياح
البحر والسموات
الشمس والليل

Civil Material Approval Request

Submittal No: 36
Project / Contract No: Maintenance, 603/2006.
Contractor: Abu Dhabi General Transport Co.
Consultant: Parsons International.

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Directorate / Section:

المرجع بالمواصفات Spec. Ref	رسم مخططات البناء Drawing No.	المرجع بجدول الكميات BOQ Ref.	Material Description (incl. make, model etc)
S05.06 PS-505.04	PD.02-01	5.004, 5.006, 5.007 5.008, 5.009, 5.011 5.013, & 5.014	KERB STONE PAINTS (White, Yellow Black) (Alternative)

Note: Only one material item for each intended usage to be entered in this sp

Intended Usage:	KERB STONE PAINTS	ن من الاستخدام:
Manufacturer / Source:	NATIONAL PAINTS, SHARJAH	المصنعة:
Supplier:	NATIONAL PAINTS SHARJAH	الموردة:

Submitted Attachments Checklist:

- | | |
|--|---|
| <input type="checkbox"/> 1 - Material Source Declaration Form (MSDF) | <input type="checkbox"/> 6 - End User's Acceptance (if required) |
| <input type="checkbox"/> 2 - Copies of Relevant Parts of Specs, BoQ & Drawings | <input type="checkbox"/> 7 - Manufacturer / Supplier's Guarantee (as per Contra |
| <input type="checkbox"/> 3 - Specification Comparison Table | <input type="checkbox"/> 8 - Previous Approvals |
| <input type="checkbox"/> 4 - Manufacturer's Technical Data / Original Catalogues | <input type="checkbox"/> 9 - Samples (if required) |
| <input type="checkbox"/> 5 - Recent Test Reports / Certificates | <input type="checkbox"/> 10 - Others (please specify) |

Contractor's Signature, Stamp and Submission Date:
Maintenance Project - Abu Dhabi

Consultant's Remarks and Recommendations:

WE RECOMMEND FOR APPROVAL IN CONDITION CONDUCTING A NEW TEST OF SPECIFIC GRAVITY FOR THE MATERIALS (Min.Required 1.5kg/Litre), 2 Coats to be Applied (90-180 Micron) Per Coat

Signature and Date Submitted to Committee:

Committee's Decision:

- The above material is **CONFORMANT** for the intended use in the project subject to:
1. Performance and furnishing the same in compliance with the intent and requirements of the contract documents;
 2. Conducting successfully a full set of testing under the supervision of consultant's staff;
 3. Method Statement should be submitted and strictly adhered to;
 4. Routine QA/QC procedures;
 5. Consultant should review the submittal thoroughly and should reject any irrelevant information / brochure.

6. Consultant should ensure that the material should be in full compliance with specification requirements
7. The contractor and fabric manufacturer should commit for a minimum thickness - DFT P.

ALBANY MUNICIPALITY
FORM "B" FOR APPROVAL OF NEW MATERIAL
of this form must be completed and

All sections of this form must be completed and all copies of the relevant portions of the specifications, drawings, manufacturer's technical data, certifications and test information must accompany this submittal. Where sections are not applicable to the items submitted, the section must be marked "NOT APPLICABLE"

CONTRACT NO : PHASE - I CONTRACT - I		REGION/AREA : AL-AIN
CONSULTANT : MAUNSELL CONSULTANCY		DATE SUBMITTED : 15/09/2001
CONTRACTOR : AL NABOODAH CCNT.CO.		SUBMITTAL NO : B-303
Material		Product Name: NATIONAL ROAD MARKER
Description :	PAINT FOR KERBS	(if appl.):
Manufacturer	NATIONAL PAINTS FACTORIES CO.	Supplier: NATIONAL PAINTS FACTORIES CO LTD.
Address	P.BOX NO. 5822 SHARIAH	P.BOX 5822, SHARIAH
Specification Clauses :		Phone : 06-3334542 Fax : 06-3337619
(attached & marked)	C 2/10, SECTION 2.27	Applicable Standards :
Relevant Drawings :		Manuf. Data :
(attached & marked)	YES	(attached & marked)
Tests & Certification :		Samples - 2 each:
(attached & marked)	YES	(attached or accessible)
Material Specifies :	(size, class, grade, type, strength, accessories etc.)	ACCESSIBLE
HIGH BUILD ROAD MARKING PAINT BASED ON ALKYD RESIN AND CHLORINATED RUBBER, PIGMENTED WITH LIGHT FAST- WEATHER RESISTANT PIGMENT WITH TOUGH INERT EXTENDERS.		
NATIONAL WHITE & NATURAL BLACK		
Proposed Area of Application and /or Limitations (if any) for this Contract :		Quantity :
FOR KERB AND BARRIER PAINTING IN CONTRACT-I AREAS		AS REQ.
Comments:	<input checked="" type="checkbox"/> Recommended	<input type="checkbox"/> Not Recommended

ALABAMA POWER CO. (12)			
FORM AL-AM-115			
DATE:	12/15	PL:	51A
NAME	W. G. H.	GE	NR
DR. NO.	11		
PHYS. SURV.			
TEST AGENT			
REMARKS			
TEST			
TEST INSTR.			
SAFETY CODE			
TIME			
FILE			
FILE NO.			
APPROV. AL-AM			
APPROV. NR			

☐ Approved Subject to
Performance

☐ Not Approved

☐ Pending Further Test Information

Conclusions

ACS

Provide

Recent tests

URGENT

**AAM Material &
QC Engineer**

SAM PRINCE ENGINEER

DIRECTOR



HEALTH AND SAFETY INFORMATION



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Manufactures by

Al Afiah Roads Cont. L.L.C.

P. O. Box 63292 – Sharjah – U.A.E. Tel. : 00971 6 5755 241 Fax. : 00971 6 5755 243

E-mail : info@afiahgroup.com

Intended Use

Horizontal Road and Airfield and Pavement Marking on asphalt based surfaces

Composition

Synthetic Resin, Refined Mineral Oil, Glass Beads (reflective grade only) Extenders, Polymer Additives, Silica Sand, Graded Calcium Carbonate, General Marble, Titanium Dioxide Rutile (White), Lead Chromate (Yellow).

General Physical Properties

Softening Point not less than (101 standard range) (115 super plus range) degree Centigrade
Flash point exceeds 230 degree Centigrade (open cup method).

Relative density : 2.0 gm/cc +/-0.1.

Standard Colors : White, Orange, Blue and Yellow, other colors are available by special request.

Additional Information

The Thermoplastic Road Marking Material using by our company has been manufactured in UAE & Oman for over 20 years and widely used in both these countries.

It has been applied in all areas by hand and machine by our own specialist application division as well as independent contractors throughout the area.

Packaging contains additional information and information on use.

Thermoplastic material has been tested on numerous occasions by the independent, and municipality laboratories over many years without cause for concern.

We welcome any sampling, testing or trials in accordance with the relevant recognized specifications.

Quality Assurance / Quality Control

All Raw Materials are rigorously tested in laboratory before used in the manufacturing process. Materials are manufactured in 1 MT Batches and testing is carried out following a rigorous regime before materials are allowed to leave the factory for application.

EVERY 2 ND BATCH	EVERY 4 TH BATCH	EVERY DAY	EVERY 3 MONTHS
LUMINANCE	LUMINANCE	APPLICATION BY HAND	INDEPENDENT TESTING BY EXTERNAL LABORATORY
VISCOSITY	HEAT STABILITY		
VISUAL APPEARANCE	BINDER CONTENT		
	SOFTENING POINT		



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Environmental / LEED Consideration

Materials are manufactured in the UAE and/or Oman and contains 68% of content is sourced with the GCC

ALL Packaging materials from the production process is recycled/reused. NO waste is generated during production. ALL packaging Road Marking Materials should be included in the pre-heater, Resulting NO waste being generated from the site work.

20% of the material content are recycled materials.

General Guidance

Materials when both hot and cold should not be handled by untrained operators; all operators should receive documented instruction on the handling of hot and molted Thermoplastic materials.

PPE should be laundered on a regular basis to avoid build up of materials within the cloth.

Materials should be stored out of direct sunlight, excessive heat or rain in a safe and secure place without danger or cross contaminations with solvents, oils, greases or fuels.

Moisture within the powder materials will cause spitting and foaming within the pre heaters causing risk to the operatives.

Each vehicle should be equipped with at least 1 Co2 fire extinguisher located in close proximity to the pre heater.

Materials are warranted to comply with the Specifications of British Standard 3262 1989 Part 1 BSEN or ASSHTO M249 50/30-80/30 RSF as per customer order.

Materials are warranted for a period of 12 months from the date of manufacture.

Materials must be stored and applied in line with the Manufactures Guidance.

Heating

All equipment should be in good working order and maintained in line with the manufactures recommendations, temperature gauges should be calibrated at least every 6 months to prevent the possibility of overheating (causing risk of fire within the Pre Heater) Materials should be brought up to temperature and then the pre heater should be timed down to allow simmer. Prolonged heating or overheating will have a detrimental effect of the material (yellow will lighten and white will darken in colour) and luminance of the material will be affected.



AL AFIAH ROADS CONT. L.L.C. ROAD MARKING DIVISION



Great care should be taken when adding material to the pre heater full bags including the packaging should be deposited in the pre-heater by gently lowering the bag and not dropping to avoid splashing. Do not overfill the pre heater but keep well charged until the end of the day when pre heater should be emptied.

Take care not to activate the agitator until cold materials have softener or damage will occur to the agitator mechanism.

Care must be taken to take note of the maximum heating temperature stated on the packaging. The pre heater should not be left unattended at any time whilst in operation.

Application

The competent road marking contractor should prepare and submit to the client for approval a method statement for the application of Thermoplastic Road marking Materials Care should be taken as to the physical conditions and environment taking into account the road and traffic conditions at the time, adequate safety measures should be in place to ensure the safety of the operatives during application.

The materials are suitable for application by hand screeding and machine spraying by following the plant manufacturers operating instructions. All application should be carried out by a Competent Contractor and trained personnel.

Fire

The prime consideration in the event of fire should be personal safety of the operators and public the area should be made safe and the fire authorities should be immediately informed.

The following notes are only to be followed if the operation be carried out without risk to personnel.

1. Turn off gas supply to pre heater.
2. Turn off agitator.
3. Do not use water at any time as this will increase the risk to personnel.
4. Extinguish the flames using CO2 fire extinguisher only.
5. Open pre heater and leave to cool.
6. Add more cold material to reduce the overall temperature.
7. Take note of the temperature gauge readings once cooled to below the maximum heating temperature drain off materials should not be used.



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Spillage

If possible and safe to do so close the source of the spillage.

Contain the spilling of hot material by bonding the area affected using sand or cotton cloths.

Allow hot material to solidify and cool before attempting removal.

Cold powder spillages should be cleaned up using brush and solvent into suitable containers for disposal.

Environmental

Waste material should be disposed of in accordance with local municipality regulations for non hazardous materials.

Removal of Materials

Materials should only be removed by a competent contractor by Hand Chipping for small areas and sand or water blasting for large areas.

Personal Protective Equipment

The contractor should assess and ensure all Operatives are supplied with the required PPE before the application of the material.

Risk Assessments

The contractor should assess the risks to health before the application of the material.



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Health Hazards, Preventions and Actions

Material in COLD/POWDER FORM

Skin Contact

Low order of toxicity.

Low order irritation.

Contact with skin should be minimized.

Preventative methods

Operatives should wear coverall and gloves.

Action in case of incident

Remove from skin using soap and water.

Eye contact

Particles may cause scratching to the eye surface/mechanical irritation.

Preventative methods

Operatives should wear eye protection during use.

Actions

Flush eyes with copious amounts of sterile water until irritation subsides; if irritation persists take medical advice.

Inhalation

Negligible hazard – materials should only be used in well ventilated areas.

Dust-long term exposure limit $10\text{mg}/\text{m}^3$ 8 hour time weighted average.

Preventative methods

Operatives should wear dust masks during use.

Actions

First aid not usually required.

Ingestion

No hazard in normal industrial use – DO NOT CHEW OR SWALLOW

Preventative methods

Materials should not be chewed.

Actions

First aid not required if swallowed immediately seek urgent medical advice, vomiting should be encouraged/induced.



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Material in HOT/MOLTEN STATE

SKIN/EYE CONTACT

Danger of burning

Preventative methods

Operatives should wear full length coveralls, eye protection, heat resistant, gloves and footwear during use.

Actions

DO NOT remove clothing or material fused to the affected area.

Pour copious amount of cold sterile water on the area affected to dissipate heat and limit the injury.

Seek immediate medical advice from doctor in minor incidents and hospital in major incidents.

Not to medical staff

The material composition is soluble in aromatic solvents, IE Toluene, Xylente or Chlorinated Hydrocarbon Solvent such as chloroform, Dichloromethane.

Inhalation

In normal use no medical consideration are required.

Preventative methods

Operatives should not expose themselves to fumes for extended periods; materials should only be used in well ventilated areas and never in confined spaces. Face masks should be worn.

Actions

In breathing difficulties are encountered then medical advice should be sought immediately.

Ingestion

No hazard in normal industrial use by competent operatives – do not chew or swallow burning to mouth and digestive system will result.

Preventative methods

Materials should not be chew or eat material.

Actions

First aid not required if swallowed seek immediate medical advice urgently.