# FUGRO TECHNICAL SERVICES LIMITED

MateriaLab Division,
Fugro Development Centre,
5 Lok Yi Street, 17 M.S. Castle Peak Road,
Tai Lam, Tuen Mun, N.T., Hong Kong.

Tel    : +852-2450 8233
Fax    : +852-2450 6138
E-mail  : matlab@fugro.com.hk
Website : www.materialab.com.hk

**MateriaLab**

## Test Report on Analysis of Adhesive

**Information Supplied by Client**

| | | |
|---|---|---|
| Client | : | GARISH CROWN BUILDING MATERIALS LTD. |
| Client's address | : | WORKSHOP B25 ON UG/F, WAH LOK INDUSTRIAL CENTRE PHASE 1, 37-41 SHAN MEI STREET, FOTAN, SHATIN, N.T. |
| Project | : | VOC test |
| Sample description | : | One sample of Gentleman Instant Nail |
| Sample identification | : | MFG 12 NOV 2011 |
| Test required | : | VOC content for adhesive other than PVC, CPVC, ABS pipe cements and adhesive primer |

**Laboratory Information**

| | | |
|---|---|---|
| Lab sample I.D. | : | EN120239/1 |
| Date of receipt of sample | : | 02/03/2012 |
| Date test completed | : | 14/03/2012 |
| Test method used | : | USEPA Method 24 & SCAQMD Method 303-91 |

Calculated based on results of

a) Volatile content – USEPA Method 24 Section 11.3.1 & ASTM D2369-98
b) Water content – USEPA Method 24 Section 11.3.2 & ASTM D4017-96a
c) Coating density – USEPA Method 24 Section 11.3.3 & ASTM D1475-96
d) Exempt compounds – SCAQMD Method 303-91

| | | |
|---|---|---|
| Dilution ratio | : | - |

*Note : This report refers only to the sample(s) tested.*

## FUGRO TECHNICAL SERVICES LIMITED

MateriaLab Division,
Fugro Development Centre,
5 Lok Yi Street, 17 M.S. Castle Peak Road,
Tai Lam, Tuen Mun, N.T., Hong Kong.

Tel : +852-2450 8233
Fax : +852-2450 6138
E-mail : matlab@fugro.com.hk
Website : www.materialab.com.hk

**MateriaLab**

Report No. : 120482EN120239

**Results :**

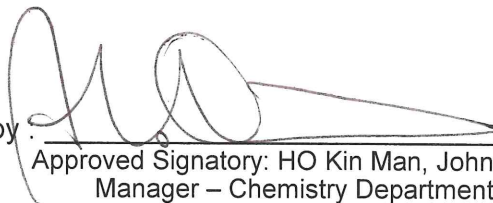|  | Result |
|---|---|
| Volatile content ($W_v$), %wt | 30.57 |
| Water content ($W_w$), %wt | 0.33 |
| Exempt compounds ($W_{ex}$), %wt | 29.1 (Methyl Acetate) |
| Coating density ($D_c$) @ 25°C, g/ml | 1.251 |
| VOC content, g/L of adhesive, less water and less exempt compounds | 24 |

Note:

Equation for calculation of VOC:

$$VOC = ( W_a - W_b - W_c ) / ( V_d - V_e - V_f )$$

$$= [ ( W_a / W ) - ( W_b / W ) - ( W_c / W ) ] * W / V_d / ( 1 - V_e / V_d - V_f / V_d )$$

$$= [ (W_v - W_w - W_{ex}) ] * [ D_c * 1000 / ( 100 - W_w * D_c / D_w - W_{ex} * D_c / D_{ex} ) ]$$

$$= (W_v - W_w - W_{ex}) * D_c * 1000 / ( 100 - W_w * D_c / D_w - W_{ex} * D_c / D_{ex} )$$

where

$W_a$ is weight of volatile compounds in grams (per unit of sample)

$W_b$ is weight of water in grams (per unit of sample)

$W_c$ is weight of exempt compounds in grams (per unit of sample)

$W$ is weight of material in grams (per unit of sample)

$V_d$ is volume of material in litres (per unit of sample)

$V_e$ is volume of water in litres (per unit of sample)

$V_f$ is volume of exempt compounds in litres (per unit of sample)

$D_w$ is density of water in g/ml @ 25°C (i.e. 0.997072 g/ml)

$D_{ex}$ is density of exempt compounds in g/ml @ 25°C

Supervised by : _____K.F. Wong_____      Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemistry Department

Date : _____19/3/2012_____
** End of Report **

*Note : This report refers only to the sample(s) tested.*