PFE TECHNOLOGIES

PERESEAL

EXPERTISE IN SEALANT TECHNOLOGY

702 HIGH PERFORMANCE ACRYLIC SEALANT

PERESEAL® 702 Acrylic Sealant is a pure acrylic latex sealant for general purpose interior and exterior caulking in architectural applications where slight or moderate joint movement is anticipated. It is easy to use and extrude, and its sound dampening properties prevent the transmission of noise through vibrations.

APPLICATIONS

Ideal for the sealing of air-conditioner ducting systems; also suitable for sealing and grouting of aluminium window and door frames. Can be used in construction grouting and caulking.

- Low VOC – qualifies for LEED IEQc4.1 (tested by TÜV SÜD PSB)
- Conforms to ASTM C920:2001
- Very easy to apply
- Sound dampening
- No smell
- Excellent paintability after curing
- Weather and UV resistant
- Permanent colour
- Excellent adhesion to most building materials
- Non-toxic, non-staining

ACRYLIC EMULSION | **PHYSICAL DRYING** | **UP TO 15% MOVEMENT**

PAINTABLE | **SOUND DAMPENING** | **MESS-FREE**

Top quality, sound-dampening acrylic sealant ideal for applications in air-con ducting and general construction

Pereseal Green Packaging

With our commitment to advanced construction technology, a better environment, and state-of-the-art production processes, PFE Technologies Pte Ltd is proud to offer our Pereseal products in aluminium foil packaging, also known as sausage packaging, in our support for greener, more efficient building practices.

Pereseal sausage foil products are offered in 330 ml net volumes, and will require a compatible sausage foil applicator gun for extrusion and application.

This initiative by PFE Technologies will lead to a wide range of benefits for the customer, the user, and the environment; bringing lower costs, higher efficiency, reduced waste, and ultimately better and environmentally friendlier building practices.

PERESEAL

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702 HIGH PERFORMANCE ACRYLIC SEALANT

TECHNICAL DETAILS

Base	Acrylic emulsion
Consistency	Stable paste
Curing system	Physical drying
Skin formation	20 minutes
Tack-free time	60 minutes
Curing rate	12 - 24 hours
Hardness	25±5 Shore A
Specific gravity	1.5 - 1.67
Temperature resistance	-25°C to +90°C
Elongation at break	>200%
Skinning time	20 minutes
Maximum deformation	±15%
Paint acceptance	Excellent

APPLICATION

Application method	Applicator gun
Application temperature	+1°C to +30°C
Clean	with white spirit before application
Tooling	with soapy solution before skin formation
Repair	with PERESEAL 702

STANDARDS/APPROVALS

ASTM C920:2001	TÜV SÜD PSB Pte Ltd

LEED IEQc4.1 - Low-Emitting Materials - Sealants

JOINT SIZE

Minimum width	5 mm
Maximum width	50 mm
Minimum depth	5 mm
Recommendation	joint width = 2 x joint depth

SUBSTRATE

Substrate: All usual building surfaces

Surfaces should be clean, dry, free of dust and grease. No primer required for aluminium, air-con ducting materials and most porous surfaces of building materials. We recommend a preliminary compatibility test before application.

COLOUR AND PACKAGING

Colour	Black, white, grey
Volume and packaging	300 ml cartridge, 20 / box
	330 ml sausage, 20 / box

OTHER NOTES

Storage and shelf life

24 months for unopened packaging in cool and dry storage place at temperature between 5°C to 25°C

Limitations

The sealant must be protected from water for 24 hours after application. It must not be used on areas where it will be constantly submerged in liquids.

PFE TECHNOLOGIES

Proudly made by PFE Technologies in Singapore

PFE TECHNOLOGIES PTE LTD
9 GUL STREET 4 SINGAPORE 629238
TEL: +65 6558 6388 | FAX: +65 6558 7310
www.pfetec.sg
Sales enquiries: sales@pfetec.sg
Technical enquiries: info@pfetec.sg

ABOUT PFE

PFE Technologies Pte Ltd is an established distribution and manufacturing company producing and supplying abrasives and sealant products. The company has owned, manufactured, marketed and distributed the Pereseal range of sealants for over three decades.

Established in Singapore in 1978, PFE Technologies has gained a reputation for quality, reliability, and outstanding value. PFE's mission is to deliver a superior level of services and products to achieve enduring, life-long customer satisfaction and relationships.

TEST REPORT: 7191168589-CHM17-01-CSY

Date: 23 AUG 2017 Tel: +65 68851312 Fax: +65 67784301

Client's Ref: Email: zhou.xiao@tuv-sud-psb.sg

PSB Singapore

Choose certainty.
Add value.

SUBJECT

Evaluation of Sealant samples

CLIENT

PFE Technologies Pte Ltd
No 9 Gul Street 4
Singapore 629238

Attn : Mr Hans Goh

DESCRIPTION OF SAMPLE

One sealant sample labelled as follows were received on 28 Jul 2017.

Product name	Quantity
PERESEAL 702	1 x 300 ml

DATE OF TEST

10 Aug 2017 – 18 Aug 2017

PSB Singapore

METHOD OF TEST

The sample was tested in the "as-received" condition.

Test	Method
1) Volatile organic compound content	As per LEED *IEQc4.1: Low-Emitting Materials - Adhesives and Sealants*, and according to South Coast Air Quality Management District (SCAQMD) Rule #1168 *Adhesive and Sealant Applications* recommend test method: US EPA Method 24 "*Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings*" as reference

RESULTS

Table 1 : The Volatile Organic Compound (VOC) Content Results

Sample	Result [a]
PERESEAL 702	53.1 g/L

a) The result was calculated based on the specific gravity = 1.5 g/cm^3 provided by client

SUMMARY OF TEST RESULTS

The summary of test results for "PERESEAL 702".

Test	Result	LEED IEQc4.1: Low-Emitting Materials - Adhesives and Sealants Requirement		Inferred Remark
		Sealants VOC Limit [g/L less water]		
VOC Content	53.1 g/L	Architectural	< 250 g/L	Pass
		Roadway	< 250 g/L	

* Adhesives, Sealants and Sealant Primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits listed in the table below correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

MS CHOO SEOW YAH
TECHNICAL EXECUTIVE

DR XIAO ZHOU
PRODUCT MANAGER
MICROCONTAMINATION DIAGNOSIS
CHEMICAL & MATERIALS

PSB Singapore

Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.

2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

3. Nothing in this report shall be interpreted to mean that TÜV SÜD PSB has verified or ascertained any endorsement or marks from any other testing authority or bodies that may be found on that sample.

4. This report shall not be reproduced wholly or in parts and no reference shall be made by the Client to TÜV SÜD PSB or to the report or results furnished by TÜV SÜD PSB in any advertisements or sales promotion.

5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, No.1 Science Park Drive Singapore 118221.

July 2011

Section 1. Chemical Product and Company Identification

Product Name : **PERESEAL ® 702**

Chemical Name : Acrylic Sealant

Supplier/Manufacturer Information : PFE Technologies Pte Ltd
9 Gul Street 4
Singapore 629238

Email : info@pfe.tech
Website : www.pfe.tech

Emergency Telephone Number:
+65 6558 6388

Telephone number for Information:
+65 6558 6388

Fax Number:
+65 6558 7310

Section 2. Hazards Identification

Classification of the substance or mixture : The product is not classified and does not have to be labelled.

GHS label elements

Hazard pictograms : Void

Signal word : Void

Hazard statements : Void

Precautionary statements

General : Not applicable.

Prevention :
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Wear protective gloves.
Wear eye or face protection.
Wear protective clothing.
Do not breathe dust.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.

Response :
Get medical attention if you feel unwell.
IF SWALLOWED:
Immediately call a POISON CENTER or physician.
Rinse mouth.
Do NOT induce vomiting.
IF ON SKIN (or hair):
Take off immediately all contaminated clothing.
Rinse skin with water or shower.

Wash contaminated clothing before reuse.
IF IN EYES:
Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : P501 Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition / Information on Ingredients

Hazardous Ingredients	CAS No. EINECS No.	Conc. %	Hazardous Symbol	Risks (R-phrases)
None	--	--	--	--

(1) For R-phrases in full: see heading 16

Section 4. First-aid Measures

Description of necessary first aid measures

Eye contact : Rinse opened eye for several minutes under running water.
Inhalation : Supply fresh air; consult doctor in case of complaints.
Skin contact : Generally, the product does not irritate the skin.
Ingestion : If symptoms persist consult doctor.

Most important symptoms and effects : No further relevant information available.
Indication of any immediate medical attention needed : No further relevant information available.

Section 5. Fire-Fighting Measures

Extinguishing Media
Suitable extinguishing media : Use fire extinguishing methods suitable to surrounding conditions.

Unsuitable extinguishing media : None.

Specific hazards arising from the chemical : No further relevant information available.

Special protective equipment for fire-fighters : Mouth respiratory protective device

Section 6. Accidental Release Measures

Personal Protection/Precaution	:	**See heading 8.1/8.3/10.3**
Environmental Precaution	:	Use appropriate containment to avoid environmental contaminant
Method of Cleaning up	:	Scrape up and place in a container fitted with lid. Label clearly with contents ready for disposal. Clean residues with water and detergents.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation
Environmental precautions	:	Dilute with plenty of water. Do not allow to enter sewers / surface or ground water.
Methods and material for containment and cleaning up	:	Absorb with liquid-binding material (sawdust, sand, acid / universal binders). Pick up mechanically.

Section 7. Handling and Storage

Precautions for safe handling	:	Observe normal hygiene standards. Use only in well ventilated areas.	
Storage	:	Keep container tightly closed in cool, dry and ventilated area. No special requirements.	
Quantity limit	:	N.D.	kg
Storage life	:	730	days
Specific uses	:	No further relevant information available.	

Section 8. Exposure Controls / Personal Protection

Control parameters

TLV-TWA	:	- mg/m^3	ppm
TLV-STEL	:	- mg/m^3	ppm
TLV-Ceiling	:	- mg/m^3	ppm
OES-LTEL	:	- mg/m^3	ppm
OES-STEL	:	- mg/m^3	ppm
MAK	:	- mg/m^3	ppm
TRK	:	- mg/m^3	ppm
MAC-TGG 8 h	:	- mg/m^3	
MAC-TGG 15 min.	:	- mg/m^3	
MAC-Ceiling	:	- mg/m^3	
VME-8 h	:	- mg/m^3	ppm
VLE-15 min.	:	- mg/m^3	ppm

GWBB-8 h	:	- mg/m^3	ppm
GWK-15 min.	:	- mg/m^3	ppm
Momentary value	:	- mg/m^3	ppm
EC	:	- mg/m^3	ppm
EC-STEL	:	- mg/m^3	ppm

Exposure Controls

Occupational Exposure Controls	:	Use only in well-ventilated area
Environmental Exposure Controls	:	see Heading 13

Personal Protections

Respiratory Protection	:	Respiratory protection required in normal conditions of use
Hand Protections	:	Gloves
Eye Protections	:	Safety glasses
Skin Protection	:	Suitable protective clothing

Section 9. Physical and Chemical Properties

General Information

Appearance (at 20°C)	:	Paste	
Odour	:	Characteristics	
Colour	:	Variable in Color	

Important Health, Safety and Environmental Information

pH value	:	N.D.	
Boiling point/boiling range	:	N.D.	°C
Flashpoint	:	N.D.	°C
Explosion limits	:	N.D.	Vol%
Vapour pressure (at 20°C)	:	N.D.	hPa
Vapour pressure (at 50°C)	:	N.D.	hPa
Relative density (at 20°C)	:	1.5	g/cm^3
Water solubility	:	Soluble	
Soluble in	:	N.D.	
Relative vapour density	:	N.D.	
Viscosity (at 20°C)	:	N.D.	Pa.s
Partition coefficient n-octanol/water	:	N.D.	
Evaporation rate			
ratio to butyl acetate	:	N.D.	
ratio to ether	:	N.D.	

Other Information

Melting point/melting range	:	N.D.	°C
Auto-ignition point	:	N.D.	°C
Saturation concentration	:	N.D.	g/m^3

Section 10. Stability and Reactivity

Conditions to Avoid/Reactivity	:	Stable under normal conditions
Materials to Avoid	:	None

Hazardous Decomposition Products	:	On burning: release of e.g. Carbon monoxide and Carbon dioxide

Section 10. Stability and Reactivity

Reactivity	:	Stable under normal conditions.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	No specific data.
Incompatible materials	:	No specific data.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological Information

Acute Toxicity

LD50 oral rat	:	N.D.	mg/kg
LD50 dermal rabbit	:	N.D.	mg/kg
LD50 dermal rabbit	:	N.D.	mg/kg
LC50 inhalation rat		N.D.	mg/l/4h
LC50 inhalation rat	:	N.D.	ppm/4h

Chronic toxicity

EC carc. cat.	:	not listed
EC muta. cat.	:	not listed
EC repr. cat.	:	not listed
Carcinogenicity (TLV)	:	not listed
Carcinogenicity (MAC)	:	not listed
Carcinogenicity (VME)	:	not listed
Carcinogenicity (GWBB)	:	not listed
Carcinogenicity (MAK)	:	not listed
Mutagenicity (MAK)	:	not listed
Teratogenicity (MAK)	:	not listed
IARC classification	:	not listed

Primary irritant effect

on the skin	:	No irritant effect
on the eye	:	No irritant effect
sensitization	:	No sensitizing effects known

Additional toxicological information

The product is not subject to classification. When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

Section 12. Ecological Information

Ecotoxicity : No data available

Mobility : Volatile organic compounds (VOC): < 1%
Insoluble in water
For other physiochemical properties see **HEADING 9**

Persistence and Degradability

Biodegradation BOD_5	:	N.D.	%ThOD
Water	:	No data available	
Soil	:	T ½ N.D.	days

Bioaccumulative Potential	:	log P_{ow}	N.D.
	:	BCF	N.D.

Other Adverse Effects	:	WGK	1
		Effects on the ozone layer	Not dangerous on ozone layer
		Greenhouse effect	No data available
		Effect on waste water purification	No data available

Section 12. Ecological Information

Ecotoxicity	:	No further relevant information available.
Persistence / degradability	:	No further relevant information available.
Bioaccumulative potential	:	No further relevant information available.
Mobility in soil	:	No further relevant information available.
Other information	:	No further relevant information available.

Section 13. Disposal Considerations on Waste Materials

Disposal Methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport Information

UN-Number : Void
ADR, AND, IMDG, IATA

UN Proper shipping name **ADR, AND, IMDG, IATA**	:	Void
Transport Hazard Class(es) **ADR, AND, IMDG, IATA**	:	Void
Packing Group **ADR, IMDG, IATA**	:	Void
Environmental hazards	:	Void
Special precautions for user	:	This product is not regarded as dangerous goods according to the national and international regulations on the transport of dangerous goods.

Section 15. Regulatory Information

Labeling not required according to available information.

Section 16. Other Information

The information provided on this SDS is correct to the best of our knowledge and information at the date of its publication. This shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

N.A. = NOT APPLICABLE
N.D. = NOT DETERMINED
***** = INTERNAL CLASSIFICATION

Exposure limits:

TLV : Threshold Limit Value - ACGIH US 2000
OES : Occupational Exposure Standards - United Kingdom 1999
MEL : Maximum Exposure Limits - United Kingdom 1999
MAK : Maximale Arbeitsplatzkonzentrationen - Germany 2001
TRK : Technische Richtkonzentrationen - Germany 2001
MAC : Maximale aanvaarde concentratie - the Netherlands 2002
VME : Valeurs limites de Moyenne d'Exposition - France 1999
VLE : Valeurs limites d'Exposition à court terme - France 1999
GWBB : Grenswaarde beroepsmatige blootstelling - Belgium 1998
GWK : Grenswaarde kortstondige blootstelling - Belgium 1998
EC : Indicative occupational exposure limit values - directive 2000/39/EC

Chronic toxicity:

K : List of the carcinogenic substances and processes - the Netherlands 2002

Section 16. Other Information

History

Date of printing	:	20/05/2017
Date of issue / Date of revision	:	20/05/2017
Date of previous issue	:	12/08/2015
Version	:	1.5
Prepared by	:	Technical department
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail UN = United Nations
References	:	Not available

Notice to reader

Unless otherwise specified in section 1, PFE Technologies Pte Ltd products are intended for industrial application only.
Keep out of the reach of children.

Further Information

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PFE TECHNOLOGIES

PFE TECHNOLOGIES PTE LTD

9 Gul Street 4 Singapore 629238 Tel: 6558 6388 Fax: 6558 7310 E-mail: pfetec@pacific.net.sg
Website: www.pfetec.com Co. Reg. No : 197800448W GST Reg No.: M2-0029325-8

6th July 2015

To whom it may concern:

PSB Test Reports and Certificates of Conformity

Please note that in our experience, most users of our products are able to specify our products only using our PSB Test reports.

In many cases, our PSB Test reports are sufficient to establish the technical parameters of our products for use in construction applications. Most users are able to accept this test report as it is conducted by PSB, a Singapore board.

These test reports do not have an expiry date.

On some occasions, users may request for a Certificate of Conformity (COC). This is especially true when we have test reports that were conducted overseas.

For example, our Pereseal FR Acrylic Sealant Fire-rating test was conducted in the UK by Bodycote Warringtonfire. We have a PSB COC to establish that this foreign test standard BS 476: Part 20: 1987 conducted by Bodycote Warringtonfire conforms with our local Singapore product listing scheme of Class 1A.

For our other products which already have the local test reports as provided by PSB, we did not take the additional step to submit it for a COC as it is usually not necessary.

Yours faithfully,

PFE TECHNOLOGIES PTE LTD
9 GUL STREET 4
SINGAPORE 629238
Tel : 6558 6388 Fax : 6558 7310

Hans Goh
Business Development Manager

PFE Technologies Pte Ltd

Test Report No. 7191056593-MEC13-ED
dated 20 May 2013

PSB Singapore

Choose certainty.
Add value.

SUBJECT:

Testing of sealant

TESTED FOR:

PFE Technologies Pte Ltd
No. 9 Gul Street 4
Singapore 629238

Attn: Mr Paul John Francia

SAMPLE DESCRIPTION:

The following items were received on 15 Mar 2013 as shown:

Sample	Volume	Quantity
'Pereseal 702'	300 ml/ cartridges	10 cartridges

TEST METHODS:

Staining And Colour Change

1. ASTM C510 : 2005 Standard Test Method For Staining And Colour Change Of Single Or Multi-Component Joint Sealants

Test cycle	:	8 hours UV exposure at 55°C and 4 hours condensation at 45°C
Exposure duration	:	100 hours
No. of determination	:	1 for staining test, 1 for colour change test, 1 as control

Extrudability

2. ASTM C1183 : 2008 Standard Test Method For Extrusion Rate Of Elastomeric Sealants
(Cross Reference: ASTM D1475 : 2008 Standard Test Method For Density Of Liquid Coatings, Inks And Related Products)

Apparatus	:	Pycnometer and caulking gun
Test pressure	:	40 psi
No. of determination	:	1

TÜV SÜD PSB

Laboratory:
TÜV SÜD PSB Pte. Ltd.
Testing Services
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

Flow Properties

3. ASTM C639 : 2007 Standard Test Method For Rheological (Flow) Properties Of Elastomeric Sealants

Method	:	Test method for 'Type II' sealant
Test conditions	:	a) 4.4°C in environmental chamber for 4 hours b) 50°C in oven for 4 hours
No. of determinations	:	2 for vertical and horizontal displacements

Hardness

4. ASTM C661 : 2006 Standard Test Method For Indentation Hardness Of Elastomeric-Type Sealants By Means Of A Durometer

Test Conditions:
a) 23°C and 50% relative humidity for 7 days
b) 38°C and 95% relative humidity for 7 days
c) 23°C and 50% relative humidity for 7 days

No. of determinations : 2, 3 points per test piece

Tack-Free Time

5. ASTM C679 : 2003 Standard Test Method For Tack-Free Time Of Elastomeric Sealants

No. of determinations : 2

Cyclic Adhesion & Cohesion

6. ASTM C719 : 2005 Standard Test Method For Adhesion And Cohesion Of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)

Test Conditions:
a) 23°C and 50% relative humidity for 7 days
b) 38°C and 95% relative humidity for 7 days
c) 23°C and 50% relative humidity for 7 days
d) Immersion in distilled water at 23°C for 7 days
e) Drying in oven at 70°C for 7 days

Cyclic Test Conditions:
Stage A-10 cycles of joint movements:
a) The joint width was compressed from 12.7mm to 9.5mm at 3.2 mm/h
b) It was extended from 9.5mm to 15.9mm at 3.2 mm/h
c) It was compressed again from 15.9mm to 12.7mm at 3.2 mm/h

Stage B-10 cycles of joint movements:
a) The joint width was compressed to 9.5mm and conditioned at 70°C for 16 to 20 hours
b) After ageing, the test specimens were cooled to 23°C for 2 to 3 hours
c) The joint width was extended to 15.9mm at -26°C and 3.2 mm/h
d) The specimens were removed and allowed to condition to room temperature

No. of determinations : 3

Effects Of Heat Ageing

7. ASTM C1246 : 2006 Standard Test Method For Effects Of Heat Ageing On Weight Loss, Cracking, And Chalking Of Elastomeric Sealants After Cure

Test Conditions:
a) 23°C and 50% relative humidity for 28 days
b) 70°C for 21 days

No. of determinations	:	3, 1 as control

Effects Of Accelerated Weathering

8. Adopted ASTM C793 : 2005 Standard Test Method For Effects Of Accelerated Weathering On Elastomeric Joint Sealants

Test cycle	:	8 hours UV exposure at 55°C and 4 hours condensation at 45°C
Lamp designation	:	Fluorescent UVA 340 mm
Exposure duration	:	250 hours
No. of determinations	:	3 (1 as control)
Bend test		
Apparatus	:	Steel mandrel
Test condition	:	-26°C for 24 hours
No. of determinations	:	3

Adhesion-In-Peel

9. ASTM C794 : 2006 Standard Test Method For Adhesion-In-Peel Of Elastomeric Joint Sealants

Test Conditions:
a) 23°C and 50% relative humidity for 7 days
b) 38°C and 95% relative humidity for 7 days
c) 23°C and 50% relative humidity for 7 days
d) Immersion in water at 23°C for 7 days

Substrate	:	Mortar
Crosshead speed	:	50.8 mm/min
No. of determinations	:	4

Material Identification/Verification

10. Material Identification/Verification By Fourier Transform Infra-Red Spectrometric Analysis (FTIR)

CONDITIONING:

Unless otherwise specified, all test specimens were tested at 23 ± 2°C and 65 ± 5% relative humidity.

TEST RESULTS:

Test	'Pereseal 702'	ASTM C920 : 2008 Standard Specification For Elastomeric Joint Sealants
1. Staining And Colour Change	No staining and no colour change	The sealant shall not cause any visible staining on the top surface of a white cement mortar base
2. Extrudability	>10 ml/min	Type S (single component), grade NS (non-sag or gunnable sealant) shall have an extrusion rate time of not < 10 ml/min
3. Rheological (Flow) Properties	Vertical displacement: 0 mm sag Horizontal displacement: No deformation	Grade NS (non-sag) or gunnable sealant shall have flow characteristics such that it does not sag >4.8mm in vertical displacement and shall show no deformation in horizontal displacement (refers to Types II and IV sealants)
4. Indentation Hardness test piece 1, average test piece 2, average	 30 30	T (traffic) sealant shall have a hardness reading of not <25 or >50 after being properly cured NT (non-traffic) sealant shall have a hardness reading of not <15 or >50 after being properly cured
5. Tack-Free Time	No transfer of test specimens to the polyethylene film	There shall be no transfer of the sealant to the polyethylene film when tested at 72 hours
6. Adhesion & Cohesion Under Cyclic Movement	No bond failure	The total loss in bond and cohesion areas among the three specimens tested for each surface shall not be >9 cm2 with mortar substrates
7. Effects Of Heat Ageing On Weight Loss, Cracking And Chalking, average	1.2% No cracking and chalking	The sealant shall not lose >7% of its original weight or show any cracking and chalking
8. Effects Of Accelerated Weathering	No cracks after UV exposure and bend test	The sealant shall show no cracks after the specified UV exposure and shall show no cracks after exposure at cold temperature and the bend test
9. Adhesion-In-Peel, average test piece 1 test piece 2 test piece 3 test piece 4	35.5 N (8.0 lbf) 35.3 N (8.0 lbf) 32.0 N (7.2 lbf) 37.9 N (8.5 lbf) 36.8 N (8.3 lbf) cohesive failure within the sealant and no adhesive bond loss between sealant and substrate for each test piece	The peel strength for each individual test shall not be <22.2 N (5 lbf) and the sealant shall show no >25% adhesive bond loss for each individual test
10. Material Identification/ Verification By FTIR	Acrylic-based material (refer to Figure 1)	-

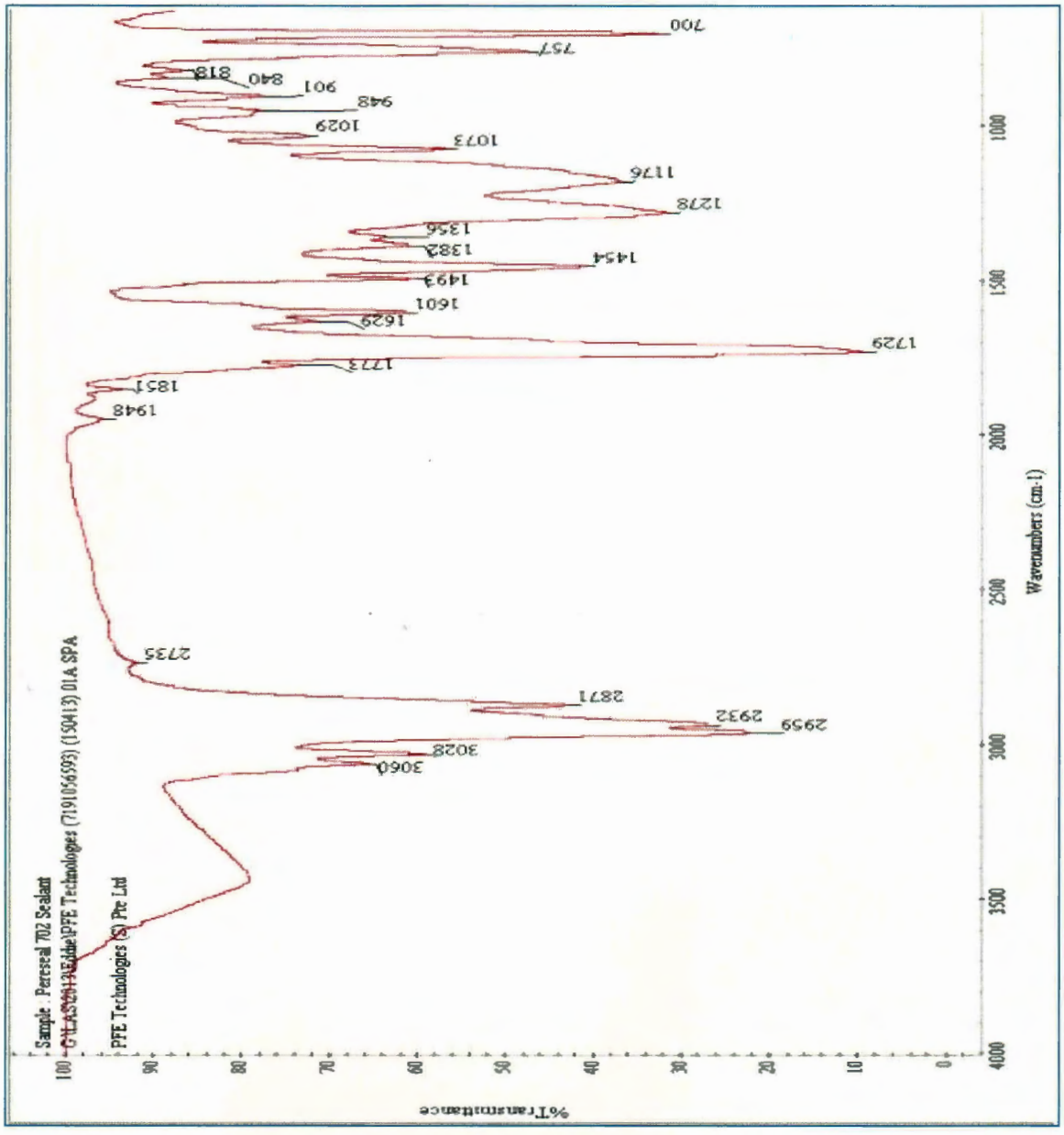
REMARKS:

The test conditions for staining and colour change tests and effects of accelerated weathering test were adopted from ASTM G154 : 2006 Standard Practice For Operating Fluorescent Light Apparatus For UV Exposure Of Non-Metallic Materials.

Eddie Suwand
Senior Associate Engineer

Eng Aik How
Engineer
Building
Mechanical Centre

Figure 1 : IR spectrum of 'Pereseal 702'



Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.

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5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, No.1 Science Park Drive Singapore 118221.

July 2011

PERESEAL 702 ACRYLIC SEALANT

Technical Data

Base	Acrylic emulsion
Consistency	Stable paste
Curing system	Physical drying
Skin formation	20 minutes
Hardness	25±5 Shore A
Specific gravity	1.5 – 1.67
Temperature resistance	-25°C to 90°C
Elongation at break	>200%
Paint acceptance	Very good
Maximum deformation	±15%

Product

PERESEAL® 702 High Performance Acrylic Sealant is a pure acrylic sealant for general purpose interior and exterior caulking in architectural applications where slight or moderate joint movement is anticipated. It is easy to use and extrude, and its sound dampening properties prevent the transmission of noise through vibrations.

Application

PERESEAL® 702 High Performance Acrylic Sealant's properties makes it an excellent sealant for:

- Air-conditioner ducting systems
- Aluminium window and door frames as a complete system

PERESEAL® 702 is also suitable for grouting, caulking and sealing applications such as in:

- Hollow core ceilings
- Floor planks
- Steel plywood siding
- Sheet rock
- Base boards
- Gypsum wallboards
- Grouting marble and ceramic tiles
- Repairing mortar and concrete joints
- Sealing of wall cracks

Properties

- Very easy to apply
- Reduces sound transmission in partition system
- UV radiation resistant
- Good adhesion to most building materials
- Good adhesion to most porous materials without needs of a primer
- Permanent colour
- Non-toxic, no smell
- Non-staining
- Environmentally friendly
- Weather resistant
- Mess-free and easy to clean
- Can be applied on damp (not wet) surfaces
- Non-flammable
- Paintable

Substrate

Suitable for most building materials. Surfaces must be clean and dry, free of dirt, wax, oil and grease. No primer required for aluminium, air-conditioner ducting materials, and most porous surfaces of building materials.

Application method

- Use an applicator gun (manual or pneumatic caulking gun.
- Application Temperature: +1 ºC to +30 ºC
- Clean with white spirit immediately after application
- Finish and tool with soapy water solution before skin formation
- Repair with PERESEAL 702.

PFE Technologies Pte. Ltd.
9 Gul Street 4, Singapore 629238
Tel: +65 6558 6388 | Fax: +65 6558 7310
Email: info@pfetec.sg | Website: www.pfetec.sg

PERESEAL 702 ACRYLIC SEALANT

Storage and shelf life
24 months for unopened packaging in a cool and dry storage place at temperature between +5ºC to +25ºC

Packaging
300 ml per cartridge, 20 cartridges per box
400 ml per sausage, 20 sausages per box
600 ml per sausage, 10 sausages per box

Colour
White, grey, black

Joint Size
- Min. width 5 mm
- Max. width 50 mm
- Min. depth 5 mm
- Recommendation 2 x joint width = joint depth

Safety Measures
Take usual hygiene precautions. Refer to the Material Safety Data Sheet of the product for other safety measures.

Remarks
The sealant must be protected from water for 24 hours after application. It must not be used on areas where it will be constantly submerged in liquids.

Conformity
Singapore:
ASTM C920:2001 – TÜV SÜD PSB Pte. Ltd.

PFE Technologies Pte. Ltd.
9 Gul Street 4, Singapore 629238
Tel: +65 6558 6388 | Fax: +65 6558 7310
Email: info@pfetec.sg | Website: www.pfetec.sg

PFE TECHNOLOGIES

Local Project References

Date: **May 3, 2019**

Product: **Pereseal 702**
High Performance Acrylic Sealant

Year	Project	Application
2007	Marina Bay Sands	Aircon Duct Works
2007	Meadows @ Peirce	Aircon works
2007	Mt Elizabeth Hospital	Aircon Duct Works
2007	Nassim Hill	Aircon Duct Works
2007	Ngee Ann Polytechnic	Window Perimeter
2007	Ngee Ann Polytechnic	Aircon works
2007	North Point Shopping Centre	Aircon Duct Works
2007	Novartis Singapore Pharmaceutical Manufacturing	Aircon Duct Works
2009	D'Leedon	Aircon Duct Works
2009	DSO National Laboratories	Aircon Duct Works
2009	Four Season Hotel	Aircon Duct Works
2009	Fusionopolis 5	Aircon works
2009	Gardens by the Bay	Aircon Duct Works
2009	GSK Biological	Aircon Duct Works
2009	Haliburton @ Tuas	Aircon Duct Works
2009	Jurong Gateway	Aircon Duct Works
2009	Jurong Point Extension Mall	Aircon Duct Works
2009	Jurong Point Shopping Centre	Aircon Duct Works
2009	Lonza Pharmaceutical	Aircon Duct Works
2009	Mount Alvernia Hospital	Aircon Duct Works
2009	Twin Peaks	Aircon Duct Works
2009	Westgate	Aircon works
2010	Connexion	Aircon Duct Works
2011	Chinatown Point	Aircon Duct Works
2011	City Square Mall	Aircon Duct Works
2011	Comcentre	Window Perimeter
2011	Singapore Civic & Culture Centre : CCRC Building	HVAC
2012	ABBOTT Pharmaceutical	Aircon Duct Works
2012	Admirax @ 8 Admiralty St	HVAC
2012	ARC III	HVAC
2012	Bedok Mall	Aircon Duct Works
2012	Biopolis Biomedical Research Hub	Aircon Duct Works
2012	National University Hospital	Aircon Duct Works
2012	National University of Singapore	Window Perimeter
2012	NUS – Education Resource Centre	HVAC
2012	Paya Lebar Square	Aircon Duct Works
2012	SATS Building	Window Perimeter

PFE TECHNOLOGIES PTE LTD
9 Gul Street 4
Singapore 629238

Tel: +65 6558 6388
Fax: +65 6558 7310
CRN: 197800448W

sales@pfe.tech
www.pfe.tech

2013	Sentosa Integrated Resorts	Aircon Duct Works
2013	Shaw Centre	Aircon Works
2013	Shaw House	Aircon works
2013	SIA Hangar	Window Perimeter
2013	Singapore General Hospital	Aircon Duct Works
2013	Singapore Institute of Management	Aircon Duct Works
2013	Singapore Sports Hub	Aircon Duct Works
2013	Singapore University Technology Design	Aircon works
2013	Synergy @ KB	Aircon Duct Works
2013	Tan Hock Seng Hospital	Aircon Duct Works
2013	The Interlace	Aircon Duct Works
2013	The Kovan	Aircon Duct Works
2014	Fusionopolis	Aircon Duct Works
2014	IGC	Aircon Duct Works
2014	Ng Teng Fong General Hospital	Aircon Duct Works
2014	Punggol Waterfront Park	Aircon works
2014	Seletar Mall	Aircon works
2014	Suntec City	Aircon Duct Works
2014	Thong Sia Building	Window Perimeter
2014	Trivelis	Aircon Duct Works
2014	UIC Development	Aircon works
2014	United Test & Assembly Centre	Aircon Duct Works
2014	Wyeth Pharmaceutical	Aircon Duct Works
2015	8 Amber Skye	Aircon works
2015	Ardmore 3 at Ardmore Park	Aircon works
2015	Downtown Line 24	Duct Works
2015	Downtown Line 24	Duct Works
2015	Downtown Line 26	Duct Works
2015	Downtown Line 26	Duct Works
2015	Downtown Line 32	Duct Works
2015	Downtown Line 32	Duct Works
2015	Dulwich College, Bukit Batok West Ave 8	Aircon works
2015	Marina One	Aircon works
2015	Mediacorp	Aircon works
2015	North Light School	Aircon works
2015	HDB Queenstown RC14	MISC
2015	Skyline Angullia	Aircon works
2015	Tampines Hub	Aircon works
2015	Toa Payoh RC 30	MISC
2015	Vessel: FPSO Kraken	Duct works
2015	SBF Centre (Robinson Road)	Duct works
2015	CHIJ Katong Convent Secondary School	Duct works
2016	Bedok Integrated Complex	Duct works
2016	Kim Chuan MRT	Duct works
2016	Tai Seng Centre, Irving Road	Duct works
2016	Yamal LNG Russia Project by Siemens	Duct works
2016	Hotel 81, Geylang Lorong 20	Duct works
2016	Downtown Line 30 Bedok	Duct works
2016	Downtown Line 33 Tampines	Duct works
2017	NUH - Centre of Oral Health	Duct works
2017	Laguna 88	Duct works

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2017	Hotel 81 Bencoolen	Duct works
2017	Dunearn Secondary School	Duct works
2017	Jurong Island to Pioneer Transmission Cable Tunnel	Sealing
2017	NUH - Centre of Oral Health	Duct works
2017	Laguna 88	Duct works
2017	Hotel 81 Bencoolen	Duct works
2017	Dunearn Secondary School	Duct works
2018	Eunoia Junior College	Duct works
2018	National Centre for Infectious Diseases	Duct works
2018	Outram Community Hospital	Duct works
2018	Mapletree	Duct works
2018	Gleneagles OT	Duct works
2018	Singapore Casket	Aircon works
2018	Income@Raffles	Duct works
2018	Shenton Way Station (TE19)	Duct Works
2018	Gardens by the Bay Station (TE22)	Duct Works
2019	A*Star Stem Cell Group	Sealing
2019	A*Star Institute of Microelectronics	Sealing
2019	Wework @ Funan	Duct Works