



BRANZ Appraised

Appraisal No. 809 [2013]

RAUPIANO PLUS ACOUSTIC PLUMBING AND DRAINAGE SYSTEM

Appraisal No. 809 [2013]



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is a plumbing and drainage pipe system that consists of discharge pipes and fittings that have been acoustically designed to reduce the noise caused by water and waste passing through the discharge system. The system is for use within multi-floor buildings such as, offices, hotels, or residential buildings where noise is an issue. The pipes are suitable for use both above and below ground. The pipes and fittings are white with a pink and a green stripe.

Scope

- 2.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System has been appraised for use within the following scope:
- as pipes, fittings and materials for sanitary plumbing system design and installation in accordance with NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2; and
 - for use as a sanitary plumbing system for internal use within buildings; and
 - for pipes and fittings of size 110 mm and greater, for drainage system design and installation in accordance with NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2.
- 2.2 Installation of components and accessories supplied by Rehau Ltd must be carried out only by licensed and registered plumbers and/or drainlayers.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 **In the opinion of BRANZ, The RAUPIANO PLUS Acoustic Plumbing and Drainage System if designed, installed, used and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC.**

Clause B2 DURABILITY: Performance B2.3.1 [a] not less than 50 years, and B2.3.1 [b] 15 years, and B2.3.2. The RAUPIANO PLUS Acoustic Plumbing and Drainage System meets this requirement. See Paragraph 8.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The RAUPIANO PLUS Acoustic Plumbing and Drainage System meets this requirement and does not present a health hazard to people.

Clause G13 FOUL WATER: Performance G13.3.1 and G13.3.2. The RAUPIANO PLUS Acoustic Plumbing and Drainage System meets these requirements. See Paragraphs 7.1 to 7.5.

- 3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance.

Technical Specification

4.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is primarily designed for use in buildings where a reduction of sound transmission in the discharge system is required. Pipes are extruded in a three layer construction with a middle layer containing a mix of polypropylene and mineral compounds to reduce sound originating from the passage of waste through the system. The system consists of a selection of pipe diameters, and associated injection moulded polypropylene fittings. Pipe ends and fittings are formed and contain a pre-fitted styrene butadiene O-ring. Pipe lengths are manufactured and supplied with one pre-formed socket end and one spigot end. The system is designed for conventional push-fit component connection.

Table 1: RAUPIANO PLUS Pipe Composition

LAYER	MATERIAL	PIGMENT/COLOUR
Internal layer	Polypropylene	White
Intermediate Layer	Mineral filled polypropylene	White
Outer Layer	UV-stabilised polypropylene	White with a pink and a green stripe

4.2 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is available in the range as detailed in Table 2.

Table 2: The RAUPIANO PLUS Acoustic Plumbing and Drainage System Range

ITEM	SIZES (mm)	TYPES
Pipes	40, 50, 75, 90, 110, 125, 160 and 200	Lengths – 0.15 m, 0.25 m, 0.5 m, 0.75 m, 1.0 m, 1.5 m, 2.0 m and 3.0 m
Bends	40, 50, 75, 90, 110, 125, 160 and 200	15°, 30°, 45°, 67° and 87°
Single Branch	40/40, 50/50, 75/50, 75/75, 90/50, 90/75, 90/90, 110/50, 110/75, 110/110, 125/110, 125/125, 160/110, 160/125, 160/160, 200/160 and 200/200	45° and 87°
Double Branch	90/90/90, 110/110/110, 125/110/110 and 160/110/110	45° and 87°
Corner Double Branch	90/90/90 and 110/110/110	87°
Shaft Branch Right and Left	90/75/90 and 110/75/110	87°
Parallel Branch	90/90 and 110/110	
Deflection Bend	75, 90 and 110	45° and 87°
Reducer	50/40, 75/50, 90/50, 90/75, 110/50, 110/75, 110/90, 125/110, 160/110, 160/125 and 200/160	
PVC Adaptor	40/43, 50/52, 75/69 and 90/82	PVC
Connection Pipe and Connection Bend	40/40-30, 50/40-30 and 50/50	
Socket Plug	40, 50, 75, 90, 110, 125, 160 and 200	
Double Socket	40, 50, 75, 90, 110, 125, 160 and 200	

Slip-on Socket	40, 50, 75, 90, 110, 125, 160 and 200	
I.O. Access Pipe	50, 75, 90, 110, 125 and 160	
Long Socket	90 and 110	
Closet Bend	90/90°, 110/22°, 110/45° and 110/90°	
Closet Connection	90 and 110	
P-trap Siphon	110	
Floor Gully	50/50/50/75	
Proprietary Pipe Clamps	40, 50, 75, 90, 110, 125, 160 and 200	Clamps with acoustic rubber inlays

Handling and Storage

- 5.1 Handling and storage on site of all materials supplied by Rehau Ltd, is under the control of the licensed and registered plumber. It is essential that the pipes and O-rings are protected from sunlight during storage prior to installation. The RAUPIANO PLUS Acoustic Plumbing and Drainage System components must be kept under cover at all times. Care must also be taken to avoid surface damage to the pipes and fittings.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the RAUPIANO PLUS Acoustic Plumbing and Drainage System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, installation, use and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

Foul Water Sanitary Plumbing

- 7.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System components are certified as complying with AS/NZS 1260 and AS/NZS 7671 as called up by AS/NZS 3500.2.
- 7.2 The RAUPIANO PLUS Acoustic Plumbing and Drainage System must be installed following sanitary plumbing design, and the Rehau Ltd installation instructions for the system. See Paragraphs 13.2 to 13.4.
- 7.3 Sanitary plumbing systems must be designed in accordance with NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2.
- 7.4 The RAUPIANO PLUS Acoustic Plumbing and Drainage System connects directly or by using PVC transition items to connect to PVC soil and discharge pipes complying with AS/NZS 1260.
- 7.5 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is for use in the interior of buildings or buried in the ground. Where it is installed where it could be exposed to ultra-violet [UV] light, it shall be protected.

Drainage

- 7.6 The RAUPIANO PLUS Acoustic Plumbing and Drainage System pipes and fittings with all dimensions greater than 110 mm have been certified to AS/NZS 5065 and are suitable for use as a drainage system designed in accordance with NZBC Acceptable Solution G13/AS2 or NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2. Note that the scope of G13/AS2 is limited to drains having a diameter of no greater than 150 mm.

Floor Gullies

- 7.7 The RAUPIANO PLUS floor gullies have been certified to AS 2887 and are suitable for use in accordance with NZBC Acceptable Solution G13/AS1.

Acoustic

- 7.8 There are no NZBC requirements for the acoustic properties of sanitary plumbing systems. The RAUPIANO PLUS Acoustic Plumbing and Drainage System has been tested using procedures based on ISO 140 and the results rated to ISO 717. These results were compared with the performance of lagged PVC drainage pipe tested to the same methodology and found to provide similar performance.

Impact Resistance

- 7.9 The RAUPIANO PLUS Acoustic Plumbing and Drainage System has adequate resistance to impact loads likely to be encountered in normal installation and service, although some scratching of the surface finish could occur during installation. The likelihood of impact damage to the system when used in commercial situations should be considered at the design stage, and appropriate protection should be considered for vulnerable areas.

Durability

Serviceable Life

- 8.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is expected to have a serviceable life comparable with conventional plumbing and drainage systems, provided the system is installed and maintained following the instructions of Rehau Ltd and this Appraisal.

Maintenance

- 9.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System does not require maintenance in normal service. Where accessible, fixings should be inspected to check the system continues to be secure.

Prevention of Fire Occurring

- 10.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solutions C/AS1 to C/AS6 inclusive, Paragraph 7.5.9 for the protection of combustible materials.

Spread of Fire

- 11.1 Sanitary piping systems are exempt from the surface finish requirements of Table 4.1 of NZBC Acceptable Solutions C/AS2 to C/AS6 inclusive, by Paragraph 4.17.6 [c]. There are no surface finish requirements for pipes under NZBC Acceptable Solution C/AS1.

Installation Information

Installation Skill Level Requirements

- 12.1 Installation of the RAUPIANO PLUS Acoustic Plumbing and Drainage System and associated components supplied by Rehau Ltd must only be installed by licensed and registered plumbers.

System Installation

- 13.1 Installation must be completed in accordance with instructions given in the RAUPIANO PLUS Acoustic Plumbing and Drainage System Technical Literature and this Appraisal. Installation of the pipe and fitting system is similar to standard rubber ring jointed pipe systems.

Sanitary Plumbing

- 13.2 Installation as a sanitary plumbing system must be in accordance with NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2.
- 13.3 In case sound acoustic properties are required, the fixing instructions of the manufacturer must be followed and RAUPIANO PLUS sound-dampening brackets must be used as part of the system. Vertical pipes must not be fixed as they pass through floors. The pipes at this point must be surrounded by an acoustic packing to prevent any acoustic bridge between the pipe and floor. The system is supplied with proprietary clamps for pipe fixing. The clamps contain rubber soundproofing inlays designed to absorb acoustic vibration. Vertical fixing intervals using clamps must be between 1 m and 2 m into walls. Horizontal fixing interval must be no more than 10 x the diameter of the pipe.
- 13.4 The RAUPIANO PLUS Acoustic Plumbing and Drainage System must be enclosed within buildings where it is not exposed to ultra-violet [UV] light.

Drainage

- 13.5 RAUPIANO PLUS pipes and fittings with all dimensions greater than 110 mm may also be used as part of a drainage system designed in accordance with NZBC Acceptable Solution G13/AS2 or NZBC Acceptable Solution G13/AS3 and AS/NZS 3500.2.

Health and Safety

- 14.1 There are no special Health and Safety issues.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 15.1 Acoustic performance testing of the RAUPIANO PLUS Acoustic Plumbing and Drainage System was conducted by the National Acoustic Laboratory to a method based on ISO 140. Test results were reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 16.1 The practicability of installation has been reviewed and found to be satisfactory.
- 16.2 The Technical Literature for the RAUPIANO PLUS Acoustic Plumbing and Drainage System has been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The RAUPIANO PLUS Acoustic Plumbing and Drainage System is manufactured in Germany by Rehau under an ISO 9001:2008 Quality Management System.
- 17.2 RAUPIANO PLUS pipe and fittings hold WaterMark Certifications to AS/NZS 7671 [Licence No. WM 70060], AS/NZS 5065 [Licence No. WM 71503], AS/NZS 1260 [Licence No. 71502] and AS 2887 [Licence No. 71501].
- 17.3 The manufacture of the RAUPIANO PLUS Acoustic Plumbing and Drainage System and accessories has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 17.4 The quality of materials, components and accessories supplied to the market by Rehau Ltd is the responsibility of Rehau Ltd.
- 17.5 Quality of installation on site of components and accessories supplied by Rehau Ltd is the responsibility of the registered installing plumber.
- 17.6 Designers are responsible for the building design, and design of the associated sanitary plumbing system within the building.
- 17.7 Building owners are responsible for any required maintenance of the RAUPIANO PLUS Acoustic Pipe System in accordance with the advice of Rehau Ltd.



Sources of Information

- AS 2887-1993 Plastic waste fittings.
- AS/NZS 1260: 2002 PVC-U pipes and fittings for drain, waste and vent application.
- AS/NZS 3500.2: 2003 Plumbing and drainage – Sanitary plumbing and drainage.
- AS/NZS 5065: 2005 Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications.
- AS/NZS 7671: 2010 Plastics piping systems for soil and waste discharge [low and high temperature] inside buildings – Polypropylene [PP].
- ISO 140 Acoustics – Measurement of sound insulation in buildings and of building elements.
- ISO 717-1:1996 Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation.
- Compliance Document for New Zealand Building Code Foul Water Clause G13, Department of Building and Housing, Third Edition, June 2007.
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition [Amendment 12, 10 October 2011].
- The Building Regulations 1992.



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08 February 2013

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PLUMBING AND DRAINAGE
SYSTEM



In the opinion of BRANZ, the **RAUPIANO PLUS Acoustic Plumbing And Drainage System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **REHAU [NZ] Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **REHAU [NZ] Ltd**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **REHAU [NZ] Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **REHAU [NZ] Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

08 February 2013