

Know-how, Innovation,
System-thinking, Quality and Service



Walraven Catalogue

Fire Protection

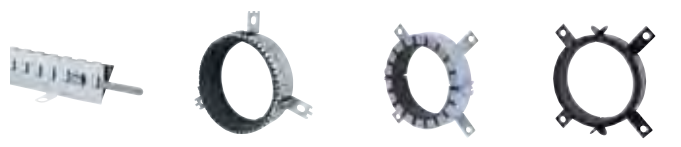




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Walraven Group



Walraven

Walraven is a manufacturer of a wide range of technical installation materials, with an emphasis on fixing systems, fire protection systems and sanitary systems. Since its founding in 1942, the family business has grown into an international company with more than 1000 skilled employees and its own sales and production sites in various countries in Europe.

Our employees think in solutions and are happy to assist you with well grounded advice and technical support. All this in close collaboration with specialised wholesale partners and distributors. Thanks to them Walraven products always close by and available at the right time in Europe, North and South America Middle East, Asia and Australia.

Head office

J. van Walraven Holding B.V.
Mijdrecht (NL)

19 Sales companies

Mijdrecht (NL)

Walraven B.V.
The Netherlands

Mijdrecht (NL)

Walraven International
Other countries

Tienen (BE)

Walraven BVBA
Belgium - Luxembourg

Bayreuth (DE)

Walraven GmbH
Germany - Austria - Switzerland
Italy - South East Europe

Grenoble (FR)

Walraven France Eurl
France

Banbury (UK)

Walraven Ltd.
United Kingdom - Ireland

Mladá Boleslav (CZ)

Walraven s.r.o.
Czech republic - Slovak republic

Kraków (PL)

Walraven Sp. z o.o.
Poland - Lithuania - Latvia
Estonia

Kyiv (UA)

Walraven Ltd.
Ukraine

Barcelona (ES)

Walraven Iberia S.L.
Spain - Portugal

Danville (US)

Walraven, Inc.
United States of America

Shanghai (CN)

Walraven Shanghai, Ltd.
China

Malmö (SE)

Walraven Nordic AB
Sweden - Denmark - Norway -
Finland - Iceland

Dubai (AE)

Hira Walraven
Middle East

Budapest (HU)

Walraven Kft.
Hungary - Romania

Mumbai (IN)

Diamond Walraven
India

Burlington (CA)

Taylor Walraven
Canada

Moscow (RU)

Walraven LLC
Russia

Singapore (SG)

Walraven Pte. Ltd.
Singapore - Indonesia - Malaysia
Thailand - Vietnam - Cambodia - Brunei
Laos - Myanmar - Australia
New Zealand



12 Production / assembly companies

| | | | | | |
|--|---|--|---|--|--|
| Mijdrecht (NL) J. van Walraven B.V. | Cista (CZ) Suchánek & Walraven s.r.o. | Horka (CZ) Suchánek & Walraven s.r.o. | Barcelona (ES) Walraven Iberia S.L. | Banbury (UK) Walraven Ltd. | Istanbul (TR) Jefleks Plastik Kauçuk |
| Gramsbergen (NL) Loko Gramsbergen B.V. | Horka (CZ) SWO Tooling s.r.o. | Changshu (CN) Walraven Metal Products (Changshu) Co. Ltd | Danville (US) Walraven, Inc. | Mumbai (IN) Diamond Walraven | Burlington (CA) Taylor Walraven |

Quality

Production

The Walraven Group has production facilities in various countries, with modern machines which are often designed in-house. Each production company has its own speciality so that products can be manufactured in the most efficient manner.

Almost all of our tooling and moulds are produced in our own tool making facility. Walraven then manages the entire process - from product development to manufacture - and can quickly respond to developments in the market.

Innovation

The development of new products is always our priority. With our primary focus being on customer satisfaction. Think of comfort, time-saving during assembly and the highest degree of reliability when operational. A large number of innovations and patents is the result. Our innovation is not just limited to product development. Also our marketing is pushing the boundaries.

We develop and produce customer-specific or project-related products too. In addition, many of our standard products can be supplied in a special size or with a special surface treatment.

Quality

Our organization is ISO 9001:2015 certified. This way we continuously improve operational processes, and thus the quality of the entire organization.

Our products meet the highest quality standards and are approved by many international institutes, such as:



kiwa

Our fire protection products meet the highest international quality standards and are approved by many European certification institutes.



CSTB



Our frames have been tested for load capacity and corrosion resistance in accordance with European standards.



RAL – Safe Connection

RAL-Quality hallmark

Walraven is one of the initiators of the 'Gütegemeinschaft Röhrbefestigung' (Safe Connection). The most important producers of pipe fixing systems have set up univocal product quality guidelines in this quality association. The 'Gütegemeinschaft Röhrbefestigung' has become acknowledged in 2003 by the RAL, the German institute for quality guarantees.

Benefits

The technical properties of the products, like the maximum safe working load, are established and published by means of a standardised measuring method.

Within the measuring method the maximum allowed load is calculated, taking a maximum deflection into consideration.

With the RAL-mark the quality of the pipe fixing products, like clamps and fixing rails of the participating manufacturers becomes clear and are easily comparable.

Currently four measuring methods for the load capacity of pipe fixing products under normal temperatures have been published:

- pipe clamps (RAL-GZ 655/B)
- fixing rail (RAL-GZ 655/C)
- rail accessoires (RAL-GZ 655/D)
- cantilever arms (RAL-GZ 655/E)

Also one measuring method for the load capacity of pipe clamps during fire:

- pipe clamps (RAL-GZ 656)

The maximum safe working loads which are mentioned in the tables are based on:










- 1) A Walraven developed measuring method;
- 2) The measuring method prescribed in the testing prescriptions RAL-GZ 655 and RAL-GZ 656, which is set up by the 'Gütegemeinschaft Röhrbefestigung'. If the product is provided with the 'RAL-Gütezeichen', the test results are checked by an independent testing institute.

The 'RAL-Gütezeichen' is exclusively given to products which satisfy high quality standards and is an evidence of quality. This gives the users of pipe fixings certainty and trust!

Certified products are recognisable by:



RAL-GZ 655 and 656 Certified Products

| | | | | |  |  | | |
|--|--|------------|----------------|----------------|---|---|----------------|----------------------|
| | | Part No. | Connection nut | Catalogue page | Dimension (mm) | RAL-GZ 655/B Cert. No. | Dimension (mm) | RAL-GZ 656 Cert. No. |
|  | BISMAT® Flash Zinc plated | 337 3 XXX | M8 | A 05 04 | 15 - 63 | 2010-23 | 15 - 63 | 2011-09 |
| | | 337 4 XXX | M8/10 | A 05 04 | 15 - 63 | 2010-23 | 15 - 63 | 2011-09 |
| | | - | - | - | - | - | - | - |
|  | BISMAT® 2000 'S' Zinc plated | 341 4 0XX | M8 | A 05 32 | 15 - 63 | 2005-08 | 15 - 63 | 2011-11 |
| | | 340 4 0XX | M8/10 | A 05 32 | 15 - 63 | 2005-08 | 15 - 63 | 2011-11 |
| | | - | - | - | - | - | - | - |
|  | BISMAT® 2000 Zinc plated | 341 3 0XX | M8 | A 05 16 | 15 - 63 | 2010-22 | 15 - 63 | 2011-10 |
| | | 340 3 XXX | M8/10 | A 05 16 | 15 - 63 | 2010-22 | 15 - 63 | 2011-10 |
| | | 340 3 XXX | M8/10 | A 05 24 | 57 - 141 | 2005-08 | 57 - 114 | 2011-10 |
|  | BIS HD1501 BIS UltraProtect® 1000 | 3313 8 0XX | M8/10 | A 10 04 | 15 - 64 | 2011-12a | 15 - 64 | 2011-14 |
| | | 3314 8 XXX | M10/12 | A 10 04 | 65 - 227 | 2011-12a | 65 - 227 | 2011-14 |
| | | 3316 8 XXX | M16 | A 10 06 | 159 - 509 | 2011-12a | 159 - 227 | 2011-14 |
| | | 3317 8 XXX | G½" | A 10 09 | 15 - 509 | 2011-12a | 15 - 227 | 2011-14 |
|  | BISMAT® 5000 Zinc plated | 348 3 0XX | M8 | A 25 05 | 16 - 50 | 2010-24 | - | - |
| | | - | - | - | - | - | - | - |
| | | - | - | - | - | - | - | - |
|  | BIS HD500 BIS UltraProtect® 1000 | 3303 8 0XX | M8/10 | B 10 04 | 15 - 71 | 2011-13a | 15 - 71 | 2011-05 |
| | | 3304 8 XXX | M10/12 | B 10 04 | 72 - 227 | 2011-13a | 72 - 227 | 2011-05 |
| | | 3306 8 XXX | M16 | B 10 06 | 159 - 509 | 2011-13a | - | - |
| | | 3307 8 XXX | G½" | B 10 09 | 15 - 509 | 2011-13a | 15 - 227 | 2011-05 |
|  | BIS Bifix® 300 SSt. Stainless Steel | 301 7 XXX | M8 | M 10 05 | 72 - 118 | 2004-09 | - | - |
| | | 302 7 XXX | M10 | M 10 05 | 62 - 219 | 2004-09 | - | - |
| | | - | - | - | - | - | - | - |

For the max. allowed load (Fa,z) per part number and RAL-certificate we refer to the product page or our webcatalogue on www.walraven.com.



| | | | | | | RAL-GZ | |
|---|---|------------|-----------------------|----------------|----------------|-----------|---------|
| | | | | | | Cert. No. | |
| | | Part No. | Dimension (mm) | For Rail | Catalogue page | | |
| | BIS RapidRail® Fixing Rail Pre-galvanized | 650 5 X00 | WM0 (27 x 18 x 1.20) | - | G 04 05 | 655/C | 2012-03 |
| | | 650 5 X01 | WM1 (30 x 15 x 2.00) | - | G 04 05 | 655/C | 2012-03 |
| | | 650 5 51X | WM1 (30 x 15 x 2.00) | - | G 04 05 | 655/C | 2012-03 |
| | | 650 5 X15 | WM15 (30 x 20 x 1.75) | - | G 04 05 | 655/C | 2012-03 |
| | | 650 5 X02 | WM2 (30 x 30 x 2.00) | - | G 04 05 | 655/C | 2012-03 |
| | | 650 5 X30 | WM30 (30 x 45 x 2.00) | - | G 04 05 | 655/C | 2012-03 |
| | BIS RapidStrut® Fixing Rail Pre-galvanized | 650 5 X24 | 41 x 21 x 1.5 | - | H 04 10 | 655/C | 2012-04 |
| | | 650 5 X22 | 41 x 21 x 2.0 | - | H 04 10 | 655/C | 2012-04 |
| | | 650 5 X25 | 41 x 21 x 2.5 | - | H 04 10 | 655/C | 2012-04 |
| | | 650 5 X44 | 41 x 41 x 1.5 | - | H 04 10 | 655/C | 2012-04 |
| | | 650 5 X42 | 41 x 41 x 2.0 | - | H 04 10 | 655/C | 2012-04 |
| | | 650 5 X45 | 41 x 41 x 2.5 | - | H 04 10 | 655/C | 2012-04 |
| | BIS RapidStrut® Fixing Rail BIS UltraProtect® 1000 | 6501 8 X27 | 41 x 21 x 2.5 | - | H 04 13 | 655/C | 2015-02 |
| | | 6501 8 X42 | 41 x 41 x 2.0 | - | H 04 13 | 655/C | 2015-02 |
| | | 6501 8 X47 | 41 x 41 x 2.5 | - | H 04 13 | 655/C | 2015-02 |
| | BIS RapidRail® Stainless Steel Fixing Rail Stainless steel | 650 7 002 | WM2 (30 x 30 x 2.0) | - | M 20 05 | 655/C | 2012-07 |
| | | - | - | - | - | - | - |
| | BIS RapidRail® Ball Swivel Hangers Zinc plated | 652 0 X00 | M8 | WM1, 2, 15, 30 | G 30 60 | 655/D | 2012-11 |
| | | 652 0 X10 | M10 | WM1, 2, 15, 30 | G 30 60 | 655/D | 2012-11 |
| | | - | - | - | - | - | - |
| | BIS RapidRail® Connector Zinc plated | 654 3 001 | 200 mm | WM1, 2, 15, 30 | G 35 35 | 655/D | 2012-08 |
| | | - | - | - | - | - | - |
| | | - | - | - | - | - | - |
| | BIS RapidRail® T-Connector Zinc plated | 658 4 090 | - | WM1, 2, 15, 30 | G 35 45 | 655/D | 2012-08 |
| | | - | - | - | - | - | - |
| | | - | - | - | - | - | - |
| | BIS RapidRail® X-Connector Zinc plated | 658 4 091 | - | WM1, 2, 15, 30 | G 35 45 | 655/D | 2012-08 |
| | | - | - | - | - | - | - |
| | | - | - | - | - | - | - |
| | BIS RapidRail® Connectors 90° Zinc plated | 658 4 00X | WM0 - 35 | WM1, 2, 15, 30 | G 35 05 | 655/D | 2012-09 |
| | | 658 4 011 | WM0 - 35 | WM1, 2, 15, 30 | G 35 05 | 655/D | 2012-09 |
| | | - | - | - | - | - | - |
| | BIS RapidRail® Connectors 135° Zinc plated | 658 4 05X | WM0 - 35 | WM1, 2, 15, 30 | G 35 10 | 655/D | 2012-09 |
| | | - | - | - | - | - | - |
| | BIS RapidRail® Cross Connectors Zinc plated | 658 4 150 | 27 x 18 | WM0, 1, 15 | G 35 50 | 655/D | 2012-10 |
| | | 658 4 151 | 30 x 15 | WM0, 1, 15 | G 35 50 | 655/D | 2012-10 |
| | | 658 4 152 | 30 x 20 | WM0, 1, 15 | G 35 50 | 655/D | 2012-10 |
| | BIS RapidRail® Rail Suspension Bracket Zinc plated | 679 3 008 | M8 | WM1, 2, 15, 30 | G 20 40 | 655/D | 2012-09 |
| | | - | - | - | - | - | - |
| | | - | - | - | - | - | - |
| RAL-GZ 655/C: for the max. allowed load (Fa,z) per part number and RAL-certificate we refer to the product page, the loading tables or our webcatalogue on www.walraven.com | | | | | | | |
| RAL-GZ 655/D: for the max. allowed load (Fa,z) per part number and RAL-certificate we refer to the product page or our webcatalogue on www.walraven.com | | | | | | | |

Introducing Walraven for smart installation solutions

Walraven has been in the M&E fixings business for 75 years. Our products are known for their quality and are considered by our customers to be innovative and market leading. Our products are designed to work together to offer total system solutions to installers.

Pipe Clamps

starQuick®, BIS Bifix®
and BIS Heavy Duty Clamps



Rail

BIS RapidRail®, BIS RapidStrut®
and Maxx Rail



Rooftop Supports

BIS Yeti® 480, BIS Yeti® 335
and BIS Ursus®



Fixing Accessories

Rail Accessories,
Light and Heavy Duty Anchors



Britclips®

Beam Clips, Cable Run Clips
and Conduit Clips



Fire Protection

Pacifyre® MK II, Pacifyre® EFC and
Pacifyre® A and S



To find out more, visit walraven.com

Explanation Max. Allowed Load

Maximum allowed load:

From most of our products a maximum allowed load is included in the article tables. Stated values are determined by:

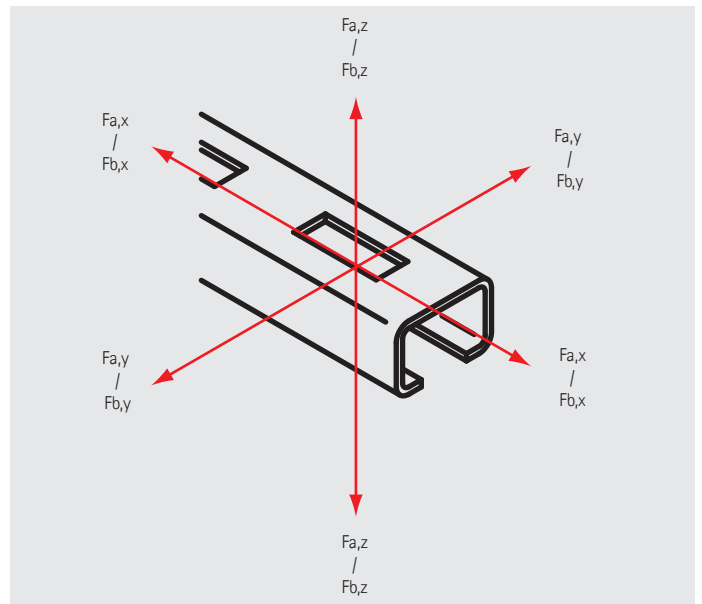
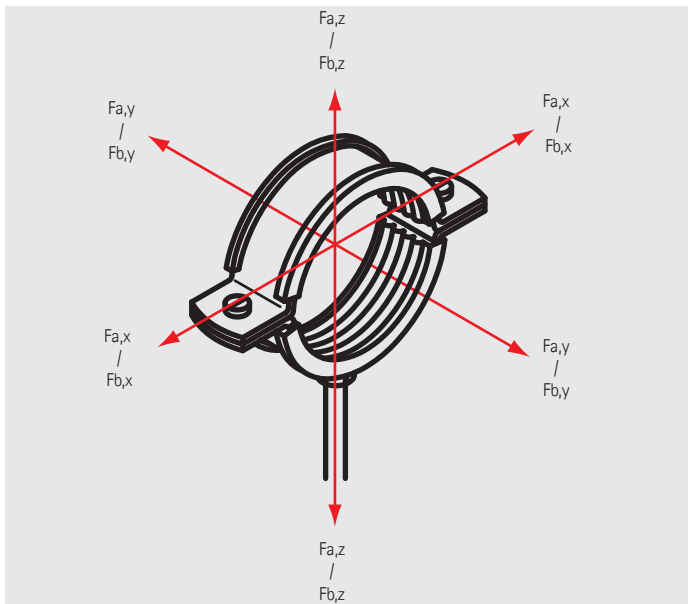
- a by Walraven developed measuring method
- the measuring method described in the testing prescriptions RAL-GZ 655, which is set up by the 'Gütegemeinschaft Rohrbefestigung'. If the product is provided with the 'RAL-Gütezeichen', the test results are checked by an independent testing institute.

For plastic clamps the breaking load is included.

Force directions (F) x, y and z (at 20 °C)

Fa = maximum allowed load

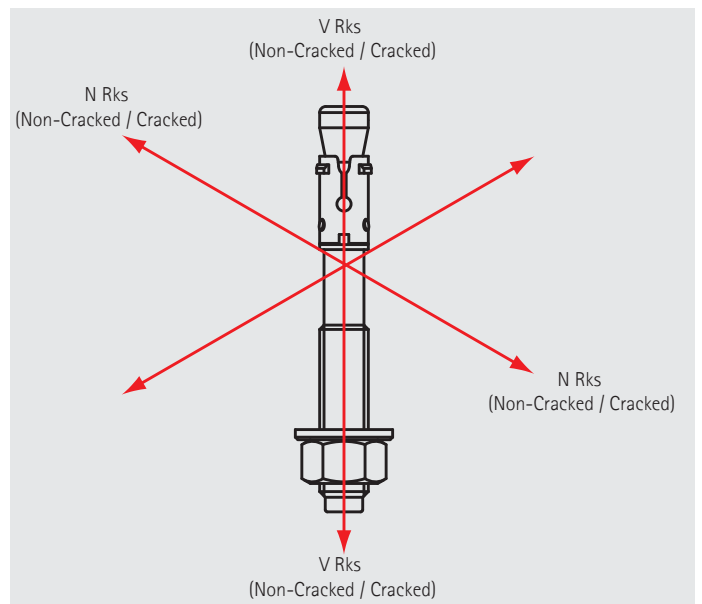
Fb = breaking load



Force directions Anchoring

V Rks = Characteristic resistance value in non cracked or cracked concrete (kN) shear load with standard embedment depth

N Rks = Characteristic resistance value in non cracked or cracked concrete (kN) tension load with standard embedment depth



BIS UltraProtect® 1000

Support system for indoor and outdoor use



Corrosion resistance

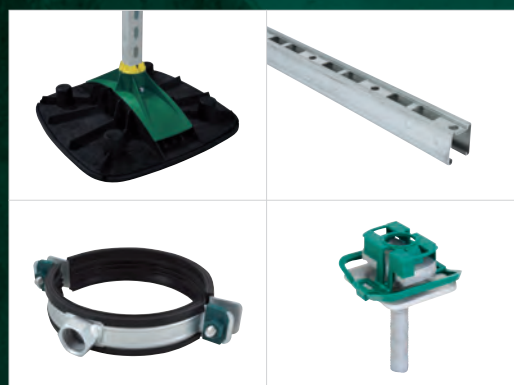
- C1 - C4 / ISO 12944-2

Salt spray test

- 1000 hours / ISO 9227*

Complementary system

- Perfectly combines with other products



* Until the occurrence of maximum 5% red rust.

BIS Sprinkler Clamp TA41

(B 12 15)

for sprinkler pipes 23 - 221 mm

M10 - M12



Features and Benefits

- one-part clamp
- for sprinkler pipes up to 8" (221 mm)
- with knurled nut for fixing to stud bolt or threaded rod
- material: steel
- clamp: pre-galvanized; nut: zinc plated
- with FM approval - certificate number 3024336
- UL listed - certificate number VFXT.EX9140

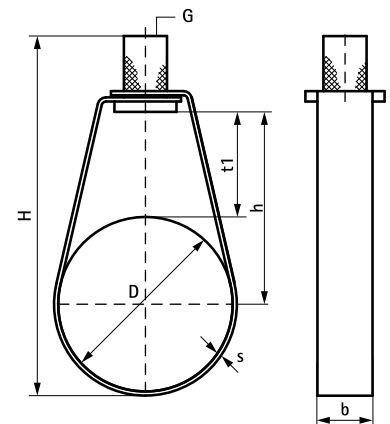


Cert.Nr.
3024336



Cert.Nr.
VFXT. EX9140

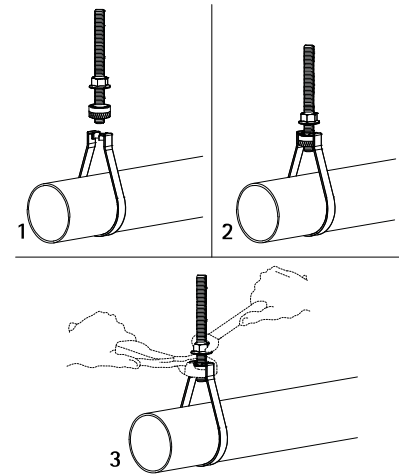
| Part No. | D (mm) | D (") | DN | G | H (mm) | h (mm) | b x s (mm) | t1 (mm) | F _{a,z} (N) | FM | UL | Pack 1 |
|----------|-----------|----------|-----|-----|-----------|-----------|---------------|------------|-------------------------|----|----|--------|
| 4535021 | 23 | 1/2 | 15 | M10 | 86 | 51 | 16 x 1.0 | 40 | 1,500 | FM | UL | 100 |
| 4535027 | 28 | 3/4 | 20 | M10 | 86 | 48 | 16 x 1.0 | 34 | 1,500 | FM | UL | 100 |
| 4535034 | 35 | 1 | 25 | M10 | 89 | 48 | 16 x 1.0 | 30 | 1,500 | FM | UL | 100 |
| 4535042 | 44 | 1 1/4 | 32 | M10 | 98 | 52 | 16 x 1.0 | 30 | 1,500 | FM | UL | 100 |
| 4535048 | 50 | 1 1/2 | 40 | M10 | 105 | 56 | 16 x 1.0 | 31 | 1,500 | FM | UL | 100 |
| 4535060 | 62 | 2 | 50 | M10 | 117 | 61 | 16 x 1.0 | 30 | 1,500 | FM | UL | 100 |
| 4535076 | 77 | 2 1/2 | 65 | M10 | 130 | 68 | 22 x 2.0 | 29 | 4,500 | FM | UL | 50 |
| 4535089 | 90 | 3 | 80 | M10 | 143 | 74 | 22 x 2.0 | 28 | 4,500 | FM | UL | 50 |
| 4535114 | 115 | 4 | 100 | M10 | 175 | 93 | 22 x 2.0 | 35 | 4,500 | FM | UL | 25 |
| 4535140 | 142 | 5 | 125 | M12 | 213 | 111 | 25 x 3.0 | 40 | 5,200 | FM | UL | 20 |
| 4535168 | 170 | 6 | 150 | M12 | 250 | 132 | 25 x 3.0 | 48 | 5,200 | FM | UL | 15 |
| 4535219 | 221 | 8 | 200 | M12 | 312 | 167 | 25 x 3.0 | 56 | 5,200 | FM | UL | 10 |



Sprinkler Clamp

(B 12 17)

for fixing of ceiling mounted sprinkler installation 26.9 - 219.1 mm



Features and Benefits

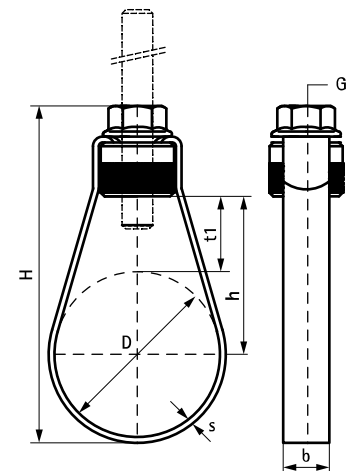
- easy installation with flange and cap nut
- for pipe suspension from threaded rod or stud bolts
- single band pipe loop with knurled nut and locking nut
- height adjustable, also after pipe insertion
- material: steel
- clamp: pre-galvanized; nut: zinc plated
- with VdS approval - certificate number G 416006
- with FM approval - certificate number 003058306 (> M10)



Cert.Nr.
003058306

Cert.Nr.
G 416006

| Part No. | D (mm) | D (°) | DN | G | H (mm) | h (mm) | b x s (mm) | t1 (mm) | F _{a,z} (N) | FM | VdS | Pack 1 |
|----------|-----------|----------|-----|-----|-----------|-----------|---------------|------------|-------------------------|----|-----|--------|
| 45555028 | 26.9 | 3/4 | 20 | M8 | 71 | 56 | 12 x 1.50 | 43 | 2,000 | - | VdS | 100 |
| 45555035 | 33.7 | 1 | 25 | M8 | 79 | 61 | 12 x 1.50 | 44 | 2,000 | - | VdS | 100 |
| 45555044 | 42.4 | 1 1/4 | 32 | M8 | 89 | 66 | 12 x 1.50 | 45 | 2,000 | - | VdS | 100 |
| 45555050 | 48.3 | 1 1/2 | 40 | M8 | 97 | 71 | 12 x 1.50 | 47 | 2,000 | - | VdS | 50 |
| 45555062 | 60.3 | 2 | 50 | M8 | 112 | 80 | 12 x 1.50 | 50 | 2,000 | - | VdS | 50 |
| 45565028 | 26.9 | 3/4 | 20 | M10 | 73 | 58 | 12 x 1.50 | - | 2,000 | FM | VdS | 100 |
| 45565035 | 33.7 | 1 | 25 | M10 | 81 | 63 | 12 x 1.50 | 46 | 2,000 | FM | VdS | 100 |
| 45565044 | 42.4 | 1 1/4 | 32 | M10 | 91 | 68 | 12 x 1.50 | 47 | 2,000 | FM | VdS | 100 |
| 45565050 | 48.3 | 1 1/2 | 40 | M10 | 108 | 82 | 12 x 1.50 | 58 | 2,000 | FM | VdS | 50 |
| 45565062 | 60.3 | 2 | 50 | M10 | 114 | 82 | 12 x 1.50 | 52 | 2,000 | FM | VdS | 50 |
| 45565077 | 76.1 | 2 1/2 | 65 | M10 | 140 | 99 | 15 x 2.50 | 61 | 3,500 | FM | VdS | 50 |
| 45565090 | 88.9 | 3 | 80 | M10 | 161 | 114 | 15 x 2.50 | 70 | 3,500 | FM | VdS | 25 |
| 45565108 | 108.0 | - | - | M10 | 201 | 144 | 15 x 2.50 | 90 | 3,500 | - | VdS | 25 |
| 45565115 | 114.3 | 4 | 100 | M10 | 204 | 144 | 15 x 2.50 | 87 | 3,500 | FM | VdS | 25 |
| 45565133 | 133.0 | - | - | M12 | 223 | 154 | 15 x 2.50 | 88 | 5,000 | - | VdS | 25 |
| 45565142 | 139.7 | 5 | 125 | M12 | 233 | 161 | 15 x 2.50 | 91 | 5,000 | FM | VdS | 20 |
| 45565159 | 159.0 | - | - | M12 | 271 | 189 | 15 x 2.50 | 110 | 5,000 | - | VdS | 20 |
| 45565170 | 168.3 | 6 | 150 | M12 | 276 | 189 | 15 x 2.50 | 105 | 5,000 | FM | VdS | 20 |
| 45565221 | 219.1 | 8 | 200 | M16 | 353 | 241 | 25 x 2.50 | 131 | 8,500 | FM | VdS | 10 |



Alternative

11 BIS Sprinkler Clamp TA41

Pacifyre[®] MK II Fire Sleeve (P)

(U 04 05)

for penetrations of plastic pipes (non-insulated) 15 - 204 mm



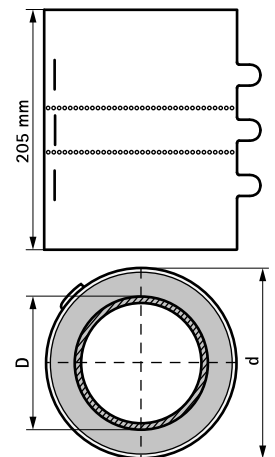
Features and Benefits

- for pipe penetrations in accordance with e.g. DIN 4102-11 or DIN EN 1366-3 in walls (solid walls or light partition walls) and ceilings with fire protection requirements
- the sleeve provides a guaranteed protection against fire, smoke and noise expansion and contraction of the pipe remains possible
- minimum space required, therefore can be applied in areas of hard accessibility
- a higher flexibility due to minimal overhang on wall and ceiling seals
- no tools, drilling or extra fixing materials needed
- simple and easy to install
- maintenance free
- noise reduction test report from IRB (Fraunhofer Institut - Germany) available
- tested according to EN 1366-3
- in accordance with many EU country building regulations
- European approval: ETA-20/0732



| Part No. | D (mm) | DN | d (mm) | Pack 1 | Pack 2 |
|------------|-----------|-----|-----------|--------|--------|
| 2151015017 | 15 - 17 | 15 | 40 | 1 | 9 |
| 2151018020 | 18 - 20 | 20 | 45 | 1 | 9 |
| 2154024026 | 23 - 28 | 25 | 50 | 1 | 9 |
| 2154030032 | 29 - 36 | 32 | 55 | 1 | 9 |
| 2154039041 | 38 - 44 | 40 | 65 | 1 | 8 |
| 2154048050 | 46 - 52 | 50 | 75 | 1 | 8 |
| 2154051053 | 48 - 55 | 52 | 75 | 1 | 8 |
| 2154054056 | 52 - 58 | 56 | 80 | 1 | 8 |
| 2154057059 | 55 - 61 | 58 | 85 | 1 | 8 |
| 2154063065 | 61 - 67 | 63 | 90 | 1 | 8 |
| 2154075077 | 70 - 79 | 75 | 100 | 1 | 6 |
| 2154078080 | 74 - 82 | 80 | 105 | 1 | 6 |
| 2154090092 | 86 - 94 | 90 | 115 | 1 | 6 |
| 2154099101 | 95 - 103 | 100 | 125 | 1 | 6 |
| 2154108110 | 104 - 113 | 110 | 135 | 1 | 6 |
| 2158123125 | 120 - 128 | 125 | 160 | 1 | 5 |
| 2158135137 | 131 - 139 | 135 | 170 | 1 | 5 |
| 2158138140 | 136 - 144 | 140 | 175 | 1 | 5 |
| 2158159161 | 155 - 164 | 160 | 195 | 1 | 5 |
| 2158180182 | 175 - 184 | 180 | 215 | 1 | 4 |
| 2152198200 | 195 - 204 | 200 | 245 | 1 | 4 |

For Pacifyre[®] MK II Fire Sleeves in other sizes, please contact your Walraven Sales Company.



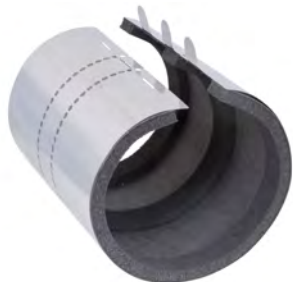
Complementary

- 32 Pacifyre[®] FPM
- 35 Pacifyre[®] ID-Card

Pacifyre® MK II Fire Sleeve (M) – Small

(U 04 10)

for penetrations of metal pipes (insulated or non-insulated) 15 - 110 mm

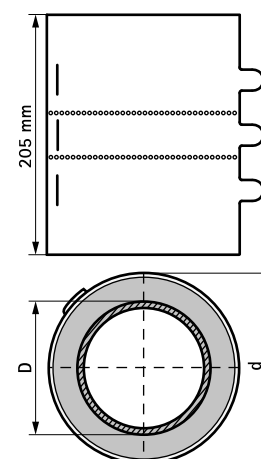


Features and Benefits

- for pipe penetrations of insulated or non-insulated metal pipes in accordance with e.g. BS476-20, in walls (solid walls or light partition walls) and ceilings with fire protection requirements
- the sleeve provides a guaranteed protection against fire, smoke and noise
- expansion and contraction of the pipe remains possible
- a higher flexibility due to minimal overhang on wall and ceiling seals
- no tools, drilling or extra fixing materials needed
- simple and easy to install
- maintenance free
- noise reduction test report from IRB (Fraunhofer Institut - Germany) available

| Part No. | D (mm) | D (") | DN | d (mm) | Pack 1 | Pack 2 |
|------------|-----------|----------|----|-----------|--------|--------|
| 2141015017 | 15 - 17 | 3/8 | 10 | 39 | 1 | 9 |
| 2141018020 | 18 - 20 | - | - | 42 | 1 | 9 |
| 2141021023 | 21 - 23 | 1/2 | 15 | 45 | 1 | 9 |
| 2141024026 | 24 - 26 | - | - | 48 | 1 | 12 |
| 2141027029 | 27 - 29 | 3/4 | 20 | 51 | 1 | 12 |
| 2141030032 | 30 - 32 | - | - | 54 | 1 | 12 |
| 2141033035 | 33 - 35 | 1 | 25 | 57 | 1 | 9 |
| 2141036038 | 36 - 38 | - | - | 60 | 1 | 12 |
| 2141039041 | 39 - 41 | - | - | 63 | 1 | 12 |
| 2141042044 | 42 - 44 | 1 1/4 | 32 | 66 | 1 | 8 |
| 2141045047 | 45 - 47 | - | - | 69 | 1 | 8 |
| 2141048050 | 48 - 50 | 1 1/2 | 40 | 72 | 1 | 8 |
| 2141051053 | 51 - 53 | - | - | 75 | 1 | 8 |
| 2141054056 | 54 - 56 | - | - | 78 | 1 | 8 |
| 2141057059 | 57 - 59 | - | - | 81 | 1 | 8 |
| 2141060062 | 60 - 62 | 2 | 50 | 84 | 1 | 8 |
| 2141063065 | 63 - 65 | - | - | 87 | 1 | 8 |
| 2141066068 | 66 - 68 | - | - | 90 | 1 | 8 |
| 2141069071 | 69 - 71 | - | - | 93 | 1 | 8 |
| 2141072074 | 72 - 74 | - | - | 96 | 1 | 8 |
| 2141075077 | 75 - 77 | 2 1/2 | 65 | 99 | 1 | 6 |
| 2141078080 | 78 - 80 | - | - | 102 | 1 | 6 |
| 2141081083 | 81 - 83 | - | - | 105 | 1 | 6 |
| 2141084086 | 84 - 86 | - | - | 108 | 1 | 6 |
| 2141087089 | 87 - 89 | 3 | 80 | 111 | 1 | 6 |
| 2141090092 | 90 - 92 | - | - | 114 | 1 | 6 |
| 2141093095 | 93 - 95 | - | - | 117 | 1 | 6 |
| 2141096098 | 96 - 98 | - | - | 120 | 1 | 6 |
| 2141099101 | 99 - 101 | - | - | 123 | 1 | 6 |
| 2141102104 | 102 - 104 | - | - | 126 | 1 | 6 |
| 2141105107 | 105 - 107 | - | - | 129 | 1 | 6 |
| 2141108110 | 108 - 110 | - | - | 132 | 1 | 6 |

For Pacifyre® MK II Fire Sleeves in other sizes, please contact your Walraven Sales Company.



Complementary

- 32 Pacifyre® FPM
- 35 Pacifyre® ID-Card

Pacifyre[®] MK II Fire Sleeve (M) – Medium

(U0411)

for penetrations of metal pipes (insulated or non-insulated) 111 - 197 mm



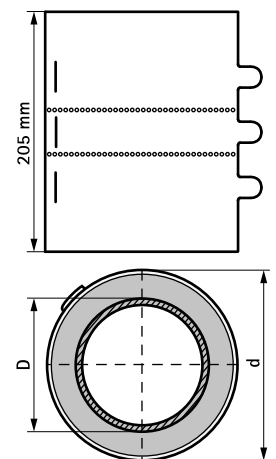
Features and Benefits

- for pipe penetrations of insulated or non-insulated metal pipes in accordance with e.g. BS476-20, in walls (solid walls or light partition walls) and ceilings with fire protection requirements
- the sleeve provides a guaranteed protection against fire, smoke and noise expansion and contraction of the pipe remains possible
- minimum space required, therefore can be applied in areas of hard accessibility
- a higher flexibility due to minimal overhang on wall and ceiling seals
- no tools, drilling or extra fixing materials needed
- simple and easy to install
- maintenance free
- noise reduction test report from IRB (Fraunhofer Institut - Germany) available
- tested according to EN 1366-3
- in accordance with many EU country building regulations



| Part No. | D (mm) | D (°) | DN | d (mm) | Pack 1 | Pack 2 |
|------------|-----------|----------|-----|-----------|--------|--------|
| 214111113 | 111 - 113 | - | - | 135 | 1 | 6 |
| 2141114116 | 114 - 116 | 4 | 100 | 138 | 1 | 6 |
| 2141117119 | 117 - 119 | - | - | 141 | 1 | 6 |
| 2141120122 | 120 - 122 | - | - | 144 | 1 | 6 |
| 2141123125 | 123 - 125 | - | - | 147 | 1 | 6 |
| 2141126128 | 126 - 128 | - | - | 150 | 1 | 6 |
| 2141129131 | 129 - 131 | - | - | 153 | 1 | 6 |
| 2141132134 | 132 - 134 | - | - | 156 | 1 | - |
| 2141135137 | 135 - 137 | - | - | 159 | 1 | - |
| 2141138140 | 138 - 140 | 5 | 125 | 162 | 1 | - |
| 2141141143 | 141 - 143 | - | - | 165 | 1 | - |
| 2141144146 | 144 - 146 | - | - | 168 | 1 | - |
| 2141147149 | 147 - 149 | - | - | 171 | 1 | - |
| 2141150152 | 150 - 152 | - | - | 174 | 1 | - |
| 2141153155 | 153 - 155 | - | - | 177 | 1 | - |
| 2141156158 | 156 - 158 | - | - | 180 | 1 | - |
| 2141159161 | 159 - 161 | - | - | 183 | 1 | - |
| 2141162164 | 162 - 164 | - | - | 186 | 1 | - |
| 2141165167 | 165 - 167 | - | - | 189 | 1 | - |
| 2141168170 | 168 - 170 | 6 | 150 | 192 | 1 | - |
| 2141171173 | 171 - 173 | - | - | 195 | 1 | - |
| 2141174176 | 174 - 176 | - | - | 198 | 1 | - |
| 2141177179 | 177 - 179 | - | - | 201 | 1 | - |
| 2141180182 | 180 - 182 | - | - | 204 | 1 | - |
| 2141183185 | 183 - 185 | - | - | 207 | 1 | - |
| 2141186188 | 186 - 188 | - | - | 210 | 1 | - |
| 2141189191 | 189 - 191 | - | - | 213 | 1 | - |
| 2141192194 | 192 - 194 | - | - | 216 | 1 | - |
| 2141195197 | 195 - 197 | - | - | 219 | 1 | - |

For Pacifyre[®] MK II Fire Sleeves in other sizes, please contact your Walraven Sales Company.



Complementary

- 32 Pacifyre[®] FPM
- 35 Pacifyre[®] ID-Card

Pacifyre® MK II Fire Sleeve (M) – Large

(U 04 12)

for penetrations of metal pipes (insulated or non-insulated) 198 - 275 mm



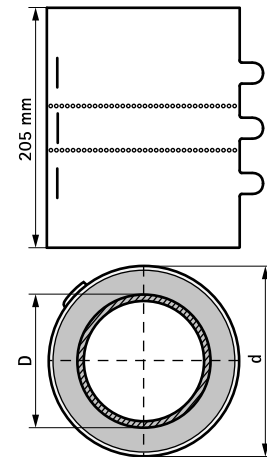
Features and Benefits

- for pipe penetrations of insulated or non-insulated metal pipes in accordance with e.g. BS476-20, in walls (solid walls or light partition walls) and ceilings with fire protection requirements
- the sleeve provides a guaranteed protection against fire, smoke and noise
- expansion and contraction of the pipe remains possible
- minimum space required, therefore can be applied in areas of hard accessibility
- a higher flexibility due to minimal overhang on wall and ceiling seals
- no tools, drilling or extra fixing materials needed
- simple and easy to install
- maintenance free
- noise reduction test report from IRB (Fraunhofer Institut - Germany) available
- tested according to EN 1366-3
- in accordance with many EU country building regulations



| Part No. | D (mm) | D (°) | DN | d (mm) | Pack 1 | Pack 2 |
|------------|-----------|----------|-----|-----------|--------|--------|
| 2141198200 | 198 - 200 | - | - | 222 | 1 | - |
| 2141201203 | 201 - 203 | - | - | 225 | 1 | - |
| 2141204206 | 204 - 206 | - | - | 228 | 1 | - |
| 2141207209 | 207 - 209 | - | - | 231 | 1 | - |
| 2141210212 | 210 - 212 | - | - | 234 | 1 | - |
| 2141213215 | 213 - 215 | - | - | 237 | 1 | - |
| 2141216218 | 216 - 218 | - | - | 240 | 1 | - |
| 2141219221 | 219 - 221 | 8 | 200 | 243 | 1 | - |
| 2141222224 | 222 - 224 | - | - | 246 | 1 | - |
| 2141225227 | 225 - 227 | - | - | 249 | 1 | - |
| 2141228230 | 228 - 230 | - | - | 252 | 1 | - |
| 2141231233 | 231 - 233 | - | - | 255 | 1 | - |
| 2141234236 | 234 - 236 | - | - | 258 | 1 | - |
| 2141237239 | 237 - 239 | - | - | 261 | 1 | - |
| 2141240242 | 240 - 242 | - | - | 264 | 1 | - |
| 2141243245 | 243 - 245 | - | - | 267 | 1 | - |
| 2141246248 | 246 - 248 | - | - | 270 | 1 | - |
| 2141249251 | 249 - 251 | - | - | 273 | 1 | - |
| 2141252254 | 252 - 254 | - | - | 276 | 1 | - |
| 2141255257 | 255 - 257 | - | - | 279 | 1 | - |
| 2141258260 | 258 - 260 | - | - | 282 | 1 | - |
| 2141261263 | 261 - 263 | - | - | 285 | 1 | - |
| 2141264266 | 264 - 266 | - | - | 288 | 1 | - |
| 2141267269 | 267 - 269 | - | - | 291 | 1 | - |
| 2141270272 | 270 - 272 | - | - | 294 | 1 | - |
| 2141273275 | 273 - 275 | 10 | 250 | 297 | 1 | - |

For Pacifyre® MK II Fire Sleeves in other sizes, please contact your Walraven Sales Company.



Complementary

- 32 Pacifyre® FPM
- 35 Pacifyre® ID-Card

Pacifyre® IWM III Fire Strip

(U 04 20)

for penetrations of insulated or non-insulated flammable pipes and multi-layer pipes

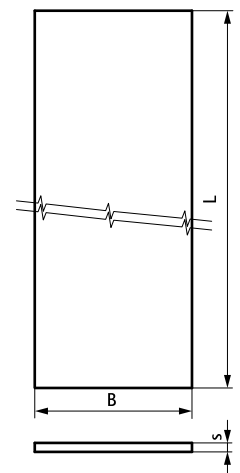


Features and Benefits

- Fire Strip for plastic (combustible) pipes and pipe systems. For apertures in walls (solid walls or light partition walls) and ceilings with fire protection requirements in accordance with UK Legislation
- no tools, drilling or extra fixing materials needed
- only 1 roll for numerous penetrations
- easily to build in: simply place the roll around the pipe, slide into the aperture, finished!
- suitable for damp conditions
- minimum of layers required, so a smaller drillhole is possible
- suitable for areas which are difficult to access, like corners
- problem solver: easy on-site modification
- maintenance free
- zero distance is possible between fire collars
- high flexibility due to self-adhesive strip
- tested according to EN 1366-3
- European approval: ETA-18/0918



| Part No. | L | B (mm) | s (mm) | Pack 1 | App. |
|------------|---------|-----------|-----------|--------|------|
| 2136050125 | 12.50 m | 50 | 2.0 | 1 | roll |
| 2136R50125 | 12.50 m | 50 | 2.0 | 1 | roll |
| 2136050625 | 6.25 m | 50 | 2.0 | 1 | roll |



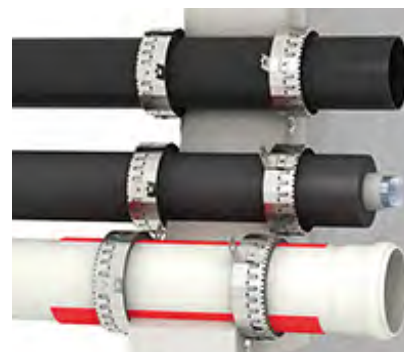
Complementary

- 32 Pacifyre® FPM
- 25 Pacifyre® MLAR Strip
- 35 Pacifyre® ID-Card

Pacifyre® EFC Fire Collar

(U 04 25)

for penetrations of plastic pipes and multi-layer pipes



Features and Benefits

- suitable for areas which are difficult to access, like corners
- a small number of intumescent layers required, so a smaller drill hole is possible
- suitable for damp conditions
- problem solver: easy on-site modification
- penetrations in corners by using partial Fire Collar allowed by regulations (only 2/3 wrapping necessary)
- only 1 box for numerous penetrations and all pipe dimensions
- high flexibility due to self-adhesive strip
- no waste
- all fixing materials included
- tested according to EN 1366-3
- European approval: ETA-13/0793

| Part No. | Model | Type | L | B | s | Cont. | Pack 1 | Pack 2 |
|------------|--------------------------------|---------------|-------|------|------|--|--------|--------|
| | | | | (mm) | (mm) | | | |
| 2132100600 | - | - | | | | Carton box* | 1 | - |
| 21321R0600 | - | - | | | | Carton box* | 1 | - |
| 2132100700 | - | - | | | | Pacifyre® EFC U/ U Carton box | 1 | - |
| 2132100601 | - | - | | | | 3 m Stainless Steel Band | 1 | - |
| 21321R0601 | - | - | | | | 3 m Stainless Steel Band | 1 | - |
| 2132100602 | - | - | | | | Refill set: 18 fixing hooks + plugs, screws and washers | 1 | 18 |
| 21321R0602 | - | - | | | | Refill set: 18 fixing hooks + plugs, screws and washers | 1 | 18 |
| 2132100603 | Card for walls and ceilings | International | | | | - | 1 | - |
| 2132100604 | | | 10 m. | 40 | 2 | 10 m Pacifyre® IM3 material | 2 | |
| 2132100703 | Card for walls and ceilings | Deutschland | | | | - | 1 | - |

*Box content: 3m. Pacifyre® EFC Stainless Band, 10m. Pacifyre® EFC Intumescent, 18 x Pacifyre® EFC Stainless Hook, 1 x Pacifyre® EFC Fixing Set (18 x Pan-Head Torx screw, 18 x Washer, 18 x BIS Starplug), 1 x Pacifyre® EFC Assembly instruction, 6 x Pacifyre® ID-Card



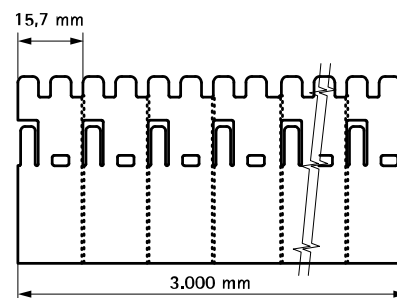
213 2 100 600



213 2 100601



213 2 100602



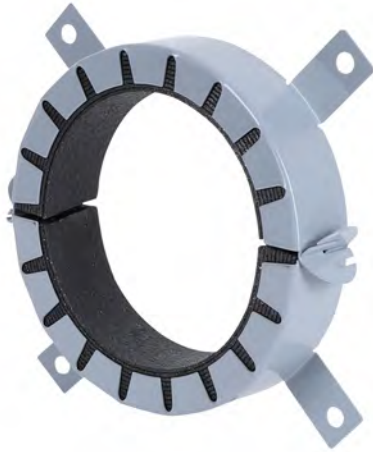
Complementary

- 31 Pacifyre® Fixing Set 1
- 32 Pacifyre® FPM
- 37 Pacifyre® A Acrylic Fire Sealant

Pacifyre® AWM II Fire Collar

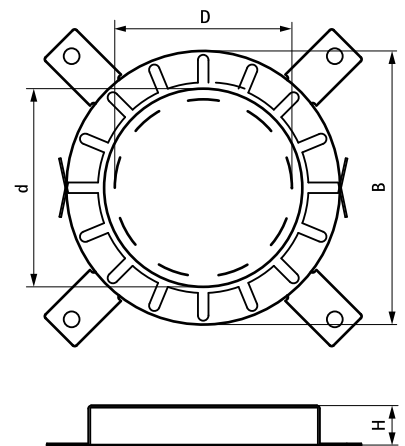
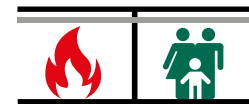
(U 04 30)

for sealing of insulated or non-insulated flammable pipes and multi-layer pipes 32 - 400 mm



Features and Benefits

- built-up fire collar for plastic (combustible) pipes and pipe systems. For apertures in walls (solid walls or light partition walls) and ceilings with fire protection in accordance with UK Legislation
- the installation of elbows, pipe couplings or branch pipes into the wall or directly in, or under the ceiling is possible due to the superficial height of the sleeve
- angular insertion is possible
- installation of telecommunications pipeline- or protective piping with up to 2 cables is possible
- suitable for damp conditions
- should be fitted to both sides of a wall and on one side below a ceiling
- flexible annular gap seal
- the use of PE noise insulation hose up to a thickness of 4 mm of composite natural rubber insulation to a thickness of 43 mm is allowed
- offset installation of sleeve is permitted
- build in is possible without additional fixings (by simply bending and sliding the fixing tabs)
- zero distance is possible between fire collars
- in approval with the German Institute for civil engineering (DIBt) in accordance with Z 19.17-1194 and monitored by the MPA Braunschweig, Germany
- European approval: ETA-13/0906



| Part No. | D (mm) | d (mm) | Model | B (mm) | H (mm) | Pack 1 |
|------------|--------|--------|----------------|--------|--------|--------|
| 2134032034 | 32 | 36 | 2 fixing tabs | 50 | 26 | 10 |
| 2134040042 | 40 | 44 | 2 fixing tabs | 58 | 26 | 10 |
| 2134050052 | 50 | 54 | 2 fixing tabs | 68 | 26 | 10 |
| 2134063065 | 63 | 67 | 4 fixing tabs | 94 | 26 | 10 |
| 2134075077 | 75 | 79 | 4 fixing tabs | 106 | 26 | 10 |
| 2134090092 | 90 | 94 | 4 fixing tabs | 132 | 26 | 10 |
| 2134110112 | 110 | 114 | 4 fixing tabs | 155 | 26 | 10 |
| 2134125125 | 125 | 129 | 4 fixing tabs | 172 | 40 | 2 |
| 2134140140 | 140 | 144 | 4 fixing tabs | 200 | 40 | 2 |
| 2134160160 | 160 | 164 | 4 fixing tabs | 220 | 40 | 2 |
| 2134180180 | 180 | 184 | 8 fixing tabs | 264 | 40 | 2 |
| 2134200200 | 200 | 204 | 8 fixing tabs | 284 | 40 | 2 |
| 2134225225 | 225 | 239 | 10 fixing tabs | 328 | 50 | 1 |
| 2134250250 | 250 | 264 | 10 fixing tabs | 353 | 50 | 1 |
| 2134280280 | 280 | 289 | 12 fixing tabs | 378 | 50 | 1 |
| 2134300300 | 300 | 314 | 12 fixing tabs | 403 | 50 | 1 |
| 2134315315 | 315 | 328 | 12 fixing tabs | 417 | 50 | 1 |
| 2134355355 | 355 | 364 | 12 fixing tabs | 453 | 50 | 1 |
| 2134400400 | 400 | 414 | 12 fixing tabs | 503 | 50 | 1 |

Following the standard of the Singapore Test Services: BS476-20:1987



Complementary

- 32 Pacifyre® FPM
- 25 Pacifyre® MLAR Strip
- 35 Pacifyre® ID-Card

Pacifyre® AWM III Fire Collar

(U 04 35)

for penetrations with flammable pipes 32 - 180 mm

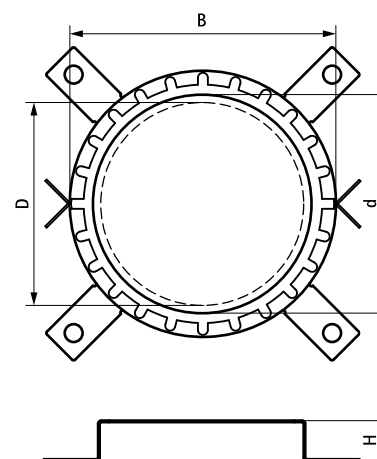


Features and Benefits

- built-up fire collar for plastic (combustible) pipes and pipe systems. For apertures in walls (solid walls or light partition walls) and ceilings with fire protection in accordance with UK Legislation
- suitable for damp conditions
- low collar height, allowing building of bends, sockets and T-joints close to the wall or ceiling
- should be fitted to both sides of a wall and on one side below a ceiling
- easily installed due to 2 part collar construction
- various finish possibilities, e.g. acrylic sealant, mortar, etc.
- build in is possible without additional fixings (by simply bending and sliding the fixing tabs)
- economical alternative for the Pacifyre® AWM II in standard installation situations
- in problematic built-in situations the use of an oversized collar is permitted (up to max. 3 sizes bigger)
- maintenance free
- zero distance is possible between fire collars
- tested according to EN 1366-3
- European approval: ETA-13/0906



| Part No. | D (mm) | d (mm) | Model | B (mm) | H (mm) | Pack 1 |
|------------|-----------|-----------|---------------|-----------|-----------|--------|
| 2135032034 | 32 | 38 | 2 fixing tabs | 47 | 26 | 10 |
| 2135040042 | 40 | 46 | 2 fixing tabs | 55 | 26 | 10 |
| 2135050052 | 50 | 56 | 2 fixing tabs | 65 | 26 | 10 |
| 2135063065 | 63 | 69 | 4 fixing tabs | 82 | 26 | 10 |
| 2135075077 | 75 | 81 | 4 fixing tabs | 94 | 26 | 10 |
| 2135090092 | 90 | 96 | 4 fixing tabs | 114 | 26 | 10 |
| 2135110112 | 110 | 116 | 4 fixing tabs | 134 | 26 | 10 |
| 2135125125 | 125 | 132 | 4 fixing tabs | 150 | 40 | 10 |
| 2135140140 | 140 | 144 | 4 fixing tabs | 168 | 40 | 2 |
| 2135160160 | 160 | 164 | 4 fixing tabs | 188 | 40 | 2 |
| 2135180180 | 180 | 184 | 4 fixing tabs | 218 | 40 | 2 |



Complementary

- 32 Pacifyre® FPM
- 31 Pacifyre® Fixing Set 1
- 25 Pacifyre® MLAR Strip

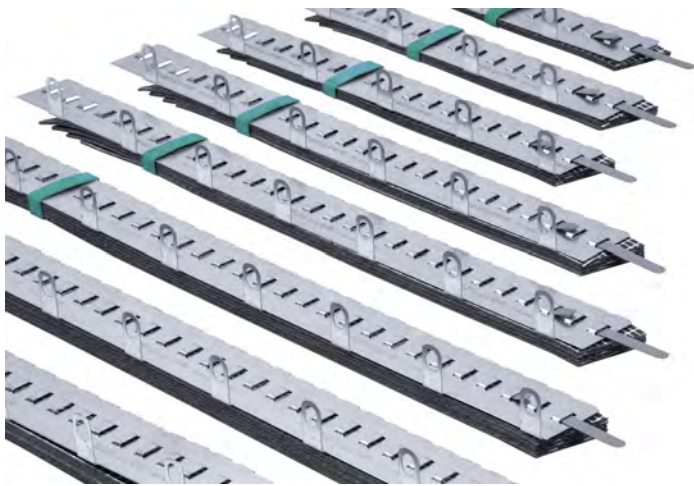
Complementary

- 35 Pacifyre® ID-Card

Pacifyre® BFC

(U 04 38)

for flammable pipe penetrations 0 - 160 mm

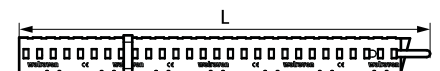
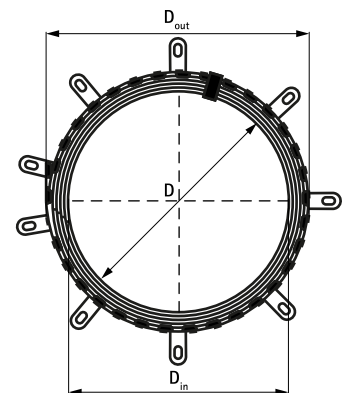


Features and Benefits

- easy to install
- suitable for damp conditions
- for thin- and thick-walled pipes
- for flexible walls, solid walls and ceilings
- up to 2 hours fire protection in wall penetrations
- up to 4 hours fire protection on floor/ ceiling penetrations
- oversized for increased flexibility
- low height of 42.5 mm
- European approval: ETA-17/0285



| Part No. | D (mm) | D in (Inner Ø) (mm) | D out (Outer Ø) (mm) | Model | L | # of fixing points needed | Pack 1 |
|------------|-----------|------------------------|-------------------------|----------|--------|---------------------------|--------|
| 2133000050 | 0 - 50 | 56 | 70 | 2 layers | 267 mm | 2 | 2 |
| 2133R00050 | | 56 | 70 | 2 layers | 267 mm | 2 | 2 |
| 2133000063 | 51 - 63 | 67 | 90 | 3 layers | 313 mm | 3 | 2 |
| 2133R00063 | | 67 | 90 | 3 layers | 313 mm | 3 | 2 |
| 2133000075 | 64 - 75 | 80 | 100 | 3 layers | 345 mm | 3 | 2 |
| 2133R00075 | | 80 | 100 | 3 layers | 345 mm | 3 | 2 |
| 2133000090 | 76 - 90 | 98 | 125 | 4 layers | 423 mm | 3 | 2 |
| 2133R00090 | | 98 | 125 | 4 layers | 423 mm | 3 | 2 |
| 2133000110 | 91 - 110 | 118 | 150 | 4 layers | 487 mm | 3 | 2 |
| 2133R00110 | | 118 | 150 | 4 layers | 487 mm | 3 | 2 |
| 2133000125 | 111 - 125 | 130 | 160 | 5 layers | 533 mm | 4 | 2 |
| 2133R00125 | | 130 | 160 | 5 layers | 533 mm | 4 | 2 |
| 2133000140 | 126 - 140 | 145 | 180 | 6 layers | 595 mm | 4 | 2 |
| 2133R00140 | | 145 | 180 | 6 layers | 595 mm | 4 | 2 |
| 2133000160 | 141 - 160 | 165 | 200 | 6 layers | 659 mm | 4 | 2 |
| 2133R00160 | | 165 | 200 | 6 layers | 659 mm | 4 | 2 |



Complementary

- 32 Pacifyre® FPM
- 31 Pacifyre® Fixing Set 1
- 37 Pacifyre® A Acrylic Fire Sealant

Complementary

- 36 Pacifyre® S Silicone Fire Sealant

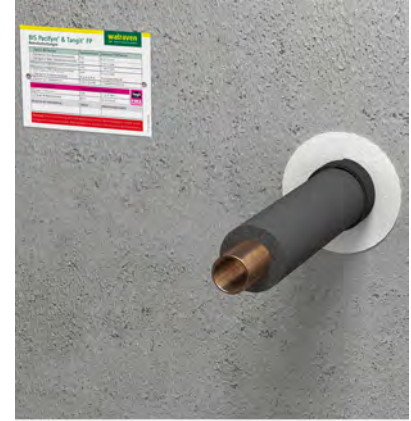
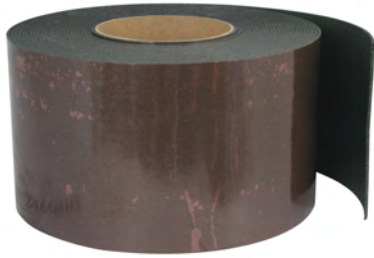
Alternative

- 18 Pacifyre® EFC Fire Collar
- 20 Pacifyre® AWM III Fire Collar

Pacifyre[®] M Pipe Wrap

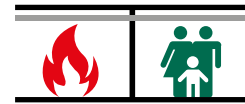
for sealing of insulated, non-flammable pipes

(U 04 40)

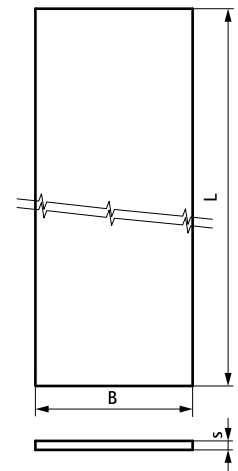


Features and Benefits

- no tools, drilling or extra fixing materials needed
- suitable for damp conditions
- only 1 roll for many penetrations
- simple to install: place the roll around the stretched insulation (please take into account the number of layers required!) slide into the construction, finished
- small number of layers, therefore applicable in areas of hard accessibility
- minimum space required
- if desired, no gap is required between the pipe jackets
- high flexibility due to self-adhesive strip



| Part No. | L | B (mm) | s (mm) | Pack 1 |
|------------|------|-----------|-----------|--------|
| 2136100100 | 10 m | 100 | 1.5 | 1 |
| 2136100050 | 5 m | 100 | 1.5 | 1 |



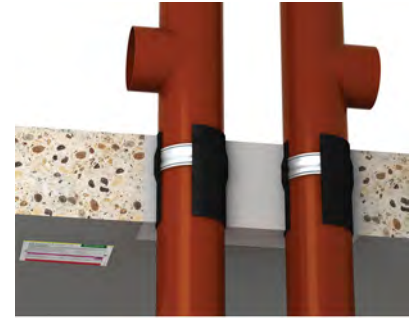
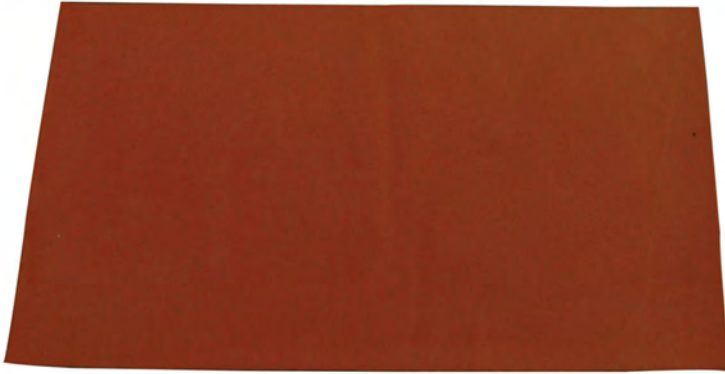
Complementary

- 32 Pacifyre[®] FPM
- 35 Pacifyre[®] ID-Card

Pacifyre[®] MLAR Flexmatte

nach MLAR/LAR/RbALei, Abschnitt 4.2 bzw. 4.3 "Erleichterungen"

(U 04 42)



Features and Benefits

- ausschließlich zur Anwendung in Einbausituationen nach den Erleichterungen (MLAR), Abschnitt 4.2 bzw. 4.3
- zur Abschottung von Rohr- und Kabeldurchführungen in Wänden und Decken
- Einbau von Verbindern bei Gussrohrleitungen in Wand und Decke möglich
- nichtbrennbare Rohre bis max. Rohraußen-Ø 160 mm
- brennbare Rohre bis max. Rohraußen-Ø 32 mm
- geringer Platzbedarf, da nur 1 Lage nötig
- Einbau in kompletter Bauteilstärke
- auf ganzer Länge selbstklebend, dadurch leichte und schnelle Montage
- Empfehlung: Kennzeichnungsschild

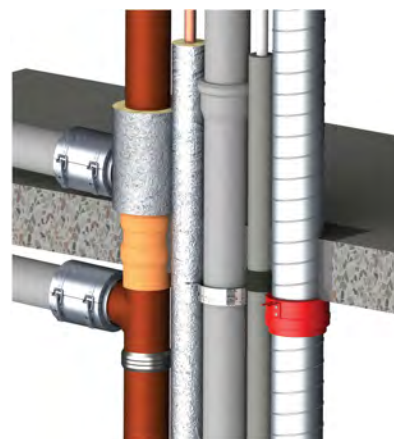
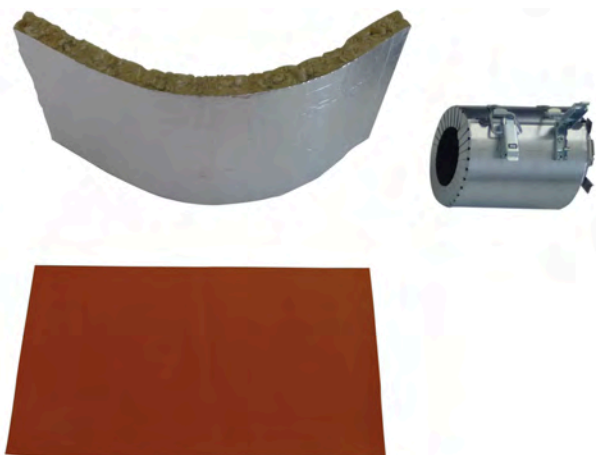


| Part No. | L | H | s | For | Colour | Pack 1 |
|------------|--------|------|------|-----------------------|--------|--------|
| | | (mm) | (mm) | | | |
| 2136245460 | 460 mm | 245 | 4.0 | Anwendungen nach MLAR | Orange | 10 |

Pacifyre® SML-MI Brandschutz-Set

(U 04 43)

zur Abschottung von Mischinstallationen



Abschottung mit Nullabstand

Features and Benefits

- keine zusätzliche Schachtung in Kellerräumen notwendig
- leichte Verarbeitung und hohe Flexibilität durch selbstklebende Matte
- benachbarte Kabelabschottungen können mit einem Abstand von lediglich 50 mm installiert werden
- Übergang von Guss- auf Kunststoffrohr direkt nach dem Abzweig möglich
- Übergang auf Kunststoffrohr bis max. 110 mm
- Formteile und Verbinder im Bauteil sind erlaubt, müssen aber umwickelt werden
- mögliche Abzweige 45° oder 88° Grad
- Abmessung Brandschutzmatte: H 245 x B 460 x s 3 mm
- Abmessung Isoliermatte: H 250 x B 620 x s 30 mm
- Schallschutzprüfzeugnis (P-BA 108/2008) des IBP (Fraunhofer Inst.)
- set consists of:
 - Brandschutzmatte zur Rohrabschottung im Bauteil
 - KonFix Hülse mit Brandschutzeinlage für Übergang auf Kunststoffrohr
 - Isoliermatte aus Steinwolle zur Anbringung oberhalb des Bauteils

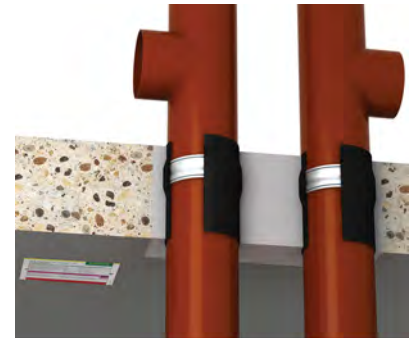


| Part No. | DN | For | Pack. | Pack 1 |
|------------|---------|---|-------|--------|
| 2136200050 | 50 | KonFix Hülse mit Brandschutzeinlage für Übergang auf Kunststoffrohre mit DN 50 | Set | 1 |
| 2136200080 | 70 / 80 | KonFix Hülse mit Brandschutzeinlage für Übergang auf Kunststoffrohre mit DN 70 und 80 | Set | 1 |
| 2136200100 | 100 | KonFix Hülse mit Brandschutzeinlage für Übergang auf Kunststoffrohre mit DN 100 | Set | 1 |

Pacifyre® MLAR Strip

nach MLAR/LAR/RbALei, Abschnitt 4.2 bzw. 4.3 "Erleichterungen"

(U 04 45)



Features and Benefits

- MLAR-Anwendung:
 - zur Abschottung von Rohr- und Kabeldurchführungen in Wänden und Decken
 - Einbau von Verbindern bei Gussrohrleitungen in Wand und Decke möglich
 - viele Abschottungen mit nur einer Rolle
 - nichtbrennbare Rohre bis max. Rohraußen-Ø 160 mm
 - brennbare Rohre bis max. Rohraußen-Ø 32 mm
 - nach MLAR/LAR/RbALei, Abschnitt 4.2 bzw. 4.3 "Erleichterungen"
- Generelle Vorteile:
 - selbstklebend auf ganzer Länge
 - geeignet für den Einsatz in Feuchträumen
 - Schallschutzgeprüft: P-BA 243/2008 (IRB Fraunhofer Institut)
 - schnelle, unkomplizierte und platzsparende Montage
 - Fremdüberwachung durch MPA Braunschweig
 - durch die Breite von 250 mm ist Abschottung aller gängigen Deckenstärken möglich



| Part No. | L | B (mm) | s (mm) | Pack 1 | App. |
|------------|-------|-----------|-----------|--------|------|
| 2136250025 | 2.5 m | 250 | 3.0 | 1 | roll |

Complementary

- 32 Pacifyre® FPM
- 35 Pacifyre® ID-Card

Pacifyre® AWM II Conduit Fire Collar

(U 04 60)

zur Abschottung von Kabelleerrohren 75 - 125 mm



Features and Benefits

- zur Herstellung von Kabelabschottungen in S90-Qualität nach DIN 4102-9 auf Wänden (leichte Trennwände und Massivwände) und Decken mit Brandschutzanforderungen nach MBO bzw. MLAR/LAR/RbALei
- should be fitted to both sides of a wall and on one side below a ceiling
- Öffnung kann zu 100% belegt werden
- sehr gute Nachbelegbarkeit von Kabeln
- System kann auch nachträglich sehr gut montiert werden
- hervorragend geeignet in der Sanierung
- European approval: ETA-11/0372



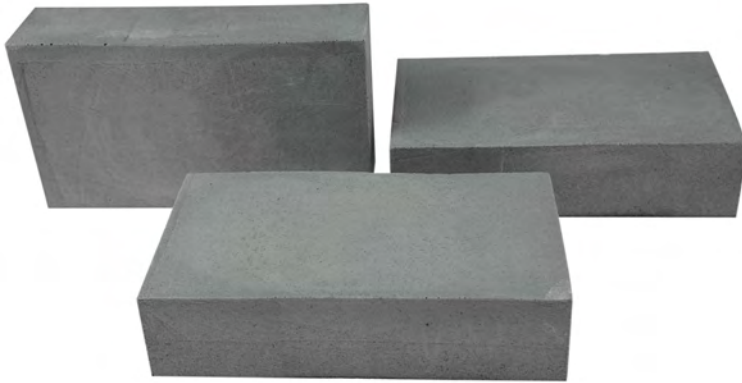
| Part No. | D (mm) | Pack 1 |
|------------|-----------|--------|
| 2138075075 | 75 | 10 |
| 2138090090 | 90 | 10 |
| 2138110110 | 110 | 10 |
| 2138125125 | 125 | 2 |

Complementary

- 32 Pacifyre® FPM
- 35 Pacifyre® ID-Card

Pacifyre® IWS Brandschutzsteine

(U 04 66)



Features and Benefits

- absolut staub- und faserfreie Nachinstallation
- einfache Verarbeitung durch leichtes Zuschneiden
- Verschluss der Zwischenräume mit Pacifyre® IWS Brandschutzschaum (Art. Nr. 2139113061 / 180 gr.)

| Part No. | L | B (mm) | H (mm) | Pack 1 |
|------------|--------|-----------|-----------|--------|
| 2139113061 | 230 mm | 130 | 60 | 20 |

Pacifyre® IWS Foam

(U 04 67)



Features and Benefits

- set consists of:
 - 1 cartridge
 - 2 mixing tubes
 - 1 gun adapter
 - 1 assembly instruction

| Part No. | Cont. | Pack 1 |
|------------|--------|--------|
| 2139900180 | 180 gr | 12 |

Pacifyre[®] DC Downlighter Cover

for fire stopping of downlighters and spot lights

(U 04 70)

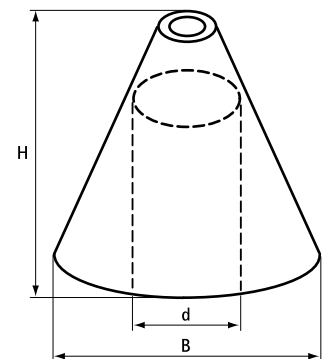


Features and Benefits

- for fire stopping of downlighters and spot lights in fire rated suspended ceilings
- suitable for 30 or 60 minutes fire resistant ceilings (NEN-EN 1364-2)
- provides thermal and acoustic insulation
- easily installed by one man to correct specification
- maintenance free
- fire resistant: 72 minutes. Test according BS476 Part 23:1987 and BS EN 1365-2:2000
- airborne and impact sound insulation: test according to BS EN ISO 140 Part 3:1995 and BS EN ISO 140 part 6:1998 BRE Test report 213942
- suspended ceiling: BS476 Part 23:1987. Duration of effective protection 72 minutes (no failure). Cert.No. FEI/F99029/Chiltern
- suspended ceiling and timber, steel or concrete beam/joist protected by plasterboard. Assessment No. CHILT/A02105/Chiltern. Duration of effective protection 60 minutes
- plasterboard ceilings: BS-EN 1365-2:2000. Integrity: 60 minutes (no failure). Insulation 60 minutes (no failure). Cert.No. TE94667/BRE

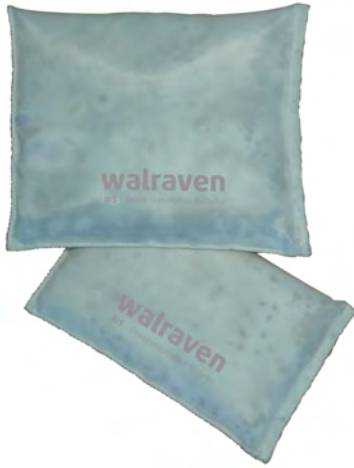


| Part No. | d (mm) | B (mm) | H (mm) | Pack 1 |
|------------|-----------|-----------|-----------|--------|
| 2190150150 | 50 - 75 | 150 | 150 | 10 |
| 2190200200 | 75 - 100 | 200 | 200 | 10 |
| 2190300170 | 145 - 270 | 300 | 170 | 5 |



Pacifyre® IWC Brandschutzkissen

(U 04 73)



Features and Benefits

- hohe Flexibilität durch schnelles Ein- und Ausbauen der Abschottung
- geringe Schottstärke
- einfache Nachbelegung

| Part No. | L | B (mm) | H (mm) | Pack 1 |
|------------|--------|-----------|-----------|--------|
| 2139006010 | 250 mm | 60 | 10 | 50 |
| 2139014515 | 250 mm | 145 | 15 | 20 |
| 2139022015 | 250 mm | 220 | 15 | 15 |
| 2139022045 | 250 mm | 220 | 45 | 10 |

Pacifyre® Fixing Set 1

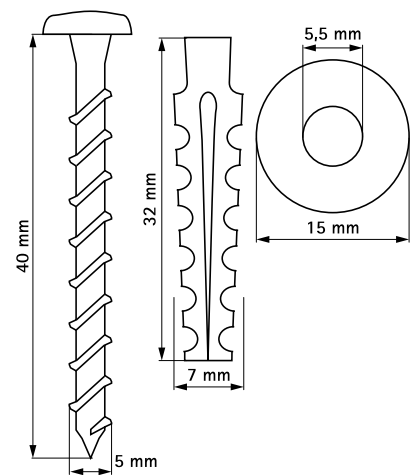
(U0481)



Features and Benefits

- for fixing fire collars to walls and floors

| Part No. | Model | Set | Pack 1 |
|------------|-------|---------|--------|
| 2121000024 | | 24 pcs. | 25 |



Complementary

- 18 Pacifyre® EFC Fire Collar
- 20 Pacifyre® AWM III Fire Collar
- 21 Pacifyre® BFC

Pacifyre® FPM

(U 04 82)

for fire safe and smoke tight sealing of penetrations, joints and other apertures



Features and Benefits

- for sealing around:
 - Pacifyre Sleeves, Collars or Strips
 - cables and pipes according to sections 4.2 and 4.3 of MLAR2005/LAR/RbALei of the German construction regulation when applicable
- recommended for sealing ventilation flaps, ventilation ducts and fire protection doors (leading firestop element should refer to a class A1 fire rated mortar sealant)
- can be used by hand or with a mortar gun
- non shrink
- any texture, from free-flowing to very firm
- good surface adhesion
- complies with DIN 4102, EN 13501, EN 998-2



| Part No. | CE | Cont. | Pack 1 |
|------------|----|-------|--------|
| 2180015300 | CE | 15 kg | 1 |

Complementary

- 13 Pacifyre® MK II Fire Sleeve (P)
- 17 Pacifyre® IWM III Fire Strip
- 18 Pacifyre® EFC Fire Collar

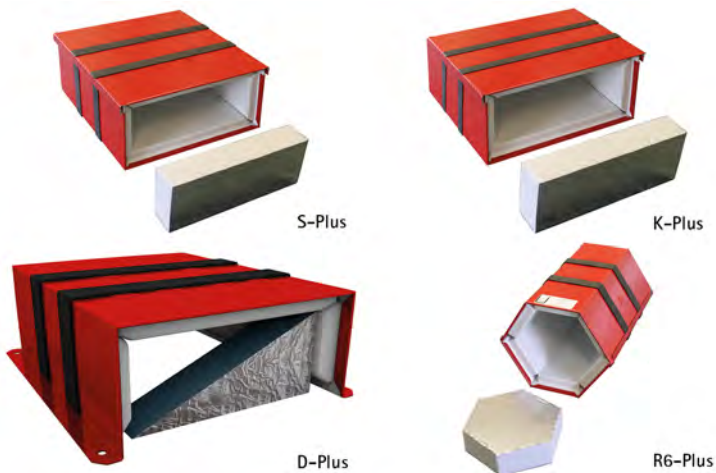
Complementary

- 20 Pacifyre® AWM III Fire Collar
- 22 Pacifyre® M Pipe Wrap
- 25 Pacifyre® MLAR Strip

Pacifyre® CB CableBox

(U 04 83)

for cable and pipe penetration of flammable and non-flammable material



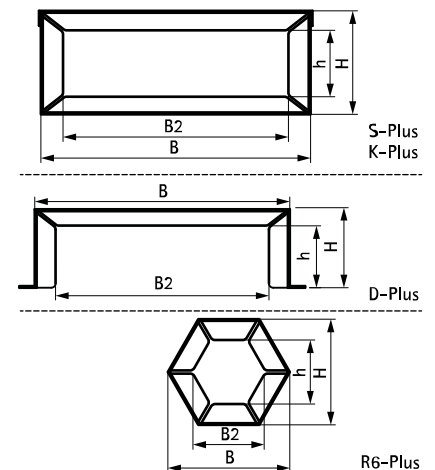
Features and Benefits

- S90 respectively R90 quality
- In massive or flexible walls of ≥ 100 mm and floors of ≥ 150 mm
- high flexibility due to retrofitting (slide-on lid)
- simple and easy to install
- cablebox can be completely filled without gaps
- cablebox can be foamed (Soudafoam GUN B1) or mortared (Pacifyre® FPM) in
- simple gap closure by provided foam boards or Soudafoam GUN B1
- multiple installations with small distances possible
- tested according to DIN 4102-9



| Part No. | Model | L | B | B2 | H | h | Pack 1 |
|------------|---------|--------|------|------|------|------|--------|
| | | | (mm) | (mm) | (mm) | (mm) | |
| 2137120060 | S-Plus | 270 mm | 132 | 94 | 60 | 33 | 1 |
| 2137240110 | S-Plus | 270 mm | 252 | 204 | 110 | 74 | 1 |
| 2137280110 | S-Plus | 270 mm | 292 | 244 | 110 | 74 | 1 |
| 2138120060 | K-Plus | 150 mm | 132 | 94 | 60 | 33 | 1 |
| 2138240060 | K-Plus | 150 mm | 252 | 214 | 60 | 33 | 1 |
| 2130240060 | D-Plus | 270 mm | 240 | 210 | 60 | 42 | 1 |
| 2130635080 | D-Plus | 270 mm | 640 | 575 | 80 | 52 | 1 |
| 2139128110 | R6-Plus | 270 mm | 128 | 80 | 110 | 70 | 1 |

Special assembly instruction: Pacifyre® CB combi boxes may only be used with non-combustible or combustible but closed piping systems or cables. In particular, flammable sewer pipes, which usually have roof ventilation and thus represent an open pipe system, should not be run through the tray. If in individual cases open pipe systems have to be led through the Pacifyre® CB Combibox, an extra fire-resistant seal must be applied. We would be happy to advise you on this.



Complementary

- 32 Pacifyre® FPM
- 35 Pacifyre® ID-Card

Pacifyre[®] MP Weichschott

(U 04 84)



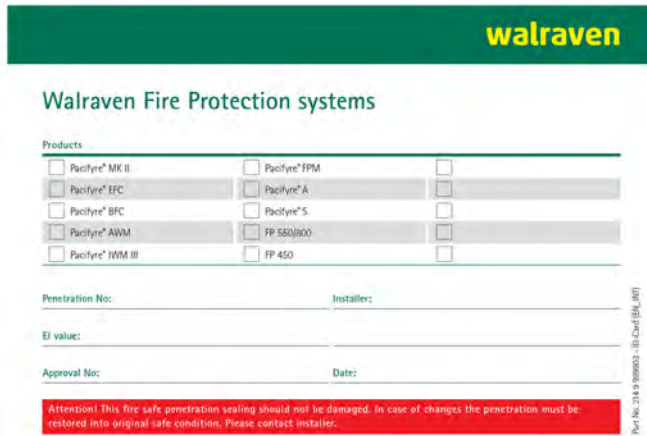
Features and Benefits

- Streich-, spritz- und spachtelbare Beschichtung erhältlich
- für den Einbau in Nass- oder Feuchträume geeignet
- Beschichtung kann einfrieren. Nach dem Auftauen ohne Einschränkungen weiter verwendbar

| Part No. | Model | L | B (mm) | H (mm) | Cont. | Pack 1 |
|------------|-------------------------------------|----------|-----------|-----------|---------|--------|
| 2139306005 | Mineralfaserplatten | 1,000 mm | 600 | 50 | - | 2 |
| 2139300002 | Brandschutzbeschichtung spachtelbar | - | - | - | 12.5 kg | 1 |
| 2139300003 | Brandschutzbeschichtung spachtelbar | - | - | - | 400 g | 1 |

Pacifyre® ID-Card

(U 04 85)



Features and Benefits

- for identification of pipe penetrations sealed with Pacifyre® and/or Tangit products



| Part No. | Model | Type | Pack 1 |
|------------|--|-------------------|--------|
| 2149999901 | Card for walls and ceilings | Deutschland | 1 |
| 2149999902 | Card for walls and ceilings | Nederland | 1 |
| 2159999902 | Self adhesive, for pipes and log books | Nederland | 1 |
| 2149999903 | Card for walls and ceilings | United Kingdom | 1 |
| 2149999904 | Card for walls and ceilings | France | 1 |
| 2149999905 | Card for walls and ceilings | Polska | 1 |
| 2149999906 | Card for walls and ceilings | Česky / Slovensky | 1 |
| 2159999906 | Self adhesive, for pipes and log books | Česky / Slovensky | 1 |
| 2159999907 | Self adhesive, for pipes and log books | Belgium | 1 |
| 2149999912 | Card for walls and ceilings | Sverige | 1 |
| 2159999912 | Self adhesive, for pipes and log books | Sverige | 1 |
| 2149999913 | Card for walls and ceilings | Danmark | 1 |
| 2159999913 | Self adhesive, for pipes and log books | Danmark | 1 |

Pacifyre® S Silicone Fire Sealant

(U 04 95)



Features and Benefits

- fire resistant and smoke tight up to 4 hours
- suitable for linear joints in walls and floors with max. 25% movement
- for sealing annular joints around pipes, fire collars and fire sleeves or wraps
- very good adhesion to most substrates
- easy to apply
- colour fast and UV-stable
- remains permanently elastic after curing
- skin formation in approx. 20 min.
- curing rate 1mm/24h
- 16 shore A hardness
- indoor emission level A+
- temperature resistance from -10 °C to +140 °C
- application temperature: +5 °C up to +30 °C
- fire class B1 (DIN 4102-2)
- CE marked
- tested and approved according to EN 1366-4 and EN 1366-3
- for more information, please refer to the Declaration of Performance / ETA, www.walraven.com/pacifyre



| Part No. | Colour | CE | ETA | DoP | Cont. | Pack 1 |
|------------|--------|----|-----|------------------|--------|--------|
| 2180100020 | White | CE | ETA | 0749 CPR 16-1007 | 300 ml | 12 |

Complementary

- 13 Pacifyre® MK II Fire Sleeve (P)
- 18 Pacifyre® EFC Fire Collar
- 21 Pacifyre® BFC

Complementary

- 35 Pacifyre® ID-Card

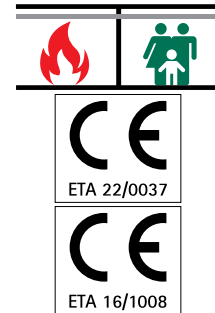
Pacifyre® A Acrylic Fire Sealant

(U 04 100)



Features and Benefits

- fire resistant and smoke tight up to 4 hours
- suitable for static linear joints in walls and floors with max. 12.5% movement
- for sealing annular joints around pipes, fire collars and fire sleeves or wraps
- for sealing cracks in concrete and plaster
- excellent adhesion to many porous substrates
- colour fast, waterproof and paintable after curing
- remains elastic after curing
- skin formation in approx. 20 min.
- shrinkage approx. 15% (DIN 52451)
- activation temperature $\geq 120\text{ }^{\circ}\text{C}$
- indoor emission level A+
- temperature resistance from $-20\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$
- application temperature: $+5\text{ }^{\circ}\text{C}$ up to $+30\text{ }^{\circ}\text{C}$
- sound reduction up to 62dB
- CE marked
- tested according to EN 1366-3, EN 1366-4 and EN ISO 717-1
- for more information, please refer to the Declaration of Performance / ETA, www.walraven.com/pacifyre



| Part No. | Colour | CE | ETA | DoP | Cont. | Pack 1 |
|------------|--------|----|-----|------------------|--------|--------|
| 2180100010 | White | CE | ETA | 0749 CPR 16-1008 | 300 ml | 12 |

Complementary

- 13 Pacifyre® MK II Fire Sleeve (P)
- 18 Pacifyre® EFC Fire Collar
- 21 Pacifyre® BFC

Complementary

- 35 Pacifyre® ID-Card

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Information: Steel Pipes

| Steel pipe suitable for screwing | | | | Weight | | | L |
|----------------------------------|-------|------|-------|----------|-----------|----------|------|
| D | | s | empty | filled | insulated | (max.)* | |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | m |
| 10.2 | 1/8 | 6 | 2.00 | 0.41 | 0.44 | 0.59 | 1.25 |
| 13.5 | 1/4 | 8 | 2.35 | 0.65 | 0.71 | 0.88 | 1.50 |
| 17.2 | 3/8 | 10 | 2.35 | 0.85 | 0.97 | 1.17 | 2.25 |
| 21.3 | 1/2 | 15 | 2.65 | 1.22 | 1.42 | 1.63 | 2.75 |
| 26.9 | 3/4 | 20 | 2.65 | 1.58 | 1.95 | 2.20 | 3.00 |
| 33.7 | 1 | 25 | 3.25 | 2.44 | 3.02 | 3.51 | 3.50 |
| 42.4 | 1 1/4 | 32 | 3.25 | 3.14 | 4.15 | 4.86 | 3.75 |
| 48.3 | 1 1/2 | 40 | 3.25 | 3.61 | 4.98 | 5.94 | 4.25 |
| 60.3 | 2 | 50 | 3.65 | 5.10 | 7.31 | 8.83 | 4.75 |
| 76.1 | 2 1/2 | 65 | 3.65 | 6.51 | 10.23 | 12.77 | 5.50 |
| 88.9 | 3 | 80 | 4.05 | 8.47 | 13.59 | 17.08 | 6.00 |
| 114.3 | 4 | 100 | 4.50 | 12.10 | 20.80 | 26.31 | 6.00 |
| 139.7 | 5 | 125 | 4.85 | 16.20 | 29.47 | 35.45 | 6.00 |
| 165.1 | 6 | 150 | 4.85 | 19.20 | 38.16 | 44.83 | 6.00 |

| Steel pipe (seamless) | | | | Weight | | | L |
|-----------------------|-------|------|-------|----------|-----------|----------|------|
| D | | s | empty | filled | insulated | (max.)* | |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | m |
| 10.2 | 1/8 | 6 | 1.6 | 0.34 | 0.38 | 0.53 | 1.25 |
| 13.5 | 1/4 | 8 | 1.8 | 0.52 | 0.60 | 0.77 | 1.50 |
| 17.2 | 3/8 | 10 | 1.8 | 0.68 | 0.83 | 1.02 | 2.25 |
| 21.3 | 1/2 | 15 | 2.0 | 0.96 | 1.19 | 1.40 | 2.75 |
| 26.9 | 3/4 | 20 | 2.3 | 1.40 | 1.79 | 2.22 | 3.00 |
| 33.7 | 1 | 25 | 2.6 | 1.99 | 2.63 | 3.12 | 3.50 |
| 42.4 | 1 1/4 | 32 | 2.6 | 2.55 | 3.64 | 4.39 | 3.75 |
| 48.3 | 1 1/2 | 40 | 2.6 | 2.93 | 4.39 | 5.39 | 4.25 |
| 60.3 | 2 | 50 | 2.9 | 4.11 | 6.44 | 8.03 | 4.75 |
| 76.1 | 2 1/2 | 65 | 2.9 | 5.24 | 9.12 | 11.70 | 5.50 |
| 88.9 | 3 | 80 | 3.2 | 6.76 | 12.10 | 15.72 | 6.00 |
| 114.3 | 4 | 100 | 3.6 | 9.83 | 18.83 | 24.25 | 6.00 |
| 139.7 | 5 | 125 | 4.0 | 13.40 | 27.02 | 33.05 | 6.00 |
| 168.3 | 6 | 150 | 4.5 | 18.20 | 38.37 | 43.66 | 6.00 |
| 219.1 | 8 | 200 | 6.3 | 33.10 | 67.75 | 72.95 | 6.00 |
| 273.0 | 10 | 250 | 6.3 | 41.40 | 96.11 | 104.15 | 6.00 |
| 323.9 | 12 | 300 | 7.1 | 55.50 | 131.57 | 141.56 | 6.00 |
| 355.6 | 14 | 350 | 8.0 | 68.60 | 160.95 | 170.74 | 6.00 |
| 406.4 | 16 | 400 | 8.8 | 86.30 | 207.05 | 217.91 | 6.00 |
| 457.0 | 18 | 450 | 10.0 | 110.00 | 262.67 | 274.44 | 6.00 |
| 508.0 | 20 | 500 | 11.0 | 135.00 | 323.79 | 335.87 | 6.00 |
| 610.0 | 24 | 600 | 12.5 | 184.00 | 457.26 | 471.16 | 6.00 |

Norm:
DIN EN 10255 - 11/2004

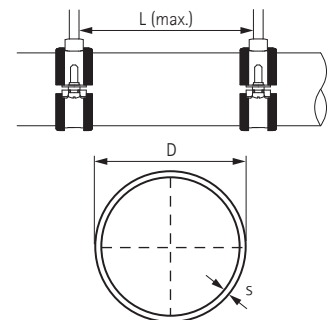
Material:
Steel 33-2, according to DIN 17100

Insulation:
mineral wool (density = 80 kg/m³)

Norm:
DIN EN 10220 - 03/2003

Material:
Steel 37

Insulation:
mineral wool (density = 80 kg/m³)



This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

* Maximum recommended fixing distance according to DIN 1988-2 (TRWI). The exact distances depend on the specific pipe-type and -manufacturer!

Information: Steel Pipes / Cast Iron Pipe

| Welded steel pipe | | | | Weight | | | L (max.)* |
|-------------------|-------|-----|-------|--------|-----------|--------|--------------|
| D | | s | empty | filled | insulated | m | |
| (mm) | (") | | | | | | (DN) |
| 10.2 | 1/8 | 6 | 1.6 | 0.34 | 0.38 | 0.53 | 1.25 |
| 13.5 | 1/4 | 8 | 1.8 | 0.52 | 0.60 | 0.77 | 1.50 |
| 17.2 | 3/8 | 10 | 1.8 | 0.68 | 0.83 | 1.02 | 2.25 |
| 21.3 | 1/2 | 15 | 2.0 | 0.95 | 1.19 | 1.40 | 2.75 |
| 26.9 | 3/4 | 20 | 2.0 | 1.23 | 1.64 | 2.07 | 3.00 |
| 33.7 | 1 | 25 | 2.0 | 1.56 | 2.25 | 2.74 | 3.50 |
| 42.4 | 1 1/4 | 32 | 2.3 | 2.27 | 3.39 | 4.17 | 3.75 |
| 48.3 | 1 1/2 | 40 | 2.3 | 2.61 | 4.11 | 5.13 | 4.25 |
| 60.3 | 2 | 50 | 2.3 | 3.29 | 5.73 | 7.38 | 4.75 |
| 76.1 | 2 1/2 | 65 | 2.6 | 4.71 | 8.66 | 11.29 | 5.50 |
| 88.9 | 3 | 80 | 2.9 | 6.15 | 11.57 | 15.17 | 6.00 |
| 114.3 | 4 | 100 | 3.2 | 8.77 | 17.91 | 23.31 | 6.00 |
| 139.7 | 5 | 125 | 3.6 | 12.10 | 25.88 | 31.92 | 6.00 |
| 168.3 | 6 | 150 | 4.0 | 16.20 | 36.57 | 43.16 | 6.00 |
| 219.1 | 8 | 200 | 4.5 | 23.80 | 58.78 | 66.55 | 6.00 |
| 273.0 | 10 | 250 | 5.0 | 33.00 | 88.13 | 96.81 | 6.00 |
| 323.9 | 12 | 300 | 5.6 | 44.00 | 121.84 | 131.49 | 6.00 |
| 355.6 | 14 | 350 | 5.6 | 48.30 | 142.06 | 153.04 | 6.00 |
| 406.4 | 16 | 400 | 6.3 | 62.20 | 184.80 | 196.81 | 6.00 |
| 457.0 | 18 | 450 | 6.3 | 70.00 | 226.01 | 239.27 | 6.00 |
| 508.0 | 20 | 500 | 6.3 | 77.90 | 270.56 | 286.13 | 6.00 |

| Cast iron pipe | | | | Weight | | | L (max.)* |
|----------------|-------------|-----|-------|--------|-----------|---|--------------|
| D | | s | empty | filled | insulated | m | |
| (mm) | Tol. (mm) | | | | | | (DN) |
| 48 | | 40 | 3.0 | 3.10 | 4.48 | - | 2.00 |
| 58 | | 50 | 3.5 | 4.30 | 6.34 | - | 2.00 |
| 78 | +2.0 / -1.0 | 70 | 3.5 | 5.90 | 9.86 | - | 2.00 |
| 83 | | 75 | 3.5 | 6.30 | 10.83 | - | 2.00 |
| 110 | | 100 | 3.5 | 8.40 | 16.73 | - | 1.50 |
| 135 | | 125 | 4.0 | 11.80 | 24.46 | - | 1.50 |
| 160 | +2.0 / -2.0 | 150 | 4.0 | 14.10 | 32.24 | - | 1.50 |
| 210 | | 200 | 5.0 | 23.10 | 54.50 | - | 1.50 |
| 274 | +2.5 / -2.5 | 250 | 5.5 | 33.30 | 87.60 | - | 1.50 |
| 326 | | 300 | 6.0 | 43.20 | 120.60 | - | 1.50 |
| 429 | +2.0 / -3.0 | 400 | 8.1 | 77.65 | 211.49 | - | 1.50 |
| 532 | +2.0 / -3.5 | 500 | 9.0 | 107.21 | 314.71 | - | 1.50 |
| 635 | +2.0 / -4.0 | 600 | 9.9 | 140.95 | 438.20 | - | 1.50 |

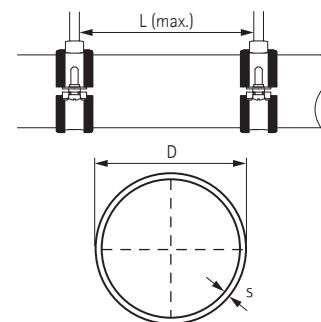
Norm:
DIN EN 10220 - 03/2003

Material:
Steel 37-2

Insulation:
mineral wool (density = 80 kg/m³)

Norm:
DIN 19522 - 01/2000

Material:
Cast iron according to ISO 185 (EN 587)



This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

* Maximum recommended fixing distance according to DIN 1988-2 (TRWI). The exact distances depend on the specific pipe-type and -manufacturer!

Information: Copper Pipe / PE-Pipe

| Copper pipe | | | | Weight | | | L (max.)* m |
|-------------|-------|------|------|----------|----------|-----------|-------------------|
| D | | | s | empty | filled | insulated | |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | |
| 10.0 | - | - | 1.0 | 0.25 | 0.30 | 0.45 | 1.00 |
| 12.0 | - | 10 | 1.0 | 0.31 | 0.39 | 0.55 | 1.25 |
| 15.0 | - | - | 1.0 | 0.39 | 0.52 | 0.70 | 1.25 |
| 18.0 | - | 15 | 1.0 | 0.48 | 0.68 | 0.87 | 1.50 |
| 22.0 | - | 20 | 1.0 | 0.59 | 0.90 | 1.11 | 2.00 |
| 28.0 | - | 25 | 1.5 | 1.11 | 1.60 | 2.05 | 2.25 |
| 35.0 | - | 32 | 1.5 | 1.41 | 2.21 | 2.70 | 2.75 |
| 42.0 | - | 40 | 1.5 | 1.70 | 2.89 | 3.69 | 3.00 |
| 54.0 | - | 50 | 2.0 | 2.91 | 4.87 | 6.19 | 3.50 |
| 64.0 | - | - | 2.0 | 3.47 | 6.29 | 8.19 | 4.00 |
| 76.1 | - | 65 | 2.0 | 4.14 | 8.22 | 10.93 | 4.25 |
| 88.9 | - | 80 | 2.0 | 4.86 | 10.52 | 14.26 | 4.75 |
| 108.0 | - | - | 2.5 | 7.37 | 15.70 | 20.98 | 5.00 |
| 133.0 | - | - | 3.0 | 10.90 | 23.57 | 29.50 | 5.00 |
| 159.0 | - | - | 3.0 | 13.09 | 31.46 | 38.06 | 5.00 |
| 219.0 | - | - | 3.0 | 18.12 | 53.73 | 61.87 | 5.00 |
| 267.0 | - | - | 3.0 | 22.10 | 75.60 | - | 5.00 |

Norm:

EN 1057 - 05/1996 (ex. DIN 1786)

Material:

Copper according to EN 1412

Insulation:

 mineral wool (density = 80 kg/m³)

| PE pipe | | | | Weight | | | L (max.)* m |
|---------|-------|------|------|----------|----------|-----------|-------------------|
| D | | | s | empty | filled | insulated | |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | |
| 50 | - | - | 1.8 | 0.29 | 1.98 | - | 1.05 |
| 63 | - | - | 2.0 | 0.40 | 3.13 | - | 1.20 |
| 75 | - | - | 2.3 | 0.55 | 4.44 | - | 1.30 |
| 90 | - | - | 2.8 | 0.79 | 6.38 | - | 1.45 |
| 110 | - | - | 3.4 | 1.17 | 9.53 | - | 1.60 |
| 125 | - | - | 3.9 | 1.51 | 12.29 | - | 1.70 |
| 140 | - | - | 4.3 | 1.88 | 15.43 | - | 1.80 |
| 160 | - | - | 4.9 | 2.42 | 19.13 | - | 1.90 |
| 180 | - | - | 5.5 | 3.07 | 25.49 | - | 2.00 |
| 200 | - | - | 6.2 | 3.84 | 31.47 | - | 2.00 |
| 225 | - | - | 6.9 | 4.77 | 39.79 | - | 2.25 |
| 250 | - | - | 7.7 | 5.92 | 49.12 | - | 2.50 |
| 280 | - | - | 8.6 | 7.40 | 61.64 | - | 2.80 |
| 315 | - | - | 9.7 | 9.37 | 77.96 | - | 3.15 |

Norm:

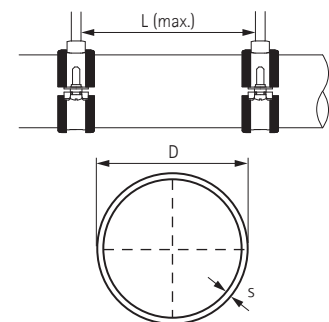
DIN 8074 - 08/1999

Series: 16

SDR: 33

Material:

HD PE



This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

* Maximum recommended fixing distance according to DIN 1988-2 (TRWI). The exact distances depend on the specific pipe-type and -manufacturer!

Information: PE-Pipe / PVC-Pipe

| PE pipe | | | | Weight | | | L |
|---------|-------|------|------|----------|----------|-----------|---------|
| D | | | s | empty | filled | insulated | (max.)* |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | m |
| 40 | - | - | 1.8 | 0.23 | 1.27 | - | 0.95 |
| 50 | - | - | 2.0 | 0.31 | 1.98 | - | 1.05 |
| 63 | - | - | 2.5 | 0.49 | 3.13 | - | 1.20 |
| 75 | - | - | 2.9 | 0.68 | 4.43 | - | 1.30 |
| 90 | - | - | 3.5 | 0.98 | 6.39 | - | 1.45 |
| 110 | - | - | 4.2 | 1.43 | 9.53 | - | 1.60 |
| 125 | - | - | 4.8 | 1.84 | 12.29 | - | 1.70 |
| 140 | - | - | 5.4 | 2.32 | 15.42 | - | 1.80 |
| 160 | - | - | 6.2 | 3.04 | 20.14 | - | 1.90 |
| 180 | - | - | 6.9 | 3.79 | 25.47 | - | 2.00 |
| 200 | - | - | 7.7 | 4.69 | 31.44 | - | 2.00 |
| 225 | - | - | 8.6 | 5.89 | 39.79 | - | 2.25 |
| 250 | - | - | 9.6 | 7.30 | 49.12 | - | 2.50 |
| 280 | - | - | 10.7 | 9.10 | 61.60 | - | 2.80 |
| 315 | - | - | 12.1 | 11.60 | 77.98 | - | 3.00 |

| PVC pipe | | | | Weight | | | L |
|----------|-------|------|------|----------|----------|-----------|---------|
| D | | | s | empty | filled | insulated | (max.)* |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | m |
| 40 | - | - | 1.8 | 0.33 | 1.37 | - | 0.90 |
| 50 | - | - | 1.8 | 0.42 | 2.11 | - | 1.10 |
| 63 | - | - | 1.9 | 0.56 | 3.31 | - | 1.20 |
| 75 | - | - | 2.2 | 0.78 | 4.69 | - | 1.35 |
| 90 | - | - | 2.7 | 1.13 | 6.75 | - | 1.50 |
| 110 | - | - | 3.2 | 1.64 | 10.07 | - | 1.70 |
| 125 | - | - | 3.7 | 2.13 | 12.99 | - | 1.80 |
| 140 | - | - | 4.1 | 2.65 | 16.29 | - | 1.95 |
| 160 | - | - | 4.7 | 3.44 | 21.24 | - | 2.10 |
| 180 | - | - | 5.3 | 4.37 | 26.90 | - | 2.20 |
| 200 | - | - | 5.9 | 5.37 | 33.17 | - | 2.30 |
| 225 | - | - | 6.6 | 6.76 | 41.97 | - | 2.40 |
| 250 | - | - | 7.3 | 8.31 | 51.81 | - | 2.50 |
| 280 | - | - | 8.2 | 10.40 | 64.95 | - | 2.80 |
| 315 | - | - | 9.2 | 13.20 | 82.26 | - | 3.00 |

Norm:
DIN 8074 - 08/1999

Series:
12,5

SDR:
26

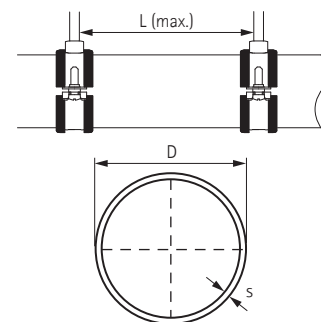
Material:
HD PE

Norm:
DIN 8062 - 11/1988

Series:
3

SDR:
34,3

Material:
PVC-U (unplasticized)



This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

* Maximum recommended fixing distance according to DIN 1988-2 (TRWI). The exact distances depend on the specific pipe-type and -manufacturer!

Information: PVC-Pipe

| PVC pipe | | | | Weight | | | L |
|----------|-------|------|------|----------|----------|-----------|---------|
| D | | | s | empty | filled | insulated | (max.)* |
| (mm) | (") | (DN) | (mm) | (kg / m) | (kg / m) | (kg / m) | m |
| 25 | - | - | 1.5 | 0.17 | 0.55 | - | 0.65 |
| 32 | - | - | 1.8 | 0.26 | 0.90 | - | 0.70 |
| 40 | - | - | 1.9 | 0.35 | 1.38 | - | 0.90 |
| 50 | - | - | 2.4 | 0.55 | 2.16 | - | 1.10 |
| 63 | - | - | 3.0 | 0.85 | 3.40 | - | 1.20 |
| 75 | - | - | 3.6 | 1.22 | 4.83 | - | 1.35 |
| 90 | - | - | 4.3 | 1.75 | 6.95 | - | 1.50 |
| 110 | - | - | 5.3 | 2.61 | 10.37 | - | 1.70 |
| 125 | - | - | 6.0 | 3.34 | 13.36 | - | 1.80 |
| 140 | - | - | 6.7 | 4.18 | 16.76 | - | 1.95 |
| 160 | - | - | 7.7 | 5.47 | 21.88 | - | 2.10 |
| 180 | - | - | 8.6 | 6.88 | 27.69 | - | 2.20 |
| 200 | - | - | 9.6 | 8.51 | 34.17 | - | 2.30 |
| 225 | - | - | 10.8 | 10.80 | 43.28 | - | 2.40 |
| 250 | - | - | 11.9 | 13.20 | 53.37 | - | 2.50 |
| 280 | - | - | 13.4 | 16.60 | 66.93 | - | 2.80 |
| 315 | - | - | 15.0 | 20.90 | 84.66 | - | 3.00 |

Norm:

DIN 8062 - 11/1988

Series:

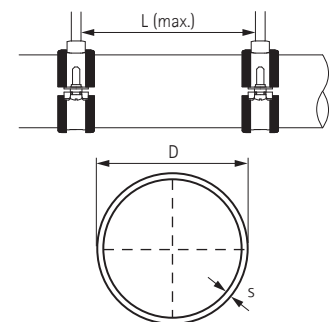
4

SDR:

21

Material:

PVC-U (unplasticized)

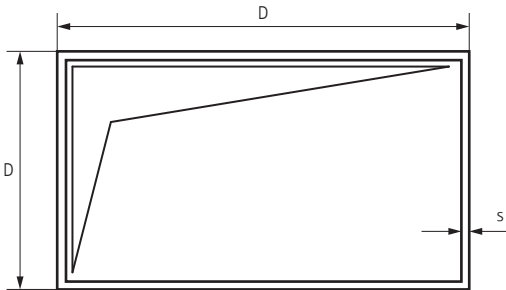


This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

* Maximum recommended fixing distance according to DIN 1988-2 (TRWI). The exact distances depend on the specific pipe-type and -manufacturer!

Information: Air Ducts (Non-Insulated)

Declaration of weight in kg/m



| D (mm) | s = 0.75 mm | | | s = 0.88 mm | | | | | | D (mm) |
|-----------|-------------|-----|-----|-------------|------|------|------|------|------|-----------|
| | 200 | 224 | 250 | 280 | 315 | 355 | 400 | 450 | 500 | |
| 200 | 6.1 | 6.5 | 6.9 | 8.6 | 9.2 | 10.0 | 10.8 | 11.7 | 12.6 | 200 |
| 224 | - | 6.9 | 7.3 | 9.1 | 9.7 | 10.4 | 11.2 | 12.1 | 13.0 | 224 |
| 250 | - | - | 7.7 | 9.5 | 10.1 | 10.9 | 11.7 | 12.6 | 13.5 | 250 |
| 280 | - | - | - | 10.1 | 10.7 | 11.4 | 12.2 | 13.1 | 14.0 | 280 |
| 315 | - | - | - | - | 11.3 | 12.0 | 12.8 | 13.7 | 14.6 | 315 |
| 355 | - | - | - | - | - | 12.8 | 13.6 | 14.5 | 15.4 | 355 |
| 400 | - | - | - | - | - | - | 14.4 | 15.3 | 16.2 | 400 |
| 450 | - | - | - | - | - | - | - | 16.2 | 17.1 | 450 |
| 500 | - | - | - | - | - | - | - | - | 18.0 | 500 |

Values for the calculation:

Density air duct: Steel plate $\rho_p = 7,850 \text{ kg/m}^3$

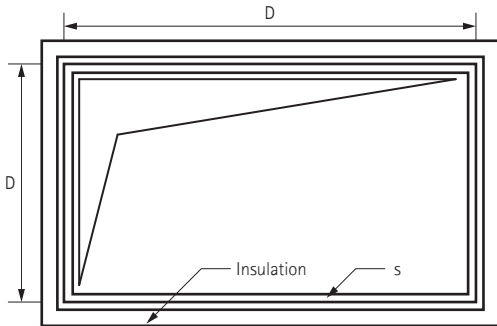
Weights for flanges and duct bracing were estimated.

| D (mm) | s = 1.00 mm | | | | | | s = 1.13 mm | | | | | | s = 1.5 mm | | | | | D (mm) |
|-----------|-------------|------|------|------|------|-------|-------------|-------|-------|-------|-------|-------|------------|-------|-------|-------|-------|-----------|
| | 560 | 630 | 710 | 800 | 900 | 1,000 | 1,120 | 1,250 | 1,400 | 1,600 | 1,800 | 2,000 | 2,240 | 2,500 | 2,800 | 3,150 | | |
| 200 | 15.5 | 16.9 | 18.6 | 20.4 | 22.5 | 24.5 | 30.4 | 33.4 | 36.9 | 41.5 | 46.1 | 50.7 | 62.3 | 68.9 | 76.5 | 85.5 | 200 | |
| 224 | 16.0 | 17.4 | 19.1 | 20.9 | 22.9 | 25.0 | 31.0 | 34.0 | 37.5 | 42.1 | 46.7 | 51.3 | 62.9 | 69.5 | 77.1 | 86.1 | 224 | |
| 250 | 16.5 | 18.0 | 19.6 | 21.4 | 23.5 | 25.5 | 31.6 | 34.6 | 38.1 | 42.7 | 47.3 | 51.9 | 63.5 | 70.2 | 77.8 | 86.7 | 250 | |
| 280 | 17.1 | 18.6 | 20.2 | 22.0 | 24.1 | 26.1 | 32.3 | 35.3 | 38.7 | 43.4 | 48.0 | 52.6 | 64.3 | 70.9 | 78.6 | 87.5 | 280 | |
| 315 | 17.9 | 19.3 | 20.9 | 22.8 | 24.8 | 26.8 | 33.1 | 36.1 | 39.6 | 44.2 | 48.8 | 53.4 | 65.2 | 71.8 | 79.5 | 88.4 | 315 | |
| 355 | 18.7 | 20.1 | 21.7 | 23.6 | 25.6 | 27.7 | 34.0 | 37.0 | 40.5 | 45.1 | 49.7 | 54.3 | 66.2 | 72.8 | 80.5 | 89.4 | 355 | |
| 400 | 19.6 | 21.0 | 22.7 | 24.5 | 26.5 | 28.6 | 35.1 | 38.1 | 41.5 | 46.1 | 50.7 | 55.4 | 67.4 | 74.0 | 81.6 | 90.6 | 400 | |
| 450 | 20.6 | 22.0 | 23.7 | 25.5 | 27.6 | 29.6 | 36.2 | 39.2 | 42.7 | 47.3 | 51.9 | 56.5 | 68.6 | 75.3 | 82.9 | 91.8 | 450 | |
| 500 | 21.6 | 23.1 | 24.7 | 26.5 | 28.6 | 30.6 | 37.4 | 40.4 | 43.8 | 48.4 | 53.0 | 57.7 | 69.9 | 76.5 | 84.2 | 93.1 | 500 | |
| 560 | 22.9 | 24.3 | 25.9 | 27.8 | 29.8 | 31.8 | 38.7 | 41.7 | 45.2 | 49.8 | 54.4 | 59.0 | 71.4 | 78.1 | 85.7 | 94.7 | 560 | |
| 630 | - | 25.7 | 27.3 | 29.2 | 31.2 | 33.3 | 40.4 | 43.4 | 46.8 | 51.4 | 56.0 | 60.7 | 73.2 | 79.9 | 87.5 | 96.4 | 630 | |
| 710 | - | - | 29.0 | 30.8 | 32.9 | 34.9 | 42.2 | 45.2 | 48.7 | 53.3 | 57.9 | 62.5 | 75.3 | 81.9 | 89.5 | 98.5 | 710 | |
| 800 | - | - | - | 32.7 | 34.7 | 36.7 | 44.3 | 47.3 | 50.7 | 55.4 | 60.0 | 64.6 | 77.6 | 84.2 | 91.8 | 100.8 | 800 | |
| 900 | - | - | - | - | 36.7 | 38.8 | 46.6 | 49.6 | 53.0 | 57.7 | 62.3 | 67.3 | 80.1 | 86.7 | 94.4 | 103.3 | 900 | |
| 1,000 | - | - | - | - | - | 40.8 | 48.9 | 51.9 | 55.4 | 60.0 | 64.6 | 69.2 | 82.7 | 89.3 | 96.9 | 105.9 | 1,000 | |
| 1,120 | - | - | - | - | - | - | 51.7 | 54.7 | 58.1 | 62.7 | 67.3 | 72.0 | 85.7 | 92.4 | 100.0 | 108.9 | 1,120 | |
| 1,250 | - | - | - | - | - | - | - | 57.7 | 61.1 | 65.7 | 70.3 | 75.0 | 89.0 | 95.7 | 103.3 | 112.3 | 1,250 | |
| 1,400 | - | - | - | - | - | - | - | - | 64.6 | 69.2 | 73.8 | 78.4 | 92.9 | 99.5 | 107.2 | 116.1 | 1,400 | |
| 1,600 | - | - | - | - | - | - | - | - | - | 73.8 | 78.4 | 83.0 | 98.0 | 104.6 | 112.3 | 121.2 | 1,600 | |
| 1,800 | - | - | - | - | - | - | - | - | - | - | 83.0 | 87.6 | 103.1 | 109.7 | 117.4 | 126.3 | 1,800 | |
| 2,000 | - | - | - | - | - | - | - | - | - | - | - | 92.3 | 108.2 | 114.8 | 122.5 | 131.4 | 2,000 | |
| 2,240 | - | - | - | - | - | - | - | - | - | - | - | - | 114.3 | 120.9 | 128.6 | 137.5 | 2,240 | |
| 2,500 | - | - | - | - | - | - | - | - | - | - | - | - | - | 127.6 | 135.2 | 144.1 | 2,500 | |
| 2,800 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 142.9 | 151.8 | 2,800 | |
| 3,150 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 160.7 | 3,150 | |

This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

Information: Air Ducts (Insulated)

Declaration of weight in kg/m



| D (mm) | s = 0.75 mm | | | s = 0.88 mm | | | | | | D (mm) |
|-----------|-------------|------|------|-------------|------|------|------|------|------|-----------|
| | 200 | 224 | 250 | 280 | 315 | 355 | 400 | 450 | 500 | |
| 200 | 9.2 | 9.9 | 10.3 | 12.2 | 13.1 | 14.0 | 15.1 | 16.3 | 17.6 | 200 |
| 224 | - | 10.4 | 10.8 | 12.8 | 13.6 | 14.6 | 15.7 | 16.9 | 18.1 | 224 |
| 250 | - | - | 11.4 | 13.4 | 14.3 | 15.3 | 16.3 | 17.6 | 18.8 | 250 |
| 280 | - | - | - | 14.2 | 15.0 | 16.0 | 17.1 | 18.3 | 19.5 | 280 |
| 315 | - | - | - | - | 15.9 | 16.8 | 17.9 | 19.1 | 20.4 | 315 |
| 355 | - | - | - | - | - | 17.8 | 18.9 | 20.1 | 21.3 | 355 |
| 400 | - | - | - | - | - | - | 20.0 | 21.2 | 22.4 | 400 |
| 450 | - | - | - | - | - | - | - | 22.4 | 23.7 | 450 |
| 500 | - | - | - | - | - | - | - | - | 24.9 | 500 |

Values for the calculation:

Density air duct: Steel plate $\rho_p = 7,850 \text{ kg/m}^3$

Density insulation: Mineral wool = approx. 80 kg/m^3

Weights for flanges and duct bracing were estimated.

| D (mm) | s = 1.0 mm | | | | | | s = 1.13 mm | | | | | | s = 1.25 mm | | | | D (mm) |
|-----------|------------|------|------|------|------|-------|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------|-----------|
| | 560 | 630 | 710 | 800 | 900 | 1,000 | 1,120 | 1,250 | 1,400 | 1,600 | 1,800 | 2,000 | 2,240 | 2,500 | 2,800 | 3,150 | |
| 200 | 20.9 | 22.8 | 24.9 | 27.3 | 30.0 | 32.7 | 39.4 | 43.2 | 47.7 | 53.5 | 59.4 | 65.3 | 78.4 | 86.7 | 96.2 | 107.4 | 200 |
| 224 | 21.5 | 23.4 | 25.6 | 28.0 | 30.6 | 33.3 | 40.1 | 43.9 | 48.4 | 54.3 | 60.1 | 66.0 | 79.1 | 87.4 | 97.0 | 108.2 | 224 |
| 250 | 22.2 | 24.1 | 26.2 | 28.7 | 31.3 | 34.0 | 40.9 | 44.7 | 49.1 | 55.0 | 60.9 | 66.8 | 80.0 | 88.3 | 97.8 | 109.0 | 250 |
| 280 | 23.0 | 24.9 | 27.1 | 29.5 | 32.1 | 34.8 | 41.8 | 45.6 | 50.0 | 55.9 | 61.8 | 67.7 | 80.9 | 89.2 | 98.8 | 110.0 | 280 |
| 315 | 24.0 | 25.8 | 28.0 | 30.4 | 33.1 | 35.8 | 42.8 | 46.6 | 51.0 | 56.9 | 62.8 | 68.7 | 82.0 | 90.3 | 99.9 | 111.1 | 315 |
| 355 | 25.0 | 26.9 | 29.1 | 31.4 | 34.2 | 36.8 | 44.0 | 47.8 | 52.2 | 58.1 | 64.0 | 69.9 | 83.3 | 91.6 | 101.2 | 112.4 | 355 |
| 400 | 26.2 | 28.1 | 30.3 | 32.7 | 35.4 | 38.0 | 45.3 | 49.1 | 53.5 | 59.4 | 65.3 | 71.2 | 84.8 | 93.1 | 102.6 | 113.8 | 400 |
| 450 | 27.6 | 29.5 | 31.6 | 34.0 | 36.7 | 39.4 | 46.8 | 50.6 | 55.0 | 60.9 | 66.8 | 72.7 | 86.4 | 94.7 | 104.2 | 115.4 | 450 |
| 500 | 28.9 | 30.8 | 33.0 | 35.4 | 38.0 | 40.7 | 48.2 | 52.1 | 56.5 | 62.4 | 68.3 | 74.2 | 88.0 | 96.2 | 105.8 | 117.0 | 500 |
| 560 | 30.5 | 32.4 | 34.6 | 37.0 | 39.7 | 42.3 | 50.0 | 53.8 | 58.3 | 64.2 | 70.0 | 75.9 | 89.9 | 98.2 | 107.7 | 118.9 | 560 |
| 630 | - | 34.3 | 36.4 | 38.9 | 41.5 | 44.2 | 52.1 | 55.9 | 60.3 | 66.2 | 72.1 | 78.0 | 92.1 | 100.4 | 110.0 | 121.1 | 630 |
| 710 | - | - | 38.6 | 41.0 | 43.7 | 46.4 | 54.4 | 58.3 | 62.7 | 68.6 | 74.5 | 80.4 | 94.7 | 103.0 | 112.5 | 123.7 | 710 |
| 800 | - | - | - | 43.4 | 46.1 | 48.8 | 57.1 | 60.9 | 65.3 | 71.2 | 77.1 | 83.0 | 97.5 | 105.8 | 115.4 | 126.6 | 800 |
| 900 | - | - | - | - | 48.8 | 51.5 | 60.0 | 63.9 | 68.3 | 74.2 | 80.1 | 86.0 | 100.7 | 109.0 | 118.6 | 129.8 | 900 |
| 1,000 | - | - | - | - | - | 54.1 | 63.0 | 66.8 | 71.2 | 77.1 | 83.0 | 88.9 | 103.9 | 112.2 | 121.8 | 132.9 | 1,000 |
| 1,120 | - | - | - | - | - | - | 66.5 | 70.3 | 74.8 | 80.7 | 86.5 | 92.4 | 107.7 | 116.0 | 125.6 | 136.8 | 1,120 |
| 1,250 | - | - | - | - | - | - | - | 74.2 | 78.6 | 84.5 | 90.4 | 96.3 | 111.9 | 120.2 | 129.8 | 140.9 | 1,250 |
| 1,400 | - | - | - | - | - | - | - | - | 83.0 | 88.9 | 94.8 | 100.7 | 116.7 | 125.0 | 134.5 | 145.7 | 1,400 |
| 1,600 | - | - | - | - | - | - | - | - | - | 94.8 | 100.7 | 106.6 | 123.1 | 131.4 | 140.9 | 152.1 | 1,600 |
| 1,800 | - | - | - | - | - | - | - | - | - | - | 106.6 | 112.5 | 129.4 | 137.7 | 147.3 | 158.5 | 1,800 |
| 2,000 | - | - | - | - | - | - | - | - | - | - | - | 118.4 | 135.8 | 144.1 | 153.7 | 164.9 | 2,000 |
| 2,240 | - | - | - | - | - | - | - | - | - | - | - | - | 143.5 | 151.8 | 161.4 | 172.5 | 2,240 |
| 2,500 | - | - | - | - | - | - | - | - | - | - | - | - | - | 160.1 | 169.6 | 180.8 | 2,500 |
| 2,800 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 179.2 | 190.4 | 2,800 |
| 3,150 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 201.6 | 3,150 |

This datasheet is to be used as a tool for selecting the correct fixing materials only. Although Walraven does everything possible to ensure the accuracy of all data within this sheet, we cannot be held responsible for information supplied by third parties, i.e. standardisation institutes and pipe manufacturers.

Information: Material Properties Plastics

ABS – Acrylonitrile–Butadiene–Styrene

Temperature-resistance:

Permanently up to 70 °C, briefly up to 85 °C and to about minus 40 °C*.

Resistant to:

Formic acid, citric acid, lactic acid.

Conditionally resistant to:

Hydrochloric acid, sulphuric acid.

Not resistant to:

Acetone, petrol, benzene, solvents for paints and lacquers, butyric acid, chlorine, acetic acid, nitric acid.

PA – PolyAmide (Nylon)

Temperature-resistance:

Permanently up to about 90 °C, briefly up to about 130 °C and to about minus 40 °C*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.

Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PA–GV – Polyamide, fibreglass reinforced

Temperature-resistance:

Permanently up to about 100–110 °C, briefly up to 160 °C and to about minus 40 °C*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.

Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PE – PolyEthylene

Temperature-resistance:

Hard types permanently up to about 90 °C, briefly up to about 105 °C
soft types permanently up to about 80 °C, briefly up to about 100 °C
and to about minus 40 °C*.

Resistant to:

Alkalis and inorganic acids.

Conditionally resistant to:

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Not resistant to:

Chlorine, hydrocarbons, oxidising acids.

POM – PolyOxyMethylene

(polyacetal, polyformaldehyde)

Temperature-resistance:

Permanently up to about 100 °C, briefly up to about 130 °C and to minus 40 °C*.

Resistant to:

Acetone, ether, petrol, weak acetic acid, benzene, heating oil, oils and greases, toluene.

Not resistant to:

Methylene chloride, trichloroethylene, hydrochloric acid, nitric acid, sulphuric acid.

PP – PolyPropylene

Temperature-resistance:

Permanently about 90 °C, briefly up to about 110 °C and to about minus 30 °C*.

Resistance to chemicals generally as for polyethylene.

PS – PolyStyrene

Temperature-resistance:

Because of its relatively high sensitivity to the effects of chemicals, its use is not recommended at temperatures above normal room temperature, about 25 °C.

Resistance to cold: to about minus 40 °C*.

Resistant to:

Alkalis, most acids, alcohol.

Conditionally resistant to:

Oils and greases.

Not resistant to:

Butyric acid, concentrated nitric acid, concentrated acetic acid, acetone, ether, petrol and benzene, solvents for paints and lacquers, chlorine, diesel fuel.

PVC (hard) – PolyVinylChloride (hard)

Temperature-resistance:

Permanently up to about 65 °C, briefly up to about 75 °C and to about minus 30 °C*.

Resistant to:

Weak acids, alkalis, oils and greases, petrol.

Not resistant to:

Strong acids, benzene, acetone, iodine, toluene, trichloroethylene.

*The minus values apply only for parts in the quiescent condition with no severe impact stress.

Information: Surface Treatment

To improve the corrosion resistance of steel products, Walraven uses all kinds of methods. Below you will find an overview:

BIS UltraProtect® 1000 system

The BIS UltraProtect® 1000 system is the ideal and most durable solution for securing or supporting mechanical installations, solar systems and many other types of installations. The products in the BIS UltraProtect® 1000 system have very high corrosion resistance and can be applied in C1-C4 environments. BIS UltraProtect® 1000 products effortlessly withstand a salt spray test of at least 1,000 hours* (in accordance with ISO 9227). Although the system utilizes a relatively thin protective coating, the corrosion resistance is high. Not only does the BIS UltraProtect® 1000 system offer a smooth and fine finish, the products are also visually appealing. An additional benefit of the relatively thin protective coating is that threaded products are also well protected against corrosion. The BIS UltraProtect® 1000 products, including threaded items such as bolts, nuts and threaded rods, have superior corrosion resistance.**

Zinc plating (blue)

The protective coating is applied in an electrolytic process after cleaning, degreasing and pickling. The thickness of the layer of zinc is between 5 and 15 µm and is determined by the current intensity and the duration of the galvanizing process. After the galvanizing process the products are passivated to extend the protection period.

Pre-galvanizing

Pre-galvanizing is a continuous thermal galvanizing process applied before material treatment in manufacturing processes. The strip steel is guided through a bath containing liquid zinc after having been cleaned, degreased and pickled. The thickness of the layer of zinc is between 20 and 25 µm. Later the steel is cut to the required width. The sides of this cut material are not galvanized. This is also the case with any holes that may be drilled in the pre-galvanized material. The sides of material thinner than 1,5 mm are protected somewhat by the zinc layer on the top and bottom by the electrolytic process of 'pulling together'.

This surface protection is suitable for threaded products, which are to be used indoors or in a non-corrosive environment.

* Until the occurrence of maximum 5% red rust.

** The warranty conditions are applicable for C1-C4 corrosive environments according to ISO 12944-2. See our website walraven.com for further information.

Hot dip galvanizing

The products to be treated are cleaned, degreased and pickled and subsequently put into an immersion bath of liquid zinc. The immersion bath has a temperature of 550 °C. In this process an alloy of zinc/iron develops on the surface and is then covered by a layer of pure zinc.

The thickness of the zinc layer varies between 50 and 100 µm. In consequence the process is less suitable for products with threaded holes or rods. Hot dip galvanized products are suitable for indoor as well as outdoor use and also for damp and light-corrosive environments.

The application for hot dip galvanizing processes is limited to the heavy systems.

Stainless steel 316 (1.4401) and 316L (1.4404)

Stainless steel 316 is one of the best corrosion resistant types of stainless steel. It offers a superior corrosion resistance in many corrosive environments. The protective layer is damaged by treatments such as punching, drilling and welding. That is why, after the last treatment, all stainless steel products receive an extra treatment which pickles and passivates to restore the protective layer. Products from stainless steel 316 can be applied in aggressive situations such as a sea climate and industry.

Powder coating

A protective layer of epoxy powder in any specified color is baked onto pre-treated products. The pre-treatment may differ per product and per application. In marine environment, the most durable solution is the combination of BIS UltraProtect® 1000 combined with powder coating.

The combined treatment reaches well over 1,000 hours in salt spray test without any signs of red rust.

Information: Surface Treatment (cont.)

Delta-Tone 9000

Delta-Tone 9000 consists of zinc and aluminium particles that are held together by an inorganic binder. This offers an effective protection against corrosion even with a limited thickness of the coating. Delta-Tone 9000 is applied in an immersion/centrifugal or spray process and then dried at a temperature of 200 °C. With this method an even layer is formed over the whole product with a thickness of 10 – 12 µm. Subsequently Delta-Tone 9000 forms a connection with the metal underneath.

In contrast to electrolytic and thermal galvanizing, with Delta-Tone 9000 there is no danger of hydrogen embrittlement in materials with an increased carbon content, such as spring steel. To improve the corrosion resistance, the process can be repeated which increases the thickness each time by 10 – 12 µm.

Products protected by Delta-Tone 9000 are suitable for outdoor use as well as moderate corrosive environments.

| Surface treatment | Thickness protection layer (µm) | Hours until 5% red rust* |
|------------------------|---------------------------------|--------------------------|
| BIS UltraProtect® 1000 | - ** | 1,000 |
| Zinc plating (blue) | 5 - 10 | 72 |
| Pre-galvanizing | 20 - 25 | 150 |
| Hot dip galvanizing | 50 - 80 | 300 - 600 |
| Powder coating | 100 | 1,000 |
| Delta-Tone 9000 | 10 - 12 | 480 |

* Until the occurrence of maximum 5% red rust.

** Method and thickness protection layer differ per product.

Walraven products are not treated with surface treatments containing Chromium 6.

Salt-spray test

To compare the protection duration of various surface treatments, a salt-spray test is carried out according to ISO 9227. In this test products are placed in a closed cabinet and sprayed with a salt solution. The products will start to corrode. The point at which 'white' and then 'red' rust appears is noted down.

This test does not give a perfect protection duration (this depends on the surroundings in which the product is applied), but does offer a comparative view of the various surface treatments.

Information: Thermal Expansion

ABS – Acrylonitrile–Butadiene–Styrene

Temperature-resistance:

Permanently up to 70 °C, briefly up to 85 °C and to about minus 40 °C*.

Resistant to:

Formic acid, citric acid, lactic acid.

Conditionally resistant to:

Hydrochloric acid, sulphuric acid.

Not resistant to:

Acetone, petrol, benzene, solvents for paints and lacquers, butyric acid, chlorine, acetic acid, nitric acid.

PA – PolyAmide (Nylon)

Temperature-resistance:

Permanently up to about 90 °C, briefly up to about 130 °C and to about minus 40 °C*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.

Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PA–GV – Polyamide, fibreglass reinforced

Temperature-resistance:

Permanently up to about 100-110 °C, briefly up to 160 °C and to about minus 40 °C*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.

Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PE – PolyEthylene

Temperature-resistance:

Hard types permanently up to about 90 °C, briefly up to about 105 °C soft types permanently up to about 80 °C, briefly up to about 100 °C and to about minus 40 °C*.

Resistant to:

Alkalis and inorganic acids.

Conditionally resistant to:

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Not resistant to:

Chlorine, hydrocarbons, oxidising acids.

POM – PolyOxyMethylene

(polyacetal, polyformaldehyde)

Temperature-resistance:

Permanently up to about 100 °C, briefly up to about 130 °C and to minus 40 °C*.

Resistant to:

Acetone, ether, petrol, weak acetic acid, benzene, heating oil, oils and greases, toluene.

Not resistant to:

Methylene chloride, trichloroethylene, hydrochloric acid, nitric acid, sulphuric acid.

PP – PolyPropylene

Temperature-resistance:

Permanently about 90 °C, briefly up to about 110 °C and to about minus 30 °C*.

Resistance to chemicals generally as for polyethylene.

PS – PolyStyrene

Temperature-resistance:

Because of its relatively high sensitivity to the effects of chemicals, its use is not recommended at temperatures above normal room temperature, about 25 °C.

Resistance to cold: to about minus 40 °C*.

Resistant to:

Alkalis, most acids, alcohol.

Conditionally resistant to:

Oils and greases.

Not resistant to:

Butyric acid, concentrated nitric acid, concentrated acetic acid, acetone, ether, petrol and benzene, solvents for paints and lacquers, chlorine, diesel fuel.

PVC (hard) – PolyVinylChloride (hard)

Temperature-resistance:

Permanently up to about 65 °C, briefly up to about 75 °C and to about minus 30 °C*.

Resistant to:

Weak acids, alkalis, oils and greases, petrol.

Not resistant to:

Strong acids, benzene, acetone, iodine, toluene, trichloroethylene.

*The minus values apply only for parts in the quiescent condition with no severe impact stress.

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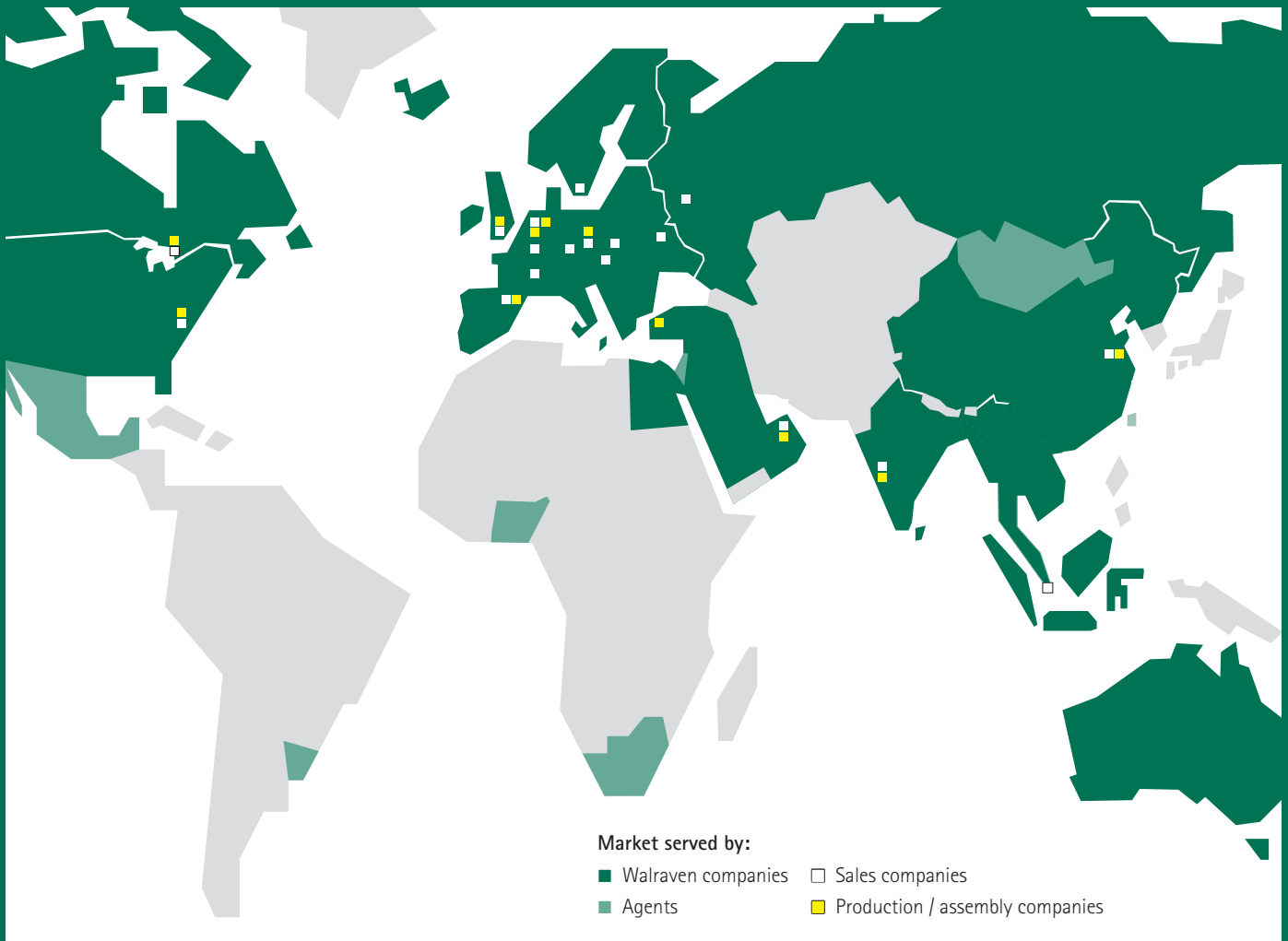
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Find out how we can support you

Would you like to find out more about any of the solutions described in this brochure?
Or would you like to discuss how we could help you find the best possible solution for your project? Get in touch today!

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