

(German) General Building Inspection Regulations Product Approval

German Institute for Building Technology
(*Deutsches Institut für Bautechnik*) DIBt
AN INSTITUTION UNDER GERMAN PUBLIC LAW

Approvals Office for Building Products and Types of Construction

The German Construction Industry Inspection Authority

(*Bautechnisches Prüfamt*)

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18 February 2010 I 52-1.40.23-15/04

Approval number:

Z-40.23-297

Valid until:

30. November 2011

Applicant:

Kungsörs Plast AB

Fabriksgatan 3, 736 22 Kungsör, SWEDEN

Subject of application for approval:

Secondary containment plastic pipe system, for underground installation in filling stations

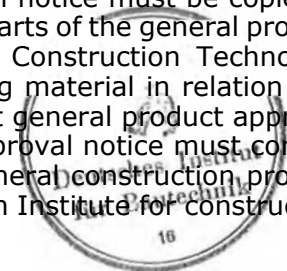
The above-mentioned subject of the application is hereby awarded general approval under the German building inspection regulations.

This general approval under the German building inspection regulations comprises eight pages and five Appendices containing 34 pages.

This general approval under the German building regulations replaces the general approval under the German building inspection regulations No. Z-40.23-297 of 21 July 2009. The subject of the application first received general approval under the German building inspection regulations on 27 November 2001.

I. GENERAL PROVISIONS

- 1 *The granting of a general product approval under the German building regulations is intended to demonstrate that the product has satisfied the product suitability requirements contained in the Ordinances on building products issued by the German Länder*
- 2 In so far as the general product approval under the German building regulations contains requirements in relation to the specialist knowledge and experience of persons commissioned to manufacture construction products and types of construction within the meaning of § 17 Para. 5 of the German Model Building Regulations (*Musterbauordnung*), it must be ensured that the evidence for this technical knowledge can be produced by qualifications and documents which have similar equivalents in the other European Union member states. This same requirement shall also apply as necessary to documents and qualifications submitted under the framework agreement for the European Economic Area (EEA) or other bilateral agreements.
- 3 The general approval under the German building regulations replaces the legally prescribed building permits, authorisations and certificates required for construction projects.
- 4 The general approval under the German building regulations is issued irrespective of the rights of third parties and in particular of private industrial property or other proprietary rights.
- 5 The manufacturer and distributor of the product which has been approved for use in the construction industry must, irrespective of any further rights contained under the "Special Provisions" section, make available to the users of this product copies of this general product approval notice and must make the users aware that this general product approval notice must be kept on the site where the product is to be used. A copy of this general product approval notice must be made to the relevant supervisory authorities on request.
- 6 Any copies which are made of this general product approval notice must be copies of the complete document. Any reproduction or publication of parts of the general product approval notice requires the consent of the Institute for Construction Technology (DIBt). Texts and illustrations which are used in advertising material in relation to a product must not differ from those contained in the relevant general product approval notice. Translations of any general construction product approval notice must contain the advisory notice: "Translation of an original German general construction product approval notice which has not been approved by the German Institute for Construction Technology (DIBt).".
- 7 A general construction product approval notice is issued irrevocably. The provisions contained in a general construction product approval notice may, however, be subsequently extended or amended, in particular, when new technical developments make it necessary to do so.



II. PARTICULAR SPECIFICATIONS

1 *The Subject of application for approval and areas of use*

(1) The subject of this application for construction product approval are secondary contained pipes made of multi-layer thermoplastic. The subject of the application for approval consists of a multilayered extruded inner pipe made of polyethylene with an inner coating acting as a permeation barrier and a two layered extruded outer pipe made of polyethylene, including all the necessary connection parts and moulded parts (electrofusion welding sleeves, brackets, T-fittings).

(2) Between the inner and the outer pipe there is an interstitial space created by integral ribs which is used as a monitoring space. The nominal diameters of the inner pipes which carry the liquids is between 63 mm and 110 mm. The measurements of the inner and outer pipes correspond with the details contained in Appendix 1.

(3) The component parts of the pipe are suitable for use in pipes which are laid underground and may be used as suction lines in which in the event of a leak the liquid column breaks off with a maximum operating pressure of -0.6 bar, as a filling line with a maximum operating pressure of 2.5 bar and as a gas recovery line for gas recirculation in filling stations or tank systems at a pressure of up to 1.0 bar.

(4) The pipes are suitable for carrying diesel fuels in accordance with DIN EN 590¹ and DIN EN 14214², petrols (gasolines) in accordance with DIN EN 2283 and ethanol fuel E85 in accordance with DIN 51625⁴ and their gases at operating temperatures of up to 30 °C.

(5) In the event of the pipe being used in an area which is at risk of earthquakes, the pipe operators must observe all the relevant local regulations in relation to the pipe, as well as the provisions contained in this general construction product approval notice.

(6) The general construction product approval notice under the German building regulations is issued irrespective of other existing provisional licences issued under other areas of legislation (e.g. the Federal law on protection from harmful emissions, the 11th Statutory Ordinance on the German Machinery and Product Safety Law (*Geräte- und Produktsicherheitsgesetz*)).

(7) The issuing of this General product approval notice under the German building regulations in relation to the subject of this application obviates the need for a statement of suitability or a construction permit under § 19h of the German Maintenance of Water Resources Law (WHG)⁵.

(8) The period of validity of the general construction product approval notice (See Page 1) refers to the use of the product in terms of the installation of the subject of the approval application and not to its subsequent use after installation.

2 *Regulations for construction products*

2.1

General

All pipes and their component parts must conform with the special provisions and the Appendices of this statement of approval as well as with those laid down by the German Institute of Construction Technology.

2.2 **Qualities and Composition**

2.2.1 **Materials**

The materials used for components of pipes are listed in Appendix 2.

¹ DIN EN 590:2004-03; Fuels for motor vehicles - Diesel fuel - Requirements and test procedures, German version EN 590:2004 (Replaces DIN 51 601/02.86)

² DIN EN 14214:2009-02; Fuels for motor vehicles - Fatty acid methyl esters (FAME) for diesel engines - Requirements and test procedures; German version EN 14214:2008

³ DIN EN 228:2000-02; Fuels for motor vehicles - Unleaded petrols (gasolines) - Requirements and test procedures; German version EN 228:1999

⁴ DIN 51625:2008-08; Fuels for motor vehicles - Ethanol fuels - Requirements and test procedures

⁵ The German Law on the Management of Water Resources (*Wasserhaushaltsgesetz - WHG*), 19. August 2002

2.2.2 Construction

The construction details for pipe components must conform to the specifications contained in Appendices 1 and 1.1 to 1.28.

2.2.3 Properties

(1) *The pipes must have the following properties: They must:*

- *be able to withstand an external vertical load (crushing strength) of 2 kN,*
- *be impact-resistant,*
- *be chemically resistant to the fluids and their gases, as listed in Section 1(4).*
- *be weather-resistant,*

(2) *The pipes must prevent the permeation of gas into the ground beneath them.*

(3) *The qualities of the inner part of the pipe must have been tested in accordance with DIN EN 14125⁶, Pipe Type B, and those of the outer pipe must have been tested in accordance with DIN EN 14125, Protective Pipe Type D2.*

(4) *The requirements under EN 13463-1⁷, Appendix C must be satisfied.*

2.3 Manufacture, Packaging, Transport, Storage and Labelling

2.3.1 Manufacture

(1) *Manufacture must be carried out in accordance with the manufacturing guidelines laid down by DIBt.*

(2) *In addition to the requirements of the description of the manufacturing process, the requirements contained in Appendix 3, Section 1 must be fulfilled.*

(3) *Pipe components must only be manufactured in the Kungsör factory in Sweden.*

(4) *Only the materials listed in Appendix 2 may be used in the manufacture of pipe components.*

2.3.2 Packaging, Transport, Storage

Packaging, transport and storage must be carried out in accordance with the provisions of Appendix 3, Section 2.

2.3.3 Labelling

(1) *The components of the pipe must be labelled by the manufacturer with a conformity symbol (Übereinstimmungszeichen (Ü-symbol) in accordance with the ordinances on conformity issued by the Federal states (Länder). Parts must be labelled only if the preconditions under Section 2.4 have been satisfied.*

(2) *In addition, the manufacturer must label the pipe components in a way which is clearly visible and permanent in accordance with DIN EN 14125, Table 6 and the labels must contain the following details as a minimum requirement:*

- *Manufacturer or manufacturer's sign,*
- *Date of manufacture,*
- *Material (PE),*
- *Outer diameter of inner pipe (63 mm, 110 mm).*

2.4 Certificate of conformity

2.4.1 General

(1) *The confirmation of the conformity of this building product (pipe component) with the regulations of this certificate of approval under the building inspection regulations must be made by the issuing of a certificate of conformity (Übereinstimmungszertifikat (ÜZ)) in accordance with the provisions of Section 2.4.2.*

⁶ *DIN EN 14125:2007-01; Thermoplastic and lexible metal pipes for erdverlegte installations for filling stations; German version EN 14125:2004+A1:2006*

⁷ *DIN EN 13463:2009-07; Non-electric appliances for use in areas where there is a risk of explosions - Part 1: Principles and Requirements; German version EN 13463-1:2009*

(2) The confirmation of the conformity of this building product (pipe component) with the regulations of this certificate of approval under the building inspection regulations must be made by the issuing of a certificate of conformity (Übereinstimmungszertifikat (ÜZ)) in accordance with the provisions of Section 2.4.3.

2.4.2 Certificate of conformity for the building product

(1) The confirmation of the conformity of this building product with the regulations of this certificate of approval under the building inspection regulations must be made by the manufacturing plant by the issuing of a certificate of conformity (Übereinstimmungszertifikat (ÜZ)) as part of the factory's internal production control system together with regular external quality control measures. These must include an initial testing of the pipe parts in accordance with the regulations contained under Section 2.4.2.2.

(2) The manufacturer of the pipe components must engage an appropriate recognised certification office and an appropriate recognised supervision authority to issue the certificate of conformity and to carry out the external quality control measures, including the product tests which have to be conducted.

(3) The declaration that a certificate of conformity has been issued must be indicated by the manufacturer by the affixing of conformity label (Übereinstimmungszeichen) (UZ) which must also mention the purpose for which the pipe is being used

(4) The certification office must provide the German Institute of Building Technology with a copy the certificate of conformity for the Institute's records. The German Institute for Construction Technology must also receive a copy of the initial test report.

2.4.2.1 Internal factory production controls

(1) An internal production control system must be set up and implemented in the manufacturer's factory. By internal factory production controls are meant the systems which the manufacturer sets up for the continuous monitoring of production which are designed to ensure that the building products made by the manufacturer conform with the provisions of this certificate of general approval under the German building inspection regulations.

(2) The factory's internal production controls must include as a minimum the list of tests contained in Appendix 4, Section 1.

(3) The results of the factory's internal production control systems must be recorded and evaluated. These records must include the following information as a minimum requirement:

- *Designation of the building product or of the starting materials and the components,*
- *Type of control or inspection test,*
- *Date of manufacture and of inspection of building product or of starting material,*
- *Results of controls and inspection tests and comparison with the relevant requirements,*
- *Signature of the manager responsible for the factory's internal production controls.*

(4) These records must be kept for a minimum of five years and must be submitted to the supervisory body appointed for the external quality control measures. They must also be submitted on request to the German Institute for Building Technology and to the highest building supervisory authority.

(5) In the event of any inspection test results being unsatisfactory the manufacturer must immediately institute the appropriate measures to remedy the defect which has been found in the tests. Any pipes which do not meet the required specifications must be handled in such a way that they cannot be confused with pipes which do satisfy the required specifications. Once any defects in pipes have been remedied the pipes must, in so far as it is technically feasible to do so and in order to prove that the defects have indeed been remedied, be subjected to a repeat performance of the same tests which originally revealed the defect.

2.4.2.2 External quality control

(1) In the manufacturing plant the internal production control systems must be regularly inspected by an external quality control team, in accordance with Appendix 4, Section 2(2). These external inspections must be carried out twice a year as a minimum.

(2) Under the procedure for external quality control an initial inspection of the pipe components must be carried out in accordance with the provisions of Appendix 4, Section 2(1). In addition, samples of the materials may be removed for random sampling testing. The sampling and inspection tests will in each case be the responsibility of the recognised inspection authority. If the evidence for the issuing of a general construction product approval notice is based on samples taken from production runs of the relevant products, these samples will be used instead of the results of initial product testing.

(3) The results of the certification and the external quality control monitoring inspections must be kept for at least five years. They must also be submitted on request to the certification office or to the supervisory office of the German Institute for Building Technology and to the highest building supervisory authority.

2.4.3 Certificate of conformity for the type of construction

The confirmation of the conformity of a pipe which is put together on the site where it will be used (type of construction) with the regulations of this certificate of approval under the building inspection regulations must be made by the issuing of a declaration of conformity (Übereinstimmungserklärung (ÜH)) in accordance with the provisions of Section 4. They must also be submitted on request to the certification office or to the supervisory office of the German Institute for Building Technology and to the highest building supervisory authority.

3 Regulations for the design and measurements of the pipes

(1) Pipes must be laid in zero stress conditions. When pipes are to be laid in the earth all removable connection pieces and all pipe plugs, as well as the welding sockets, must be placed in a waterproof control box where they can be monitored, in accordance with the provisions of Appendices 1.8 and 1.9. In order to be able to check the pipe monitoring space for leak integrity, each end of the pipe must be fitted with a leak tight test connector.

(2) The minimum soil covering of the pipes is 30 cm, plus another load-distributing layer consisting of asphalt or another type of material which complies with the statutory ordinance on road surface construction materials. The soil covering may, however, be reduced to a minimum of 15 cm if a 10 cm thick reinforced concrete plate is used to secure the upper surface of the pipe in accordance with Appendix 5, Paragraph (4). The clearance between individual pipes must not be less than 10 cm.

(3) The pipe's control space must be connected to an excess pressure leak detection indicator which must have a general construction supervisory authority certificate of fitness for purpose and whose field of utilisation permits connection to a double wall pipe. It must also have an alarm switching pressure of at least 1 bar above the operating pressure. The pressure in the control space must not, however, exceed 8 bar for the 125/110 mm double wall pipe and 5 bar for the 75/63 mm double wall pipe.

(4) The maximum operating under pressure of the pipe is - 0.6 bar.

(5) When the pipe is used for gas recirculation (gas recovery line) the maximum operating pressure is 1.0 bar.

(6) The operating temperature of the storage media must not exceed 30 °C.

(7) The total overall lengths of the pipe strings must not exceed 150m for pipes with a nominal diameter of 63mm, and 30 m for pipes with a nominal diameter of 110mm. Multiple pipe strings may be connected to a single excess pressure leak detection indicator only if they are connected in parallel via a distributor register.

(8) *The pipes must be fitted at each end with a socket for connection through a leak detection indicator and to enable checks to be made that there is free access to the control space. The test connector must be fitted with a ball valve, which must be sealed with leads in a closed position once the leak detector has become operational and it must also be closed off using a blind plug. The pipe's connection sockets for the leak indicator must be permanently labelled in a clearly visible manner as follows:*

- *Control space sockets: "Leak indicator",*
- *Control space sockets: "Test".*

(9) *In addition to having labels on the pipe component parts in accordance with Section 2.2.3 the installation engineers must also ensure that the pipe is fitted with a manufacturer's plate which contains as a minimum the following information:*

- *Number of the general construction product approval notice (Z-40.23-297),*
- *Pipe Type, Material, Measurements,*
- *Manufacturer or manufacturer's sign,*
- *Permissible operating pressure in bar,*
- *Permissible operating pressure for the leak indicator in bar,*
- *Alarm pressure in bar.*

(10) *In view of the proposed type of use for the pipe it is not necessary to carry out a statics test on the pipe.*

4. Regulations for the installation of the pipe

(1) *The operator of the filling station/tank system is obliged to engage only suitable specialist personnel for the laying of pipes who meet the conditions laid down in § 19 I of the German Management of Water Resources Act - Wasserhaushaltsgesetz WHG⁸ and who have been given a suitable induction by the applicant, unless of course the applicant carries out the work of laying the pipes himself, using his own suitably trained and qualified personnel. Persons carrying out welding work must have a certificate in accordance with DVS 2212⁹ or an equivalent proof of evidence of proficiency to carry out the work.*

(2) *When the pipes are being laid the stipulations contained in Appendix 5 must be met.*

(3) *When the alarm is activated ("leak detection" in accordance with EN 13160¹⁰) both an acoustic and a visual alarm system must be triggered automatically and the relevant equipment must be switched off immediately.*

(4) *Measures to repair any damage arising from such incidents must be taken in agreement with a recognised expert in the handling of plastics¹¹, who is also familiar with fire and explosion protection measures or with the relevant certification office.*

5 Regulations in relation to use, maintenance, servicing and inspection

5.1 Use (operation)

(1) *The pipes must be used only as suction lines for the transportation of the liquids mentioned in Paragraph 1(1) and up to an operating lower pressure of -0.6 bar and for gas recirculation from the above-mentioned liquids at pressures of up to 1.0 bar.*

(2) *The fuel flow speed must remain under 3.5 m/s.*

⁸ The German Water Resources Management Act (Wasserhaushaltsgesetz) (WHG) of 19. August 2002

⁹ Guideline DVS 2212-1:2006-05; "Inspection of plastics welders - Test Groups I and II"

¹⁰ DIN EN 13160-2:2003-09; Leak detection systems, Part 2: Overpressure and Low pressure Systems, German version EN 13160:2003

¹¹ Technical specialists from Certification and supervisory agencies in accordance with Paragraph 2.4.2(2) as well as other technical specialists who are appointed by The German Institute of Construction Technology (DIBt).

5.2 Maintenance, Servicing and Inspection

- (1) Before being used the pipe must undergo a pressure test in accordance with Paragraph (2) and a leak integrity test in accordance with Paragraph (3).
- (2) The pressure test is intended to inspect the integrity of the welding connections and must be carried out in respect of the inner pipe (with a pressure-less monitoring space) as well as for the outer pipe (with a pressure-less inner pipe). Each test to be carried out a pressure of 5.2 bar for 5 minutes.
- (3) The pressure test is intended to inspect the integrity of the welding connections and must be carried out in respect of the inner pipe (with a pressure-less monitoring space) as well as for the outer pipe (with a pressure-less inner pipe). Each test to be carried out a pressure of 0.2 bar for 120 minutes.
- (4) When leaks are detected measures must be instituted immediately to remedy the fault, if necessary with the assistance of expert personnel within the meaning of § 19 I of the German Water Resources Management Act (WHG)⁸, who, if dealing with liquids with a flashpoint of ≤ 55 °C, must also be familiar with fire and explosion protection measures.
- (5) The integrity of the monitoring spade must be tested at least by the date of every regular statutory inspection under the German Maintenance of Water Resources Act by means of an integrity test carried out at an overpressure of 0.2 bar for a minimum period of 30 mins. (the test must be carried out in accordance with the pipe string length and should be carried out for individual sections of pipes, if appropriate). The inspection must be performed and documented by the technical expert named in Paragraph (3).
- (6) The operator of the filling station/tank system is obliged to engage only suitable specialist companies for the installation, maintenance and cleaning of pipes who must meet the conditions laid down in § 19 I of the German Management of Water Resources Act - Wasserhaushaltsgesetz WHG) and who have been given a suitable induction by the applicant, unless of course the applicant carries out the work himself, using his own suitably trained and qualified personnel and in accordance with the regulations of the relevant Federal state.
- (7) In all installation and maintenance work only pipe components which are covered by this general construction products approval notice are to be used and only the methods of joining pipes together which are listed in Appendix 5, Section 3 may be employed.

Feistel

Certified



C o n s t r u c t i o n a n d i n s t a l l a t i o n o f p i p e s

(1) *In relation to the planning, preparation and laying of pipes, the applicant must draw up, as a supplement to the regulations contained in this approval notice, a set of instructions for procedures, which describe the composition of the pipes and the method for laying the pipes in the ground.*

(2) *In order to ensure that the pipeline is properly constructed the applicant must in particular make detailed descriptions under the following points:*

- *Preparations for welding and execution of the electro-sleeve welding (Requirements in accordance with DVS Guideline 2207-1:2005-09, for welding connections, in particular, Section 5: Resistance welding)*
- *Requirements of persons carrying out welding work in accordance with DVS 2212³ or an equivalent proof of evidence of proficiency to carry out the work.*
- *There is a requirement for absolute care and cleanliness to be maintained in constructing the pipeline,*
- *The pipeline must be inspected once it is complete (welding, leak integrity, electrostatic properties),*

(3) *In order to ensure that the pipeline is properly laid, the applicant must in particular make detailed descriptions under the following points:*

- *Preparation of the construction site and demands made on its qualities.*
- *Burying and embedding the pipe in the earth, demands made on the materials used in burying and the pipes and in backfilling.*
- *Clearance of the pipes from one another or from other components and the demands made on pipes which cross over another.*
- *Details of permissible installation depths (minimum and maximum)*
- *Laying the pipes without using excessive force,*

In relation to all details of the laying pipes in the ground which are not included in the installation instructions, the following guidelines and further regulations mentioned therein shall apply:

- *DVWG (German Association for the Gas and Water Industries)-Worksheet G 472, 6/2000; here in particular*
 - *Planning and technical implementation*
 - *Construction*
- *KRV-Instructions for laying PE gas pipes, A 435/96-10; here, in particular*
 - *Transportation and Storage of pipes and pipe components*
 - *Trench*
 - *Installation of the pipe components*
 - *Pressure test*
 - *Filling the trench*

(4) *In addition, when carrying out the laying of the pipes the relevant ordinances on road construction work must be observed and when concrete is used to secure the top surfaces of the German Committee on the user of Reinforced Concrete's (DAfStb) guidelines on "using concrete with substances which are at risk of water damage ("Betonbau beim Umgang mit wassergefährdenden Stoffen"⁴ in conjunction with DIN 1045-1 to ⁵*

³ Guideline DVS 2212-1:2006-05; "Inspection of plastics welders _ Test Groups I and II"

⁴ DAfStb; German Committee on the use of Reinforced Concrete in the German Institute for IDO Standardisation - DIN - Deutsches Institut für Normung e.V., Guidelines on Use of Concrete Near Substances at Risk of water Damage (Richtlinie "Betonbau beim Umgang mit wassergefährdenden Stoffen")

⁵ DIN 1045-1/2/3:2008-08; Supporting Structures made of Concrete, Reinforced concrete and Prestressed Concrete, Part 1: Measurement and Construction; Part 2: Concrete - Selection, Properties, Manufacture and Conformity - Usage rules under DIN EN 206-1; Part 3. Construction work; DIN 1045-4:2001-07; Part 4: Supplementary rules for the Manufacture and Conformity of Ready-made components