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Industrial Piping made of Thermoplastics
Design, Structure and Installation of Two-pipe Systems

DVS
Technical Code
DVS 2210-2

Contents:

DVS, Technical Committee, Working Group “Joining of Plastics”

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1 Scope of application

This technical code includes fundamentals for the design, dimensioning and installation of two-pipe systems as well as for the design and manufacture of two-pipe components made of thermoplastics. Prerequisites for the application of the technical code are experience in plastics processing and general piping construction as well as knowledge about the materials used.

The two-pipe systems dealt with in this technical code may be used to transport liquid and gaseous substances. They may be laid not only inside buildings, ducts and shafts but also outdoors. The dimensioning of buried two-pipe systems is not dealt with in this technical code as far as external loads are concerned.

This technical code should be consulted during the installation of two-pipe systems laid both above and below ground, especially whenever the use of a two-pipe system is specified because of particular dangers to people and the environment. Therefore, in the case of piping for the transport of environmentally-hazardous or toxic substances, an explicit agreement does not have to be made between the customer and the company with regard to the application of this technical code.

Two-pipe systems that serve process engineering purposes (e. g. with coolant in the annular space) are not covered by this technical code. With regard to the loads on the internal and external pipes, this application requires a different approach. Separate attention must be paid to any regulations, fundamental construction, testing and authorisation principles or official conditions that demand, extend or restrict the application of this technical code. Remarks about this are included in Section 2.

1.1 Areas of application

Examples of areas of application are:

– installations in waste water engineering
– installations in electroplating technology
– industrial and chemical installations

The scope of application does not exclude the extension of the technical code to areas not listed above. The contracting parties must reach an agreement on any extended application of the technical code.

1.2 Definitions of terms

Two-pipe systems within the scope of this technical code are concentric pipe sections that are pushed one inside the other. The annular space between the pipes must be gas-tight and liquid-tight and should only be used for monitoring purposes. Pipe systems that are provided with a splash guard or are operated in a protective pipe are not covered by the term "two-pipe systems".

The "two-pipe system" term encompasses all of the elements that are used for construction a relevant piping installation. Double piping can be erected not only using units prefabricated in the factory (preassembled) but also by assembling the component parts on the building site.

Two- pipe systems are characterised by the fact that the longitudinal mobility of the internal pipe section is restricted in the event of a temperature change. In the region of the bend sections, limited length changes may be accommodated, depending on the type of two-pipe system used.

1.2.1 Terms

Internal pipe (piping)	Internal pipe section for the transport of liquid or gaseous substances
External pipe (piping)	External pipe section for the protection of people and the environment in the event of unplanned leaks in the internal pipe
Annular space or monitoring space	Space between the internal and external pipe which, in the event of failure, collects the substances escaping from the internal pipe
Inspection facility	Part of the two-pipe system according to Section 10.1, which offers the possibility of visually inspecting the integrity of the internal pipe
Leak monitoring	Facility according to Section 10.2 which permanently monitors the annular space and automatically signals any leaks in the internal pipe

1.3 Materials

With regard to the material selection, consideration must be given to the following:

– area of application
– operating conditions
– the influence of installation and ambient conditions
– chemical resistance to the substances to be conveyed
– compatibility of the materials
– type of joints

If necessary, the suitability of all materials in the system, including adhesives, seal materials, and similar items must be proven.

The scope of application includes the following pipe materials[1)]:

– acrylonitrile butadiene styrene (ABS)
– polybutene (PB)

[1)] It should be understood that the material designations are generic terms for one group of thermoplastics in each case. Thermoplastics with abbreviations according to DIN, EN and ISO standards may be assigned to the material groups according to their properties (e. g. PE includes PE 63, PE 80 and PE 100 types and PVC-U the -HI, -NI and -RI types). The information provided corresponds to the status of the standardisation at the time of printing.