



Fire Protection



Industry



Mining & Tunneling



Snowmaking



Miscellaneous

[www.alvenius.com](http://www.alvenius.com)



# Quick Connection Steel Pipe Systems



**ALVENIUS<sup>®</sup>**





# Alvenius<sup>®</sup> - The Company

**Alvenius<sup>®</sup> was established in Eskilstuna in 1951. Soon the company started to manufacture steel pipe systems for international mining companies and construction projects around the world.**

The southern part of Africa and South America were soon important export markets. During the later part of the sixties Alvenius<sup>®</sup> entered the growing business of snow making and is today well established on the European market.

In the beginning of the nineties the thermoplastic coating was introduced as a cost efficient corrosion protection method. Today Alvenius<sup>®</sup> thermoplastic coated steel pipes are used where stainless steel previously was the only alternative. Some examples are fire mains, desalination, leaching, water & sewage and many other areas where a good corrosion protection is required.

Alvenius<sup>®</sup> belongs to the Boxholm group.

## Marketing segments

Alvenius<sup>®</sup> has five defined market segments. Fire Protection, Industry, Mining & Tunneling, Snowmaking, and General. All areas have their own needs and demands.

With that in mind we have used our unique product advantages and created concepts optimised for each application.



## Our Vision

The Alvenius® vision is to be a world leader in the manufacturing of quick connection steel pipe systems with low weight and excellent corrosion protection, within selected segments.

On the domestic market Alvenius® shall be a leading supplier of steel pipe systems and a contract manufacturer of low volume products where the combination of logistics, welding technology and corrosion protection are key factors for the customers.

## Spirally welded steel pipes

The pipes are spirally welded from certified pressure vessel carbon steel. This makes it possible to reduce the wall thickness of the pipes, whilst still maintaining excellent performance in terms of rated working pressure. The result is a low weight pipe for high pressures up to 80 bar (1160 psi).

The welding method is Submerged Arc Welding, SAW. The welded seam is smooth, flat and does usually not exceed 2.5 mm (0.1") in height. Alvenius® spirally welded steel pipes are manufactured in Ø 76–508 mm (3–20"). Wall thickness ranging from 2.0 mm to 8.0 mm (0.08–0.31"). Special dimensions are available on request. Our pipes in diameter O48 and O60 are not spirally welded.

## Quality management system

Our dedication to quality in the products and services we supply goes all the way back to the origin of the company. Since 1997 the Quality Management System has been certified according to ISO 9001.

During production of the pipes, the weld is continuously examined with an automated ultra sonic system in addition to regular X-ray and visual inspection. Finally the pipes undergo a hydrostatic test at 1.5 times their rated working pressure.

All personnel performing welding operations have a relevant level of competence, verified on a yearly basis. The Quality Management System is subject to an external audit twice yearly.

The Alvenius® standard product range is approved according to PED 97/23/EC, the Pressure Equipment Directive. This means that Lloyds Register has examined and scrutinized our design, drawings, choice of material and calculations.

The manufacturing process has been studied and examined in terms of methods and competence of the staff.

## Environmental management system

Alvenius® has an Environmental Management System according to EN-ISO 14001 certified by Lloyds Register since 2000. The Environment Management System undergoes an external audit twice yearly.

## Two pipe systems

K 10. Alvenius® system K10 is a shouldered system based on the metric standard, Ø 48–254 mm (2–10"). Designed for pressures up to 40 bar (580 psi).

VICTAULIC. Alvenius® system Victaulic is a grooved system based on the ISO standard, Ø 60–508 mm (2.5–20"). Standard design for pressures up to 80 bar (1160 psi). The pipes are available either roll grooved or equipped with cut grooved machined rings welded to the pipe ends.

## Complete system

Alvenius® offers complete pipe systems with a comprehensive range of fittings such as bends, tees, reducers, flange adaptors, threaded outlets etc. All connected with the same quick coupling concept.

## Quick couplings with self-sealing gaskets

The coupling locks into the groove or the shoulder at the pipe ends so that the connected pipe can withstand considerable axial forces. Self-sealing design of the gasket makes the coupling suitable for low as well as high pressures.



## Easy assembly

Alvenius® steel pipes are joined by quick couplings.

In four easy steps, it is possible for anyone familiar with a wrench to assemble the Alvenius® pipe system.

It is up to three times faster to install than welding.



# An economical and equally good alternative to stainless steel piping

**Alvenius<sup>®</sup> light-weight steel pipe system, inside and outside surface thermoplastic coated, combine the strength of steel and the resistance of thermoplastic to a wide variety of corrosive media.**

The pipes are connected using Alvenius<sup>®</sup> well known quick-couplings or flanges which eliminate expensive welding and makes it possible to quickly exchange single pipe lengths and fittings.

The system is suitable for high-pressure applications up to 80 bar.

## **Method of coating**

The untreated steel surfaces are sand blasted to a coatable finish. The pipes are heated to the temperature for coating. The pipes are coated using fluidised bed or electrostatic coating methods. The thickness of film applied is 20-30 mil/500-700 microns.

The Swedish Corrosion Institute buried in 1990 a number of thermoplastic coated steel tubes for testing corrosion resistance. After 12 years the pipes were inspected and the outcome was very good. The tubes showed no signs of corrosion and thermoplastic coating was completely intact.



### The characteristics of thermoplastic

- Extremely good adhesion - no risk of scaling or cracking.
- Elongation at break, 800 %
- Good resistance to chemicals, especially acids and alkalies
- Excellent weather resistant properties
- Safe working temperature continuous in air +150°F/65°C
- Good corrosion protecting characteristics
- Dielectric resistance
- Environmental friendly
- Difficult to ignite building material

### Standard and special products

The pipes can be used as process and cooling water pipes, effluent and drainage pipes, high pressure pipes, fire fighting pipes.

Special dimensions and designs available on request.

### Range of applications

Alvenius® thermoplastic coated pipe system will be found in various types of industry, where primarily stainless steel has been the traditional material for pipes that are subjected to extreme exposure.

#### Examples:

- |                        |                      |                                  |
|------------------------|----------------------|----------------------------------|
| • Mining               | • Off-shore          | • Fire fighting pipes            |
| • Chemical industry    | • Mineral processing | • Paper and cellulose industries |
| • Kommunal VA          | • Foundation tubes   | • Municipal water industry       |
| • Food stuffs industry | • Snowmaking         |                                  |



Installation of pipes for water supply to the snow guns. Idrefjäll Sweden.



Alvenius® Thermoplastic Coated pipes are used in the fire protecting system at Ringhals nuclear power plant, Sweden.



The city of Lidingö, Sweden, uses the Alvenius® thermoplastic coated pipe system for distribution of potable water.

100 km Alvenius® thermoplastic coated pipe system at the heap leaching plant at the Bulghah gold mine in Saudi Arabia.



Stora Enso, Gruvön, Sweden chose Alvenius® TP-pipes, as industrial sewage pipeline, for the new soda recovery boiler.

# Alvenius® Outstanding Pipe Performance

**Alvenius® uses Swedish high quality steel in the pipes. This means that we can produce high quality pipes with thinner walls and still deliver high performance pipes.**

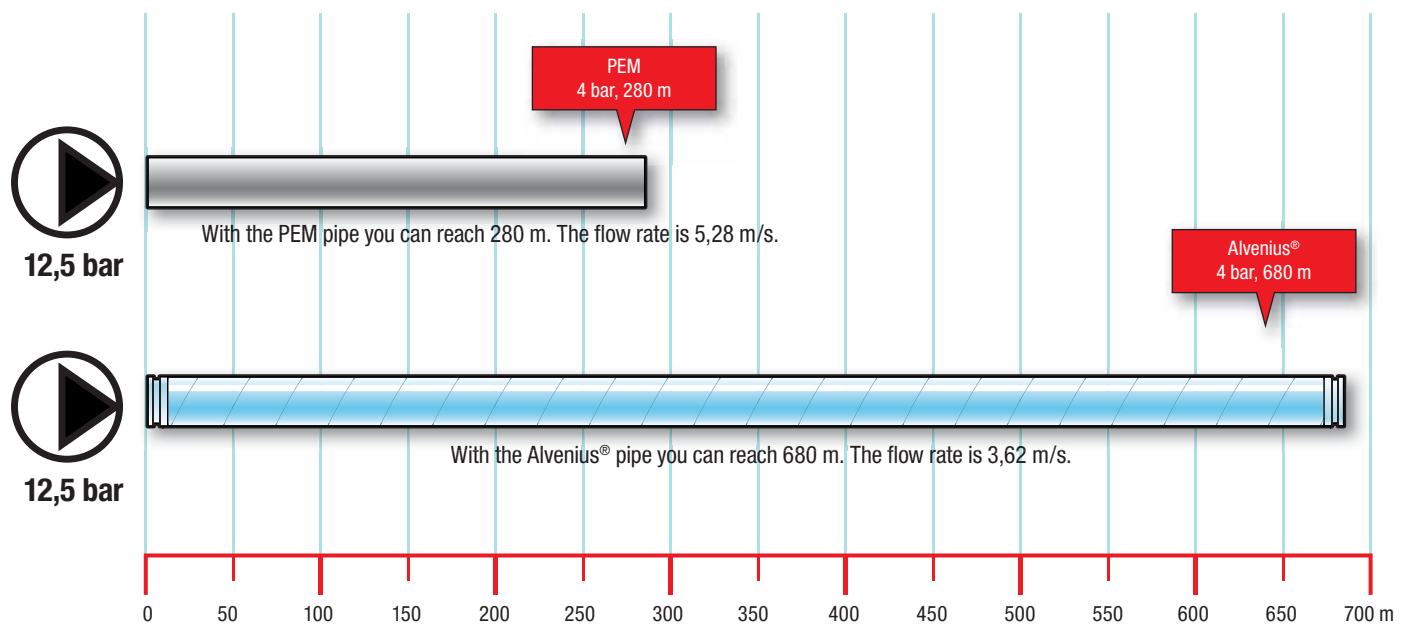
The result is lighter pipes and costsavings in transportation and installation.

Our customers benefit from pipes with a larger inner diameter and extraordinary performance compared to most of the competing pipes in the market.

The large inner diameter paired with a low friction coefficient results in a very low pressure drop.

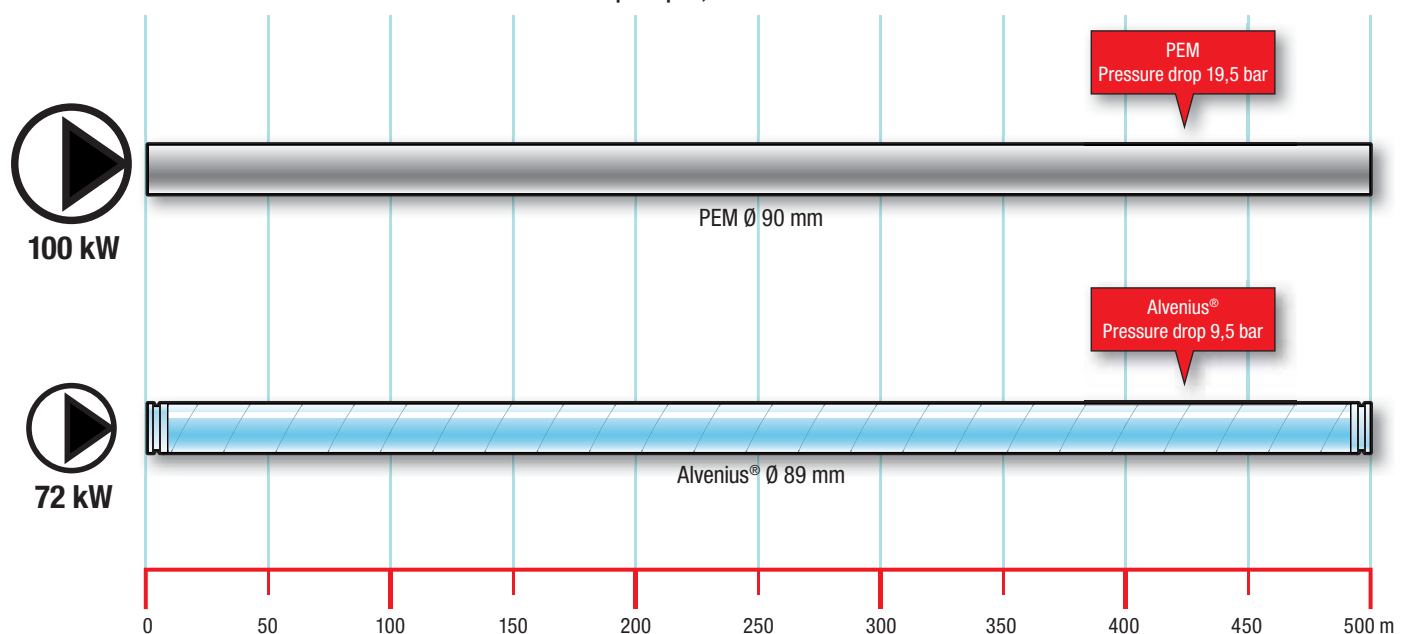
## Comparison Pipe Distance

Required end pressure 4 bar. Pump pressure 12,5 bar.



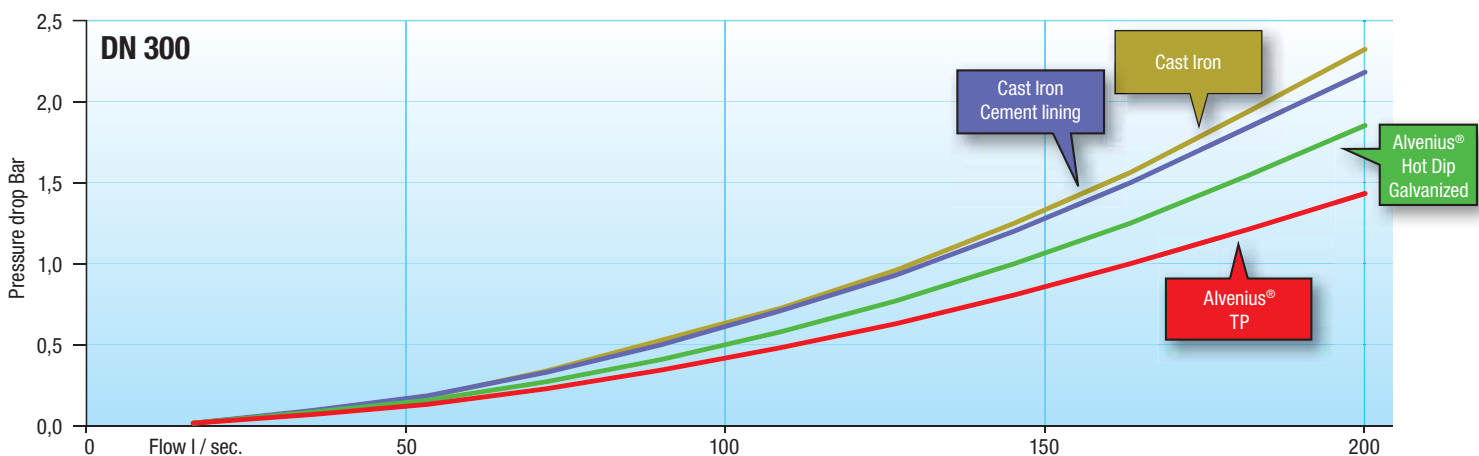
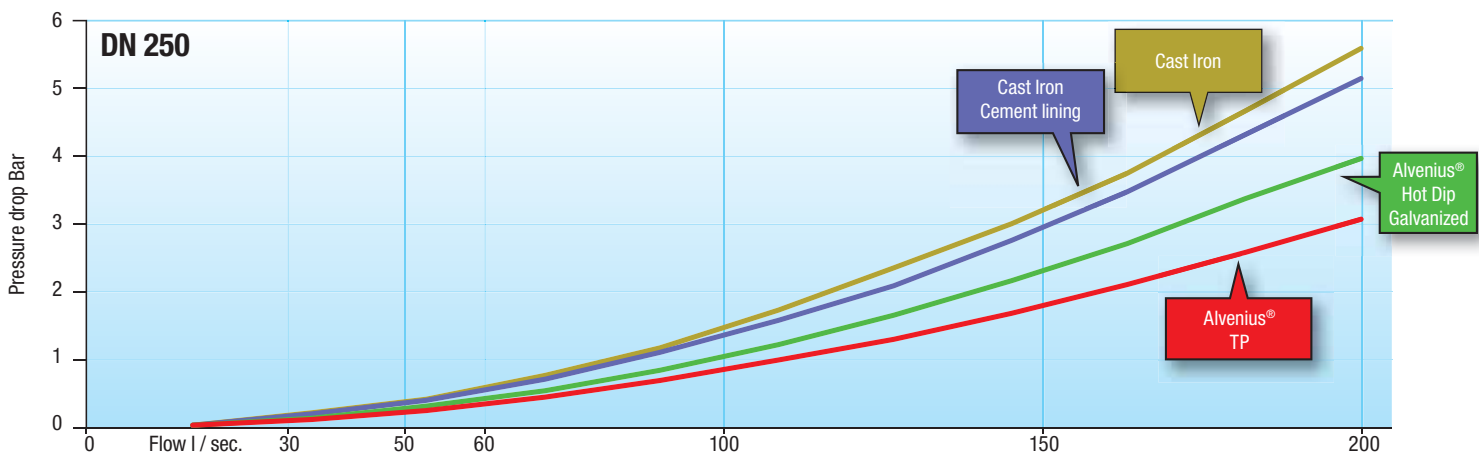
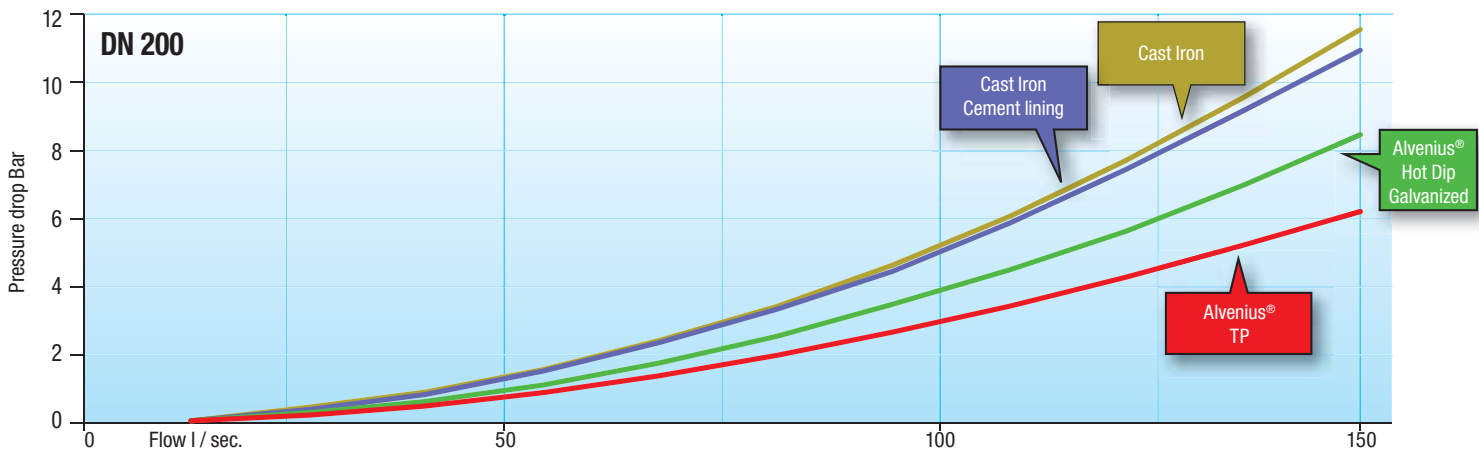
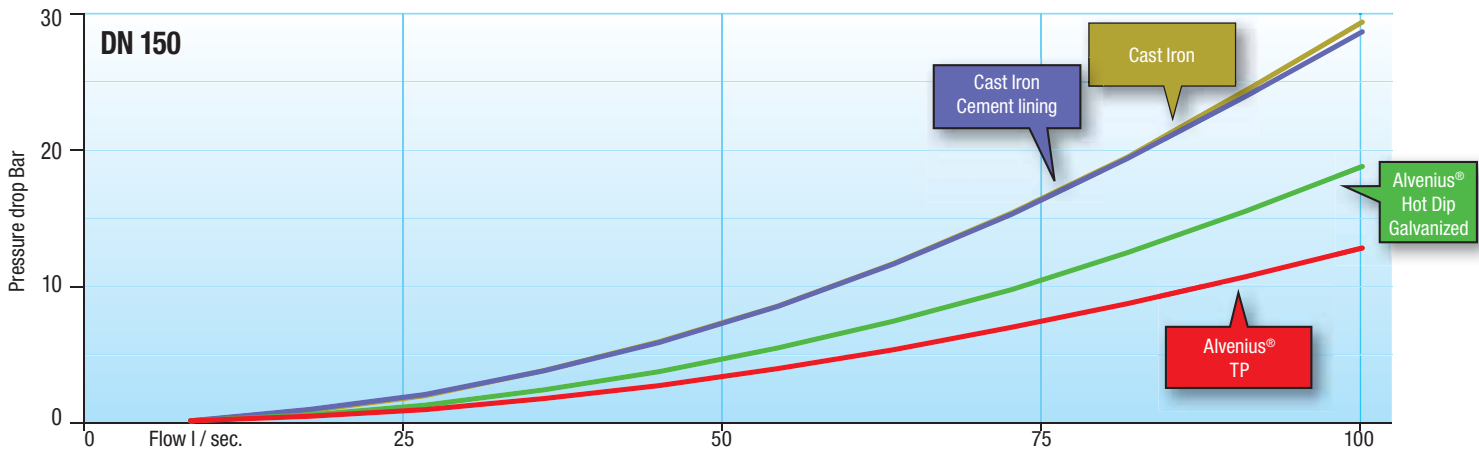
## Comparison Pump Size

We need to pump 1,5 m<sup>3</sup>/min 500 m.



The difference in pressure corresponds to a pump power of 28 kW at 85% efficiency.  
At 100% efficiency, the difference is 24 kW

Pressure drop as a function of flow at +2 C pipe length 1000 meters



# Save the environment and reduce your transport costs with Alvenius® pipes

The low weight of Alvenius® pipes is one of the advantages when it comes to installation, but it

is also significant when calculating the freight costs and maximum quantity on each trailer.

## Comparison number of trailers with Alvenius® pipes and Cast Iron pipes Maximum load 24000 kg



2 trailers of Alvenius 6” PN80, 3248 m of pipes



4 trailers of Cast iron pipes 6”, 2856 m of pipes

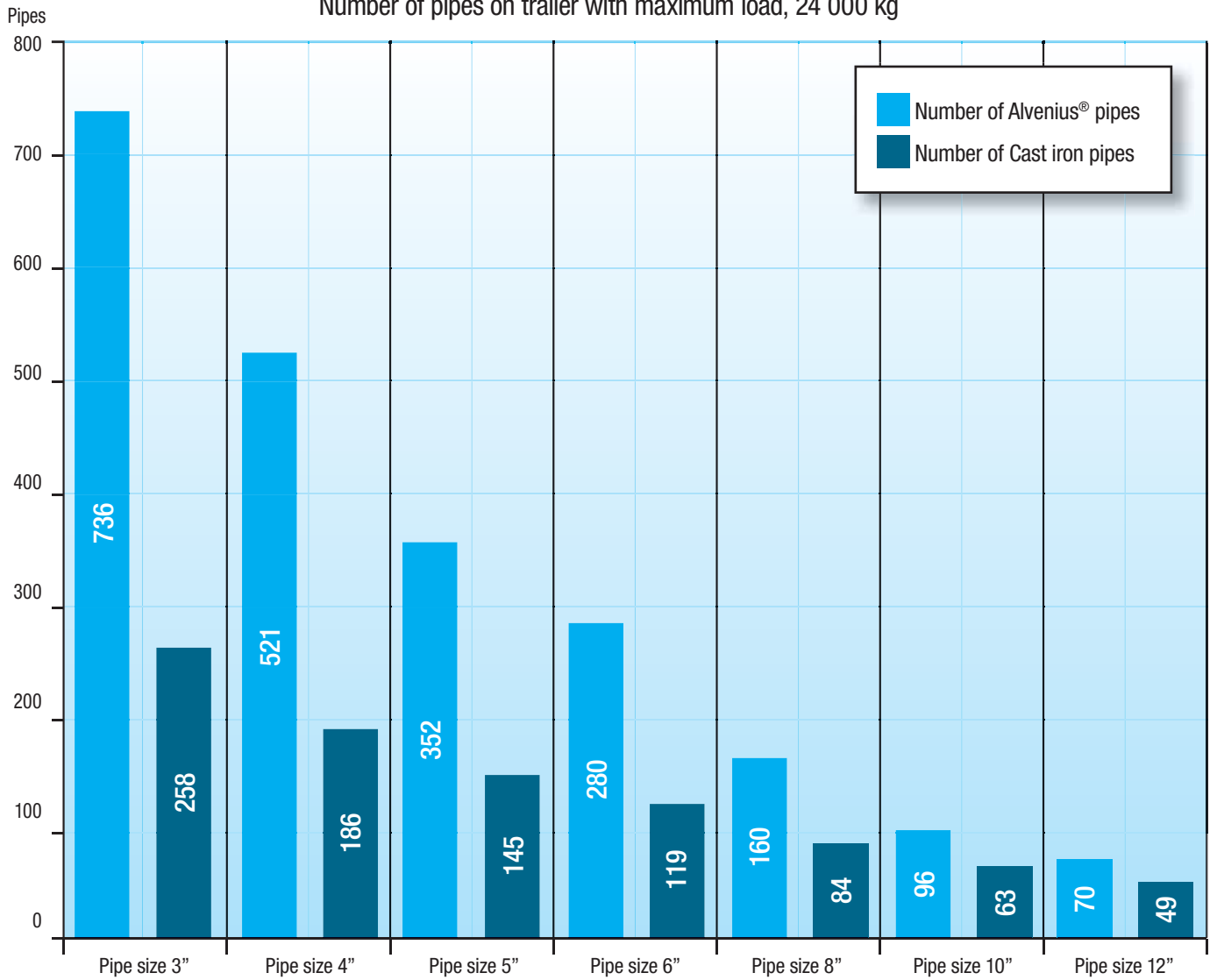
## Overall comparison Alvenius® pipes and Cast Iron pipes

Significant difference in inside diameter, weight and number of pipes on each trailer.

Pipe type	Size Inch	Inner DN mm	Outside Ø mm	Inside difference mm	Weight kg/m	Weight kg/pipe	Pipes on Trailer Max 24000 kg	Total weight
Alvenius	3"	84,5	88,9	5,1	4,8	28	736 pipes	21344 kg
Cast iron	3"	79,4	98,0		15,5	93	258 pipes	23994 kg
Alvenius	4"	108,9	114,3	12,3	7,8	45	521 pipes	23996 kg
Cast iron	4"	96,6	118,0		21,5	129	186 pipes	23994 kg
Alvenius	5"	133,1	139,7	11,1	11,6	67	352 pipes	23584 kg
Cast iron	5"	122,0	144,0		27,5	165	145 pipes	23925 kg
Alvenius	6"	162,7	168,3	15,3	12,1	70	280 pipes	19600 kg
Cast iron	6"	147,4	170,0		33,5	201	119 pipes	23919 kg
Alvenius	8"	211,9	219,1	12,7	20,0	116	160 pipes	18560 kg
Cast iron	8"	199,2	222,0		47,5	285	84 pipes	23940 kg
Alvenius	10"	264,2	273,0	15,2	24,1	140	96 pipes	16896 kg
Cast iron	10"	249,0	274,0		63,0	378	63 pipes	23814 kg
Alvenius	12"	311,6	323,0	11,8	46,0	267	70 pipes	18690 kg
Cast iron	12"	299,8	326,0		80,5	483	49 pipes	23667 kg



**Comparison Pipes on Trailer Alvenius® vs Cast Iron**  
 Number of pipes on trailer with maximum load, 24 000 kg



# Short delivery time

**Alvenius® keep a wide range of pipes and fittings in our 60.000 m<sup>2</sup> stock to enable a short and reliable delivery to our customers.**

With more than 50 years experience of shipments all over the world we make sure to deliver in time and at the lowest possible cost.



#### Some important references from Fire Protection:

Felbertauerntunnel (AT), Stockholm Metro (SE), Olkiluoto OL3 (FI), Hutton Oil Platform Removal Project (UK)



#### Some important references from Industry:

Stora Enso Gruvöns Bruk - Sewage Water (SE), Fortum Högdalenverket - Waste Water (SE), Sydvatten - Water Supply (SE), Norwegian Pavilion World Expo 2010 Shanghai - Drainage System (CN), Condriil Libya - Casing Rörs (LY), Lidingö - Potable Water (SE), Jönköping - District Cooling (SE), Ånge Energi - Sewage Water (SE)



#### Some important references from Mining & Tunneling:

ABB Mining (MN), Aljustrel (PT), Bell Common Tunnel (UK), Boliden Garpenberg Mine (SE), Boliden Kristineberg Mine (SE), Boliden Renström Mine (SE), Bulghah Gold Mine (SA), Dannemora Mineral (SE), Deutsche Steinkohle AG (DE), Ellhnikos Xrysos (GR), Ethiopian Mineral Development (ET), Hallandsas Project (SE), Heathrow Terminal 5 Tunnel (UK), Hitura Mine (FI), Honour Oak Tunnel (UK), Lissabon Metro (PT), Lørentunnelen (NO), Malmö Citytunnel (SE), Midroc Gold Mine (ET), Nordkalk Oy (FI), Northern Iron Sydvaranger Iron Project (NO), Philex (PH), South Crofty Mine (UK), Zinkgruvan (SE)



#### Some important references from Snowmaking:

Trysil (NO), Åre (SE), Zermatt (CH), Boi Tauli (ES), Arinsal (AD), Madonna di Campiglio (IT), Obersdorf (AT), Levi (FI), Idre (SE), Otepää (EE), Sheregesh (RU), Cortina (IT), Verbier (CH), Vasaloppet (SE), Hafjell/Lillehammer (NO), Jaworzna Krynicka (PL), Ski Mont Saint-Bruno (CA), Brasov (RO)



#### Some important reference from Miscellaneous:

Böhler - Powder Capsules (AT), ErasT-rörl - Powder Capsules (SE)