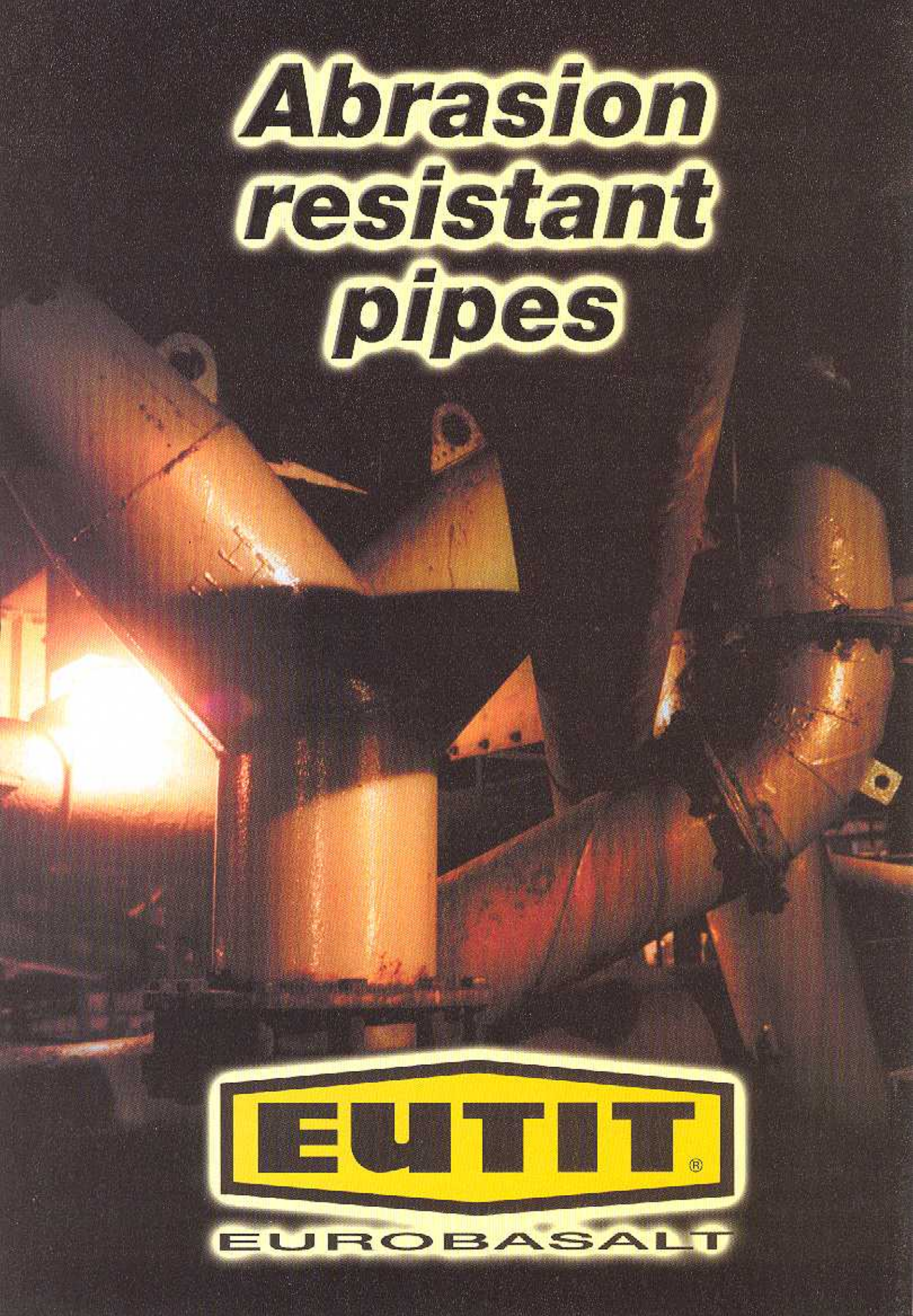


Abrasion resistant pipes

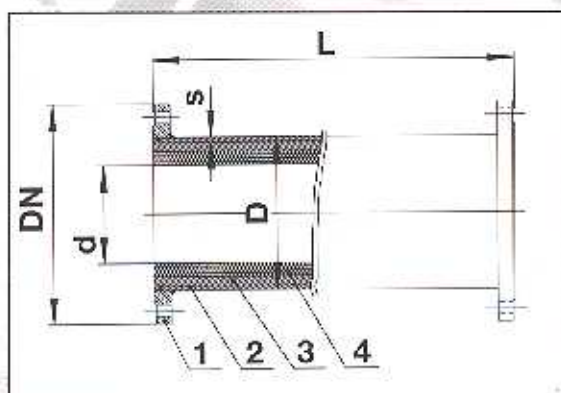
A dark, industrial scene featuring large, curved pipes and machinery, illuminated by warm, orange light. The pipes appear to be made of a heavy material, possibly metal or composite, and are part of a larger system. The lighting creates strong highlights and shadows, emphasizing the textures and shapes of the components.

EUTIT[®]
EUROBASALT

PIPES

JS-inner parameter of basalt	Nominal dimension	Steel pipe outer diameter	Weight incl. basalt lining (kg)							
			500	1000	1500	2000	3000	4000	5000	6000
Js	DN	Dxs								
40	125	133 x 4,5	30,8	51,4	72,0	92,7	134,9	-	-	-
50	125	133 x 4,5	30,4	50,6	70,9	91,1	132,6	-	-	-
60	125	133 x 4,5	29,8	49,5	69,2	88,9	129,2	168,6	-	-
70	125	159 x 4,5	36,3	62,5	88,8	115,0	171,0	223,6	276,0	328,5
82,5	125	159 x 4,5	35,1	60,3	85,4	110,5	164,3	214,5	264,7	315,0
100	150	168 x 4,5	37,2	62,1	86,9	111,8	161,6	211,3	261,1	310,9
125	175	194 x 5,6	47,1	78,7	110,2	141,8	205,0	268,0	331,2	394,3
150	200	219 x 6,3	54,9	92,6	130,2	167,8	243,1	318,4	393,7	469,1
175	225	245 x 6,3	62,8	105,8	148,8	191,9	277,9	364,1	450,2	536,2
204	250	273 x 7,0	70,8	120,7	170,7	220,7	320,6	420,5	520,5	620,4
225	300	324 x 5,0	91,4	157,1	222,7	288,4	419,7	551,0	682,4	813,6
254	300	324 x 5,0	80,8	135,9	191,0	246,2	356,3	466,5	576,6	686,9
303	350	377 x 5,0	99,3	166,2	233,1	300,0	433,9	567,6	701,4	835,3
356	400	426 x 5,0	116,4	190,7	264,8	339,1	487,4	635,9	784,3	932,7
400	450	530 x 5,0	161,2	295,5	429,7	564,0	832,4	1100,9	1369,4	1637,9
456	450	530 x 5,0	123,5	220,1	316,6	413,3	606,4	799,6	992,7	1185,9
500	600	630 x 6,0	265,4	436,0	606,7	777,4	1118,6	1460,0	1801,2	-
600	700	720 x 7,0	344,9	539,4	733,9	928,4	1317,5	1706,5	-	-
610	700	720 x 7,0	335,3	520,2	705,2	890,1	1260,0	1629,8	-	-

JS-inner parameter of eucor	Nominal dimension	Steel pipe outer diameter	Weight incl. eucor lining (kg)							
			500	1000	1500	2000	3000	4000	5000	6000
Js	DN	Dxs								
40	125	133 x 4,5	32,2	54,1	76,2	98,2	143,2	-	-	-
50	125	133 x 4,5	32,0	53,8	75,7	97,5	142,1	-	-	-
60	125	133 x 4,5	31,6	53,1	74,6	96,1	140,0	183,0	-	-
70	125	159 x 4,5	38,3	66,6	94,8	123,1	183,2	239,7	296,2	352,7
82,5	125	159 x 4,5	37,4	64,9	92,3	119,7	178,0	232,8	287,5	342,4
100	150	168 x 4,5	39,2	66,1	93,0	119,9	173,8	227,6	281,5	335,3
125	175	194 x 5,6	49,6	83,6	117,6	151,6	219,7	287,7	355,8	423,8
150	200	219 x 6,3	57,7	98,3	138,8	179,3	260,4	341,5	422,6	503,7
175	225	245 x 6,3	66,1	112,4	158,8	205,1	297,8	390,6	483,3	575,9
204	250	273 x 7,0	74,6	128,3	182,1	235,9	343,4	450,9	558,5	666,0
225	300	324 x 5,0	95,8	165,4	235,2	305,0	444,7	584,3	723,9	863,5
254	300	324 x 5,0	85,5	145,2	204,9	264,8	384,2	503,7	623,1	742,7
303	350	377 x 5,0	104,8	177,2	249,5	321,9	466,7	611,5	756,2	901,0
356	400	426 x 5,0	122,8	203,4	284,0	364,6	525,7	686,9	848,1	1009,3
400	450	530 x 5,0	168,3	309,7	451,1	592,5	875,1	1157,9	1440,7	1723,4
456	450	530 x 5,0	131,6	236,2	340,9	445,6	654,9	864,2	1073,4	1282,8
500	600	630 x 6,0	275,8	456,4	637,3	818,2	1179,8	1541,6	1903,3	-
600	700	720 x 7,0	357,0	563,7	770,4	977,1	1390,4	1803,8	-	-
610	700	720 x 7,0	347,7	544,9	742,3	939,5	1334,1	1728,7	-	-



d=Js Basalt, eucor liners' inner parameter
 D Steel pipe outer diameter
 DN Nominal dimension
 s Steel casing thickness
 L Pipes length

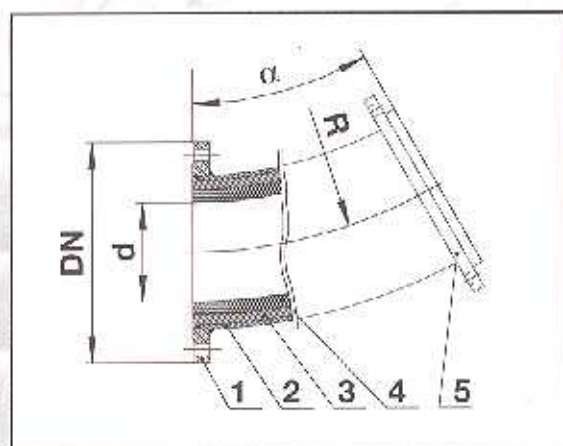
1. Fix welded flange
2. Steel pipe (casing)
3. Cement mortar
4. Cast basalt (eucor) liner

- Flanges according to standard CSN 131160 part 1 - for pressure PN 6, 10, 16, 25.
- Standard basalt liners' thickness - 20 mm
- Thickness of cast basalt, eucor out of standard pipes, bends, T pieces etc. - 25 mm or more according to customer's request
- Apart from the listed standard nominal bores, any diameter is available e.g.: 25, 32, 55, 65, 75, 90, 95, 110, 120, 135, 180, 240, 248, 275, 290, 325, 336, 350, 370, 380, 432, 470, 490, 490.
- Out of standard diameter (d) more than 610 mm is lined with pre-shaped tiles.
- Out of standard products' mould costs is charged to customer.
- Make-up pieces are manufactured according to customer's request.
- Apart from the listed standard length, any length is available.
- Apart from the listed standard bends' angles and radius, any dimension is available.
- Beside the standard flanges, any other flanges and couplings are available.
- Material of steel casings 11 353 1, unless agreed otherwise.
- Length of abrasion resistance pipes may vary by - 30 mm + 0 mm

ELBOWS (BENDS)

JS-inner parameter of basalt	Nominal dimension	Steel pipe outer diameter	Weight incl. basalt lining (kg)											
			R=750			R=1000			R=1500			R=2000		R=3000
Js	DN	Dxs	15°	30°	45°	15°	30°	45°	15°	30°	45°	15°	30°	15°
40	125	133 x 4,5	18,2	26,4	34,6	20,9	31,8	42,7	26,4	42,7	59,0	31,8	53,5	42,7
50	125	133 x 4,5	18,1	26,1	34,1	20,7	31,4	42,1	26,1	42,1	58,1	31,4	52,7	42,1
60	125	133 x 4,5	17,9	25,6	33,4	20,5	30,8	41,2	25,6	41,2	56,7	30,8	51,6	41,2
70	125	159 x 4,5	18,8	29,2	39,6	22,3	36,1	49,9	29,2	49,9	70,7	36,1	63,7	49,9
82,5	125	159 x 4,5	18,4	28,3	38,2	21,7	34,9	48,2	28,3	48,2	68,0	34,9	61,4	48,2
100	150	182 x 3,0	22,0	33,2	44,2	25,8	40,6	55,4	33,2	55,4	77,6	40,6	70,2	55,4
125	175	205 x 3,0	27,4	40,1	52,9	31,6	48,6	65,6	40,1	65,6	91,1	48,6	82,6	65,6
150	200	230 x 3,0	30,8	45,4	60,1	35,6	55,2	74,8	45,4	74,8	104,1	55,2	94,3	74,8
175	225	262 x 3,0	35,4	53,2	71,1	41,3	65,1	88,9	53,2	88,9	124,5	65,1	112,6	88,9
204	250	288 x 3,0	37,9	57,5	77,1	44,4	70,6	96,7	57,5	96,7	135,8	70,6	122,8	96,7
225	300	337 x 3,0	49,8	77,2	104,6	58,9	95,4	132,0	77,2	132,0	186,8	95,4	168,5	132,0
254	300	337 x 3,0	45,7	69,0	92,4	53,5	84,6	115,7	69,0	115,7	162,3	84,6	146,8	115,7
303	350	385 x 4,0	58,8	87,1	115,4	68,2	105,9	143,7	87,1	143,7	200,2	105,9	181,4	143,7
356	400	442 x 4,0	71,4	105,2	139,0	82,7	127,8	172,9	105,2	172,9	240,5	127,8	218,0	172,9
400	450	485 x 4,0	80,3	117,5	154,8	92,7	142,4	192,0	117,5	192,0	266,5	142,4	241,7	192,0
500	600	630 x 6,0	163,1	231,5	300,0	185,9	277,2	368,4	231,5	368,4	505,2	277,2	459,6	368,4

JS-inner parameter of basalt	Nominal dimension	Steel pipe outer diameter	Weight incl. eucor lining (kg)											
			R=750			R=1000			R=1500			R=2000		R=3000
Js	DN	Dxs	15°	30°	45°	15°	30°	45°	15°	30°	45°	15°	30°	15°
40	125	133 x 4,5	18,8	27,5	36,2	21,7	33,3	44,9	27,5	44,8	62,3	33,3	56,4	44,8
50	125	133 x 4,5	18,7	27,3	36,0	21,6	33,1	44,6	27,3	44,8	61,8	33,1	56,1	44,6
60	125	133 x 4,5	18,6	27,1	35,5	21,4	32,7	44,0	27,1	44,0	61,0	32,7	55,3	44,0
70	125	159 x 4,5	19,6	30,8	41,9	23,3	38,2	53,1	30,8	53,1	75,4	38,2	68,0	53,1
82,5	125	159 x 4,5	19,3	30,1	40,9	22,9	37,3	51,7	30,1	51,7	73,4	37,3	66,2	51,7
100	150	182 x 3,0	23,1	35,3	47,4	27,2	43,4	69,6	35,3	59,6	83,9	43,4	75,8	59,6
125	175	205 x 3,0	28,8	42,6	56,6	33,3	51,9	70,6	42,6	70,6	98,6	51,9	89,3	70,6
150	200	230 x 3,0	32,2	48,3	64,5	37,6	59,1	80,6	48,3	80,6	112,8	59,1	102,1	80,6
175	225	262 x 3,0	37,1	56,6	76,1	43,6	69,6	95,5	56,6	95,5	134,5	69,6	121,5	95,5
204	250	288 x 3,0	39,8	61,3	82,8	47,0	75,6	104,3	61,3	104,3	147,3	75,6	133,0	104,3
225	300	337 x 3,0	51,9	81,3	110,8	61,7	101,0	140,3	81,3	140,3	199,2	101,0	179,6	140,3
254	300	337 x 3,0	48,0	73,7	99,3	56,6	90,8	125,0	73,7	125,0	176,3	90,8	159,2	125,0
303	350	385 x 4,0	61,5	92,5	123,6	71,9	113,2	154,6	92,5	154,6	216,6	113,2	195,9	154,6
356	400	442 x 4,0	74,6	111,6	148,6	86,9	136,2	185,6	111,6	185,6	259,8	136,2	234,9	185,6
400	450	485 x 4,0	83,6	124,6	165,4	97,4	151,8	208,2	124,6	206,2	287,7	151,8	260,5	206,2
500	600	630 x 6,0	167,5	240,3	313,1	191,8	288,8	385,9	240,3	385,9	531,4	288,8	482,9	385,9



Thickness of basalt, eucor linings - 25 mm

d=Js Basalt, Eucor liners' inner diameter
D Steel pipe outer diameter
DN Nominal dimension
s Steel casing thickness
R Bends' central radius
α Bends' angle ALFA

1. Fix welded flange
2. Steel pipe (casing)
3. Cement mortar
4. Cast basalt (eucor) liner
5. Rotating flange with welded ring

TECHNICAL DATA	BASALT	EUCOR
Mohs hardness (ČSN EN 101)	min. 8. degree	min. 8. degree
Volume mass (ČSN EN 993-1)	2900 - 3000 kg.m ⁻³	min. 3500 kg.m ⁻³
Absorption capacity, porosity (ČSN EN 993-1) for eucor	0%	max. 10% volume
Compressive strength (ČSN EN 993-5)	min. 300 - 450 MPa	min. 350 MPa
Flexural (bending) strength (ČSN EN 993-6)	min. 45 MPa	min. 35 MPa
Coefficient of expansion (ČSN EN 109)	max. 8.10 ⁻⁶ .K ⁻¹ (0 - 400°C)	max. 8.10 ⁻⁶ .K ⁻¹ (0 - 400°C)
Abradability (DIN 52106)	max. decrease 5 cm ³ /50 cm ²	max. 0.75 cm ³ /50cm ²
Wear resistance (ČSN EN 102)	max. decrease 110 mm ³	max. 30 mm ³
Operating temperature limit	400°C	1000-1100°C
Heat shock resistance (DIN 51068)	min. temp. difference 150°C	min. 20 cycles 850/20°C
Thermal conductivity (ČSN EN 993-14)	1.9 - 2.2 W.m ⁻¹ .K ⁻¹ (20 - 1000°C)	5.8 - 2.6 W.m ⁻¹ .K ⁻¹

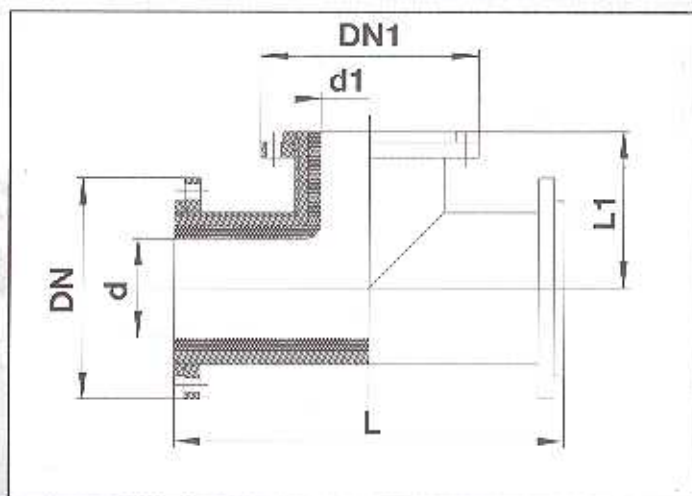
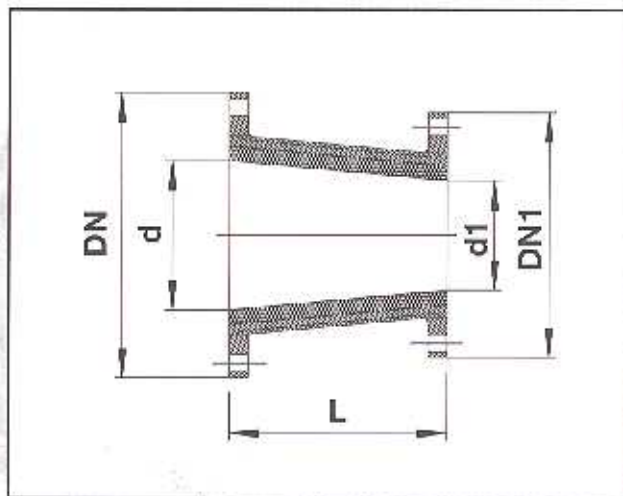
REDUCERS

„T” PCS 90°

JS-inner diameter of basalt, eucor		Nominal dimension DN		Length	Weight incl. basalt lining	Weight incl. eucor lining
Js	Js1	DN	DN1	L	kg	kg
82,5	100	125	150	150	21,6	22,3
82,5	125	125	175	300	38,2	39,9
82,5	150	125	200	450	57,1	59,9
100	125	150	175	150	26,4	27,3
100	150	150	200	300	43,8	45,7
100	204	150	250	550	71,5	74,9
125	150	175	200	150	32,2	33,3
125	204	175	250	300	58,2	60,6
125	254	175	300	550	109,3	114,3
150	175	200	225	150	37,4	38,6
150	204	200	250	300	62,6	65,2
150	254	200	300	550	117,5	122,8
175	204	225	250	150	42,8	44,2
175	254	225	300	400	97,4	101,5
204	254	250	300	250	73,2	75,9
204	303	250	350	500	145,4	151,3
254	303	300	350	250	95,5	98,8
254	356	300	400	500	188,9	194,0
303	356	350	400	250	124,5	128,3
303	400	350	450	500	235,0	243,0
356	400	400	450	250	150,9	155,2
356	500	400	600	750	467,5	481,9
400	500	450	600	500	358,2	368,3

JS-inner diameter of basalt, eucor		Nominal dimension DN		Length		Weight incl. basalt lining	Weight incl. eucor lining
Js	Js1	DN	DN1	L	L1	kg	kg
82,5	82,5	125	125	450	225	43,0	50,8
100	82,5	150	125	475	238	49,3	58,3
100	100	150	150	500	250	53,3	63,0
125	82,5	175	125	500	250	60,8	71,9
125	100	175	150	525	263	65,3	77,2
125	125	175	175	550	275	71,7	84,8
150	100	200	150	550	275	75,3	89,0
150	125	200	175	575	288	82,1	97,1
150	150	200	200	600	300	88,3	104,4
175	125	225	175	600	300	93,3	110,3
175	150	225	200	625	313	99,6	117,8
175	175	225	225	650	325	106,5	125,9
204	150	250	200	650	325	111,5	131,8
204	175	250	225	675	338	118,9	140,6
204	204	250	250	700	350	125,6	148,0
254	175	300	225	725	363	136,3	161,2
254	204	300	250	750	375	143,6	169,8
254	254	300	300	800	400	156,6	185,4
303	204	350	250	800	400	176,4	208,6
303	254	350	300	850	425	190,8	225,6
303	303	350	350	900	450	211,0	249,5
356	254	400	300	900	450	221,3	261,7
356	303	400	350	950	475	242,3	286,5
356	356	400	400	1000	500	263,0	311,0
400	303	450	350	1000	500	354,0	418,6
400	356	450	400	1050	525	380,6	450,0
400	400	450	450	1100	550	425,9	503,6
500	356	600	400	1200	600	578,1	683,6
500	400	600	450	1250	625	630,3	745,3
500	500	600	600	1400	700	765,2	904,8

Linings thickness 25 mm.



Following informations are required in case of enquires or orders:

1	Pipes - length [mm]
2	Elbows (bends) - Radius R, angle Alfa
3	Inner diameter [mm]
4	Linings - basalt, eucor
5	Working pressure [MPa]
6	Flanges - loose, fix welded
7	If any strange particles can intrude into piping

8	Conveying - pneumatic, hydraulic
9	Material causing the wear
10	Properties of bulk material-size and shape of particle [mm]
11	Speed of conveying material [m/s]
12	Working temperature (heat shock) [°C]

13	Special request of coating [m]
14	Special request of inside trimming
15	Special request of flanges [ČN, DIN, ATYP]
16	Transport conditions
17	Packing

Advantages of abrasion resistant pipes lined with Cast Basalt and Eucor:

Sometimes, people tend to disregard alternative materials that they are not familiar with. One such material is Cast Basalt. We would like to inform you about the advantages of Cast Basalt, the properties and the application. We trust that the following statement will clarify and satisfy you of the benefits of Cast Basalt and Eucor products. The first considerations are for quality in economy. Despite the initial higher cost of Cast Basalt products in comparison to unlined steel piping, the resulting cost savings can be over six times in value by the end of the life cycle of the Cast Basalt product. The Cast Basalt product not only lasts much longer than steel product but subsequently reduces repair, maintenance and down time. Czech Cast Basalt is of the highest quality and is exceptionally high in resistance to abrasion and almost all acids and alkalis. Further Czech Cast Basalt is completely resistant to corrosion, moisture and will not weather to atmosphere. Cast Basalt is proven in innumerable installations and surpasses the life of Steel Cast Iron, alloy or performance steels. Cast Basalt Abrasive resistant Linings are skilfully inserted into steel casings by experienced tradesmen. Not only do we supply the abrasion resistant lining in standard and tailor made form for installation by others, we also supply the finish product in the form of Straights, Elbows, Tees or any other specially designed shape. In addition all types of end connections can be fitted such as couplings, fixed or rotating flanges. Cast Basalt products can be tailor made to the customers requirements.

Further details:

Abrasive resistant pipe lining of Cast Basalt and Eucor has been well proven over many years in the pneumatic and hydraulic conveying of bulk materials. Pneumatically conveyed bulk material can be conveyed upto 22 m / sec with Cast Basalt linings and 30 m / sec with Eucor linings. With hydraulically conveyed bulk materials including sludge and slurry velocities can be upto 2,2 m / sec and working pressure upto 4 MPa. Chain conveyers lined with either Cast basalt or Eucor can be used where wet, sticky hot bulk materials are conveyed. Further, we can advise that the use of Eucor materials can last four times longer than Cast Basalt, which is particularly useful in pipe elbows which tend to have the shortest wear life. The use of Eucor in pipe elbows therefore extends the life of pipe line and combinations of Eucor bends and Basalt straights have been proven to be in many cases, the most economical cost effective solution. Besides the standard items, listed in our brochure, other special shapes such as reducers, tee pieces, „Y” pieces, breeches pieces, manifolds and square to round transition pieces can be made. We can supply complete lining for Bunkers, Chain Conveyors, Cyclone Separators, Chutes, Channels and Sluiceway for sludge and slurry. We can also provide the steel fabrication with external anticorrosion coating, to our specification or to an agreed specification in accordance with the customers requirements. Drawing on the above stated is available. We can warrant for all products provided all technical conditions are agreed with customers.

Packing and shipping:

Abrasion resistant pipes are transported either by road on lorries, by railway trucks or by ocean going containers, in accordance with the customers requirements.

Special conditions:

All products are packed securely and protected against movement whether in stock or in transit. All products are treated with the utmost care at all times to prevent damage.

