ESEN PLASTİK SANAYİ TİC. VE A.Ş.

PE CORRUGATED PİPE GUIDE

according to

EN 13476-3

PE CORRUGATED PİPE GUIDE
according to EN 13476-3

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1. Products and Specification

1.1. ID 100 SN8 Corrugated Pipe

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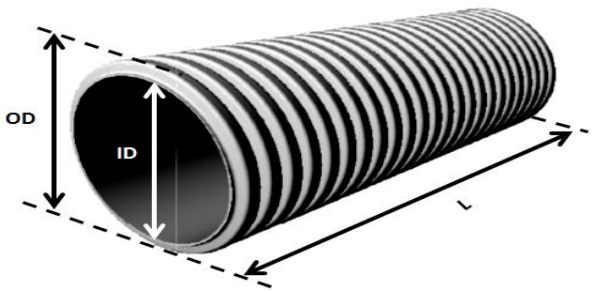
PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 100 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**95 // 100**
Outside Diameter (OD-mm):	**~ 110**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 95 mm and 100 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1 mm // e5: min. 1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

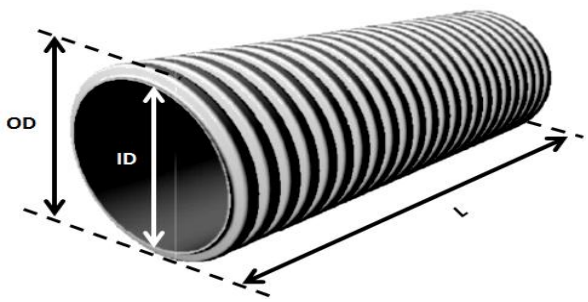
1.2. ID 100 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 100 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**95 // 100**
Outside Diameter (OD-mm):	**~ 110**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 95 mm and 100 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1 mm // e5: min. 1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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1.3. ID 150 SN8 Corrugated Pipe

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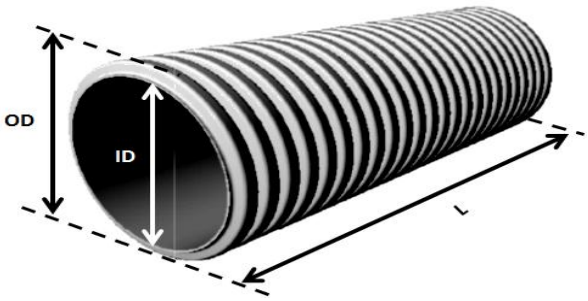
PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 150 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**145 // 150**
Outside Diameter (OD-mm):	**~ 170**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 145 mm and 150 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1,3 mm // e5: min. 1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

1.4. ID 150 SN4 Corrugated Pipe

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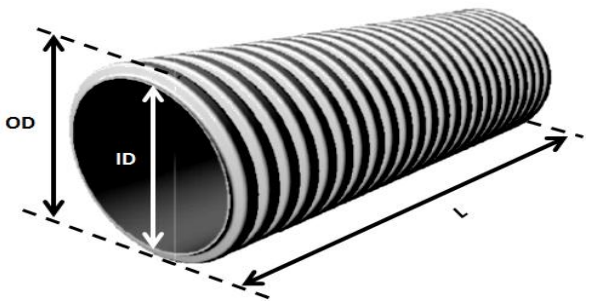
PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 150 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**145 // 150**
Outside Diameter (OD-mm):	**~ 170**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 145 mm and 150 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1,3 mm // e5: min. 1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

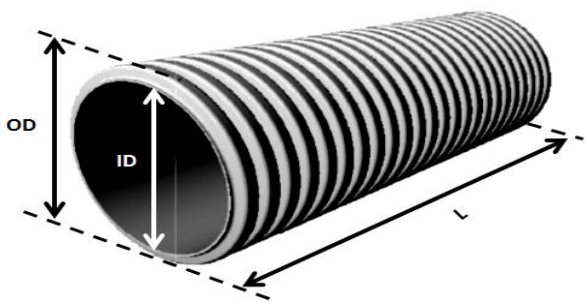
1.5. ID 200 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 200 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**195 // 200**
Outside Diameter (OD-mm):	**~ 230**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 195 mm and 200 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1,5 mm // e5: min. 1,1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

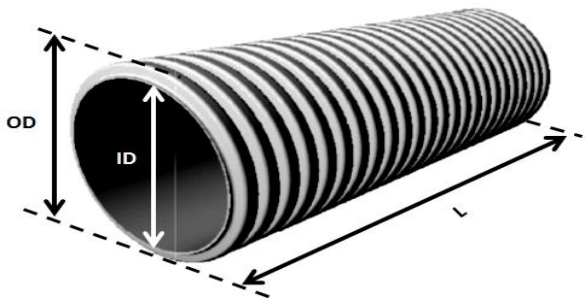
1.6. ID 200 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 200 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**195 // 200**
Outside Diameter (OD-mm):	**~ 230**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: N/A**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 195 mm and 200 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 1,5 mm // e5: min. 1,1 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

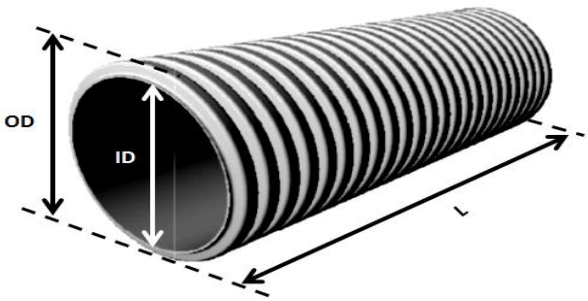
1.7. ID 300 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 300 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**294 // 300**
Outside Diameter (OD-mm):	**~ 340**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 294 mm and 300 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 2 mm // e5: min. 1,7 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

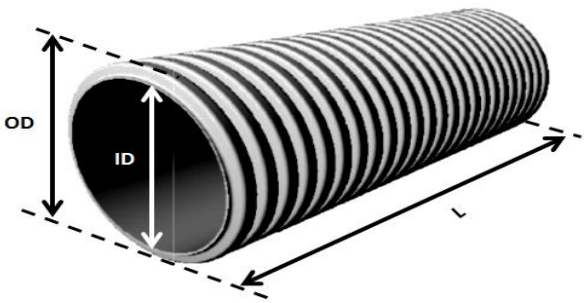
1.8. ID 300 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 300 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**294 // 300**
Outside Diameter (OD-mm):	**~ 340**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 294 mm and 300 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 2 mm // e5: min. 1,7 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 14364	TS EN 12201-2+A1
TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

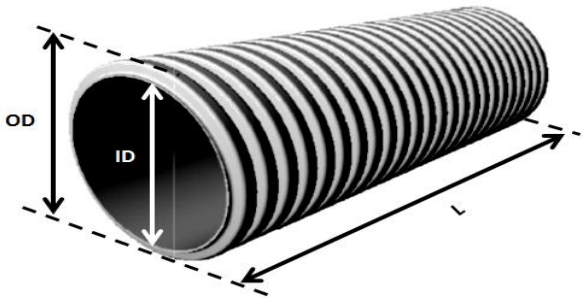
1.9. ID 400 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 400 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**392 // 400**
Outside Diameter (OD-mm):	**~ 450**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 392 mm and 400 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 2,5 mm // e5: min. 2,3 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TSE

TS EN 14364	TS EN 12201-2+A1
TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

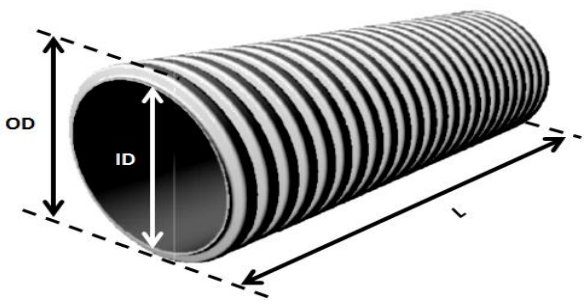
1.10. ID 400 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 400 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**392 // 400**
Outside Diameter (OD-mm):	**~ 450**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 392 mm and 400 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 2,5 mm // e5: min. 2,3 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

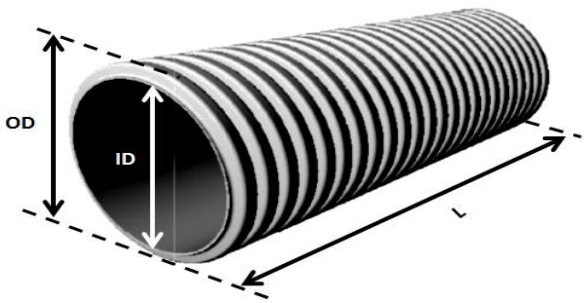
1.11. ID 500 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 500 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**490 // 500**
Outside Diameter (OD-mm):	**~ 560**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 490 mm and 500 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 3 mm // e5: min. 3 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

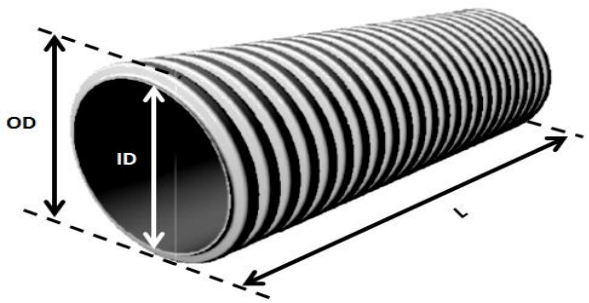
1.12. ID 500 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 500 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**490 // 500**
Outside Diameter (OD-mm):	**~ 560**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 490 mm and 500 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 3 mm // e5: min. 3 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

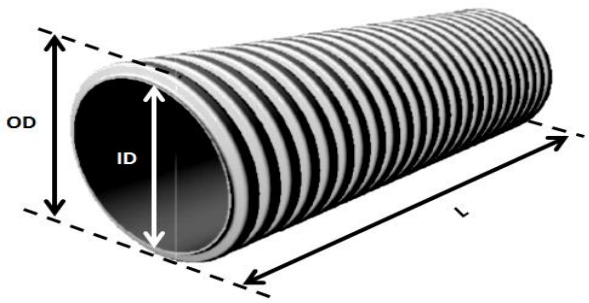
1.13. ID 600 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 600 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**588 // 600**
Outside Diameter (OD-mm):	**~ 680**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 588 mm and 600 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 3,5 mm // e5: min. 3,5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

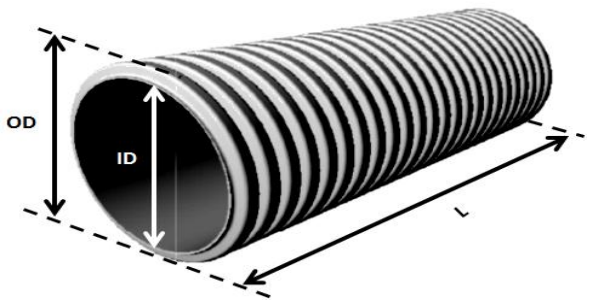
1.14. ID 600 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 600 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**588 // 600**
Outside Diameter (OD-mm):	**~ 680**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 588 mm and 600 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 3,5 mm // e5: min. 3,5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1555-2	TS 9128

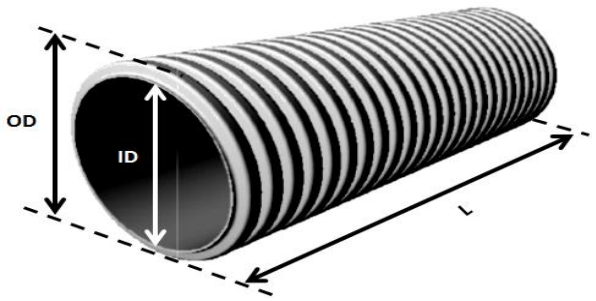
1.15. ID 800 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 800 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**785 // 800**
Outside Diameter (OD-mm):	**~ 900**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 785 mm and 800 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 4,5 mm // e5: min. 4,5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

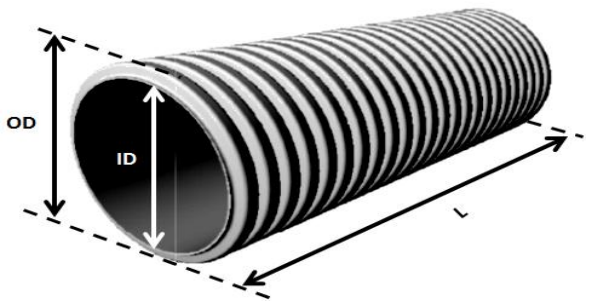
1.16. ID 800 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 800 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**785 // 800**
Outside Diameter (OD-mm):	**~ 900**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 785 mm and 800 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 4,5 mm // e5: min. 4,5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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TÜRKAK
Test
TS EN ISO/IEC 17025
AB-0688-T

SYSTEM CERTIFICATES // *SİSTEM BELGELERİMİZ*

ISO 9001:2015
ISO 14001:2015
TÜV AUSTRIA TURK TS OHSAS 18001:2007
PROKS CERTIFICATION ISO/IEC 27001 — ISO/IEC 27001:2013

CERTIFICATE OF HYGIENE
HİJYEN BELGELERİMİZ

NSF

PRODUCT CERTIFICATES // *ÜRÜN BELGELERİMİZ*

TÜV AUSTRIA TURK ISO 4427-2:2007
TSE

TS EN 14364	TS EN 12201-2+A1
TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

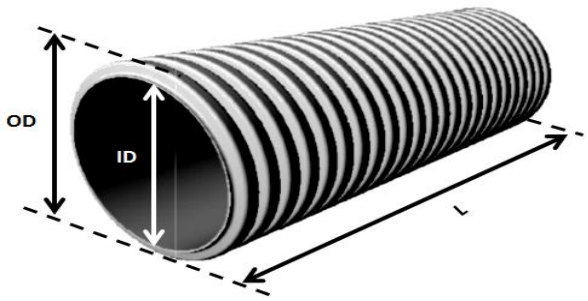
1.17. ID 1000 SN8 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 1000 mm SN 8 Corrugated Pipe
Inside Diameter (ID-mm):	**985 // 1000**
Outside Diameter (OD-mm):	**~ 1160**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 985 mm and 1000 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 5 mm // e5: min. 5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 8
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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OUR CERTIFICATES // *BELGELERİMİZ*

LABORATORY ACCREDITATION
LABORATUVAR AKREDİTASYONUMUZ

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PROKS CERTIFICATION ISO/IEC 27001 ISO/IEC 27001:2013

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TÜV AUSTRIA TURK ISO 4427-2:2007
TSE

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TS EN 1796	TS EN ISO 1452-2
TS EN 1555-2	TS 9128

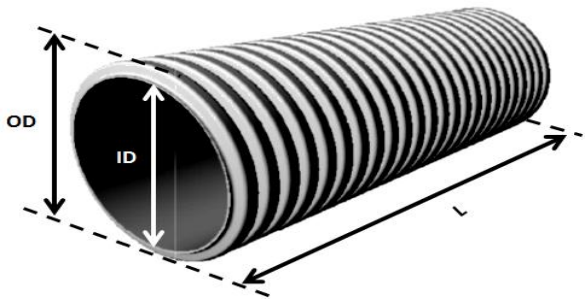
1.18. ID 1000 SN4 Corrugated Pipe

ESENPLASTiK

PRODUCT SPECIFICATION

Date: 15.01.2020

Pipe Definition:	ID 1000 mm SN 4 Corrugated Pipe
Inside Diameter (ID-mm):	**985 // 1000**
Outside Diameter (OD-mm):	**~ 1160**
Max. Length (L-m):	**with Socket: 13,5** **with Muff: 6**
Product Standards:	**EN 13476-3**



Tests	Test Standard	Unit	Applicable Limits
Appearance	EN 13476-1/ 6.1	-	Visible surfaces of pipes and fittings shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this standard.
Colour	EN 13476-1/ 6.2	-	The inner and outer layers of pipes and fittings must be colored. The outer layer of pipes and fittings must be black The inner layer of the pipe should preferably be blue.
Inside Diameter	EN 13476-3/ 7.2.3.1	mm	Between 985 mm and 1000 mm
Min. Wall Thickness	EN 13476-3/ 7.2.3.1	mm	e4: min. 5 mm // e5: min. 5 mm
Melt Mass-Flow Rate (MFR)	EN ISO 1133-1	g/10 min	≤ 1,6
Density	EN ISO 1183-1	g/cm³	≥ 0,930
Ring Stiffness	EN ISO 9969	kN/m^2	≥ 4
Impact Strength	EN ISO 3127	%	TIR ≤ %10
Ring Flexibility	EN ISO 13968	-	There should be no decrease in force at 30% There shall be no cracking in any part of the wall structure.
Resistance to Heating (Oven Test)	ISO 12091	-	The pipe shall show no delaminations, cracks or bubbles
Tightness of Elastomeric Ring Seal Joint	ISO 13259 EN 1277	bar	Should not leak in 0,5 bar

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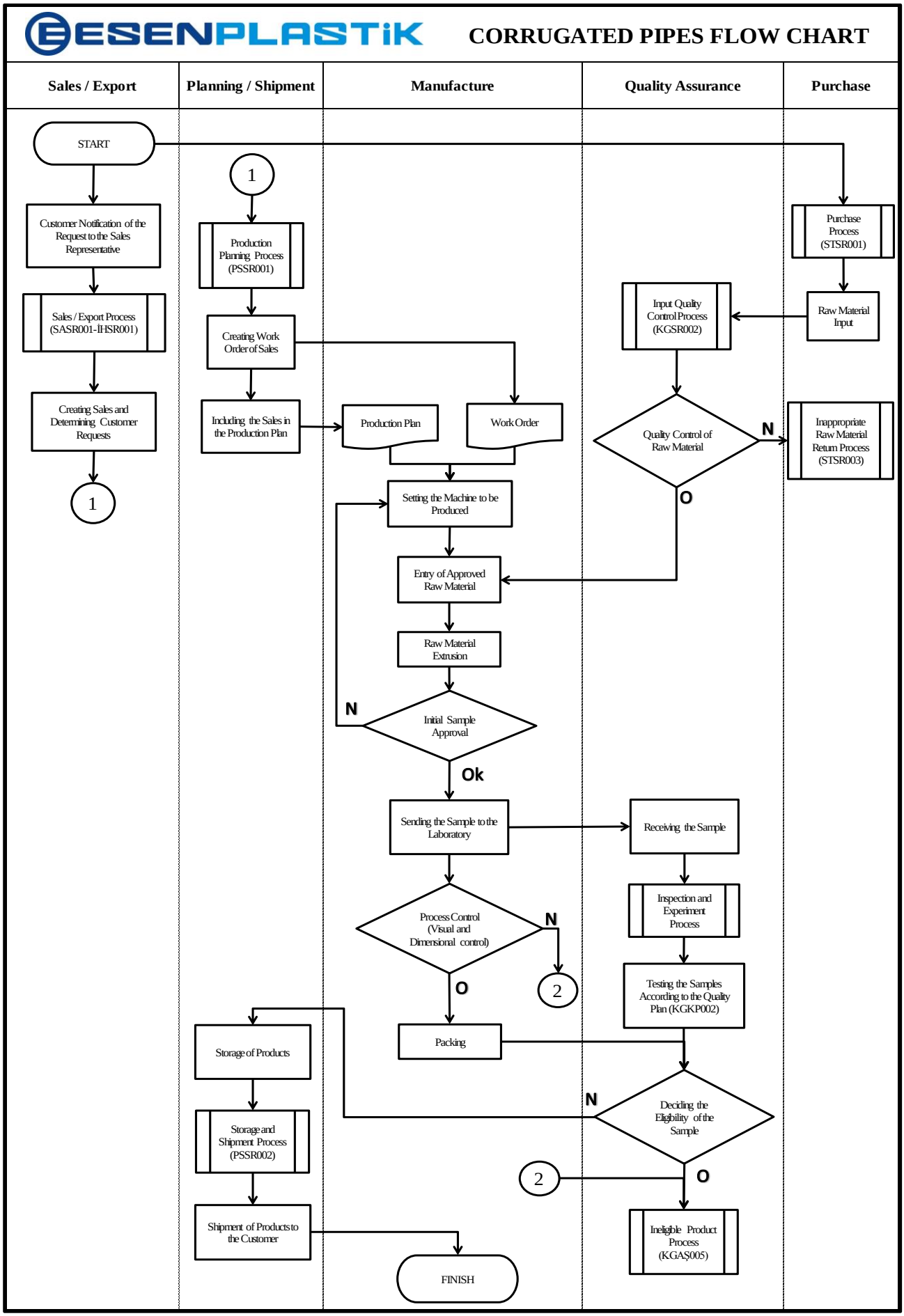
2. Corrugated Pipe Flow Chart



3. Controls and Tests

3.1. Input Quality Control

The tests applied and the standards of the tests applied to the raw materials coming to the factory are as follows;

* Melt Flow Rate acc to EN ISO 1133-1

* Denstiy acc to EN ISO 1183-1

* O.I.T. acc to EN ISO 11357-6

In addition, these values are compared with the certificate of analysis prepared by the supplier. If the values are within the desired range, the raw material is approved.

Annex 1: Sample raw material Input control form

Annex 2: Sample raw material analysis certificate

3.2. Process Control

Pipe samples taken from the first 10 pipes at the beginning of production are delivered to the quality laboratory by the production engineer with the test request form (Annex3). Samples taken for corrugated pipes are subjected to the tests described in "KGKP002 Corrugated Pipes Plan" and their suitability is checked (Annex 4). The test results are evaluated according to the relevant standard and customer specifications and are published to the production and planning supervisor with a summary test form. (Annex 5). If the test results are suitable, "FR-PL-24 Test Report" or "Certificate of Analysis" is prepared and shared with the customer (Annex6).

Annex 3: Sample Test Test Request Form

Annex 4: Corrugated Pipes Plan

Annex 5: Sample summary test form

Annex 6: Sample Test Report

3.3. Final Control

All pipes produced are visually and dimensionally checked before loading.

4. Range / Frequency of Controls, Tests and Calibrations

The frequency and range of tests on the products are as follows;

* Every raw material coming to the factory is subjected to the entrance quality control process. Tests are carried out according to the quality plan separately from each lot.

* Appearance and dimensional measurements are made every 3 hours from the first sample confirmation after production adjustment.

* Mechanical and chemical tests described in the quality plan of the party are carried out as of the start of production. These tests are repeated in case the machine condition changes, the ratios in the formula change or the raw material source changes. In addition, these tests are repeated every 4 days as an intermediate control.

All devices and equipment used in the tests must be calibrated. Calibrations of all devices and equipment are repeated once a year.

5. Raw Materials Used

The raw materials used are obtained from the manufacturers listed in the PE100 + association. Raw materials must meet the following tests and requests. These tests should be explained in the type test report and TDS provided by the raw material producer.

Test	Test Parameters	Requirements	Test Standards
Resistance to Internal Pressure	Test Temperature: 80°C Test Duration: 165hours	No Damage	ISO 1167-1/2
Resistance to Internal Pressure	Test Temperature: 80°C Test Duration: 1000hours	No Damage	ISO 1167-1/2

Annex 7: Sample raw material type tests

6. Marking

Marking on the pipe must meet the following minimum requirements.

Aspect	Marking of Symbols	Legibility [a]
Standard Number	EN 13476-3	A
DN/ID Series	DN/ID 150 - 1200	A
Manufacturer’s Name	ESEN	A
Stiffness Class	SN4 or SN8	A
Material	PE	A
Application Area Code	U or UD	A
Costumer		B
Other Information [b]		B

a: Legibility codes;

A – During the pipe production, it is made permanently on the rib by shaping on the mold.

B – Inject printing is done.

b: Any additional information requested by the customer is written on the pipe with inject printing.