SAPPMA

southern african plastic pipe manufacturers association

Ensuring Quality HDPE Piping Systems

SAVA/SAPPMA Conference

14 August 2025

Quality

Components:

- Client specific based on requirements:
  - Pipe
  - Fittings
  - Welding Machines
  - Welders
  - Welding
  - Weld Qualification
  - On-site Inspection and 3rd Party Testing
  - Pressure Testing

Quality Requirements:

- Pipe
  - ISO 9001 Quality Control Accreditation
  - Material SANS / ISO 4427-1 Certificate
  - Certificate of Analysis (Raw Material)
  - Certificate of Conformance
  - Manufacturers Quality Control Plan
  - Quality Certificate (SABS, SATAS, etc.)
  - SAPPMA Membership
  - On-site inspection
  - 3rd Party Testing

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South African National Accreditation System

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

PRODUCTIVITY ENGINEERING SERVICES AND CONSULTANTS CC

Co. Reg. No.: 1997/013923/23

CENTURION

Facility Accreditation Number: **T0879**

is a South African National Accreditation System accredited facility provided that all conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation, Annexure "A", bearing the above accreditation number for

PHYSICAL TESTING

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant accreditation symbol to issue facility reports and/or certificates

Mr M Phaloane
Acting Chief Executive Officer

Effective Date: 29 July 2024
Certificate Expires: 28 July 2029

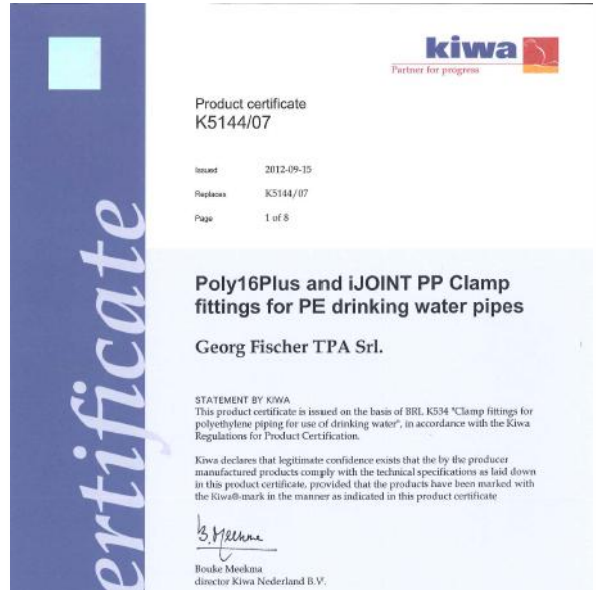
SANS 4427 part 2: Pipe
SANS 4437 part 2: Pipe

Quality Requirements:

- Pipe
  - Gouges
    - 10% Rule
  - Out-of-Roundness (Ovality)
    - Standard (800mm and lower)
  - Toe-In
    - Inherent to HDPE
  - Contaminants
    - Raw material quality
  - Handling and Storage
    - SAPPMA Technical Document

Quality Requirements:

- Injection Moulded Fittings
  - ISO 9001 Quality Control Accreditation
  - Certificate of Analysis (Raw Material)
  - Certificate of Conformance – EN 10204 (3.1)
  - Manufacturers Quality Control Plan
  - Quality Certificate (SABS, SATAS, AENOR, DIN, etc.)
  - Acceptance from various International Authorities
  - Factory Mutual (FM) Approval
  - On-site inspection
  - 3rd Party Testing


kiwa
Partner for progress

Product certificate
K5144/07

Issued 2012-09-15
Replaces K5144/07
Page 1 of 8

Poly16Plus and iJOINT PP Clamp fittings for PE drinking water pipes

Georg Fischer TPA Srl.

STATEMENT BY KIWA
This product certificate is issued on the basis of BRL K534 "Clamp fittings for polyethylene piping for use of drinking water", in accordance with the Kiwa Regulations for Product Certification.

Kiwa declares that legitimate confidence exists that the by the producer manufactured products comply with the technical specifications as laid down in this product certificate, provided that the products have been marked with the Kiwa®-mark in the manner as indicated in this product certificate

Bouke Meekma
director Kiwa Nederland B.V.

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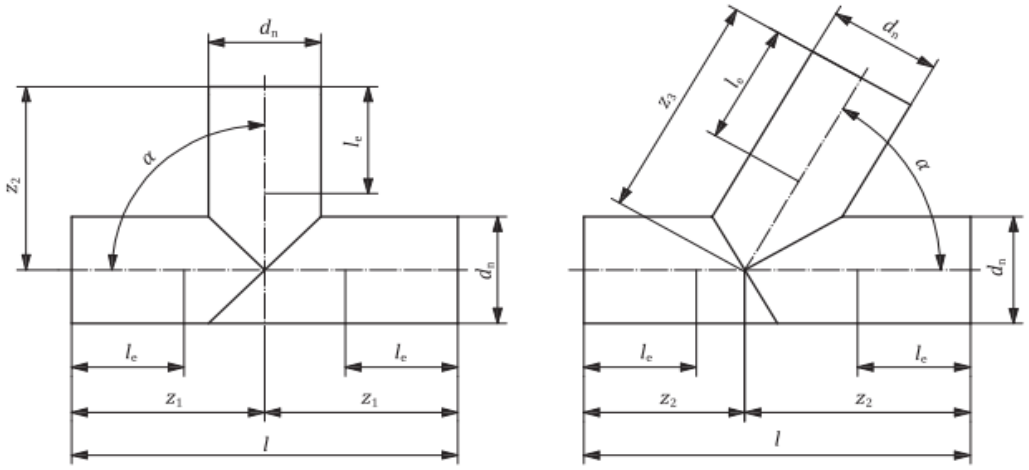
Testing Laboratory

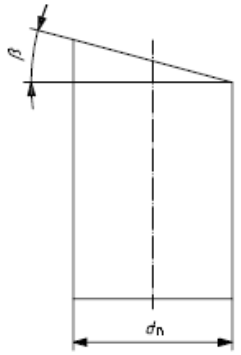
Quality Requirements:

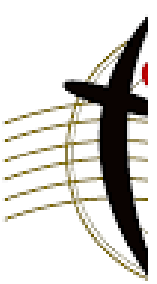
- Fabricated Fittings
  - Derating



a) 90° b) 60°

machin





β shall not be greater than 15°.

Key

d_n nominal outside diameter

β cut angle

Figure B.2 — Segment design

For tees fabricated out of pipe segments, the following derating rules for the calculation of the PN shall apply:

$$PN = f_T \times PN_{pipe}$$

where

f_T is the derating factor for these tees, having a value of 0,5;

PN_{pipe} is the nominal pressure of the pipe.

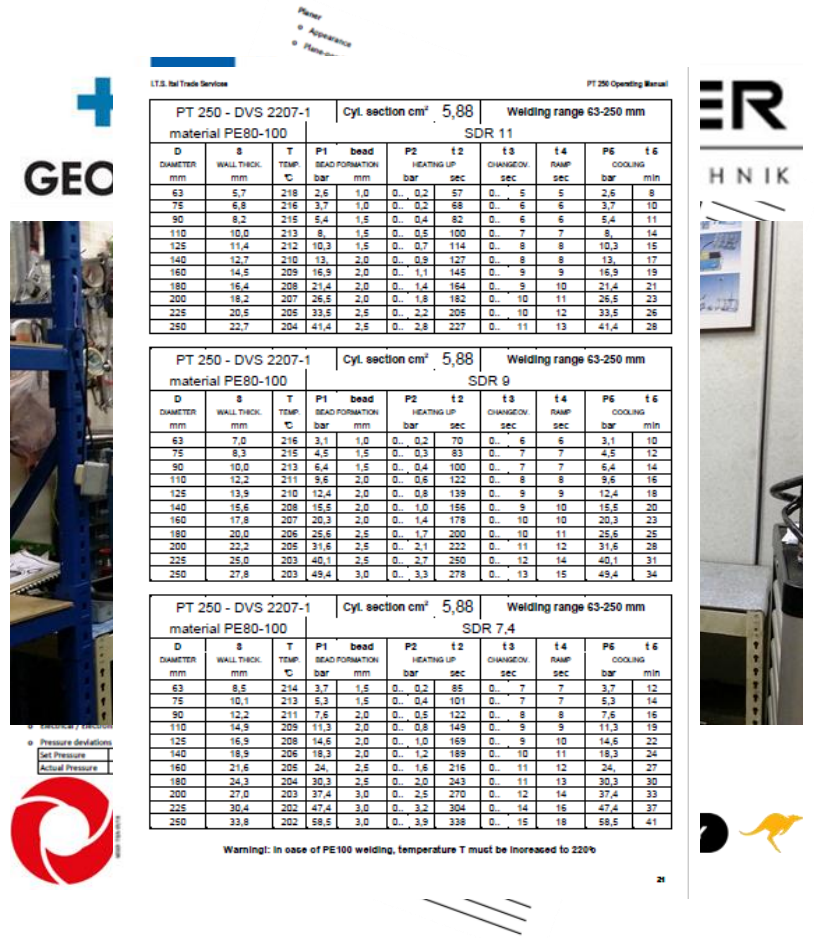
Table B.3 — Derating factors for segmented bends

Cut angle β	Derating factor f_B
$\leqslant 7{,}5°$	1,0
$7{,}5° < \beta \leqslant 15°$	0,8

SANS 4427 part 3: Fittings

Quality Requirements:

- Welding Machines
  - Manufactured by a reputable manufacturer
  - ISO 9001 Quality Control Accreditation
  - Regularly services and maintained
  - Calibration Certificate
  - Regular Inspections
  - Pipe specific welding tables
  - Capable of producing accurate weld reports



PT 250 - DVS 2207-1 | Cyl. section cm² 5,88 | Welding range 63-250 mm
material PE80-100 | SDR 11

D DIAMETER mm	s WALL THICK. mm	T TEMP. °C	P1 bead BEAD FORMATION bar	bead mm	P2 HEATING UP bar	t 2 HEATING UP sec	t 3 CHANGEOV. sec	t 4 RAMP sec	P6 COOLING bar	t 6 COOLING min
63	5,7	218	2,6	1,0	0... 0,2	57	0... 5	5	2,6	8
75	6,8	216	3,7	1,0	0... 0,2	68	0... 6	6	3,7	10
90	8,2	215	5,4	1,5	0... 0,4	82	0... 6	6	5,4	11
110	10,0	213	8,	1,5	0... 0,5	100	0... 7	7	8,	14
125	11,4	212	10,3	1,5	0... 0,7	114	0... 8	8	10,3	15
140	12,7	210	13,	2,0	0... 0,9	127	0... 8	8	13,	17
160	14,5	209	16,9	2,0	0... 1,1	145	0... 9	9	16,9	19
180	16,4	208	21,4	2,0	0... 1,4	164	0... 9	10	21,4	21
200	18,2	207	26,5	2,0	0... 1,8	182	0... 10	11	26,5	23
225	20,5	205	33,5	2,5	0... 2,2	205	0... 10	12	33,5	26
250	22,7	204	41,4	2,5	0... 2,8	227	0... 11	13	41,4	28

PT 250 - DVS 2207-1 | Cyl. section cm² 5,88 | Welding range 63-250 mm
material PE80-100 | SDR 9

D DIAMETER mm	s WALL THICK. mm	T TEMP. °C	P1 bead BEAD FORMATION bar	bead mm	P2 HEATING UP bar	t 2 HEATING UP sec	t 3 CHANGEOV. sec	t 4 RAMP sec	P6 COOLING bar	t 6 COOLING min
63	7,0	216	3,1	1,0	0... 0,2	70	0... 6	6	3,1	10
75	8,3	215	4,5	1,5	0... 0,3	83	0... 7	7	4,5	12
90	10,0	213	6,4	1,5	0... 0,4	100	0... 7	7	6,4	14
110	12,2	211	9,6	2,0	0... 0,6	122	0... 8	8	9,6	16
125	13,9	210	12,4	2,0	0... 0,8	139	0... 9	9	12,4	18
140	15,6	208	15,5	2,0	0... 1,0	156	0... 9	10	15,5	20
160	17,8	207	20,3	2,0	0... 1,4	178	0... 10	10	20,3	23
180	20,0	206	25,6	2,5	0... 1,7	200	0... 10	11	25,6	25
200	22,2	205	31,6	2,5	0... 2,1	222	0... 11	12	31,6	28
225	25,0	203	40,1	2,5	0... 2,7	250	0... 12	14	40,1	31
250	27,8	203	49,4	3,0	0... 3,3	278	0... 13	15	49,4	34

PT 250 - DVS 2207-1 | Cyl. section cm² 5,88 | Welding range 63-250 mm
material PE80-100 | SDR 7,4

D DIAMETER mm	s WALL THICK. mm	T TEMP. °C	P1 bead BEAD FORMATION bar	bead mm	P2 HEATING UP bar	t 2 HEATING UP sec	t 3 CHANGEOV. sec	t 4 RAMP sec	P6 COOLING bar	t 6 COOLING min
63	8,5	214	3,7	1,5	0... 0,2	85	0... 7	7	3,7	12
75	10,1	213	5,3	1,5	0... 0,4	101	0... 7	7	5,3	14
90	12,2	211	7,6	2,0	0... 0,5	122	0... 8	8	7,6	16
110	14,9	209	11,3	2,0	0... 0,8	149	0... 9	9	11,3	19
125	16,9	208	14,6	2,0	0... 1,0	169	0... 9	10	14,6	22
140	18,9	206	18,3	2,0	0... 1,2	189	0... 10	11	18,3	24
160	21,6	205	24,	2,5	0... 1,6	216	0... 11	12	24,	27
180	24,3	204	30,3	2,5	0... 2,0	243	0... 11	13	30,3	30
200	27,0	203	37,4	3,0	0... 2,5	270	0... 12	14	37,4	33
225	30,4	202	47,4	3,0	0... 3,2	304	0... 14	16	47,4	37
250	33,8	202	58,5	3,0	0... 3,9	338	0... 15	18	58,5	41

Warning!: In case of PE100 welding, temperature T must be increased to 220°c

SANS 1671 part 1 to 9 (Machines)

Quality Requirements:

- Welding
  - In accordance with relevant standard
  - Following international best practice
  - Protected against the elements
  - Weld protocols recorded:
    - Manual
    - PEWeldBank
  - Inspection / Witness
  - Third party testing

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Mr M Phaloane
Acting Chief Executive Officer

Effective Date: 29 July 2024
Certificate Expires: 28 July 2029

SANS 10268 part 1 to 10 (Processes) / DVS 2207
SANS 6269

Quality Requirements:

- Welder
  - Company to be a member of IFPA
  - Certificate of Competence from Plastics SA
  - Familiar with machine
  - Qualified to dimension and SDR

Plastics | SA

Certificate

Accreditation Number 17-QA/ACC/0109/07
In compliance with the MERSETA Education and Training Quality Assurance

Sandile Wonder Matunda

ID Number 881219 6022 081

was found competent in the following programme

Thermoplastic Welding

Butt Welding (HS)

Valid Until: 11 May 2025

which is aligned to specific unit standards of the
National Certificate Thermoplastic Fabrication NQF Level 2 (24215)
with a total of 13 credits

Training Executive - Kirtida Bhana

Learner No: PFSA 104308

Regional Training Manager - Isaya Ntuli

May 2022

SANS 10269 - Testing and Approval of Welders

Quality Requirements:

- Weld Qualification
  - Preliminary Welding Procedure Specification (P-WPS)
  - Qualification welds and 3rd party testing.
  - Welding Procedure Specification Qualification Report
  - Final Welding Procedure Specification
  - Compile Welding Quality pack with inspection reports, COC's, COA's, Certificates, etc.
  - On-site inspection of Thermoplastic Welding

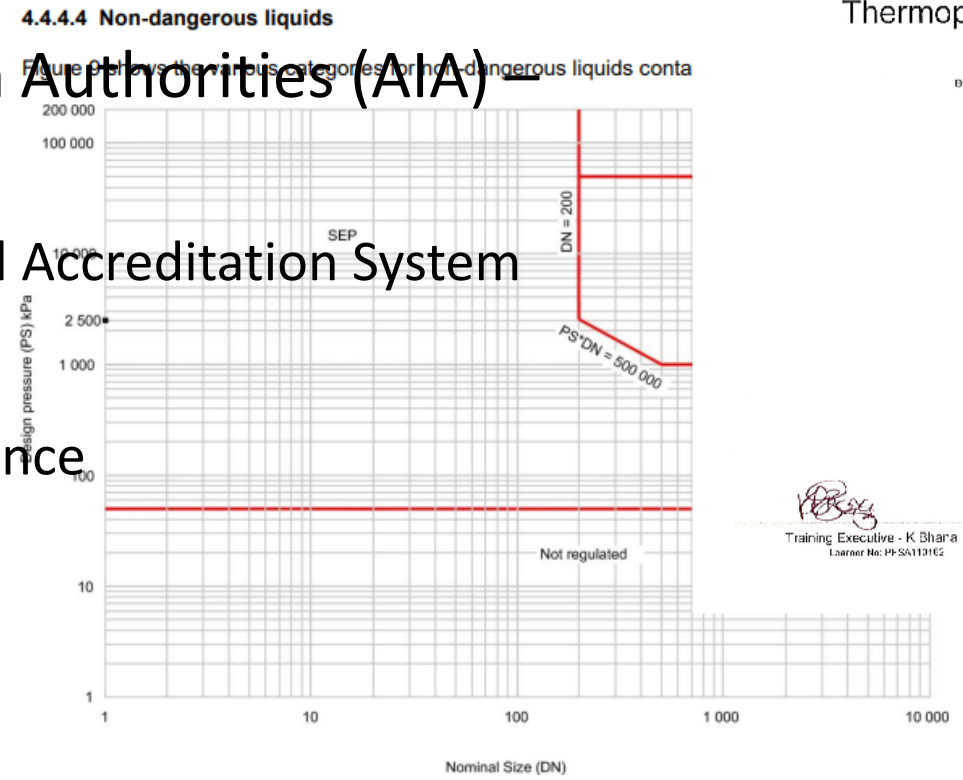
SANS 10268 part 1 to 10 (Processes)
SANS 10270 - Approval of Welding Procedures

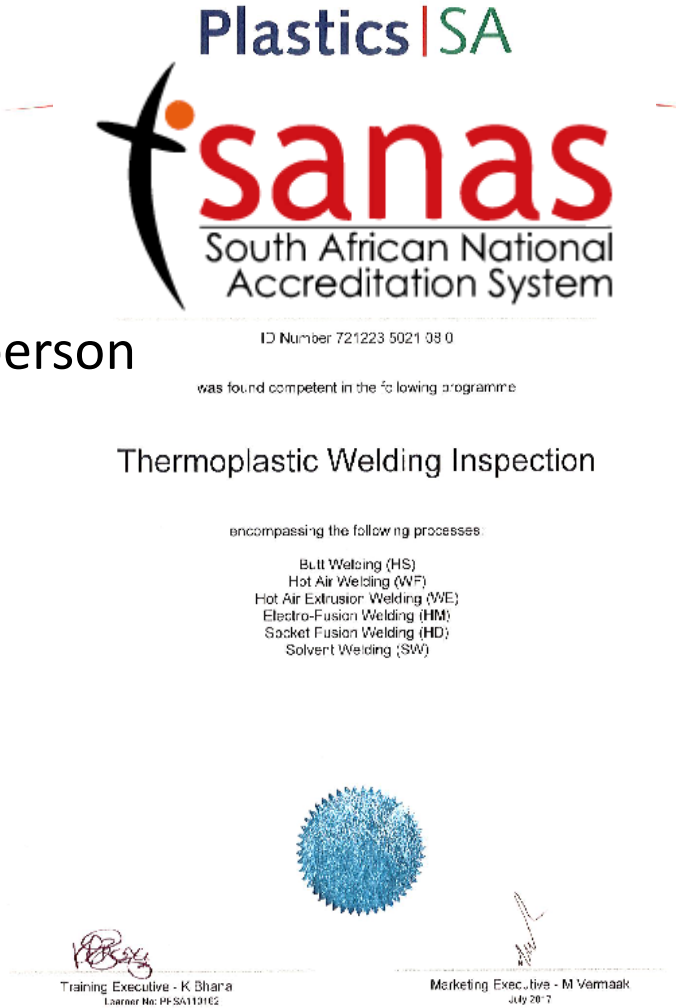
Thermoplastic Welding Inspection

- Butt Welding
- Hot Air Welding
- Hot Air Extrusion Welding
- Electro Fusion Welding
- Socket Fusion Welding
- Solvent Welding

Thermoplastic Inspection

- SANS 347:2024
  - Sound engineering practice (SEP)
  - Category 1 - Applicable health and safety standard(s)
  - Category 2+ - Appropriately registered professional person (for example, registered Pr. Eng. Pr. Technologist or Pr. Cert. Eng.)
- Approved Inspection Authorities (AIA) – Risk dependant
  - South African National Accreditation System (SANAS) Accreditation
  - Thermoplastic Experience





Pressure Testing

- Preparation:
  - Filling
  - Air
  - Exposed Joints
- SANS 2001 Series (SANS 1200 Series)
- Temperature Deration
- Miner's Rule for Cumulative Damage
  - SANS 13760
  - Pressure, Time and Temperature

SANS Specifications:

SANS Specification Number:	Title:
SANS 4427 part 1	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) Part 1: General
SANS 4427 part 2	Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) Part 2: Pipes
SANS 4427 part 3	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) Part 3: Fittings
SANS 4427 part 5	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) Part 5: Fitness for purpose of the system.
SANS 4437 part 1	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) Part 1: General
SANS 4437 part 2	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) Part 2: Pipes
SANS 4437 part 3	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) Part 3: Fittings
SANS 4437 part 5	Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) Part 5: Fitness for purpose of the system
SANS 21138	Plastics piping systems for non-pressure underground drainage and sewerage - Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE)

SANS Specifications:

SANS Specification Number:	Title:
10268-1	Welding of thermoplastics – Processes - Part 1: Heated Tool Welding
10268-2	Welding of thermoplastics – Processes - Part 2: Electrofusion Welding
10268-3	Welding of thermoplastics – Processes - Part 3: Hot-gas Welding
10268-4	Welding of thermoplastics – Processes - Part 4: Hot-gas Extrusion Welding
10268-5	Welding of thermoplastics – Processes - Part 5: Solvent Welding
10268-6	Welding of thermoplastics – Processes - Part 6: Ultrasonic Welding
10268-7	Welding of thermoplastics – Processes - Part 7: Infra-red Welding
10268-8	Welding of thermoplastics – Processes - Part 8: Bead & Crevice Free Welding
10268-9	Welding of thermoplastics – Processes - Part 9: Spin & Friction Welding
10268-10	Welding of thermoplastics – Processes - Part 10: Weld defects
1671-1	Welding of thermoplastics – Machines - Part 1: Heated Tool Welding
1671-2	Welding of thermoplastics – Machines - Part 2: Electrofusion Welding
1671-3	Welding of thermoplastics – Machines - Part 3: Hot-gas Welding
1671-4	Welding of thermoplastics – Machines - Part 4: Hot-gas Extrusion Welding
1671-5	Welding of thermoplastics – Machines - Part 5: Solvent Welding
1671-6	Welding of thermoplastics – Machines - Part 6: Ultrasonic Welding
1671-7	Welding of thermoplastics – Machines - Part 7: Infra-red Welding
1671-8	Welding of thermoplastics – Machines - Part 8: Bead & Crevice Free Welding
1671-9	Welding of thermoplastics – Machines - Part 9: Spin or Friction Welding
6269 (Was SABS SM1269)	Welding of thermoplastics – Test methods for Welded Joints
1655	Welding of thermoplastics – Welding Rods, Fillers and Solvents
10269	Welding of thermoplastics – Testing and Approval of Welders
10270	Welding of thermoplastics – Approval of Welding Procedures and Welds

Questions?

Thank You

SAPPMA

southern african plastic pipe manufacturers association

More information

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admin@sappma.co.za