

Technical Installation & Operation Manual

KWT inline Penstock

Type KLSA



2008 KWT® Waterbeheersing BV

Supplied by:



AQUATIC
CONTROL
ENGINEERING LTD

Phone 01777 249080 info@aquaticcontrol.co.uk

Foreword:

All products are designed and constructed according to the specifications as written in the order confirmation. Never use the product for any other means or applications than stated. This could result in premature failure of the product or risk the safety of personnel. Without any exception, the products are not designed to bear or carry any loads of the civil construction

KWT products will be virtually drop-tight at their working pressure if installation has been carried out correctly. A better seal can be expected at applications with on seated pressure. The responsibility of drop-tight installation lies primarily with the installing contractor.

Phrases in this manual which need special attention are marked as follow:



- Give's the user suggestions and tips to carry out instructions more easily.
- Remarks, with additional information.
- Inform's user of possible problems.



- The user can cause serious injury to himself or others or can damage the product.

CE When the KKS is supplied with, or retrofitted with an actuator, the complete system should meet the machinery guidelines.

Contents

- Foreword
- 1. Introduction
 - 1.1 Product
 - General
 - Purpose of usage
 - Installation & Operation stipulations
 - 1.2 Technical Specifications
- 2. Safety
 - 2.1 General
 - 2.2 Safety, Health and Environmental Risks
 - 2.3 Safety Precautions
- 3. Transport & Storage
 - 3.1 Transport
 - 3.2 Storage
- 4. Installation & Erection
 - 4.1 General
 - Warranty
 - Safety Aspects
 - 4.2 Preparation prior to mounting
 - Check the concrete wall
 - 4.3 KKS Installation
 - 4.4 Actuator Installation
 - 4.5 Inspection prior to operation
- 5. Operation
 - 5.1 General
 - Safety Aspects
 - 5.2 Opening and Closing
- 6. Cleaning & Maintenance
 - 6.1 General
 - 6.2 Maintenance & Inspection

I. Introduction

I.1 Product

General

The inline penstock is designed as a standard to withstand on/off pressure and has been produced to be used in a pipeline system. The operating pressure of a maximum of 10 MWC is guaranteed as the penstock is tested to 20 MWC. This penstock can be operated manually or with an actuator. The penstock is available as a P-model, suitable for PVC (polyvinyl chloride) and HDPE (high-density polyethylene) connection and as an F-model with a PN10/PN 16 flange connection as standard.

Purpose of usage & Principle of functioning

The KLSA is suitable for installation in aggressive media due to the material used. The HDPE and SS316L materials have a very high chemical resistance. The HDPE housing has been strengthened with SS316L and is suitable to be used both above the surface and underground. The moving plate is made of SS316L.

Installation & operation stipulations

All installation / operation personnel must read this instruction guideline carefully before installing/operating the KLSA.

Make sure you have taken all the correct safety precautions into account before starting. All legal and local regulations have to be followed precisely.

Installation of the KLSA should only be carried out by fully competent personnel. In case of any doubt, please contact the supplier immediately

I.2 Technical specifications

Materials of Construction	
Moving plate	SS 316 L
Spindle	SS 316 L
Wire Block	POM
Bearing ring	OLG
House	HDPE
Seals	EPDM

Table I: Technical specifications

2. Safety

2.1 General

In this chapter all safety precautions of the KLSA are discussed. It is most important that everybody who operates the KLSA is familiar with the contents of this chapter.

2.2. Safety, Health and environmental Risks

The following risks should be regarded:

- Danger of trapping of fingers and hands when mounting or operating.
- Electrical dangers during mounting or maintenance.
- Falling during hoisting.

2.3 Safety precautions if applicable.

- Unsafe situations or defects should reported to the responsible person.
- Make sure that the power supply to the actuator has been isolated during installation or maintenance.
- Qualified personnel should only carry out Electrical and mechanical work
- Wear all necessary P.P.E.

3. Transport and storage

3.1 Transport:

The KLSA must be transported in such a way that it is fully secured, so that it cannot overturn or move. This must also be considered during loading and lifting of the KLSA.

The KLSA can be lifted with 'soft' suitable slings, or with suitable shackles and chains. The slings should only be placed on the lifting points provided to prevent damage to the KLSA

-  All necessary lifting should be carried out by fully trained personnel
-  Only lift the KLSA by means of lifting slings and a lifting bar.

3.2 Storage

It is recommended to store the KLSA upright, free of dust, dirt and moisture.

4. Installation & Erection

4.1 General

In this chapter it is discussed how the KLSA should be taken into operation. In the paragraph 4.3 the installation is explained step by step. In paragraph 4.5 the required actions prior to operation are described.

Warranty

It is the responsibility of the purchaser to inspect the supplied KWT products for possible defects and that all ordered items are present at arrival. Missing parts or defects should be reported to KWT immediately, and the product can not be installed until these are rectified. The warranty will be deemed void if:

- The items supplied are not installed in the manner set out in this manual
- The products are modified in any way without the prior approval of the supplier/manufacturer
- The items are damaged due to mis-use, vandalism or overload.

All claims for warranty are subject to a full inspection by the supplier/manufacturer. KWT/ACE maintain the right to refuse claims for warranty where the inspection proves the damage to be the fault of another party.

Safety Aspects:

The installing contractor is considered to be acquainted with the safety procedures as mentioned in chapter 2.

4.2 Preparation prior to mounting

1. Excavate and prepare the ground to fit the KLSA.
2. Check the internal dimensions of the pipes the KLSA is to be fitted to, to check they correspond with the external diameter of the KLSA spigots.
3. Prepare a firm, stable base, using a suitable material for the ground conditions to prevent movement.

NOTE: When the penstock is not installed on a suitably stable base, and ground movement occurs, the penstock may be subject to damage.

4.3 KLSA Installation

When all points in 4.2 are addressed then continue with following installation procedure:

- 1) With suitable lifting slings, using only the lifting points provided, lift the KLSA up and adjust to ensure that the KLSA is vertical and at the right level.
- 2) Lower the KLSA to the required position
- 3) Connect the KLSA with the pipes using double couplers or thermally welded connections/joints.
- 4) Check connections for water tightness, and apply waterproof sealant if necessary.

4.4 KLSA Spindle extension.

1. Place the protection tube with the spindle extension on top of the KLSA.
2. Be sure that the spindle extension is fully engaged to the operation point of the KLSA.
3. Place bolts and tighten to secure the protection tube and spindle extension.
4. Place the Handwheel on the spindle extension, and secure with locking bolt.

NOTE: The spindle extension has been pre-set to the correct length for the protection tube, with the securing ring already positioned. No further action is necessary.

IMPORTANT- Do not lubricate any part of the KLSA with grease or oil, unless otherwise instructed.

4.5 Inspection prior to operation

- 1) Clean the KLSA thoroughly after installation.
- 2) Check the proper functioning of the KLSA by closing and opening the penstock and check the assembly for leaks and for correct operation.

Back-filling:

Once the penstock operation has been checked and is correct, the area can be back-filled. This needs to be done using a suitable material for the ground conditions, and in such a way that the penstock is supported to prevent movement.

If the KLSA is to be used under a road it is preferable to cover the backfilled area with a 2x2 m concrete slab to prevent damage.



If in any doubt always contact the supplier.

5. Operation

5.1 General

The operation of the KLSA is discussed in paragraph 5.2.

Safety issues

The installing contractor is considered to be acquainted with the safety procedures as mentioned in chapter 2.

5.2 Opening and closing:

Using a Handwheel

- 1) Turn the Handwheel counter clockwise to open, clockwise to close.
- 2) If a high operation torque is noticed, the KLSA must not be operated until a cause has been found and rectified.

For the number of cycles to operate the penstock please consult the order acknowledgement. The operation torque should be less or equal to the value stated in the acknowledgement.



Never increase the operating torque by using transmission, spindle driver, enlarged lever i.e. whilst the maximum allowable torque will be exceeded and may lead to damage of the components.



Great care must be taken to ensure that the weir is not operated past it's limits, or operated when obstructed by debris etc.

6. Cleaning & maintenance:

6.1 General

The KLSA is constructed in a way that a minimum of maintenance is required. Paragraph 6.2 describes the regulations involving regular maintenance.

6.2 Maintenance & Inspection

Minimum Requirements

For correct functioning of the KLSA, it is recommended to operate the KLSA fully through it's cycle annually, and inspected for damage or obstruction monthly.

Warning

Before working on any part of the gate ensure that all power sources are locked off and safety precautions have been implemented. Report immediately any loose or damaged parts that may cause injury to personnel, damage the gate or affect the efficiency of its operation.

KWT WATERBEHEERSING
WENTELPLOEG 42
8256 SN BIDDINGHUIZEN
NEDERLAND
Tel: 0031-321-335566

C/O Aquatic Control Engineering Ltd (UK)
Phone 01777 249080
Email info@aquaticcontrol.co.uk

Material Safety Data Sheet

In accordance with European Commission Directive 93/112/EEC "Safety data sheets" with reference to:

- Directive 67/548/EEC "Dangerous substances"
- Directive 99/45/EC "Dangerous Preparations"
- Directive 89/109/EEC "Food contact materials"
- Directive 94/27/EC "Nickel jewellery" and national regulations in Finland, Sweden and UK.

Date of issue: August 2002. Issue: 3. Rev: 2. Revised due to new risk phrases.

1. IDENTIFICATION OF PREPARATION AND COMPANY

Stainless steel

Corrosion, heat and creep resisting grades with ferritic, martensitic, duplex or austenitic microstructure in massive product forms: semi-finished products, plate, sheet, strip, bar, rod, tube, fittings. The products are mainly used for manufacturing of consumer products or applications in process industry, transport, building and construction, power and energy, and food and beverage industry. They are marked with designations according to European standards (e.g. EN 10088).

Manufacturer, importer, supplier

AvestaPolarit Oy

P.O. Box 270, FIN-02601 Espoo, Finland

Tel: +358 (0)9 421 2112, Fax: + 358 (0)9 421 3893

AvestaPolarit AB

SE-774 80 AVESTA, Sweden

Tel: +46 (0)226 810 00, Fax: +46 (0)226 811 86

AvestaPolarit Ltd

P.O. Box 161, Shepcote Lane, Sheffield S9 1TR

Tel: +44 (0)114 244 3311, Fax: +44 (0)114 244 8280

Departments supplying information

Avesta Research Centre

AvestaPolarit AB

SE-774 80 AVESTA, Sweden Tel: +46 (0)226 810 00

Email: research@avestapolarit.com

Group Quality Systems

AvestaPolarit Ltd

SHEFFIELD S9 1TR, UK Tel: +44 (0)114 244 3311

Email: tony.newson@avestapolarit.com

Technical Customer Service

AvestaPolarit Stainless Oy

FIN-95400 TORNIO, Finland Tel: +358 (0)16 4521

Email: technical.tornio@avestapolarit.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Iron alloy with 10,5 – 30% Cr

max. 38% Ni

max. 11% Mn

max. 8% Mo

Other elements may be present, such as Si, Cu, Ti. These are not classified as hazardous, or are below the concentration levels for classification of these alloys as hazardous.

3. HAZARD CLASSIFICATION OF PRODUCT

Many stainless steels contain nickel as an essential alloying element. Nickel is classified in EC Directive 67/548/EEC as a suspect carcinogen (category 3 – R40) and as a skin sensitiser (R43). The classification rules of EC Directive 99/45/EC dictate that any preparations with equal to or more than 1% content of nickel must automatically be classified as suspect carcinogens (R40). Stainless steels do not cause nickel sensitisation by prolonged skin contact in humans. Nevertheless, all stainless steels with 1% or more nickel are classified as skin sensitisers.

Description of hazards

There are no hazards of concern for man or the environment from stainless steels in the forms supplied. However, if an individual is already sensitised to nickel, prolonged skin contact with a few types of stainless steel may result in an allergic dermatological reaction. If prolonged skin contact is involved in the processing of this product, please contact the supplier for advice. No carcinogenic effects resulting from exposure to stainless steels have been reported, either in epidemiological studies or in tests with animals.

Dust and fume may be generated during processing e.g. in welding, cutting and grinding. If airborne concentrations of dust and fume are excessive, inhalation over long periods may affect workers' health, primarily of the lungs.

4. FIRST AID MEASURES

Inhalation

Not applicable to stainless steels in the massive form. Inhalation of dust and/or fume from grinding, cutting and welding operations is unlikely to generate the need for specific first aid.

Skin and eye contact

There are no special symptoms or effects associated with stainless steel. In the event of physical injury to the skin seek appropriate medical attention. In the event of physical injury to the eyes, seek immediate medical attention. Austenitic stainless steel particles are non-magnetic or only slightly magnetic and may not respond to a magnet placed over the eye. In such cases seek hospital treatment.

Ingestion

Does not apply to stainless steel in the massive form.

5. FIRE FIGHTING MEASURES

Stainless steels are not combustible. There are no special hazards or precautions associated with stainless steels if in the vicinity of a fire.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

There are no special technical measures involved for handling stainless steels. Normal precautions should be taken to avoid physical injury from coiled or bundled products, possibly with sharp edges:

- Straps or bands, used to secure some products, should not be used for lifting. Coils and bundled products (e.g. sections, rods, bars etc.) may spring apart when the banding is removed and the banding itself could cause eye or other injury when tension is released.
- Certain products may, as a result of processing, be brittle or have residual stress that might cause fracture or significant deformation.
- All products are likely to have sharp edges that could cause lacerations and flying particles may be produced when shearing.
- Suitable protective clothing and equipment, such as hand and eye protection, should be worn and systems of work adopted to take account of any hazards arising from the risk of fracturing or the release of tension when breaking open banding.
- Suitable racks should be used to ensure stability when stacking narrow coils.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

There are no occupational exposure limits for stainless steels. Occupational exposure limits apply to some constituent elements

(Ni, Cr, Mn, Mo) and certain of their compounds. Table 1 shows limits according to current legislation in Finland, Sweden and UK. Note that the OEL for welding fume is without prejudice to any occupational exposure limits for individual components in the fume.

Exposure controls

In the processing of all metallic materials, exposure to fume and dust must be kept below any legally imposed limits. Dust and fume may be generated in use, e.g. by cutting, grinding and welding processes, which may contain materials subject to exposure limits. To ensure these limits are not exceeded, adequate general or local ventilation or fume extraction should be provided.

Personal protection

In accordance with European and national health and safety regulations, it is necessary to assess the need for personal protection equipment and appropriate approved respiratory protection should be provided for those workers at risk of inhalation. Suitable hand and eye protection should be worn where there is a risk of laceration, flying particles, burning or welding radiation or contact with oils during processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid; metallic grey, ranging from dull to bright polished. Occasionally supplied with oxidised, blue/black surfaces.

Odour: Odourless

Water solubility: Insoluble

Table 1. Occupational exposure limits (mg/m³) in Finland, Sweden and UK

Substance	Finland		Sweden, NGV		UK		
	8h TWA	15 min TWA	TD	RD	Limit	8h TWA	15 min TWA
Chromium, & its Cr(II), Cr(III) compounds	as Cr	0.5	0.5		OES	0.5	
Chromium (VI) compounds	as CrO ₄	0.05					
Chromium (VI) compounds	as Cr		0.02		MEL	0.05	
Copper & its compounds	as Cu	1	1	0.2			
Copper, fume	as Cu	0.1			OES	0.2	
Iron oxide, fume	as Fe	5		3.5	OES	5	10
Manganese and its inorganic compounds	as Mn	0.5	0.4	0.2	*		
Manganese fume					OES	1	3
Molybdenum & its soluble compounds	as Mo	5			OES	5	10
Molybdenum & its insoluble compounds	as Mo		10	5	OES	10	20
Nickel, metal	as Ni	1	0.5				
Nickel, compounds	as Ni	0.1					
Nickel, soluble compounds	as Ni		0.1		MEL	0.1	
Nickel, insoluble compounds	as Ni				MEL	0.5	
Nickel, carbonyl	as Ni	0.0071	0.021	0.007			
Nickel, subsulfide	as Ni			0.01			
Nickel, organic compounds	as Ni				OES	1	3
Welding fume, total					OES	5	

NGV= Nivågränsvärde; TWA= Time Weighted Average; RD= Respirable dust; TD= Total Dust; OES= Occupational Exp. Standard; MEL= Maximum Exp. Limit

* OES for Mn in UK not applicable after May 2001 – exposure limits for Mn awaiting development of MEL.

Melting: 1370°C – 1520°C

Density: 7,7 – 8,1 kg/dm³

Thermal expansion (RT to 100 °C): 10 – 16 x 10⁻⁶ m/m°C

Thermal conductivity (RT): 12 – 30 W/m°C

Magnetic: Austenitic stainless steels are non-magnetic in most supply conditions, but may be para-magnetic in some supply conditions (Permeability 1,005 – 1,1). Duplex, ferritic and martensitic stainless steels are ferro-magnetic.

10. STABILITY AND REACTIVITY

Stainless steels are stable and non-reactive under normal ambient atmospheric conditions. May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. When heated to very high temperatures fumes may be produced (e.g. by cutting, welding or melting operations).

11. TOXICOLOGICAL DATA

Chronic toxicity, oral or inhalation

Stainless steels may contain nickel, which has been classified in EC Directive 67/548/EEC as a suspect carcinogenic substance, Category 3 (i.e. "causing concern for man... but available information is not adequate for making a satisfactory assessment"). The exposure route of concern is inhalation. These stainless steel products are in massive form, not capable of being inhaled.

The requirements of EC Directive 99/45/EC are such that all mixtures, solutions and alloys with more than 1% nickel must be classified in the same way as nickel itself, by default. There is no direct evidence of carcinogenic effects of stainless steels in man, nor indirect evidence from animals tested by relevant routes, i.e. inhalation or ingestion. In other studies, using non-relevant routes in animals, alloys with up to 40% nickel caused no significant increase in cancer.

During mechanical working, flame cutting or welding, stainless steel dust, or fumes containing complex or mixed oxides (spinels) of its constituents, may be formed. Over long periods, inhalation of excessive airborne levels may have long term health effects, primarily affecting the lungs. However, studies of workers exposed to nickel powder and dust and fumes generated in the production of nickel alloys and stainless steels have not indicated a respiratory cancer hazard.

Welding and flame cutting fumes may contain hexavalent chromium compounds. Studies have shown that some hexavalent chromium compounds can cause cancer. However, epidemiological studies amongst welders indicate no extra increased risk of cancer when welding stainless steels, compared with the slightly increased risk when welding steels that do not contain chromium.

Dermatological toxicity

Nickel is classified as a skin sensitizer. It causes skin sensitisation in susceptible individuals through prolonged intimate contact with the skin (e.g. wearing of jewellery). The requirements of EC Directive 99/45/EC are that all mixtures, solutions and alloys with 1% or more of nickel must, by default, also be classified as skin sensitizers.

Numerous patch tests have established that most stainless steels do not cause sensitisation. However, studies have shown that, in some individuals already sensitised to nickel, close and prolonged skin contact with the re-sulphurised free-machining types of stainless steel with 0,15 – 0,35% S (EN 1.4105, 1.4523, 1.4305, 1.4570) may cause an allergic reaction.

Other observations

Long-term experience of stainless steels in the most varied applications has demonstrated that these very resistant materials are eminently suitable where hygiene is of paramount importance (e.g. food processing and food preparation).

The UK Health & Safety Executive's publication "Control of fume arising from electric arc welding of stainless steel" indicates that there is some risk of developing asthma from compounds of chromium VI and nickel in the fume from stainless steel welding. However, stainless steel welding fume did not meet the European Union classification criteria required for inclusion in as a substance capable of causing asthma.

12. ECOLOGICAL DATA

No known harmful effects. No special precautions are required.

13. DISPOSAL CONSIDERATIONS

Surplus and scrap (waste) stainless steel is valuable and in demand for the production of prime new stainless steel. Recycling routes are well-established, and recycling is therefore the preferred disposal route. Disposal to landfill is not harmful to the environment, but it is a waste of resources and therefore less desirable than recycling.

14. TRANSPORT DATA

No special precautions required.

15. REGULATORY REFERENCES

Classification and labelling requirements

Stainless steels with a specified nickel content less than 1% are not classified "as dangerous for supply" under EC Directive 67/548/EEC. Stainless steels containing 1% or more of nickel are classified in the same way as nickel (Table 2). However, in recognition of their essentially non-hazardous nature, stainless steels in the massive form are not required to be labelled as hazardous.

Table 2. Classification of nickel

CAS No.	Substance	Danger symbol	Risk phrases	Safety phrases
7440-02-0	Nickel	Xn (Harmful)	R40 Limited evidence of carcinogenic effect R43 may cause sensitisation by skin contact	S22 do not breathe dust S36 wear protective clothing

Other

The use of products that contain nickel and which come into direct and prolonged contact with the skin are limited by EC Directive 94/27/EC. Posts inserted into pierced ears and other parts of the body during epithelization of the wound must not contain more than 0,05% nickel. Other nickel-containing products in direct and prolonged contact with the skin must release no more than 0,5 µg/cm²/week of nickel as defined in CEN 1811.

16. OTHER INFORMATION

Food contact materials

The Council of Europe published "Guidelines on metals and alloys used as food contact materials" in April 2001 as a reference document to ensure that metallic materials used in contact with food comply with the provisions of Article 2.2 of Directive 89/109/EEC. The document includes a section on stainless steels.

References to key data

Note that all of the data on the potential health effects of stainless steel, including those which might occur during manufacture and processing, which were available up to 1998 are reviewed in the reference No. 1 below.

- 1) H J Cross, J Beach, L S Levy, S Sadhra, T Sorahan, C McRoy: Manufacture, processing and use of stainless steel: A Review of the Health Effects. Prepared for Eurofer by the Institute of Occupational Health, University of Birmingham, 1999.
- 2) N Becker: Cancer mortality among arc welders exposed to fumes containing chromium and nickel. Results of a third follow-up: 1989-1995.
- 3) Report of the International Committee on Nickel Carcinogenesis in Man: Scand J, Work Environ Health 1990, 16; 1-82
- 4) International Agency for Research on Cancer. Chromium, nickel and welding. 'IARC Monograph on the Evaluation of Carcinogenic Risks to Humans'. Lyon: IARC 1990.

References to national regulations

Sweden

AFS 2000:3 Hygieniska gränsvärden och åtgärder mot luftföroreningar. (Hygienic limitvalues and measures against air pollutants), implemented 2001-01-01.
KIFS 1994:12 Klassificering och märkning av kemiska produkter. (Classification and labelling of chemical products)
KIFS 1998:8 Kemiska produkter och biotekniska organismer. (Chemical products and biotechnical organisms)

AvestaPolarit AB

Avesta Research Centre
SE-774 80 Avesta, Sweden
Tel: +46 (0)226 810 00
Fax: +46 (0)226 813 05
www.avestapolarit.com

AFS Arbetarskyddsstyrelsens författningssamling (National Board of Occupational Safety and Health – www.av.se)
KIFS Kemikalieinspektionens författningssamling (National Chemicals Inspectorate – www.kemi.se)

Finland

HTP Haitallisiki tunnetut pitoisuudet 2000
(www.occuphealth.fi)

EU

EN 1811: Reference test method for release of nickel from products intended to come into direct and prolonged contact with skin

UK

Health & Safety Executive Guidance Notes
EH26: Occupational Skin Diseases Health and Safety Precautions
EH40: Occupational Exposure Limits 2002
EH42: Monitoring Strategies for Toxic Substances
EH44: Dust in the Workplace:
General Principles of Protection 1990
EH54: Assessment of Exposure to Fume from Welding and Allied Processes
EH55: The Control of Exposure to Fume from Welding, Brazing and Similar Processes
EH Health & Safety Executive's publications
(www.hse.gov.uk)
Health & Safety Executive Information Document
ID 668/29: Control of fume arising from electric arc welding of stainless steel

Declaration

The information given in this safety data sheet is based on the present level of our knowledge and experience. The data sheet describes the products with respect to safety requirements. The data given is not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should it be used as the basis for ordering these products.

Terms and definitions

Ref. ISO Guide 51

Harm: Physical injury or damage to health of people or damage to property or the environment

Hazard: Potential source of harm

Risk: Combination of the probability of occurrence of harm and the severity of that harm

Safety: Freedom from unacceptable risk

SIMONA

HIGH DENSITY POLYETHYLENE (HDPE)

TECHNICAL INFORMATION FOR HDPE.

CHARACTERISTIC VALUES OF MATERIAL

	Test method DIN	Dimension	SIMONA PE-HWST	SIMONA PE-HWU
Density, method C	53479	g / cm ³	0.945	0.950
Yield stress, Test piece 3	53455	N/ mm ²	22	22
Elongation at yield stress	53455	%	9	9
Elongation at tear	53455	%	500	300
Tensile-E-module	53457	N / mm ²	800	800
Impact strength (Std.small bar)	53453	KJ / mm ²	without break	without break
Impact strength when notched (U-notch)	53453	KJ / mm ²	13	12
Indentation hardness H 132 / 30	53456	N / mm ²	43	40
Shore hardness D	53505	N / mm ²	62	63
Crystalline melting range calorimetric	52328	K (°C)	399-403 (126-130)	
Mean coefficient of thermal expansion	53752	k	1.8 . 10	1.8 . 10
Heat conductivity	52612	W / mk	0.38	0.38
Behaviour in fire	4102		82	82
Dielectric strength. Method K 20 / 5D	53481	kV / mm	50	47
Volume resistance Annular electrode	53482	Ohm .cm	> 10	> 10
Surface resistance. Electrode A	53482	Ohm	10	10
Creep resistance. Method KC	53480	V	600	600

Dielectric constant; At 300-1000 Hz. At 3 . 10 Hz	53483		2.3 2.3	2.3 2.3
Dielectric loss factor. At 300 Hz At 1000 Hz At 3.10 Hz	53483		< 3 . 10 1 .10 < 3 . 10	<3. 10 5 . 10 < 3 . 10
Physiological safety	BGA		Yes	Yes

The data specified here are guide values and may vary depending on the processing method and the production of test pieces. Unless specified otherwise, these are average values taken from measurements on extruded sheets 4mm thick. This information cannot be automatically transferred to finished components. The manufacturer or user must check the suitability of our materials for a specific application.

Moulding compounds designation (DIN 16776, 12 / 84)

PE-HWST	natural	FM	DIN	16776-PE, EN	45	T	003 / 6
PE-HWST	dyed	FM	DIN	16776-PE, EC	45	T	003 / 6
PE-HWST	pressed	FM	DIN	16776-PE, QN	45	T	003 / 6
PE-HWU	dyed	FM	DIN	16776-PE, ECLH	45	T	003 / 6
PE-HWU	pressed	FM	DIN	16776-PE, QCLH	45	T	003 / 6

Plastics

CEE-Safety Data Sheet according to 91 / 155 EWG

Trade name:

SIMONA PE-HWU-B / SIMONA PE-HWU / SIMONA PE-HD-pipe

1. Indications to the manufacturer.

SIMONAAG Tel: 06752 / 14-0
Teichweg 6 Fax: 06752 / 14-211
D-55606 Km

2. Composition / Indications to components.

Chemical characteristics Polymer of ethylene.

CAS-number Not necessary

3. Possible dangers. Un-known

4. First aid measures.

General comment. Medical aid is not necessary

5. Fire-fighting measures.

Suitable fire-fighting appliance. Water fog, foam, fire fighting powder, carbon dioxide

6. Measures in case of unintended release. Not applicable.

7. Handling and storage.

Handling. No special regulations must be observed

Storage. Unlimited good storage property

8. Limitation of exposition.

Personal protective equipment. Not necessary

9.Physical and chemical characteristics.	
Phenotype:	
Form	Semi- finished product
Colour	Black
Smell	Not distinguishable
Change of state:	
Crystallite melting point	126 - 130°C
Fire point	Not applicable
Inflammation temperature	Approx. 350°C
Density	0.95 g/cm ³
10.Stability and reactivity.	
Thermal decomposition.	Above approx. 300°C
Dangerous decomposition products. None Besides carbon black also carbon dioxide and water as well as low molecular parts of PE will develop during the burning process. In case of incomplete burning also carbon monoxide may arise.	
11.Toxic indications.	
During several years of usage no effects being harmful for the health were observed.	
12.Ecological indications.	
No biodegradation, no solubility in water, no effects being harmful to the Environment must be expected.	
13.Waste-disposal indications.	
Can be recycled or can be disposed of together with household rubbish (acc.to Local Regulations).	
Waste key for the unused product.	57 128
Waste name.	Waste of polyoefine
14.Transport indications.	
No dangerous product in respect to / according to transport regulations.	
15.Instructions.	
Marking according to GefStoff V/EG.	No obligation for marking.
Water danger class.	Class 0 (self classification)

16. Further indications.

The indications are based on our to-days knowledge. They are meant to describe our Products in respect to safety requirements. They do not represent any guarantee of The described product in the sense of the legal guarantee regulations.

POLY MAX (PROF)

MS POLYMER

PRODUCT DESCRIPTION

Superior-quality, all-purpose construction adhesive and sealant based on MS-polymer.

FIELD OF APPLICATION

For bonding, constructing and sealing of nearly every kind of material to nearly every kind of surface. For indoor and outdoor use. Suitable for damp areas. Overpaintable with most types of acrylic latex and alkyd paint.

Bonding: glass, mirrors, many plastics, brick, natural stone, concrete, wood, iron and many other metals.

Construction: skirtings, lathwork, windowsills, sills, facing panels, insulation panels, plaster ornaments, decorative frames.

Sealing: joints, seams and cracks in kitchens and bathrooms, roof, gutter and chimney repairs, top seal in glazing.

PROPERTIES

Dilutability: Not applicable.

Temperature resistance: from -40°C to +100°C.

Moisture resistance: very good.

Frost resistance: good.

Resistance: resistant to all weather effects, UV light, aggressive industrial air, household detergents and cleaners, brief impact of dilute acids, bases and salts.

Overpaintability: good, both with acrylic- and alkyd paint.

Flexibility: permanently flexible.

TECHNICAL DATA

Basic material	: MS polymer.
Colour	: white, grey and brown.
Solids content	: 100%.
Specific gravity	: 1,58 g/ml
Viscosity	: at 25°C pasty.
Skin forming time	: approx. 10-15 minutes at 20°C.
Non-sticky	: after approx. 4 hours.
Shore A hardness	: approx. 66.
Modulus at 100%	: approx. 1.70 N/mm ²
Flash point	: >100°C.
PH	: not applicable.
Shrinkage	: none.
Full hardening	: approx. 3 mm/24 hours.
Elongation to fracture	: approx. 250%.
Tensile strength	: approx. 2,2 N/mm ² .

APPLICATION

Surface treatment: The surface must be very clean, dry and free from dust and grease. No need to use primer.

Tools: Use sealant gun. Clean tools with white spirit.

Application temperature: Do not use below +5°C.

Directions for use: Cut off plastic nipple as far as screw thread to make an opening 10 mm across. Screw plastic nozzle on tight and cut off at an angle. Fit to gun.

Apply Poly Max to one clean surface that is free from dust and grease. No need to use primer.

Bonding and construction: Apply in lines or drops.

Press together and leave to cure. Clamp if necessary.

Sealing: The joints to be sealed must be at least 5 mm deep and 5 mm wide. Fill deeper joints with foam

beading. Apply sealant evenly and smooth joint with moist filling knife. When smoothing vertical joints, work up from the bottom. Completely smooth joints can be obtained by applying adhesive tape along the edges of the joint. Remove tape immediately after application and smoothing of the sealant.

Curing time: Forms a surface skin, which is overpaintable, after approx. 10-15 minutes. Non-sticky in approx. 4 hours.

STAINS

Remove stains with white spirit. Dry adhesive stains can only be removed mechanically.

STORAGE PROPERTIES

At least 1 year after production in carefully sealed packaging, in a cool place, free from frost.

WARNING

Not applicable.

TRANSPORT CLASSIFICATION

Not applicable.

02; 040514

Our instructions are based on extensive investigations and experience. In view of the large variety of materials and the conditions under which our products are applied, no responsibility can be assumed for the results obtained and/or any damage caused from the use of the product. However, our Service Department is quite willing to supply any advice needed.

Head office: Bison International - P.O. Box 160, 4460 AD Goes (NL). Tel. 31-113-235712, Fax 31-113-232077, e-mail: export@bison.boltongroup.nl

Material Safety Data Sheet

In accordance with European Commission Directive 93/112/EEC "Safety data sheets" with reference to:

- Directive 67/548/EEC "Dangerous substances"
- Directive 99/45/EC "Dangerous Preparations"
- Directive 89/109/EEC "Food contact materials"
- Directive 94/27/EC "Nickel jewellery" and national regulations in Finland, Sweden and UK.

Date of issue: August 2002. Issue: 3. Rev: 2. Revised due to new risk phrases.

1. IDENTIFICATION OF PREPARATION AND COMPANY

Stainless steel

Corrosion, heat and creep resisting grades with ferritic, martensitic, duplex or austenitic microstructure in massive product forms: semi-finished products, plate, sheet, strip, bar, rod, tube, fittings. The products are mainly used for manufacturing of consumer products or applications in process industry, transport, building and construction, power and energy, and food and beverage industry. They are marked with designations according to European standards (e.g. EN 10088).

Manufacturer, importer, supplier

AvestaPolarit Oy

P.O. Box 270, FIN-02601 Espoo, Finland

Tel: +358 (0)9 421 2112, Fax: + 358 (0)9 421 3893

AvestaPolarit AB

SE-774 80 AVESTA, Sweden

Tel: +46 (0)226 810 00, Fax: +46 (0)226 811 86

AvestaPolarit Ltd

P.O. Box 161, Shepcote Lane, Sheffield S9 1TR

Tel: +44 (0)114 244 3311, Fax: +44 (0)114 244 8280

Departments supplying information

Avesta Research Centre

AvestaPolarit AB

SE-774 80 AVESTA, Sweden Tel: +46 (0)226 810 00

Email: research@avestapolarit.com

Group Quality Systems

AvestaPolarit Ltd

SHEFFIELD S9 1TR, UK Tel: +44 (0)114 244 3311

Email: tony.newson@avestapolarit.com

Technical Customer Service

AvestaPolarit Stainless Oy

FIN-95400 TORNIO, Finland Tel: +358 (0)16 4521

Email: technical.tornio@avestapolarit.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Iron alloy with 10,5 – 30% Cr

max. 38% Ni

max. 11% Mn

max. 8% Mo

Other elements may be present, such as Si, Cu, Ti. These are not classified as hazardous, or are below the concentration levels for classification of these alloys as hazardous.

3. HAZARD CLASSIFICATION OF PRODUCT

Many stainless steels contain nickel as an essential alloying element. Nickel is classified in EC Directive 67/548/EEC as a suspect carcinogen (category 3 – R40) and as a skin sensitiser (R43). The classification rules of EC Directive 99/45/EC dictate that any preparations with equal to or more than 1% content of nickel must automatically be classified as suspect carcinogens (R40). Stainless steels do not cause nickel sensitisation by prolonged skin contact in humans. Nevertheless, all stainless steels with 1% or more nickel are classified as skin sensitisers.

Description of hazards

There are no hazards of concern for man or the environment from stainless steels in the forms supplied. However, if an individual is already sensitised to nickel, prolonged skin contact with a few types of stainless steel may result in an allergic dermatological reaction. If prolonged skin contact is involved in the processing of this product, please contact the supplier for advice. No carcinogenic effects resulting from exposure to stainless steels have been reported, either in epidemiological studies or in tests with animals.

Dust and fume may be generated during processing e.g. in welding, cutting and grinding. If airborne concentrations of dust and fume are excessive, inhalation over long periods may affect workers' health, primarily of the lungs.

4. FIRST AID MEASURES

Inhalation

Not applicable to stainless steels in the massive form. Inhalation of dust and/or fume from grinding, cutting and welding operations is unlikely to generate the need for specific first aid.

Skin and eye contact

There are no special symptoms or effects associated with stainless steel. In the event of physical injury to the skin seek appropriate medical attention. In the event of physical injury to the eyes, seek immediate medical attention. Austenitic stainless steel particles are non-magnetic or only slightly magnetic and may not respond to a magnet placed over the eye. In such cases seek hospital treatment.

Ingestion

Does not apply to stainless steel in the massive form.

5. FIRE FIGHTING MEASURES

Stainless steels are not combustible. There are no special hazards or precautions associated with stainless steels if in the vicinity of a fire.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

There are no special technical measures involved for handling stainless steels. Normal precautions should be taken to avoid physical injury from coiled or bundled products, possibly with sharp edges:

- Straps or bands, used to secure some products, should not be used for lifting. Coils and bundled products (e.g. sections, rods, bars etc.) may spring apart when the banding is removed and the banding itself could cause eye or other injury when tension is released.
- Certain products may, as a result of processing, be brittle or have residual stress that might cause fracture or significant deformation.
- All products are likely to have sharp edges that could cause lacerations and flying particles may be produced when shearing.
- Suitable protective clothing and equipment, such as hand and eye protection, should be worn and systems of work adopted to take account of any hazards arising from the risk of fracturing or the release of tension when breaking open banding.
- Suitable racks should be used to ensure stability when stacking narrow coils.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

There are no occupational exposure limits for stainless steels. Occupational exposure limits apply to some constituent elements

(Ni, Cr, Mn, Mo) and certain of their compounds. Table 1 shows limits according to current legislation in Finland, Sweden and UK. Note that the OEL for welding fume is without prejudice to any occupational exposure limits for individual components in the fume.

Exposure controls

In the processing of all metallic materials, exposure to fume and dust must be kept below any legally imposed limits. Dust and fume may be generated in use, e.g. by cutting, grinding and welding processes, which may contain materials subject to exposure limits. To ensure these limits are not exceeded, adequate general or local ventilation or fume extraction should be provided.

Personal protection

In accordance with European and national health and safety regulations, it is necessary to assess the need for personal protection equipment and appropriate approved respiratory protection should be provided for those workers at risk of inhalation. Suitable hand and eye protection should be worn where there is a risk of laceration, flying particles, burning or welding radiation or contact with oils during processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid; metallic grey, ranging from dull to bright polished. Occasionally supplied with oxidised, blue/black surfaces.

Odour: Odourless

Water solubility: Insoluble

Table 1. Occupational exposure limits (mg/m³) in Finland, Sweden and UK

Substance	Finland		Sweden, NGV		UK		
	8h TWA	15 min TWA	TD	RD	Limit	8h TWA	15 min TWA
Chromium, & its Cr(II), Cr(III) compounds	as Cr	0.5	0.5		OES	0.5	
Chromium (VI) compounds	as CrO ⁴	0.05					
Chromium (VI) compounds	as Cr		0.02		MEL	0.05	
Copper & its compounds	as Cu	1	1	0.2			
Copper, fume	as Cu	0.1			OES	0.2	
Iron oxide, fume	as Fe	5		3.5	OES	5	10
Manganese and its inorganic compounds	as Mn	0.5	0.4	0.2	*		
Manganese fume					OES	1	3
Molybdenum & its soluble compounds	as Mo	5			OES	5	10
Molybdenum & its insoluble compounds	as Mo		10	5	OES	10	20
Nickel, metal	as Ni	1	0.5				
Nickel, compounds	as Ni	0.1					
Nickel, soluble compounds	as Ni		0.1		MEL	0.1	
Nickel, insoluble compounds	as Ni				MEL	0.5	
Nickel, carbonyl	as Ni	0.0071	0.021	0.007			
Nickel, subsulfide	as Ni			0.01			
Nickel, organic compounds	as Ni				OES	1	3
Welding fume, total					OES	5	

NGV= Nivågränsvärde; TWA= Time Weighted Average; RD= Respirable dust; TD= Total Dust; OES= Occupational Exp. Standard; MEL= Maximum Exp. Limit

* OES for Mn in UK not applicable after May 2001 – exposure limits for Mn awaiting development of MEL.

Melting: 1370°C – 1520°C

Density: 7,7 – 8,1 kg/dm³

Thermal expansion (RT to 100 °C): 10 – 16 x 10⁻⁶ m/m°C

Thermal conductivity (RT): 12 – 30 W/m°C

Magnetic: Austenitic stainless steels are non-magnetic in most supply conditions, but may be para-magnetic in some supply conditions (Permeability 1,005 – 1,1). Duplex, ferritic and martensitic stainless steels are ferro-magnetic.

10. STABILITY AND REACTIVITY

Stainless steels are stable and non-reactive under normal ambient atmospheric conditions. May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. When heated to very high temperatures fumes may be produced (e.g. by cutting, welding or melting operations).

11. TOXICOLOGICAL DATA

Chronic toxicity, oral or inhalation

Stainless steels may contain nickel, which has been classified in EC Directive 67/548/EEC as a suspect carcinogenic substance, Category 3 (i.e. "causing concern for man... but available information is not adequate for making a satisfactory assessment"). The exposure route of concern is inhalation. These stainless steel products are in massive form, not capable of being inhaled.

The requirements of EC Directive 99/45/EC are such that all mixtures, solutions and alloys with more than 1% nickel must be classified in the same way as nickel itself, by default. There is no direct evidence of carcinogenic effects of stainless steels in man, nor indirect evidence from animals tested by relevant routes, i.e. inhalation or ingestion. In other studies, using non-relevant routes in animals, alloys with up to 40% nickel caused no significant increase in cancer.

During mechanical working, flame cutting or welding, stainless steel dust, or fumes containing complex or mixed oxides (spinels) of its constituents, may be formed. Over long periods, inhalation of excessive airborne levels may have long term health effects, primarily affecting the lungs. However, studies of workers exposed to nickel powder and dust and fumes generated in the production of nickel alloys and stainless steels have not indicated a respiratory cancer hazard.

Welding and flame cutting fumes may contain hexavalent chromium compounds. Studies have shown that some hexavalent chromium compounds can cause cancer. However, epidemiological studies amongst welders indicate no extra increased risk of cancer when welding stainless steels, compared with the slightly increased risk when welding steels that do not contain chromium.

Dermatological toxicity

Nickel is classified as a skin sensitizer. It causes skin sensitisation in susceptible individuals through prolonged intimate contact with the skin (e.g. wearing of jewellery). The requirements of EC Directive 99/45/EC are that all mixtures, solutions and alloys with 1% or more of nickel must, by default, also be classified as skin sensitizers.

Numerous patch tests have established that most stainless steels do not cause sensitisation. However, studies have shown that, in some individuals already sensitised to nickel, close and prolonged skin contact with the re-sulphurised free-machining types of stainless steel with 0,15 – 0,35% S (EN 1.4105, 1.4523, 1.4305, 1.4570) may cause an allergic reaction.

Other observations

Long-term experience of stainless steels in the most varied applications has demonstrated that these very resistant materials are eminently suitable where hygiene is of paramount importance (e.g. food processing and food preparation).

The UK Health & Safety Executive's publication "Control of fume arising from electric arc welding of stainless steel" indicates that there is some risk of developing asthma from compounds of chromium VI and nickel in the fume from stainless steel welding. However, stainless steel welding fume did not meet the European Union classification criteria required for inclusion in as a substance capable of causing asthma.

12. ECOLOGICAL DATA

No known harmful effects. No special precautions are required.

13. DISPOSAL CONSIDERATIONS

Surplus and scrap (waste) stainless steel is valuable and in demand for the production of prime new stainless steel. Recycling routes are well-established, and recycling is therefore the preferred disposal route. Disposal to landfill is not harmful to the environment, but it is a waste of resources and therefore less desirable than recycling.

14. TRANSPORT DATA

No special precautions required.

15. REGULATORY REFERENCES

Classification and labelling requirements

Stainless steels with a specified nickel content less than 1% are not classified "as dangerous for supply" under EC Directive 67/548/EEC. Stainless steels containing 1% or more of nickel are classified in the same way as nickel (Table 2). However, in recognition of their essentially non-hazardous nature, stainless steels in the massive form are not required to be labelled as hazardous.

Table 2. Classification of nickel

CAS No.	Substance	Danger symbol	Risk phrases	Safety phrases
7440-02-0	Nickel	Xn (Harmful)	R40 Limited evidence of carcinogenic effect R43 may cause sensitisation by skin contact	S22 do not breathe dust S36 wear protective clothing

Other

The use of products that contain nickel and which come into direct and prolonged contact with the skin are limited by EC Directive 94/27/EC. Posts inserted into pierced ears and other parts of the body during epithelization of the wound must not contain more than 0,05% nickel. Other nickel-containing products in direct and prolonged contact with the skin must release no more than 0,5 µg/cm²/week of nickel as defined in CEN 1811.

16. OTHER INFORMATION

Food contact materials

The Council of Europe published "Guidelines on metals and alloys used as food contact materials" in April 2001 as a reference document to ensure that metallic materials used in contact with food comply with the provisions of Article 2.2 of Directive 89/109/EEC. The document includes a section on stainless steels.

References to key data

Note that all of the data on the potential health effects of stainless steel, including those which might occur during manufacture and processing, which were available up to 1998 are reviewed in the reference No. 1 below.

- 1) H J Cross, J Beach, L S Levy, S Sadhra, T Sorahan, C McRoy: Manufacture, processing and use of stainless steel: A Review of the Health Effects. Prepared for Eurofer by the Institute of Occupational Health, University of Birmingham, 1999.
- 2) N Becker: Cancer mortality among arc welders exposed to fumes containing chromium and nickel. Results of a third follow-up: 1989-1995.
- 3) Report of the International Committee on Nickel Carcinogenesis in Man: Scand J, Work Environ Health 1990, 16; 1-82
- 4) International Agency for Research on Cancer. Chromium, nickel and welding. 'IARC Monograph on the Evaluation of Carcinogenic Risks to Humans'. Lyon: IARC 1990.

References to national regulations

Sweden

AFS 2000:3 Hygieniska gränsvärden och åtgärder mot luftföroreningar. (Hygienic limitvalues and measures against air pollutants), implemented 2001-01-01.
KIFS 1994:12 Klassificering och märkning av kemiska produkter. (Classification and labelling of chemical products)
KIFS 1998:8 Kemiska produkter och biotekniska organismer. (Chemical products and biotechnical organisms)

AvestaPolarit AB

Avesta Research Centre
SE-774 80 Avesta, Sweden
Tel: +46 (0)226 810 00
Fax: +46 (0)226 813 05
www.avestapolarit.com

AFS Arbetarskyddsstyrelsens författningssamling (National Board of Occupational Safety and Health – www.av.se)
KIFS Kemikalieinspektionens författningssamling (National Chemicals Inspectorate – www.kemi.se)

Finland

HTP Haitallisiki tunnetut pitoisuudet 2000
(www.occuphealth.fi)

EU

EN 1811: Reference test method for release of nickel from products intended to come into direct and prolonged contact with skin

UK

Health & Safety Executive Guidance Notes
EH26: Occupational Skin Diseases Health and Safety Precautions
EH40: Occupational Exposure Limits 2002
EH42: Monitoring Strategies for Toxic Substances
EH44: Dust in the Workplace:
General Principles of Protection 1990
EH54: Assessment of Exposure to Fume from Welding and Allied Processes
EH55: The Control of Exposure to Fume from Welding, Brazing and Similar Processes
EH Health & Safety Executive's publications
(www.hse.gov.uk)
Health & Safety Executive Information Document
ID 668/29: Control of fume arising from electric arc welding of stainless steel

Declaration

The information given in this safety data sheet is based on the present level of our knowledge and experience. The data sheet describes the products with respect to safety requirements. The data given is not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should it be used as the basis for ordering these products.

Terms and definitions

Ref. ISO Guide 51

Harm: Physical injury or damage to health of people or damage to property or the environment

Hazard: Potential source of harm

Risk: Combination of the probability of occurrence of harm and the severity of that harm

Safety: Freedom from unacceptable risk

CEE-Safety Data Sheet according to 91/155/EWG

Page 1 of 2

Trade name: **SIMONA® PE-HWU / PE-HWU-B / PE-HD pipe**

11/2000

1. Indications to the manufacturer

SIMONA AG Phone (0 67 52) 14-0
Teichweg 16 Fax (0 67 52) 14-211
D-55606 Kirn

2. Composition / Indications to components

Chemical characteristics: polymer of ethylene
CAS-number: not necessary

3. Possible dangers

unknown

4. First-aid measures

General comment: medical aid is not necessary

5. Fire-fighting measures

Suitable fire-fighting appliance: water fog, foam, fire fighting powder, carbon dioxide

6. Measures in case of unintended release

not applicable

7. Handling and storage

Handling: no special regulations must be observed
Storage: unlimited good storage property

8. Limitation of exposition

Personal protective equipment: not necessary

9. Physical and chemical characteristics

<u>Phenotype:</u>		<u>Change of state:</u>	
form:	semi-finished product	crystallite melting point:	126 - 130 °C
colour:	black	fire point:	not applicable
smell:	not distinguishable	inflammation temperature:	appr. 350 °C (value indicated in literature)
		density:	0.95 g/cm ³

10. Stability and reactivity

Thermal decomposition: above appr. 300 °C

Dangerous decomposition products:

Besides carbon black also carbon dioxide and water as well as low molecular parts of PE will develop during the burning process. In case of incomplete burning also carbon monoxide may arise.

11. Toxic indications

During several years of usage no effects being harmful for the health were observed.

12. Ecological indications

No biodegradation, no solubility in water, no effects being harmful to the environment must be expected.

13. Waste-disposal indications

Can be recycled or can be disposed of together with household rubbish (acc. to local regulations).

Waste key for the unused product: EAK-Code 120 105

Waste name: waste of polyolefine

14. Transport indications

No dangerous product in respect to / according to transport regulations

15. Instructions

Marking according to GefStoffV/EG: no obligation for marking

Water danger class: class 0 (self classification)

16. Further indications

The indications are based on our today's knowledge.

They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 22.10.2007

Revision: 22.10.2007

1 Identification of the substance/preparation and of the company/undertaking

- . **Product details**
- . **Trade name:** PolyMax Lijmkit Transparant
- . **Application of the substance / the preparation** Adhesive
- . **Manufacturer/Supplier:**
Bison International
Dr.A.F.Philipsstraat 9
NL-4462 EW Goes
PO Box 160
NL-4460 AD Goes
tel. +31 113 235700
fax. +31 113 232077
e mail: msds@bison.boltongroup.nl
- . **Further information obtainable from:** R & D Department
- . **Information in case of emergency:** +31 113 235700

2 Hazards identification

- . **Hazard description:** Not applicable.
- . **Information concerning to particular hazards to man and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- . **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

3 Composition/information on ingredients

- . **Chemical characterization**
- . **Description:** Adhesive
- . **Dangerous components:**

CAS: 2768-02-7	trimethoxyvinylsilane	2.5-10%
EINECS: 220-449-8	Xn; R 20	
CAS: 13822-56-5	3-(trimethoxysilyl)propylamine	≤ 2.5%
EINECS: 237-511-5	Xi; R 36/37/38	
CAS: 41556-26-7	bis-(1,2,2,6,6,-pentamethyl-4-piperidyl)sebaaat	≤ 2.5%
	Xi, N; R 36-51/53	
CAS: 82919-37-7	Methyl 1,2,2,6,6,-pentamethyl-4-piperidyl sebacate	≤ 2.5%
EINECS: 280-060-4	Xi, N; R 43-50/53	
- . **Additional information:**
For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

- . **General information:** No special measures required.
- . **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- . **After skin contact:** Generally the product does not irritate the skin.
- . **After eye contact:** Rinse opened eye for several minutes under running water.
- . **After swallowing:** If symptoms persist consult doctor.

(Contd. on page 2)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 22.10.2007

Revision: 22.10.2007

Trade name: PolyMax Lijmkit Transparant

(Contd. of page 1)

5 Fire-fighting measures

- . **Suitable extinguishing agents:**
Use fire extinguishing methods suitable to surrounding conditions.
- . **Protective equipment:** No special measures required.

6 Accidental release measures

- . **Person-related safety precautions:** Not required.
- . **Measures for environmental protection:**
Do not allow to enter sewers/ surface or ground water.
- . **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- . **Additional information:** No dangerous substances are released.

7 Handling and storage

- . **Handling:**
- . **Information for safe handling:** No special measures required.
- . **Information about fire - and explosion protection:** No special measures required.
- . **Storage:**
- . **Requirements to be met by storerooms and receptacles:** No special requirements.
- . **Information about storage in one common storage facility:** Not required.
- . **Further information about storage conditions:** None.

8 Exposure controls/personal protection

- . **Additional information about design of technical facilities:**
No further data; see item 7.
- . **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- . **Additional information:** The lists valid during the making were used as basis.
- . **Personal protective equipment:**
- . **General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals.
- . **Respiratory protection:** Not required.
- . **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- . **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- . **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- . **Eye protection:** Goggles recommended during refilling

(Contd. on page 3)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 22.10.2007

Revision: 22.10.2007

Trade name: PolyMax Lijmkit Transparant

(Contd. of page 2)

9 Physical and chemical properties**. General Information**

Form: Fluid
Colour: According to product specification
Odour: Characteristic

. Change in condition

Melting point/Melting range: Undetermined.
Boiling point/Boiling range: 270°C

- . Flash point:** > 100°C
- . Ignition temperature:** 400.0°C
- . Self-igniting:** Product is not selfigniting.
- . Danger of explosion:** Product does not present an explosion hazard.
- . Vapour pressure at 20°C:** 0.0 hPa
- . Density at 20°C:** 1.13479 g/cm³
- . Solubility in / Miscibility with water:** Not miscible or difficult to mix.
- . Solids content:** 83.6 %

10 Stability and reactivity

- . Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- . Dangerous reactions** No dangerous reactions known.
- . Dangerous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- . Acute toxicity:**
- . Primary irritant effect:**
- . on the skin:** No irritant effect.
- . on the eye:** No irritating effect.
- . Sensitization:** No sensitizing effects known.
- . Additional toxicological information:**
 The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.
 When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

12 Ecological information

- . General notes:**
 Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
 Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

13 Disposal considerations

- . Product:**
- . Recommendation** Smaller quantities can be disposed of with household waste.

(Contd. on page 4)

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 22.10.2007

Revision: 22.10.2007

Trade name: PolyMax Lijmkit Transparant

(Contd. of page 3)

- . **Uncleaned packaging:**
- . **Recommendation:**
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

14 Transport information

- . **Land transport ADR/RID (cross-border)**
- . **ADR/RID class:** -
- . **Maritime transport IMDG:**
- . **IMDG Class:** -
- . **Marine pollutant:** No
- . **Air transport ICAO-TI and IATA-DGR:**
- . **ICAO/IATA Class:** -

15 Regulatory information

- . **Labelling according to EU guidelines:**
Observe the general safety regulations when handling chemicals.
The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials (German GefStoffV).
- . **Special labelling of certain preparations:**
Contains Methyl 1,2,2,6,6,-pentamethyl-4-piperidyl sebacate, N-(3-(trimethoxysilyl)propyl)ethylenediamine. May produce an allergic reaction.
Safety data sheet available for professional user on request.
- . **National regulations:**
- . **Waterhazard class:**
Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- . **Relevant R-phrases**
 - 20 Harmful by inhalation.
 - 36 Irritating to eyes.
 - 36/37/38 Irritating to eyes, respiratory system and skin.
 - 43 May cause sensitisation by skin contact.
 - 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 - 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- . **Department issuing MSDS:** R & D laboratory
- . **Contact:** M.L. de Jager
- . *** Data compared to the previous version altered.**