UNI

Safety Class Coilformers

This catalogue contains information on the NORWE range of UNI safety class coilformers and components.

Universal coilformers (UNI) are available for lamination sizes EI and EE with different stack dimensions. The coilformers can be used universally in single or double section design. By fitting shrouds and insulating bridges, safety class to VDE 0551 / IEC 14 d is achieved. Coilformers are also available with pockets to fit thermal fuses or cutouts.

We supply coilformers made in high quality thermoplastics, matching your production requirements. In addition, accessories such as contact parts, temperature fuses and clips, are also covered, as is information on shrouds und insulating bridges.

All dimensions in mm/inch. The permissible deviations according to DIN 16901 apply as tolerances.

Wherever high-temperature soldering processes are used in connection with UNI coilformers, we recommend irradiation cross-linked plastics. This ensures that the mechanical properties – in particular those of gfr-polyamides – are maintained and breakages are reduced. For this reason NORWE offers all plastic components of the UNI-series in irradiated cross-linked materials.

In the short term, the cross-linked materials can be exposed to very high temperatures. Apart from improved aspects in production there may be interesting cost advantages, and a discussion with us could be useful.

Should you need further assistance, be it technical or to assist when placing your order, we look forward to hearing from you.

Fully tagged or pinned coilformers are – in small quantities – usually available from stock. We can also quote for coilformers with pins or tags fitted to your requirements. All lead-times are relatively short.

Our extensive range of modular tooling allows almost unlimited constructional changes to meet customers specification, often by simple changes of tool inserts.

In addition the modular tooling system allows extremely short tooling times and can be very cost effective.

© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

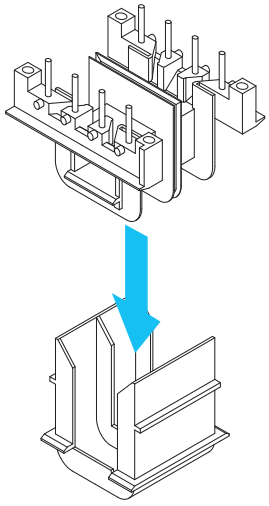
Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

P.O. Box 25 11
North Canton, OH 44720-0511

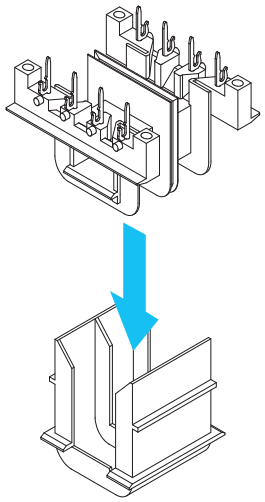
United States of America

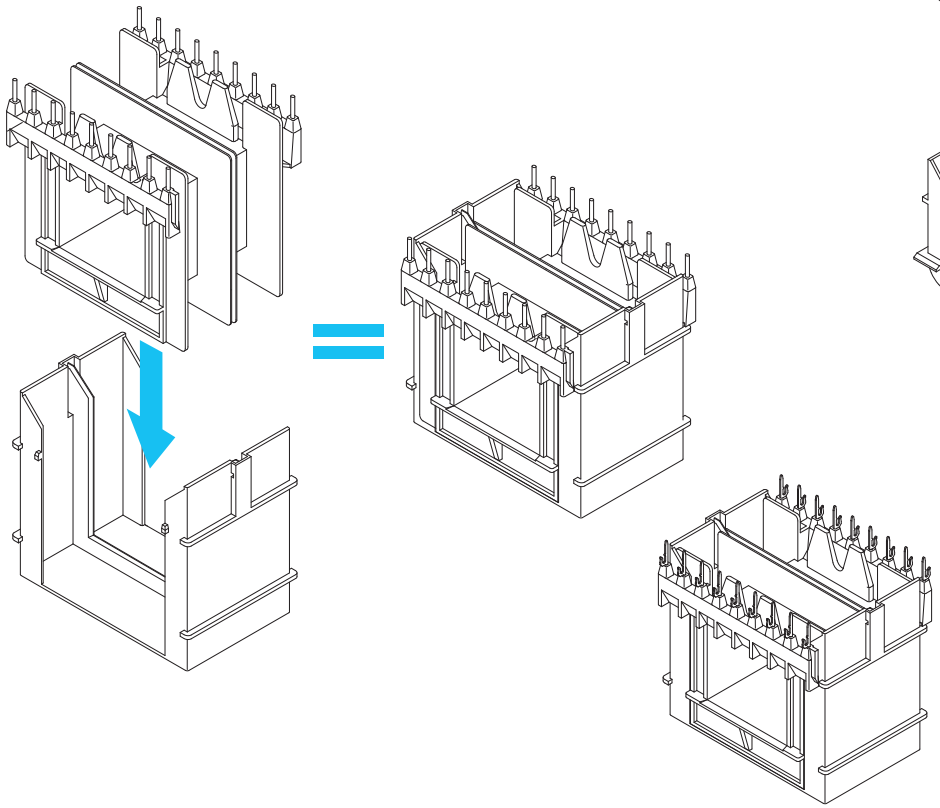
Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com



Description of the designs with press-fit solder-pins or press-fit solder-tags.
The ideal coilformer-version for a cost-effective and efficient processing.

This design specially features solid press-fit solder-pins to achieve an optimized pinning automation. Reinforcing ribs to the core stabilize the terminal strips also if thicker wires are used. The choice of using press-fit solder-tags allows wrapping thick or litz wires.
The coilformers are suitable for automatic winding on computer controlled machines.
The special design allows crossing-free routing of the wires. Depending on the individual application versions with one section or with symmetrical partitioning of the winding space are available. Due to the design of the terminal strips, being separated from the main flanges, as well as with an optional set of accessories consisting of shroud/insulating bridge safety class requirements are achieved without potting (creepage and clearance distances of 8–11 mm/0.315–0.433 inch between primary and secondary and 4.8–6 mm/0.189–0.236 inch to the core).
In addition special designs, e.g. with asymmetrical partitioning of the winding space, can be realized in a cost-effective and efficient way.





© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

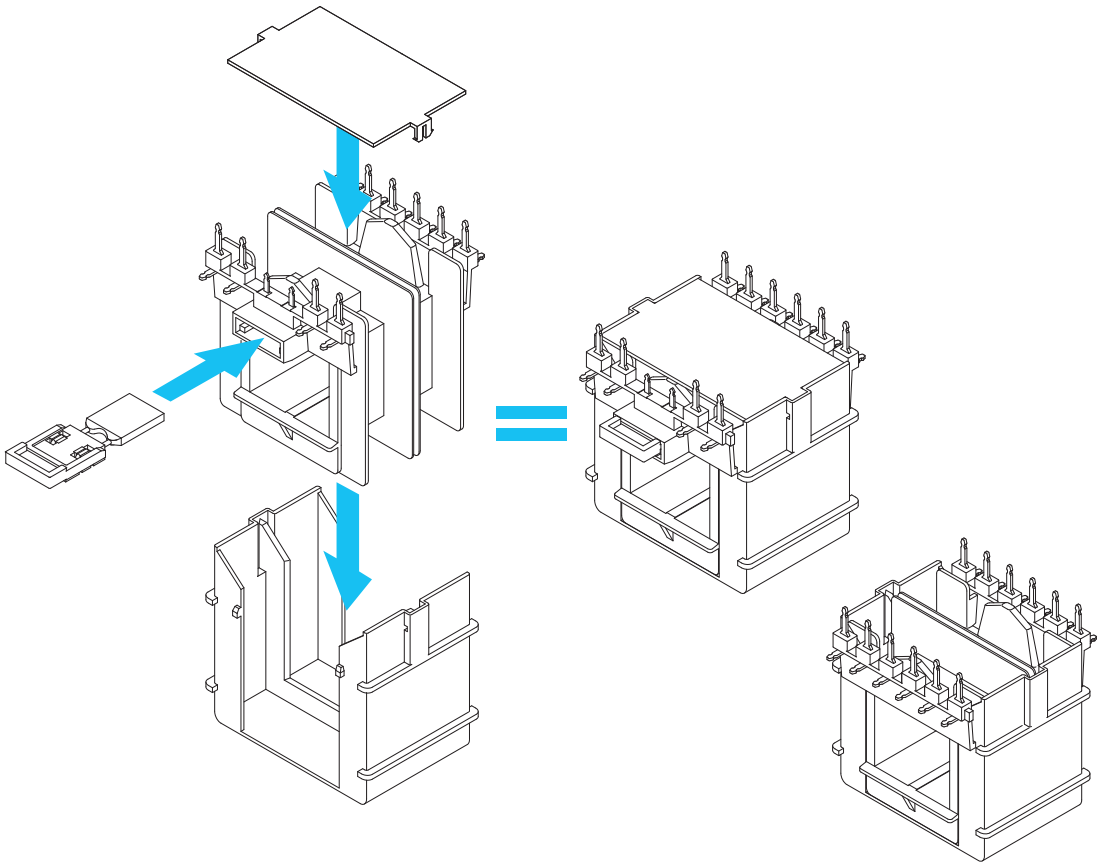
P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Description of the designs with side-wrapping solder-tags. The all-round coilformer version for a flexible processing.

The coilformers of this series provide an optimized connection system using side-wrapping solder-tags which have a slimmer section for wire-wrapping. Pointed ends of the solder-tags allow an easier insertion into the pcb.
The coilformers are available in different designs.
The wide range of products includes versions with and without partitioning of the winding area, with symmetrical and also with asymmetrical partitioning of the winding space – as an option also with a compartment to accommodate a plug-in thermofuse which can be replaced easily. An efficient processing of the components on computer controlled winding machines is guaranteed. Due to the special design a crossing-free routing of the wires is possible.
As optional accessories we can supply shrouds and insulating bridges which provide creepage and clearance distances of 8–11 mm/0.315–0.433 inch between primary and secondary as well as 4.8–6 mm/0.189–0.236 inch to the core – without potting.
In addition special designs can be produced at low costs.



© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

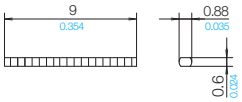
P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

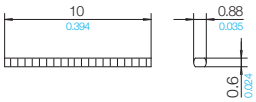
Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Solder-pins and Solder-tags used for UNI Coilformers

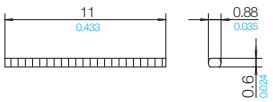
The solder-pins and solder-tags matched to the coilformers are listed below. The material used is tin bronze, tinned (solder-pins) or brass, tinned (solder-tags). Further standard types are listed in our catalogue “Stamped and Pressed Components for Electronic Applications”. (Special materials and designs on request, dimensions in mm/inch).



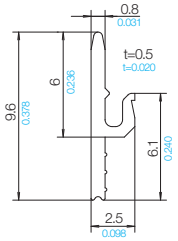
Solder-pin: z809/ua
73295-212



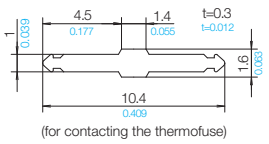
Solder-pin: z810/ua
73296-212



Solder-pin: z811/ua
73297-212

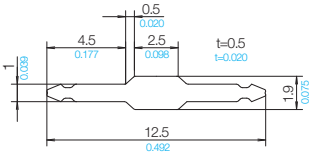


Solder-tag: s31/we
75526-263



(for contacting the thermofuse)

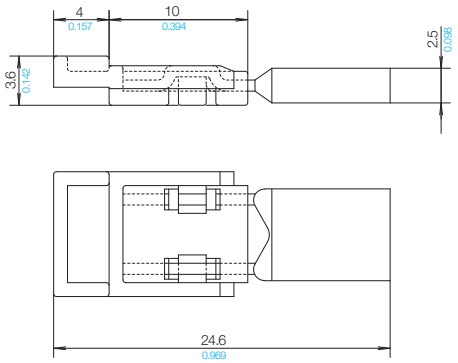
Solder-tag: s11/wc
75315-259



Solder-tag: s14/wd
75508-261

NORWE thermoclip used for UNI Coilformers with plug-in thermofuses

The soldering of a temperature fuse into a wound transformer can be problematic as the generated heat can destroy the fuse. The NORWE thermoclip allows the fitting of a temperature fuse into a compartment in the coilformer, but without soldering. Plug in and ready. The safety requirement for a temperature fuse is to open the circuit only once when the running temperature of the transformer exceeds the rated level. After repairing the fault condition, a new temperature fuse must be fitted.
We deliver the NORWE thermoclip with temperature fuse matching your individual production requirements and will be quite prepared to quote on request. Please note that the minimum order quantity is 5.000 pieces.



© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

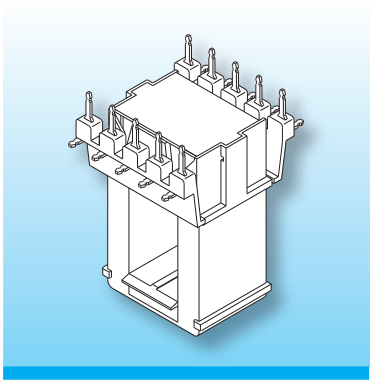
NORWE Inc.

P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Design of transformers with UNI-Coilformers
The following tables can be used for the design of transformers, giving winding data and the copper-factor for different wire diameters. The data are to support the design of transformers using UNI-coilformers.



Specific details concerning laminations, such as losses, induction etc. and details on copper wire should be obtained from the manufacturers.

A_N	-	Usable Winding Area
l_m	-	Average Length of Turn
L	-	Copper Factor Grade 1 Wire
2L	-	Copper Factor Grade 2 Wire
d	-	Nominal Diameter of Wire

Winding Area
Single Section Type

Type	A_N
	mm² / inch²
EJ 30	38.4 / 0.060
EJ 38	78.9 / 0.123
EJ 42	91.8 / 0.142
EJ 48	121.5 / 0.188
EJ 54	155.4 / 0.241
EJ 60	201.7 / 0.312

Winding Area
Double Section Type

Type	wide area A_N	narrow area A_N
	mm² / inch²	mm² / inch²
EJ 30	18.9 / 0.029	13.2 / 0.021
EJ 38	41.8 / 0.065	27.7 / 0.043
EJ 42	45.3 / 0.070	36.2 / 0.056
EJ 48	57.8 / 0.090	51.9 / 0.080
EJ 54	71.0 / 0.110	71.0 / 0.110
EJ 60	93.1 / 0.144	93.1 / 0.144

Average Length of Turn

Type	l_m/mm
	mm / inch
EJ 30-5	50.6 / 1.992
EJ 30-10	61.6 / 2.425
EJ 30-12	65.6 / 2.583
EJ 30-15	71.6 / 2.819
EJ 30-18	76.6 / 3.016
EJ 38-7	67.0 / 2.638
EJ 38-13	79.2 / 3.118
EJ 38-16	84.6 / 3.331
EJ 42-8	73.4 / 2.890
EJ 42-14	86.0 / 3.386
EJ 48-16	97.6 / 3.843
EJ 48-20	105.0 / 4.134
EJ 54-18	109.2 / 4.299
EJ 60-21	121.6 / 4.787
EJ 60-25	130.6 / 5.142
EJ 60-30	140.6 / 5.535

Copper Factor

d	L	2L
mm / inch	mm² / inch²	mm² / inch²
0.040 / 0.002	41985 / 65.077	32441 / 50.283
0.050 / 0.002	29319 / 45.444	23570 / 36.533
0.063 / 0.003	18729 / 29.030	15580 / 24.149
0.071 / 0.003	15328 / 23.758	12800 / 19.840
0.080 / 0.003	12308 / 19.077	10446 / 16.191
0.090 / 0.004	10046 / 15.571	8502 / 13.178
0.100 / 0.004	8353 / 12.947	7169 / 11.112
0.112 / 0.004	6128 / 9.498	5385 / 8.347
0.125 / 0.005	5195 / 8.052	4542 / 7.040
0.140 / 0.006	4276 / 6.628	3781 / 5.861
0.160 / 0.006	3367 / 5.219	2986 / 4.628
0.180 / 0.007	2719 / 4.214	2448 / 3.794
0.224 / 0.009	1774 / 2.750	1636 / 2.536
0.250 / 0.010	1424 / 2.207	1335 / 2.069
0.280 / 0.011	1153 / 1.787	1081 / 1.676
0.315 / 0.012	920 / 1.426	853 / 1.322
0.355 / 0.014	731 / 1.133	676 / 1.048
0.400 / 0.016	578 / 0.896	567 / 0.879
0.450 / 0.018	476 / 0.738	432 / 0.670
0.500 / 0.020	392 / 0.608	352 / 0.546
0.560 / 0.022	315 / 0.488	283 / 0.439
0.630 / 0.025	253 / 0.392	226 / 0.350

© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

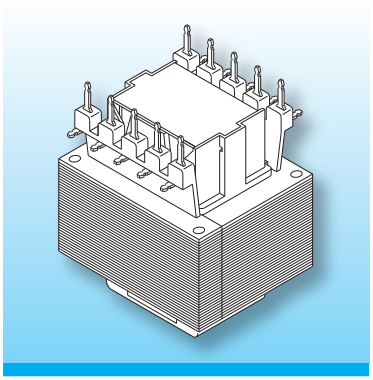
P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Laminations

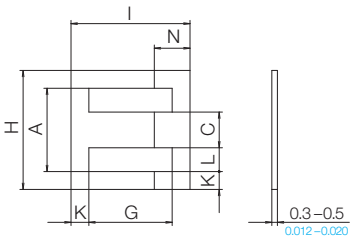
The table below shows the sizes of some more common laminations for the UNI-coilformer range, with dimensions in mm/inch.
The data given may assist when designing a specific transformer.



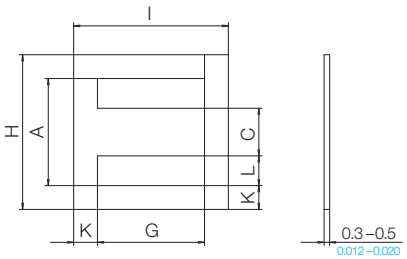
However, exact details such as dimensions and electrical data must be obtained from lamination manufacturers.

Type	A	C	G	H	I	K	L	N
EE 25	17.40 / 0.685	7.60 / 0.299	17.40 / 0.685	25.00 / 0.984	25.00 / 0.984	3.80 / 0.150	4.90 / 0.193	8.00 / 0.315
EJ 30	20.00 / 0.787	10.00 / 0.394	15.00 / 0.591	30.00 / 1.181	25.00 / 0.984	5.00 / 0.197	5.00 / 0.197	–
EJ 38	25.60 / 1.008	12.80 / 0.504	19.25 / 0.758	38.40 / 1.512	32.00 / 1.260	6.40 / 0.252	6.40 / 0.252	–
EI 50S	25.40 / 1.000	12.70 / 0.500	19.05 / 0.750	38.10 / 1.500	31.75 / 1.250	6.35 / 0.250	6.35 / 0.250	–
EJ 42	28.00 / 1.102	14.00 / 0.551	21.00 / 0.827	42.00 / 1.654	35.00 / 1.378	7.00 / 0.276	7.00 / 0.276	–
EI 21 (EI 50)	28.58 / 1.125	12.70 / 0.500	20.64 / 0.813	41.28 / 1.625	33.34 / 1.313	6.35 / 0.250	7.94 / 0.313	–
EI 56	28.58 / 1.125	14.29 / 0.563	21.43 / 0.844	42.86 / 1.688	35.72 / 1.406	7.15 / 0.281	7.15 / 0.281	–
EJ 48	32.00 / 1.260	16.00 / 0.630	24.00 / 0.945	48.00 / 1.890	40.00 / 1.575	8.00 / 0.315	8.00 / 0.315	–
EI 62	31.75 / 1.250	15.88 / 0.625	23.81 / 0.938	47.63 / 1.875	39.69 / 1.563	7.94 / 0.313	7.94 / 0.313	–
EI 68	34.93 / 1.375	17.46 / 0.688	26.19 / 1.031	52.39 / 2.063	43.66 / 1.719	8.73 / 0.344	8.73 / 0.344	–
EJ 54	36.00 / 1.417	18.00 / 0.709	27.00 / 1.063	54.00 / 2.126	45.00 / 1.772	9.00 / 0.354	9.00 / 0.354	–
EI 75	38.10 / 1.500	19.05 / 0.750	28.58 / 1.125	57.15 / 2.250	47.63 / 1.875	9.53 / 0.375	9.53 / 0.375	–
EJ 60	40.00 / 1.575	20.00 / 0.787	30.00 / 1.181	60.00 / 2.362	50.00 / 1.969	10.00 / 0.394	10.00 / 0.394	–
EJ 66	44.00 / 1.732	22.00 / 0.866	33.00 / 1.299	66.00 / 2.598	55.00 / 2.165	11.00 / 0.433	11.00 / 0.433	–
EI 87	44.45 / 1.750	22.23 / 0.875	33.34 / 1.313	66.68 / 2.625	55.56 / 2.188	11.11 / 0.438	11.11 / 0.438	–

EE



EJ



© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Thermoplastic Materials

The following survey contains supplementary information on the different thermoplastic-qualities.
The material quality orientates to the conventional use of the components. For technical reasons alternative materials cannot be used for all articles.
Consult our qualified specialists regarding your individual material requests – we will be pleased to check whether your material requirements can be realized.
Further information on the materials can also be obtained from our homepage (e.g. to call up the UL cards).

NORWE Mat.-Code	NORWE Mat.-Description	Chemical Symbol	Tradename, Manufacturer	UL-File-No.	Flammability Rating acc. UL 94	RTI Elec acc. UL
017	x2g5	PA66 Polyamide 66	A3X2G5 Ultramid BASF AG	E 41871	V-0 (0.81)	+120°C
024	p6g	PA66 Polyamide 66	PA66 30% GF black Compound	–	–	(+125°C)
039	A3X2G5 sv.	PA66 Polyamide 66	A3X2G5 cross-linked Ultramid BASF AG	–	–	(+120°C)
047	pcg	PBT Polybutylene Terephthalate	B4225 Pocan Lanxess AG	E 245249	V-0 (1.50)	+130°C
096	TE 250 F6	PA46 Polyamide 46	TE250F6 Stanyl DSM	E 47960	V-0 (0.35) V-0 (0.75)	+ 65°C +140°C
243	Zen.6130L, black	LCP Liquid Crystal Polymer	6130L black Zenite TICONA	E 344082	V-0 (0.38)	+240°C

Explanations on the above survey of materials:

NORWE Mat.-Code . . . . . designates the number NORWE fixed for the material.

NORWE Mat.-Description . . . . . names the NORWE-abbreviation for the material.

Chemical Symbol . . . . . classifies the chemical product group of the material.

Tradename . . . . . designates the product name or trade name fixed by the manufacturer.

Manufacturer . . . . . name of manufacturer.

UL-File-No. . . . . material quality tested and certified with respect to safety and fflammability. The manufacturers of certified and approved products receive a so-called recognition card (yellow card) in which the product qualities are listed in detail. You find all relevant yellow cards – also called UL cards – for different material qualities on our website www.norwe.de or can obtain them from us. You can call up all relevant yellow cards – also called UL cards – for different material qualities just by clicking on the respective UL-file-number.

Flammability Rating acc. UL . . . . determines the flammability of plastic materials based on burning tests in accordance with UL 94 considering the wall thickness of the material.

RTI (Elec.) . . . . . Relative Temperature Index according to UL 746 B. The specified temperatures are valid vor long-range electrical load (Elec).

© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Irradiation Cross-Linking of UNI Components

NORWE cannot only look back on more than 40 years of experience in the development and production of coilformers but has in the meantime also gained almost 10 years of experience in irradiation cross-linking.

All components of the UNI-series can on request be supplied in cross-linked material. A cross-linking enhancing material is added to the thermoplast granulates. After moulding the components are irradiated with Beta- or Gamma rays – depending on the penetration required.
The material loses its thermoplast characteristics (but it is not a thermoset) and withstands very high temperature peeks for short periods without any problems.

- Depending on the degree of cross-linking the coilformers and accessories withstand solder temperatures of 450–480° C for about 1–3 seconds. Irradiated cross-linked components easily tolerate the higher solder temperatures required due to the contact elements being changed to be leadfree.

- Unlike high temperature polymers – also cost-effective granulates are suitable for irradiation cross-linking. The characteristic features of the coilformers and accessories do not change due to the cross-linking.

- In contrast to high temperature polymers lower temperatures of material and mould during the production process are required and thus the tool elements are less stressed resulting in longevity.
The lower temperature profiles during the moulding process provide a lower wear and tear of the tool elements as well as a perceptible saving of energy costs.

© 07/2012 by NORWE ONE GmbH

All dimensions in mm/inch

The permissible deviations according to DIN 16901 apply as tolerances

Warranties:
refer to Terms and Conditions of Sale

Valid version of data sheet online

QR Online-Version

NORWE ONE GmbH

Paulstraße 5, Pernze
51702 Bergneustadt

Deutschland

Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.

P.O. Box 25 11
North Canton, OH 44720-0511

United States of America

Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

© 04/2014 by NORWE ONE GmbH
Warranties:
refer to Terms and Conditions of Sale

NORWE ONE GmbH
Paulstraße 5, Pernze
51702 Bergneustadt
Deutschland
Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.
P.O. Box 25 11
North Canton, OH 44720-0511
United States of America
Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Contact to NORWE

NORWE – online

All informations, product specifications, latest news and as well our extensive service offering you find on out up-to-date websites.

Up-to-date product database
- enlarged, sophisticated search function
- comprehensive product survey
- Product Data Sheets as PDF-download
- complete product-catalogues as PDF-download

www.norwe.de

www.norwe.com

Up-to-date contacts
- contacts all over the world

www.norwe.eu

Up-to-date information
- data and facts of the company
- presence on trade fairs all over the world
- product innovations
- material database with UL-cards

www.coilformers.info

www.carretes.eu

Individual special designs
- problem solutions orientated to industries' demands

www.carreteis.info

www.carcasses.info

Current certifications
- EN ISO 9001:2008
- UL 746 D
- EN ISO 14001:2005
- AEOC

www.spulenkoerper.info

www.karkasi-katushek.info

Services
- qualified advice
- cost neutral sample request
- individual quotation request
- mobile access via QR-Code

www.corpi-bobina.info

© 05/2012 by NORWE ONE GmbH

NORWE ONE GmbH
Paulstraße 5, Pernze
51702 Bergneustadt
Deutschland
Telefon +49 (0) 2763-807-0
WhatsApp +49 2763 807-0
E-mail verkauf@norwe.de
Internet www.norwe.de
www.norwe.eu

NORWE Inc.
P.O. Box 25 11
North Canton, OH 44720-0511
United States of America
Telefon +1-330 497-8113
E-mail usa@norwe.com
Internet www.norwe.com

Contact to NORWE