

## G4J - gel for prefilled joints

G4J is a Polymeric Gel on elastomeric cross linked base, chemically inert and absolutely no toxic.



**G4J is UL Recognized Component**

For additional information see the UL Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database)

G4J is used for the filling of **all RAYTECH PREFILLED joints**:

**HAPPY** and **HAPPY JOINT** in all packing options;  
**GEL BOX LINE (ISAAC, PASCAL, WATT, JOULE, KELVIN)** in all packing options;  
**GEL COVER LINE (OHM, BAR, MAMMUT GEL COVER)** in all packing options;  
**NANO JOINT, NANO MAM** and **NANO FOR**,  
**BRAVO** and **MINI BRAVO**,  
**LITTLE JOINT (BARNEY, FRED, DINO, BARNEY Y, FRED Y, BOB4)** in all packing options,  
**READY BOX IP68, FOX BOX**  
**SUPER CLIK, RAPID JOINT IP68, RAPIDINO IP68**,  
**KING JOINT, RAPID JOINT, CLIK FIRE**,  
**RAPID JOINT IP68 System Fast RP** and **RAPID JOINT System Fast RP**,  
**GALACTIC MAMMUT SECURITY, GALACTIC NANO JOINT**,  
**MCA UNIVERSAL IP68** and **MCA-Y**.

PROPERTY		TEST METHOD / NOTE	UNIT	TYPICAL VALUE
Physical	Aspect	-	-	Gel
	Colour	-	-	Clear and transparent
	Initial Hardness	Penetration cone ASTM D 217/C	1/10 mm	340
	After aging hardness	Penetration cone ASTM D 217/C	1/10 mm	290
	Hardness	-	-	0 SHORE 00
	Density	-	g/cc	0,97
	Thermal conductivity	-	W/mK	Approx 0,2
	Continuous working temperature	-	°C	from -60 to +150
	Installation temperature	(related to joints)	°C	from -40 to + 50
	Water absorption after 30 days immersion	-	%	<< 0,05%
Flammability	Flame class	UL 94	-	HB
	Flammability point	-	°C	>200
	Auto-ignition temperature	-	°C	>400
Electrical	Dielectric strength	-	kV/mm	25
	Dielectric constant / Permittivity	@ 100Hz	-	2.95
		@ 100kHz	-	2.95
	Power factor / Tan δ	@ 100Hz	-	0,0025
		@ 100kHz	-	0,00015
Volume resistivity	-	Ω cm	2,4 x 10exp 15	
Degree of protection		EN 60529		IPX8, IP68 (Depending on the envelopes)

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<b>EXPOSITION TO CHEMICALS OF CROSSLINKED PRODUCT</b>	
<b>Salt, salty water etc</b>	have no adverse effect.
<b>Sea water or chlorine environments (swimming pools etc.)</b>	have no adverse effect.
<b>Inorganic acids in water solutions</b>	have not visible effects.
<b>Strong, pure acids or alkaline (not in solution)</b>	The exposition has to be avoided, especially at high temperature.
<b>Alkaline solutions and vinegar</b>	could bring, after a long time of exposition, to a softening of the external surface.
<b>Solutions of hydrocarbons in water</b>	could give, after a long exposition at quite high temperatures, the hardening of the external surface of the products; of course nothing happens for temporary expositions
<b>Pure hydrocarbons</b>	Permanent immersion in strong and pure hydrocarbons has to be avoided.

<b>SHELF LIFE</b>	
The product has unlimited shelf life, if stored and used according to the relevant instructions.	

*Settimo Milanese, 10/2018*

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TDS\_G4J\_gel\_prefilled - 2/2



## POLYPROPYLENE AUTO-EXTINGUIBLE - UL94 V2

- Raw material for the moulding of the following lines of enclosures:
  - Materia prima per lo stampaggio dei seguenti accessori:
  - Matière première pour la fabrication des suivantes accessoires:
- **Gel Box Line, (ISAAC, PASCAL, WATT, JOULE, KELVIN), HAPPY** with coloured casing ;  
Gel Box Line, (ISAAC, PASCAL, WATT, JOULE, KELVIN), HAPPY con involucri colorati ;  
Gel Box Line, (ISAAC, PASCAL, WATT, JOULE, KELVIN), HAPPY avec boites colorées ;
  - **MAMMUT GEL COVER**
  - **NANO JOINT, NANO MAM , NANO FOR**
  - **LITTLE JOINT (BARNEY, FRED, DINO, BARNEY Y, FRED Y, BOB4)**
  - **SUPER CLIK**
  - **RAPID JOINT IP68, RAPIDINO IP68**
  - **KING JOINT**
  - **RAPID JOINT**
  - **CLIK FIRE**
  - **MAGIC JOINT FIRE**
  - **RAPID JOINT L RIP68 e RAPID JOINT RP**
  - **GALACTIC MAMMUT SECURITY**
  - **GALACTIC NANO JOINT 4**
  - **MCA Universal IP68**
  - **MCA-Y**

PROPERTIES – Proprietà - Propriétés	METHOD Metodo Méthode	UNIT Unità Unité	TYPICAL VALUE Valore tipico Valeur typique
• <b>GENERAL – generali - général</b>			
Density Densità Densité	ASTM D-792	g/ml	0.93
Melt volume rate Tasso volumetrico allo stato fuso Débit volumique à l'état fondu 230°C/2.16Kg	ISO-1133	cm <sup>3</sup> /10 min	16.0
Linear modul shrinkage Ritiro lineare Rétraite linéaire	ASTM D-955	%	1.5
Transversal mould shrinkage Ritiro trasversale Rétraite transversale	ASTM D-955	%	1.5
Water adsorption (24h-23°C) Assorbimento acqua (24h-23°C) Absorption de l'eau	ASTM D-570	%	0.02
• <b>THERMAL – Termiche- Thermique</b>			
Vicat B	ASTM D-1525	°C	80
HDT A	ASTM D-648	°C	55

PROPERTIES – <i>Proprietà - Propriétés</i>	METHOD <i>Metodo Méthode</i>	UNIT <i>Unità Unité</i>	TYPICAL VALUE <i>Valore tipico Valeur typique</i>
<b>• MECHANICAL – Meccaniche - Mécanique</b>			
IZOD impact strength, notched <i>IZOD con intaglio IZOD avec entaille</i>	ISO-180/1A	KJ/m <sup>2</sup>	9
IZOD impact strength, unnotched <i>IZOD senza intaglio IZOD sans entaille</i>	ISO-180/1U	KJ/m <sup>2</sup>	NB
Tensile strength <i>Carico a trazione Charge à la traction</i>	ASTM D-638	MPa	20
Tensile elongation at break <i>Allungamento a rottura Allongement à rupture</i>	ASTM D-638	%	>100
Tensile modulus <i>Modulo elastico trazione Module d'élasticité traction</i>	ASTM D-638	MPa	1000
Flexural modulus <i>Modulo elastico a flessione Module d'élasticité à flexion</i>	ASTM D-790	MPa	-
Flexural strength <i>Carico massimo a flessione Charge maximale à flexion</i>	ASTM D-790	MPa	-
<b>• ELECTRICAL – elettriche - électrique</b>			
Comparative tracking index <i>CTI Indice d'alignement comparatif</i>	IEC 60112	V	-
Surface resistivity <i>Resistività di superficie Resistività de surface</i>	-	Ohm	-
<b>• FLAME RESISTANCE - Resistenza alla fiamma – Resistività à la flamme</b>			
Flame resistance (3.2 mm) <i>Resistenza alla fiamma (3.2 mm) Resistività à la flamme (3.2 mm)</i>	UL94	-	V2
Flame resistance (1.6 mm) <i>Resistenza alla fiamma (1.6 mm) Resistività à la flamme (1.6 mm)</i>	UL94	-	V2
Flame resistance (0.8 mm) <i>Resistenza alla fiamma (0.8 mm) Resistività à la flamme (0.8 mm)</i>	UL94	-	-
GWFI	IEC 60695-2-12	°C/mm	-
GWIT	IEC 60695-2-13	°C/mm	-

Settimo Milanese, 10/2018



**GEL CONNECTION  
CONNECTORS  
WAGO series**

The following products come complete with 450 V – 32 A splicing connectors not of our production:

NANO JOINT: WAGO series 221

HAPPY JOINT: WAGO series 221

GALACTIC NANO JOINT: WAGO series 222

For further details please refer to manufacturer data available on [www.wago.com](http://www.wago.com)



**GEL CONNECTION  
CONNECTORS  
MAMMUT - FORBOX**

The following products come complete with connectors not of our production, according to the table.


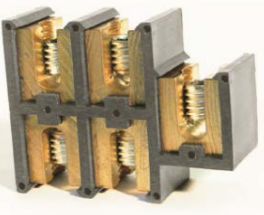

Products	Connector			
	Type	mm <sup>2</sup>	V	A
PASCAL M2,5 NANO MAM 2,5 BARNEY FRED RAPIDINO IP68 L2 RAPIDINO IP68 L3	MAMMUT	2,5	400	24
KELVIN M4 NANO MAM 4 GALACTIC MAMMUT SECURITY FRED/4	MAMMUT	4	400	32
WATT + 1.5	FORBOX	1,5	450	17,5
WATT + 2.5 NANO FOR 2,5	FORBOX	2,5	450	24
KELVIN + 4 KELVIN 6 + 4 NANO FOR 4	FORBOX	4	450	32
KELVIN + 6 KELVIN 6 + 6	FORBOX	6	500	41

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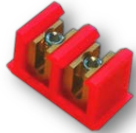
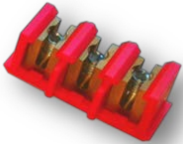


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Item	Shape	Description	Cable Section Range (mm <sup>2</sup> )		Dimensions (mm)			Part of Jointing Kit	Selling Unit (SU)
			in line /straight	branch	L or Ø	W	H		
<b>MORSETTIERA L16</b>		<b>INSULATED CONNECTION BLOCK L 5x16</b> for in line connections up to 5 core Grey polypropylene separator, with pre-assembled brass connectors with steel screw	1,5 - 16	na	31	24	-	KING JOINT 0, L6 & L10 RAPID JOINT L1,5-IP68 & L6-IP68 WONDER JOINT SP L16 MAGIC P JOINT SP L16 MAGIC JOINT SP L16 RAYCAST SP L16	polybag of <b>10</b> PCS
<b>MORSETTIERA L25</b>		<b>INSULATED CONNECTION BLOCK L 5x25</b> for in line connections up to 5 core Grey polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	4 - 25	na	34	39	-	KING JOINT L25 RAPID JOINT L10-IP68 WONDER JOINT SP L25 MAGIC P JOINT SP L25 MAGIC JOINT SP L25 RAYCAST SP L25	polybag of <b>10</b> PCS
<b>MORSETTIERA Y6</b>		<b>INSULATED CONNECTION BLOCK Y 5x6</b> for branch connections up to 5 core Grey polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	1,5 - 6	1,5-4	36	13	28	KING JOINT Y6 WONDER JOINT SP Y6 MAGIC P JOINT SP Y6 MAGIC JOINT SP Y6 RAYCAST SP D6	polybag of <b>10</b> PCS
<b>MORSETTIERA Y16</b>		<b>INSULATED CONNECTION BLOCK Y 5x16</b> for branch connections up to 5 core Grey polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 6 not included)	4 - 16	1,5-4	45	16	36	KING JOINT Y16 WONDER JOINT SP Y16 MAGIC P JOINT SP Y16 MAGIC JOINT SP Y16 RAYCAST SP D16	polybag of <b>10</b> PCS
<b>MORSETTIERA T</b>		<b>INSULATED CONNECTION BLOCK Y 4x35</b> for branch connections up to 4 core Black polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 6 not included)	10 - 35	1,5-6	50	24	36	KING JOINT Y35 MAGIC P JOINT SP T35 MAGIC JOINT SP T35 RAYCAST SP T 35 SUPER CLIK 3	polybag of <b>5</b> PCS
<b>MORSETTIERA B1</b>		<b>INSULATED CONNECTION BLOCK LY 1x6</b> for branch or in line connections Red polypropylene separator, with pre-assembled brass connector with allen screw (Allen key size 2 not included)	1 x 1,5 - 6	1 x 1,5 - 6	17	14	15	BRAVO 1-6 MINIBRAVO 1 BARNEY Y RAPIDINO IP68 Y1	polybag of <b>30</b> PCS



Item	Shape	Description	Cable Section Range (mm <sup>2</sup> )		Dimensions (mm)			Part of Jointing Kit	Selling Unit (SU)
			in line /straight	branch	L or Ø	W	H		
<b>MORSETTIERA B2</b>		<b>INSULATED CONNECTION BLOCK LY 2x6</b> for branch or in line connections Red polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	2 x 1,5 - 6	2 x 1,5 - 6	29	14	15	MINIBRAVO 2	polybag of <b>30</b> PCS
<b>MORSETTIERA B3</b>		<b>INSULATED CONNECTION BLOCK LY 3x6</b> for branch or in line connections Red polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	3 x 1,5 - 6	3 x 1,5 - 6	40	22	15	BRAVO 3-6 MINIBRAVO 3 FRED Y RAPIDINO IP68 Y3 BOB4	polybag of <b>30</b> PCS
<b>MORSETTIERA 3-6</b>		<b>INSULATED CONNECTION BLOCK LY 3x6</b> for branch or in line connections up to 3 cores Red polypropylene separator, with pre-assembled brass connectors with steel screw	Straight: 1,5 - 6	Main: 4 Branch: 2,5	20	25,5	18	SUPER CLIK 0	polybag of <b>10</b> PCS
<b>MORSETTIERA 4-6</b>		<b>INSULATED CONNECTION BLOCK LY 4x6</b> for branch or in line connections up to 4 cores Red polypropylene separator, with pre-assembled brass connectors with steel screw.	Straight: 1,5 - 6	Main: 4 Branch: 2,5	19	25,5	17,2	DINO RAPIDINO IP68 L4	-



Item	Shape	Description	Cable Section Range (mm <sup>2</sup> )		Dimensions (mm)			Part of Jointing Kit	Selling Unit (SU)
			in line /straight	branch	L or Ø	W	H		
<b>MORSETTIERA 5-6</b>		<b>INSULATED CONNECTION BLOCK LY 5x6</b> for branch or in line connections up to 5 cores Red polypropylene separator, with pre-assembled brass connectors with steel screw	Straight: 1,5 - 6	Main: 4 Branch: 2,5	31	25,5	18	SUPER CLIK 1	polybag of <b>10</b> PCS
<b>MORSETTIERA 5-16</b>		<b>INSULATED CONNECTION BLOCK LY 5x16 mm<sup>2</sup></b> for branch or in line connections up to 5 cores Red polypropylene separator, with pre-assembled brass connectors with steel screw	Straight: 4 - 16	Main: 10 Branch: 6	38,5	28,5	23	SUPER CLIK 2	polybag of <b>10</b> PCS
<b>MORSETTIERA 3x6</b>		<b>INSULATED CONNECTION BLOCK LY 3x6 mm<sup>2</sup></b> for branch or in line connections Grey polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	3 x 1,5 - 6	3 x 1,5 - 6	37	14	22	READY BOX IP68 90	
<b>MORSETTIERA 5x6</b>		<b>INSULATED CONNECTION BLOCK LY 5x6 mm<sup>2</sup></b> for branch or in line connections Grey polypropylene separator, with pre-assembled brass connectors with allen screw (Allen key size 2 not included)	5 x 1,5 - 6	5 x 1,5 - 6	59	14	22		READY BOX IP68 120

Settimo Milanese, 10/2018





**GEL CONNECTION IP68**  
CABLE GLANDS METRIC PITCH

The cable glands in **LITTLE JOINT (BARNEY, FRED, DINO, BARNEY Y, FRED Y, BOB4)**, **MINIRAPID (RAPIDINO IP68)** and **READY BOX IP68, FOX BOX** accessories are made of a self-extinguishing compound, with high resistance to UV radiation and to ageing, also in the most severe conditions

Item	Pitch	Ø cable range		Ø tubes	Part of the kit IP68
	<b>METRICO</b>	Min (mm)	Max (mm)		
DADO M16	M16X1.5	6	10	-	BARNEY, BARNEY Y, RAPIDINO IP68 L2, RAPIDINO IP68 Y1
DADO M20	M20X1.5	8	13	-	FRED, FRED Y, BOB4, RAPIDINO IP68 L3, RAPIDINO IP68 Y3
DADO M25	M25X1.5	10	16	-	DINO, RAPIDINO IP68 L4
BULLONE (hole Ø 21)	M25X1.5	6*	18	16*, 20	READY BOX IP68 120, READY BOX IP68 90, FOX BOX

\*for cable up to 13 mm, use the adaptors included in the kit

\* use the adaptors included in the kit

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
<b>Protection degree</b>	IEC 60529	-	IP 68
<b>• MECHANICAL</b>			
Tensile strength	ASTM D-638	MPa	20
Tensile elongation at break	ASTM D-638	%	>100
Tensile modulus	ASTM D-638	MPa	1000
<b>RESISTENZA ALLA FIAMMA</b>			
Flame resistance (3.2 mm)	UL94	-	V2
Flame resistance (1.6 mm)	UL94	-	V2
Flame resistance (0.8 mm)	UL94	-	V2

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