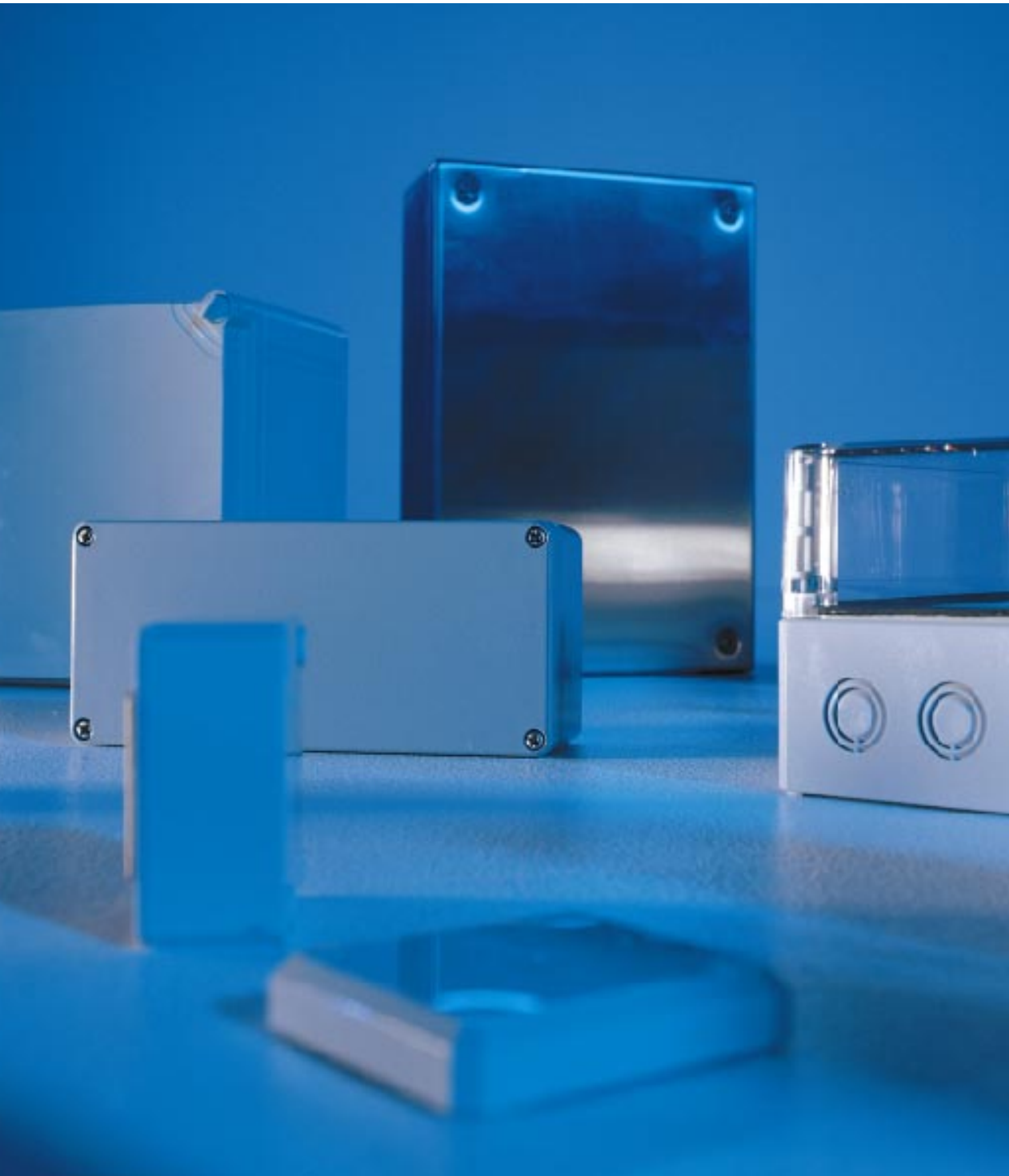


## CUBO enclosures



# Ensto international electrification

Electricity is the common factor in the activities of Ensto. The company has produced and marketed electrical equipment since 1958. Ensto has over 1800 employees and its turnover lies over one billion finmarks. There are three main business units.

**Ensto Installation** offers an almost complete range of products for installation in buildings, with the exception of cables.

**Ensto Distribution** produces equipment for transmission and distribution of electricity for power houses, energy distributors and electrical railway equipment.

**Ensto Industry** produces equipment for the electrical and electronics OEM industry.























## Protect your vital networks in CUBO enclosures

The function of electronic communication systems is a key question in the community of today. Ensto has developed a broad and uniform enclosure system to secure an undisturbed function. In production control and surveillance it is essential that sensors are properly protected and that control signals pass through reliably in any situation. Adequate protection will stop dust and humidity from entering electronic gateways as well as electrical and

pneumatic equipment. A sturdy enclosure is also resistant to blows.

A target for the development of CUBO has been to minimize risks at heavy phases of work and in exacting chemical surroundings. Robust and reliable enclosure systems secure the function of the nerve centre of your company. And once your communication systems are safely protected, your capacity is free for further innovations!

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# Ensto at top of technology

Ensto has a number of modern and efficient production plants in Finland, mainly for production of enclosures. The Porvoo works, approx. 17.000 m<sup>2</sup>, produces small and middle-sized enclosures. The Salo works, over 13 000 m<sup>2</sup> makes large enclosures, and part of the middle-sized types as well. Metal enclosures and metal accessories are made at the Mikkeli plant, over 8 000 m<sup>2</sup>. The plants in Sweden and Norway are assigned to plastic and other accessories.

## Production capacity

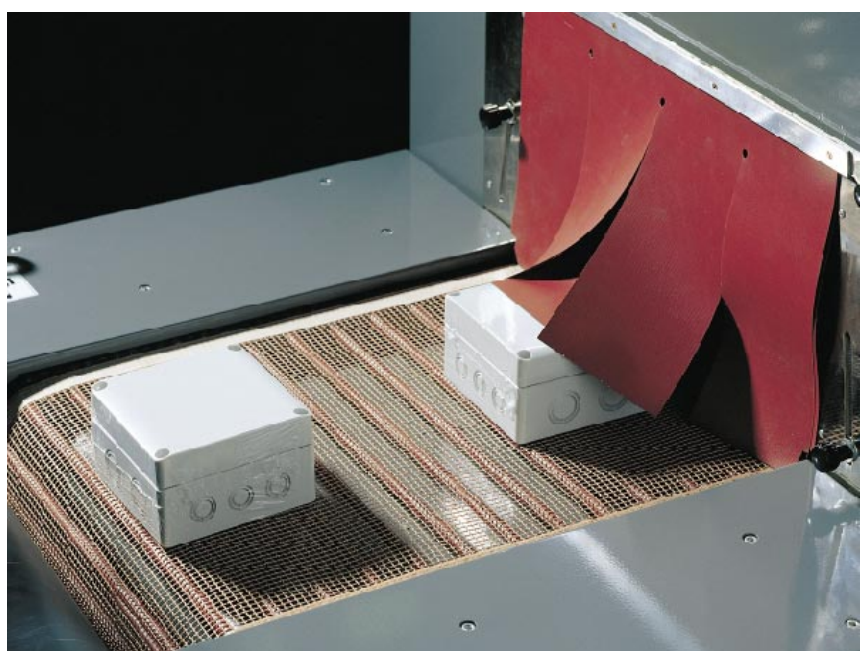
Ensto has a versatile machinery, over 150 injection moulding machines, fitted with robots to secure maximal output. The individual machines vary from 20 tons to 1 300 tons. The Ensto group also includes several units specialized in process automatization. Injection moulds are produced within the group.

## Subcontractor services

Utilization of the newest technology available is significant for Ensto. This feature has made Ensto one of the largest subcontractors in Europe in fields of electromechanical and electronic equipment and accessories in plastics and metal.

## Testing

Through the years Ensto has preserved a very high quality profile, a guarantee for which is the ISO 14000 quality system applied. The



whole business is certified according to ISO 9001. Testing of components is made in accordance with the newest European and international standards. Ensto uses several laboratories specialized in product development and random testing of products along the production lines.

## Research and development

A considerable part of the turnover is transferred into innovation work for new products, using the newest methods on the market. Many new ideas for technological progress in this field have come from national and international work groups for standardization.

Product information to customers is supplied also by electronic systems, and networks is a primary method of communication between Ensto and many of its customers.



## Recycling

Enclosures made of recyclable, environmentally safe raw materials is a main issue in the philosophy of Ensto. Also package materials are recyclable. Environmental aspects have a primary position in all development work.

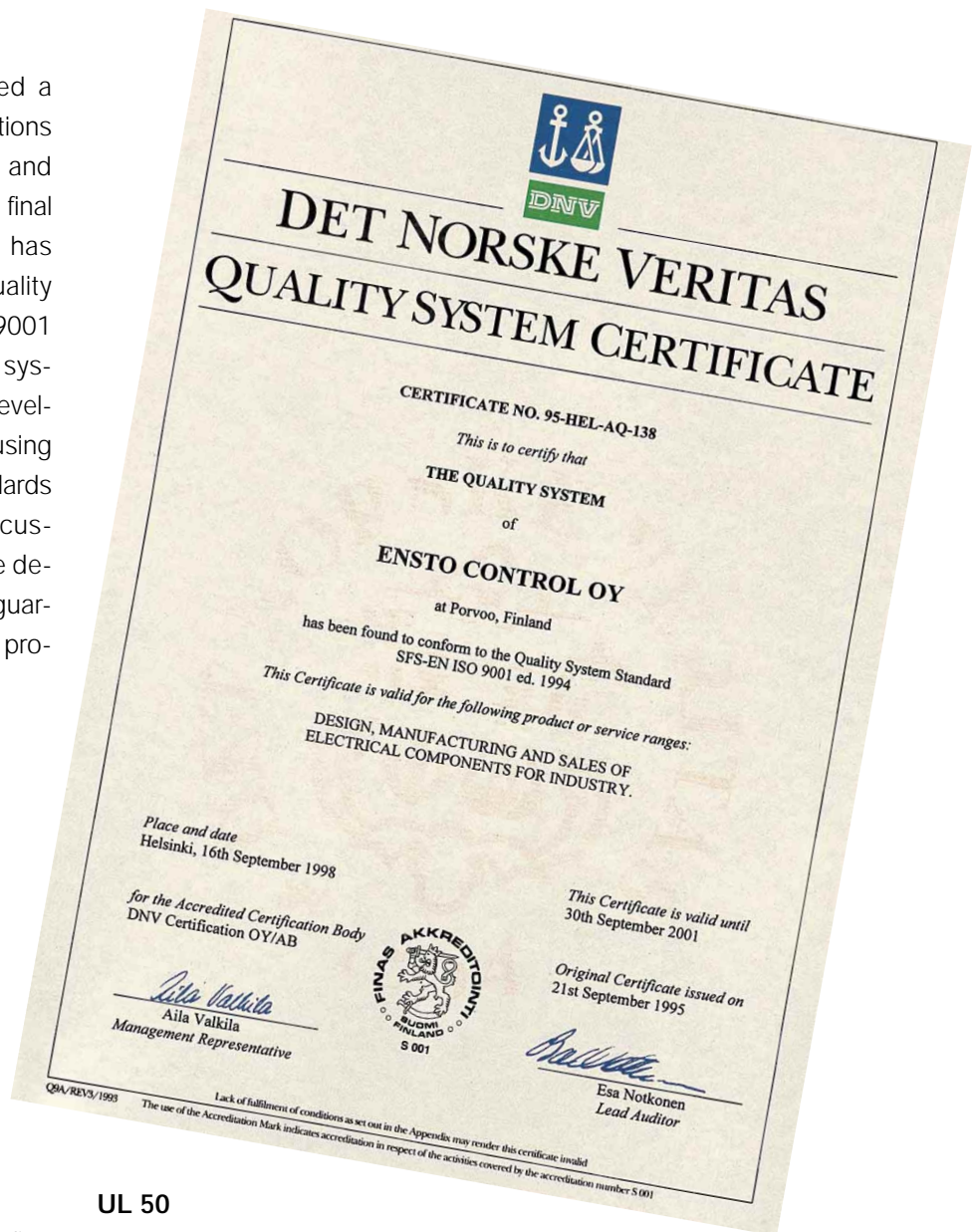


## Logistics

The internal logistic know-how is continuously upheld and improved. Ensto produces and supplies thousands of products to more than 50 countries. A reliable delivery capacity is secured by scheduling from an early stage followed by a continuous dialogue throughout the production process.

# Quality control system covers all functions

Ensto Control Oy has created a quality system to cover all functions within the company, from idea and construction to delivery of the final product. Det Norske Veritas has certified Ensto Control's quality system according to EN ISO 9001 standard in 1994. This quality system has been applied in the development of the CUBO ranges, using the ISO 9001, the newest standards and the requirements of the customers as a base for the whole design work. The system is a guarantee for high quality, faultless products and correct timing.



## Standards

### EN 50298

The CUBO enclosures are the first products on the market to meet the requirements set in the suggested standard prEN 50298. The standard specifies requirements for empty enclosures for low-voltage switchgear and controlgear assemblies.

### UL

UL-listing, a "green card" issued by the Underwriters' Laboratories Ltd. is a basic qualification for the choice of raw materials.

### UL 50








CUBO enclosures are tested in accordance with the UL 50 standard, "Enclosures For Electrical Equipments"










### UL 94

The behaviour in fire of plastic materials is tested according to the UL 94 standard. The raw material for CUBO falls under the severest test UL 94V. Test specimen are burnt in vertical position.

# Safety classification

## IP-classes, EN 60529

1st NUMERAL	IP	☒	☐
Protection against intrusion			
	0		
0: No protection			
	1		
1: Protection against objects max. 50 mm			
	2		
2: Protection against objects max. 12 mm			
	3		
3: Protection against objects max. 2,5 mm			
	4		
4: Protection against solid objects max. 1 mm			
	5		
5: Protection against dust, limited intrusion acceptable all directions			
	6		
6: Total protection against dust			


2nd NUMERAL	IP	☐	☒
Protection against liquids			
	0		
0: No protection			
	1		
1: Protection against vertically falling water drops			
	2		
2: Protection against rain drops falling in max. 15° angle			
	3		
3: Protection against rain drops falling in max. 60° angle			
	4		
4: Protection against water drops falling from all directions			
	5		
5: Protection against low pressure sprue water from *)			
	6		
6: Protection against jet water under pressure *)			
	7		
7: Protection against water intrusion under submersion at 15 cm to 1 m depth			
	8		
8: Protection against water intrusion under long term submersion under pressure			

\*) Minor intrusion acceptable

## IK-classes, EN 50102

Blow energy/J	IK-kode
<	IK 01 - 05
1	IK 06
2	IK 07
5	IK 08
10	IK 09
20	IK 10


---

## NEMA Safety Classification

NEMA (National Electrical Manufacturers' Association) is a cooperative organization for the American electrical industry. The NEMA specifications and testing methods are used by Underwriters Laboratories (UL) for testing and classification of enclosures. The table below gives a comparison of the NEMA classification and the nearest corresponding IP rates.

NEMA-class:	IP-class:	Indoor:	Outdoor:	In- and Outdoor:	Protection against following factors:
NEMA 1	IP 23	X			Falling soil
NEMA 2	IP 30	X			Water splashes and soil
NEMA 3	IP 64		X		Wind carried dust, rain and hail
NEMA 3R	IP 32		X		Rain and hail
NEMA 3S	IP 64		X		As 3, outdoor equipment under ice load
NEMA 4	IP 66			X	As 3, protection against sprue water, ice growth
NEMA 4X	IP 66			X	As 4, corrosion resistant
NEMA 6	IP 67-68			X	As 6P, ice growth acceptable corrosion resistant
NEMA 6P	IP 67-68			X	Immersed in water, specified time and depth
NEMA 12, 12K	IP 65	X			Soil/non-corroding drops of liquids
NEMA 13	IP 65	X			As 12, oils and non-corroding cooling agents

# Raw materials used by Ensto

## Plastic materials

The environmental aspects are in the foreground at the choice of raw materials. Provided the technical conditions are met, the choice falls on a raw material that is safe for the environment. Recyclable polycarbonate (PC) and acrylic butadien styrene (ABS) are the raw materials that Ensto has chosen for its enclosures.

## Polycarbonate (PC)

Polycarbonate, an excellent material for instrument housing, is an amorphous thermoplastic material with high temperature endurance and good technical properties. Polycarbonate is suitable for use indoor as well as outdoor. It is weather resistant, it has good electrical features and is selfextinguishing.

## Acrylic butadien styrene (ABS)

ABS is an amorphous thermoplastic material with good mechanical properties and high chemical resistance. ABS is a good choice for indoor use also for severe surroundings.

## Machining of PC and ABS

Both materials are easy to machine with normal hand tools. They can be painted with suitable lacquers, and they can be welded with ultrasonic equipment.



## Maintenance of PC and ABS enclosures

Water and mild soap are enough for cleaning the enclosures. Solvents should not be used. No special maintenance is needed.



## Technical properties of PC and ABS

	Standard	Unit	PC	PC + Glass fibre	ABS
<b>Mechanical properties</b>					
Impact strength +23°C -30°C	ISO 179-1eU	kJ/m <sup>2</sup>	good	good	good
	ISO 179-1eU	kJ/m <sup>2</sup>	good	good	-
Elasticity modulus	ISO 527	Mpa	2400	4000	2100
<b>Elasticity properties</b>					
Vicat softening point B50	ISO 306	°C	145	144	94
Long term use, heat	UL 746B	°C	125	120	60
Long term use, cold		°C	-50	-50	-40
Flammability	UL 94	Classifi- cation	V-2	V-0	HB
<b>Electrical properties</b>					
Disruptive strength	EC 243-1	kV/mm	30	30	32
Creeping current limit	IEC 112	V	275	175	525
<b>Physical properties</b>					
Absorption of water	ISO 62	%	0,15	0,13	
Density	ISO 1183	g/cm <sup>3</sup>	1,20	1,25	1,04

## Ensto gasketing material

Polyurethane (PUR) is the main gasketing material used in Ensto boxes. Newest technology applied at the gasketing process secure the highest possible IP classification.

## Technical properties of PUR

	Unit	PUR
Temperature	°C	-50+130
Tensile strength	Mpa	0,4
Elongation at break	%	110
Hardness	Shore A	6
Spec. weight	g/cm <sup>3</sup>	0,4
Permanent compression	%	5

# CUBO with wide variation



## CUBO customizing service

Ensto Control can supply enclosures machined to your need, thus saving your time and money. After they have passed through the machining lines, you will receive your enclosures ready for mounting and assembled according to your instructions.

## Holes and machining

Electronic components, displays and cabling needs a number of holes and tooling in the enclosures.

The Ensto tooling service can supply milled, drilled, threaded and countersunk machining after your drawings. Large series can be made economically with exchangeable mould

parts according to the customer's specifications.

## Shielding

Occasionally the shielding of enclosures must withstand high frequencies, from 30 up to 400 Mhz. Sufficient shielding is achieved by coating the inner side of the enclosure with a layer of metal coating. An environmentally safe, water soluble metal dispersion has been used successfully in Ensto for several years. A conductive gasket accomplishes the shielding effect.

## Colour service

In addition to the grey standard colour and the transparent covers there are other colour alternatives as

well. Dyed raw material is an economical choice for large series. Smaller quantities can be lacquered. An air drying paint according to the RAL colour chart gives an excellent result on ABS enclosures. For PC enclosures a twocomponent paint is the best choice. Lacquering will also give the enclosures increased chemical resistance and mechanical strength. A protective layer of UV lacquer is recommended for transparent covers in extreme bright sunshine.

## Printing

Logotypes, instructive texts and pictures can be printed on the enclosures. They get a stylish look and they are easy to keep clean and tidy.

# Spotlight on CUBO-enclosures



# Ensto CUBO D enclosures IP 66/67



The CUBO D enclosure range is designed for housing of sensitive electronic, electric and pneumatic components and for use as terminal box. Special features are fastening pods inside the cover, slots for circuit boards in the base and cover plugs for the cover screws.

CUBO D is made of polycarbonate and ABS as standard; other plastic materials are available as well. Standard colour is RAL 7035, other colours available on request. The cover is grey or transparent.

Dimensions follow the European measuring standard for apparatus housings. Degree of protection IP 66/67.

## Main characteristics

- 20 different sizes
- 2 different materials: polycarbonate and ABS
- captive cover screws in stainless steel
- plain base sides
- modern design with phased corners
- stylish blind plugs for the covers
- fastening pods also inside the cover
- slots for PCBs in base corners

## Explanation to type symbols

### DPCP 162412 T

- D = CUBO D
- PC = polycarbonate
- AB = ABS
- P = plain sides
- 16 = 160 mm height
- 24 = 240 mm width
- 12 = 121 mm depth
- T = transparent cover
- G = grey cover

# Cubo D

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g	Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Complete enclosure, PC with grey cover</b>				<b>Complete enclosure, ABS with clear cover</b>			
DPCP 050504 G		53x55x36	47	DABP 050504 T		53x55x36	45
DPCP 050704 G		53x63x36	55	DABP 050704 T		53x63x36	51
DPCP 080806 G		80x82x56	128	DABP 080806 T		80x82x56	122
DPCP 080809 G		80x82x86	163	DABP 080809 T		80x82x86	146
DPCP 081206 G		80x120x56	169	DABP 081206 T		80x120x56	152
DPCP 081209 G		80x120x86	205	DABP 081209 T		80x120x86	191
DPCP 081606 G		80x160x56	194	DABP 081606 T		80x160x56	192
DPCP 081609 G		80x160x86	255	DABP 081609 T		80x160x86	237
DPCP 121206 G		120x122x56	219	DABP 121206 T		120x122x56	208
DPCP 121209 G		120x122x86	288	DABP 121209 T		120x122x86	267
DPCP 121609 G		120x160x91	363	DABP 121609 T		120x160x91	346
DPCP 122008 G	On request	120x200x76	-	DABP 122008 T	On request	120x200x76	-
DPCP 122009 G		120x200x86	423	DABP 122009 T		120x200x86	394
DPCP 122410 G	On request	120x240x101	-	DABP 122410 T	On request	120x240x101	-
DPCP 152008 G		150x200x76	421	DABP 152008 T		150x200x76	398
DPCP 162409 G		160x240x91	612	DABP 162409 T		160x240x91	577
DPCP 162412 G		160x240x121	743	DABP 162412 T		160x240x121	708
DPCP 203615 G	On request	200x360x151	-	DABP 203615 T	On request	200x360x151	-
DPCP 233009 G		230x300x86	973	DABP 233009 T		230x300x86	909
DPCP 233011 G		230x300x111	1107	DABP 233011 T		230x300x111	1043
<b>Complete enclosure, PC with clear cover</b>				<b>Mouting plates</b>			
DPCP 050504 T		53x55x36	47	DMP 0808		55x65x1,5	39
DPCP 050704 T		53x63x36	55	DMP 0812		65x91x1,5	67
DPCP 080806 T		80x82x56	128	DMP 0816		65x131x1,5	97
DPCP 080809 T		80x82x86	163	DMP 1212		93x105x1,5	112
DPCP 081206 T		80x120x56	169	DMP 1216		100x130x1,5	130
DPCP 081209 T		80x120x86	205	DMP 1220		100x170x1,5	202
DPCP 081606 T		80x160x56	194	DMP 1224	On request	108x210x1,5	-
DPCP 081609 T		80x160x86	255	DMP 1520		128x170x1,5	260
DPCP 121206 T		120x122x56	219	DMP 1624		148x211x1,5	342
DPCP 121209 T		120x122x86	288	DMP 2036	On request	182x340x1,5	-
DPCP 121609 T		120x160x91	363	DMP 2330		210x285x1,5	-
DPCP 122008 T	On request	120x200x76	-	<b>DIN rails, 15 and 35 mm</b>			
DPCP 122009 T		120x200x86	423	DR 15016.4	for 050504	15x26	7
DPCP 122410 T	On request	120x240x101	-	DR 15038.4	for 050704	15x48	14
DPCP 152008 T		150x200x76	421	DR 15058.4	for 080806/09	15x68	17
DPCP 162409 T		160x240x91	612	DR 15096.4	for 081206/09	15x106	28
DPCP 162412 T		160x240x121	743	DR 15136.4	for 081608/09, 121609	15x146	35
DPCP 203615 T	On request	200x360x151	-	DR 35058.4	for 080806/09	35x68	21
DPCP 233009 T		230x300x86	973	DR 35096.4	for 081206/09	35x106	34
DPCP 233011 T		230x300x111	1107	DR 35136.4	for 081608/09, 121609	35x146	46
<b>Complete enclosure, ABS with grey cover</b>				DR 35160.4	for 152008	35x170	55
DABP 050504 G		53x55x36	43	DR 35176.4	for 122008/09	35x186	59
DABP 050704 G		53x63x36	50	DR 35215.4	for 122410, 162409/12	35x225	73
DABP 080806 G		80x82x56	117	DR 35275.4	for 233009/11	35x285	93
DABP 080809 G		80x82x86	141	DR 35330.4	On request	35x340	-
DABP 081206 G		80x120x56	146	<b>Accessories</b>			
DABP 081209 G		80x120x86	185	DSHI 1	Hinge pair	28x28	27
DABP 081606 G		80x160x56	184	DFL 1	Fastening lug, set á 4		20
DABP 081609 G		80x160x86	229	DCP 1	Corner plug, set		2,4
DABP 121206 G		120x122x56	201	DLS 1	Cover screw, short 4x18/10		1,4
DABP 121209 G		120x122x86	260	DLS 2	Cover screw, long 4x50/10		1,8
DABP 121609 G		120x160x91	335	DLS 3	Cover screw, TORX	4x18/7	1,4
DABP 122008 G	On request	120x200x76	-	DMS 1	Mounting screw	3x7	0,5
DABP 122009 G		120x200x86	380	PEM 166	UL Label (to be ordered separately with PC enclosure)		
DABP 122410 G	On request	120x240x101	-				
DABP 152008 G		150x200x76	388				
DABP 162409 G		160x240x91	546				
DABP 162412 G		160x240x121	680				
DABP 203615 G	On request	200x360x151	-				
DABP 233009 G		230x300x86	844				
DABP 233011 G		230x300x111	895				

# Ensto CUBO H aluminium enclosures IP 65



The H-range enclosures are made of cast aluminium. They are sturdy and impact resistant and give an excellent housing for apparatus in demanding locations in various industrial sectors. Impact strength is 7 Nm. These high-class aluminium enclosures meet the requirements of the mechanical industry with regard to resistance against solvents, petrol and oil. Special features are high heat resistance and heat conduction. Heat resistance is 140 °C with silicone gaskets, unpainted even 180 °C. Corrosion resistance, for example against sea water, can be achieved with special lacquering.

An efficient shielding against interference is essential for equipment

used in electrical and electronic industry. A conductive gasket is available for the purpose. The enclosures have plain sides in RL 7001 grey colour. With special approval also for use in Ex-surroundings. Degree of protection IP 65.

## Main characteristics

- impact resistant - 7 Nm in accordance with EN 50014
- temperature resistant
- suitable for use in explosion hazard areas, e. g. for (Ex) e
- captive screws for the lid
- high resistance to chemicals

## Temperature range

EPDM gasket -40 °C to 90 °C  
Silicon gasket -55 °C to 140 °C  
(unpainted up to 180 °C)  
Colour grey  
(similar to RAL 7001)  
special paint jobs on request

## Explanation to the type symbols

### HALP 060604 G

H = CUBO H  
AL = aluminium  
P = plain sides  
06 = 64 mm height  
06 = 58 mm width  
04 = 36 mm depth  
G = grey cover

# Cubo H

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Complete enclosure</b>			
HALP 060604	G	64x58x36	150
HALP 061004	G	64x98x36	250
HALP 061504	G	64x150x36	320
HALP 080806	G	80x75x57	300
HALP 081306	G	80x125x57	440
HALP 081806	G	80x175x57	510
HALP 082506	G	80x250x57	600
HALP 121209	G	120x122x90	880
HALP 122209	G	120x220x90	1350
HALP 123608	G	120x360x80	1950
HALP 161609	G	160x160x90	1470
HALP 162609	G	160x260x90	2100
HALP 163609	G	160x360x90	2700
HALP 165609	G	160x560x90	3600
HALP 202311	G	200x230x110	2450
HALP 202318	G	200x230x180	2880
HALP 232811	G	230x280x110	2990
HALP 233311	G	230x330x110	3400
HALP 233318	G	230x330x180	4000
HALP 234011	G	230x400x110	4600
HALP 236011	G	230x600x110	6800
HALP 314011	G	310x400x110	6600
HALP 314018	G	310x400x180	7800
HALP 316011	G	310x600x110	9400
HALP 316018	G	310x600x180	11000

## Mounting plates

HMP 0606	for 060604
HMP 0610	for 061004
HMP 0615	for 061504
HMP 0808	for 080806
HMP 0813	for 081306
HMP 0818	for 081806
HMP 1212	for 121209
HMP 1222	for 122209
HMP 1236	for 123609
HMP 1616	for 161609
HMP 1626	for 162609
HMP 1636	for 163609
HMP 1656	for 165609
HMP 2023	for 202311/18
HMP 2328	for 232811
HMP 2333	for 233311/18
HMP 2340	for 234011
HMP 2360	for 236011
HMP 3140	for 314011/18
HMP 3160	for 316011/18

# Ensto CUBO M polyester enclosures IP 65



The CUBO M enclosures made of glassfibre reinforced polyester offer an excellent protection for apparatus for the electrical, petrochemical and mechanical industry. They are resistant to a wide range of chemicals. They are safe also for outdoor use, thanks to their sturdy construction, 7 Nm impact strength, corrosion and weater resistance and high tightness. The raw material is self-extinguishing and flameproof. Standard colour is grey RAL 7001. On special order the M-range is available also with approval for use in hazardous areas.

## Main characteristics

- resistant to chemicals
- temperature resistant
- flame retardant
- suitable for use in explosion hazard areas, on request
- impact resistant - 7 Nm in accordance with EN 50 014
- cover attached with captive screws
- seawater proof

## Explanation to the type symbols

### MGRP 080806 G

- M = CUBO M
- GR = polyester
- P = plain sides
- 08 = 75 mm height
- 08 = 80 mm width
- 06 = 55 mm depth
- G = grey cover

## Temperature range

EPDM gasket -40 °C to 90 °C  
silicon gasket -55 °C to 140 °C



# Cubo M

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Complete enclosure</b>			
MGRP 080806 G		75x80x55	230
MGRP 081106 G		75x110x55	280
MGRP 081606 G		75x160x55	370
MGRP 081906 G		75x190x55	430
MGRP 121209 G		120x122x90	660
MGRP 121212 G		120x122x120	890
MGRP 122209 G		120x220x90	1040
MGRP 161609 G		160x160x90	1280
MGRP 161612 G		160x160x120	1500
MGRP 162609 G		160x260x90	1750
MGRP 163609 G		160x360x90	2300
MGRP 165609 G		160x560x90	3600
MGRP 252612 G		250x255x120	2700
MGRP 252616 G		250x255x160	3275
MGRP 254012 G		250x400x120	3700
MGRP 404112 G		400x405x120	5100
<b>Mounting plates</b>			
MMP 0808	for 080806		
MMP 0811	for 081106		
MMP 0816	for 081606		
MMP 0819	for 081906		
MMP 1212	for 121209/12		
MMP 1222	for 122209		
MMP 1616	for 161609/12		
MMP 1626	for 162609		
MMP 1636	for 163609		
MMP 1656	for 165609		
MMP 2526	for 252612/16		
MMP 2540	for 254012		
MMP 4041	for 404112		

# Ensto CUBO S enclosures IP 66/67



The CUBO S range is designed for housing of electrical and pneumatic equipment, and is also suitable as terminal box in mechanically and chemically exacting conditions. CUBO S is available in two versions, with pre-pressings for openings on the sides or with plain sides for individual machining of holes. Special features are slots for PCBs in the base and sealability of all cover screws. Raw materials are polycarbonate and ABS. Standard colour is RAL 7035 grey, other colours on request. The covers are grey or transparent. Dimensions follow 25 mm module steps. Degree of protection is IP 66/67.

## Main characteristics

- 17 different sizes, 3 different versions (SPCK, SPCP, SABP)
- 2 different materials: polycarbonate and ABS
- captive and sealable cover screws in glassfilled PA
- integrated cover gasket of PUR, IP 66/67
- base with plain sides or knock outs
- all dimensions follow 25 mm moduls
- base in always 50 mm deep
- cover depths: 25, 50, 75 or 100 mm
- sealing holes in each cover (d = 1 mm)
- base/cover = male/female
- slots for PCB in base corners

## Explanation to the type symbols

### SPCK 181808 T

- S = CUBO S
- PC = polycarbonate
- AB = ABS
- K = pre-pressed knockouts
- P = plain sides
- 18 = 175 mm height
- 18 = 175 mm width
- 08 = 75 mm depth
- T = transparent cover
- G = grey cover

# Cubo S

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g	Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Complete enclosure, PC with grey cover</b>				<b>Complete enclosure, ABS with grey cover</b>			
Knock outs in the base				Plain walls in the base			
SPCK 081308 G		75x125x75	209	SPCP 181808 T		175x175x75	461
SPCK 081310 G		75x125x100	274	SPCP 181810 T		175x175x100	573
SPCK 081313 G		75x125x125	300	SPCP 181813 T		175x175x125	640
SPCK 131308 G		125x125x75	283	SPCP 181815 T		175x175x150	717
SPCK 131310 G		125x125x100	357	SPCP 182508 T		175x250x75	631
SPCK 131313 G		125x125x125	398	SPCP 182510 T		175x250x100	743
SPCK 131808 G		125x175x75	381	SPCP 182515 T		175x250x150	947
SPCK 131810 G		125x175x100	465	<b>Complete enclosure, ABS with clear cover</b>			
SPCK 131813 G		125x175x125	530	Plain walls in the base			
SPCK 131815 G		125x175x150	603	SABP 081308 G		75x125x75	184
SPCK 181808 G		175x175x75	461	SABP 081310 G		75x125x100	243
SPCK 181810 G		175x175x100	573	SABP 081313 G		75x125x125	266
SPCK 181813 G		175x175x125	640	SABP 131308 G		125x125x75	250
SPCK 181815 G		175x175x150	717	SABP 131310 G		125x125x100	317
SPCK 182508 G		175x250x75	631	SABP 131313 G		125x125x125	353
SPCK 182510 G		175x250x100	743	SABP 131808 G		125x175x75	328
SPCK 182515 G		175x250x150	947	SABP 131810 G		125x175x100	401
<b>Complete enclosure, PC with clear cover</b>				SABP 131813 G		125x175x125	459
Knock outs in the base				SABP 131815 G		125x175x150	521
SPCK 081308 T		75x125x75	209	SABP 181808 G		175x175x75	392
SPCK 081310 T		75x125x100	274	SABP 181810 G		175x175x100	490
SPCK 081313 T		75x125x125	300	SABP 181813 G		175x175x125	557
SPCK 131308 T		125x125x75	283	SABP 181815 G		175x175x150	616
SPCK 131310 T		125x125x100	357	SABP 182508 G		175x250x75	553
SPCK 131313 T		125x125x125	398	SABP 182510 G		175x250x100	666
SPCK 131808 T		125x175x75	381	SABP 182515 G		175x250x150	842
SPCK 131810 T		125x175x100	465	<b>Complete enclosure, ABS with clear cover</b>			
SPCK 131813 T		125x175x125	530	Plain walls in the base			
SPCK 131815 T		125x175x150	603	SABP 081308 T		75x125x75	193
SPCK 181808 T		175x175x75	461	SABP 081310 T		75x125x100	258
SPCK 181810 T		175x175x100	573	SABP 081313 T		75x125x125	284
SPCK 181813 T		175x175x125	640	SABP 131308 T		125x125x75	263
SPCK 181815 T		175x175x150	717	SABP 131310 T		125x125x100	337
SPCK 182508 T		175x250x75	631	SABP 131313 T		125x125x125	378
SPCK 182510 T		175x250x100	743	SABP 131808 T		125x175x75	342
SPCK 182515 T		175x250x150	947	SABP 131810 T		125x175x100	426
<b>Complete enclosure, PC with grey cover</b>				SABP 131813 T		125x175x125	491
Plain walls in the base				SABP 131815 T		125x175x150	564
SPCP 081308 G		75x125x75	209	SABP 181808 T		175x175x75	412
SPCP 081310 G		75x125x100	274	SABP 181810 T		175x175x100	524
SPCP 081313 G		75x125x125	300	SABP 181813 T		175x175x125	591
SPCP 131308 G		125x125x75	283	SABP 181815 T		175x175x150	668
SPCP 131310 G		125x125x100	357	SABP 182508 T		175x250x75	586
SPCP 131313 G		125x125x125	398	SABP 182510 T		175x250x100	698
SPCP 131808 G		125x175x75	381	SABP 182515 T		175x250x150	902
SPCP 131810 G		125x175x100	465	<b>Mounting plates</b>			
SPCP 131813 G		125x175x125	530	SMP 0813	Galv. steel	48x98x1,5	50
SPCP 131815 G		125x175x150	603	SMP 1313	"	98x98x1,5	106
SPCP 181808 G		175x175x75	461	SMP 1318	"	98x148x1,5	160
SPCP 181810 G		175x175x100	573	SMP 1818	"	148x148x1,5	247
SPCP 181813 G		175x175x125	640	SMP 1825	"	148x223x1,5	367
SPCP 181815 G		175x175x150	717	<b>Mounting rails (DIN)</b>			
SPCP 182508 G		175x250x75	631	DR 35040.4		35x50	15
SPCP 182510 G		175x250x100	743	DR 35090.4		35x100	32
SPCP 182515 G		175x250x150	947	DR 35140.4		35x150	49
<b>Complete enclosure, PC with clear cover</b>				DR 35215.4		35x225	73
Plain walls in the base				<b>Accessories</b>			
SPCP 081308 T		75x125x75	209	DSHI 1	Hinge, pair	28x28	27
SPCP 081310 T		75x125x100	274	SFL 1	Fastening lug, set á 4	15x30	11
SPCP 081313 T		75x125x125	300	SBI 1	Brass insert, sep.	M2	1
SPCP 131308 T		125x125x75	283	SMS 1	Mtg. screw, separate	4x8	1
SPCP 131310 T		125x125x100	357	SLS 35	Cover screw, sep.	11x35	1,8
SPCP 131313 T		125x125x125	398	SLS 60	Cover screw, sep.	11x60	3,4
SPCP 131808 T		125x175x75	381	PEM 166	UL Label (to be ordered separately with PC enclosure)		
SPCP 131810 T		125x175x100	465				
SPCP 131813 T		125x175x125	530				
SPCP 131815 T		125x175x150	603				

Data subject to change without notice.

# Ensto CUBO O enclosures IP 66/67



A durable and versatile enclosure has been the main concept for the construction of the CUBO O range. The enclosures are made of polycarbonate and ABS. Extension frames and alternatives for fastening of covers give a variety of possibilities. Adjustable elevators in the base corners allow mounting of plates and panels at any height. Standard colour is grey RAL 7035. The covers are grey or transparent. Degree of protection IP 66/67.

## Main characteristics

- 7 different sizes
- 2 different materials: polycarbonate and ABS
- 3 different covers screws in polyamide
- grey or transparent covers
- integrated cover gasket of PUR, IP 66/67
- a 55 mm deep extension frame available for all 7 sizes
- possibility to mount the cover on both sides of the base
- 2 sealing holes in each cover (d = 1 mm)
- elevator slots inside all base corners for panels

## Explanation to the type symbols

### OABP 203013 G

- O = CUBO O
- PC = polycarbonate
- AB = ABS
- P = plain sides
- 20 = 200 mm height
- 30 = 300 mm width
- 13 = 130 mm depth
- G = grey cover
- T = transparent cover
- E = extension frame

# Cubo O

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g	Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Extension frame include, screws, 55 mm deep, grey PC</b>				<b>Polycarbonate with clear cover, 130 mm deep</b>			
OPCP 202006 E	for 202010 base	200x200x55	304	OPCP 202013 T		200x200x130	1039
OPCP 203006 E	for 203010 base	200x300x55	360	OPCP 203013 T		200x300x130	1349
OPCP 204006 E	for 204010 base	200x400x55	433	OPCP 204013 T		200x400x130	1674
OPCP 303006 E	for 303010 base	300x300x55	450	OPCP 303013 T		300x300x130	1738
OPCP 304006 E	for 304010 base	300x400x55	480	OPCP 304013 T		300x400x130	2199
OPCP 306006 E	for 306010 base	300x600x55	667	OPCP 306013 T		300x600x130	3000
OPCP 406006 E	for 406010 base	400x600x55	766	OPCP 406013 T		400x600x130	3964
<b>Mounting plates, galv. steel</b>				<b>ABS with grey cover, 130 mm deep</b>			
OMP 2020	for 202010 base	160x160x1,5	285	OABP 202013 G		200x200x130	894
OMP 2030	for 203010 base	160x260x1,5	467	OABP 203013 G		200x300x130	1176
OMP 2040	for 204010 base	160x360x1,5	760	OABP 204013 G		200x400x130	1467
OMP 3030	for 303010 base	260x260x1,5	760	OABP 303013 G		300x300x130	1510
OMP 3040	for 304010 base	260x360x1,5	1058	OABP 304013 G		300x400x130	1950
OMP 3060	for 306010 base	260x560x1,5	1470	OABP 306013 G		300x600x130	2696
OMP 4060	for 406010 base	360x560x1,5	2300	OABP 406013 G		400x600x130	3484
<b>Mounting rails, DIN</b>				<b>ABS with clear cover, 130 mm deep</b>			
DR35 150.5	for 200 mm side	160x35	51	OABP 202013 T		200x200x130	926
DR35 250.5	for 300 mm side	260x35	83	OABP 203013 T		200x300x130	1218
DR35 350.5	for 400 mm side	360x35	115	OABP 204013 T		200x400x130	1512
<b>Cover screws</b>				<b>Polycarbonate with grey cover, 185 mm deep</b>			
OLS 42	Lid screw, cross head	14x42	2,7	Extension frame included			
OLW 55	Lid screw, wing head	14x55	3	OPCP 202018 G		200x200x185	1367
OLT 42	Lid screw, tamper proof, DIN head	14x42	2,8	OPCP 203018 G		200x300x185	1733
OLT 42 KEY	DIN head Key for OLT 42	50x50	42	OPCP 204018 G		200x400x185	2131
<b>Accessories</b>				<b>Polycarbonate with clear cover, 185 mm deep</b>			
OES 1	Extension frame screw	17x68	6	Extension frame included			
OHI 1	Hinge, pair		50	OPCP 202018 T		200x200x185	1367
OFL 1	Fastening lug, set á 4		26	OPCP 203018 T		200x300x185	1733
OEL 1	Corner elevator	20/26x14	8	OPCP 204018 T		200x400x185	2131
OTS 1	Threaded bushing	17x30/18	2,5	OPCP 303018 T		300x300x185	2188
OMS 1	Mounting screw	5x10	1	OPCP 304018 T		300x400x185	2703
OBI 1	Brass insert	M3	0,5	OPCP 306018 T		300x600x185	3703
QCP 1	Blind plug for lid	15/17x11	0,6	OPCP 406018 T		400x600x185	4730
OBS 15	Spacer incl. M5 screw	8x15		<b>ABS with grey cover, 185 mm deep</b>			
OBS 20	Spacer incl. M5 screw	8x20		Extension frame included			
OBS 30	Spacer incl. M5 screw	8x30		OABP 202018 G		200x200x185	1222
PEM 166	UL Label (to be ordered separately with complete PC enclosure)			OABP 203018 G		200x300x185	1560
<b>Complete enclosure, packed in single carton</b>				<b>Polycarbonate with clear cover, 185 mm deep</b>			
<b>Polycarbonate with grey cover, depth 130 mm</b>				Extension frame included			
OPCP 202013 G		200x200x130	1039	OABP 202018 T		200x200x185	1254
OPCP 203013 G		200x300x130	1349	OABP 203018 T		200x300x185	1602
OPCP 204013 G		200x400x130	1674	OABP 204018 T		200x400x185	1969
OPCP 303013 G		300x300x130	1738	OABP 303018 T		300x300x185	2018
OPCP 304013 G		300x400x130	2199	OABP 304018 T		300x400x185	2507
OPCP 306013 G		300x600x130	3000	OABP 306018 T		300x600x185	3468
OPCP 406013 G		400x600x130	3964	OABP 406018 T		400x600x185	4333

# Ensto CUBO C enclosures IP 66/67



CUBO C represents a versatile enclosure system of polycarbonate. The bases have pre-pressed flange knockouts for flanges according to SFS standard. The CUBO C enclosures can be built together with each other to larger units. A broad range of flanges and accessories make the range flexible and versatile to meet various needs. Even the depth of the enclosure can be altered with 55 mm high extension frames.

## Main characteristic

- flanges knock outs on all base sides (SFS)
- large number of different flanges
- degree of protection IP 66/67
- 2 different materials: polycarbonate and ABS

## Explanation to the type symbols

### CPCF 406013 T

- C = CUBO C
- PC = polycarbonate
- F = knockouts for flanges
- 40 = 400 mm height
- 60 = 600 mm width
- 13 = 130 mm depth
- T = transparent cover
- G = grey cover

# Cubo C

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
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**Complete enclosure, packed in single carton  
Polycarbonate with grey cover, depth 130 mm**

CPCF 202013 G		200x200x130	1039
CPCF 203013 G		200x300x130	1349
CPCF 204013 G		200x400x130	1674
CPCF 303013 G		300x300x130	1738
CPCF 304013 G		300x400x130	2199
CPCF 306013 G		300x600x130	3000
CPCF 406013 G		400x600x130	3964

**Polycarbonate with clear cover, 130 mm deep**

CPCF 202013 T		200x200x130	1039
CPCF 203013 T		200x300x130	1349
CPCF 204013 T		200x400x130	1674
CPCF 303013 T		300x300x130	1738
CPCF 304013 T		300x400x130	2199
CPCF 306013 T		300x600x130	3000
CPCF 406013 T		400x600x130	3964

**Polycarbonate with grey cover, 185 mm deep**

Extension frame included			
CPCF 202018 G		200x200x185	1367
CPCF 203018 G		200x300x185	1733
CPCF 204018 G		200x400x185	2131
CPCF 303018 G		300x300x185	2188
CPCF 304018 G		300x400x185	2703
CPCF 306018 G		300x600x185	3703
CPCF 406018 G		400x600x185	4730

**Polycarbonate with clear cover, 185 mm deep**

Extension frame included			
CPCF 202018 T		200x200x185	1367
CPCF 203018 T		200x300x185	1733
CPCF 204018 T		200x400x185	2131
CPCF 303018 T		300x300x185	2188
CPCF 304018 T		300x400x185	2703
CPCF 306018 T		300x600x185	3703
CPCF 406018 T		400x600x185	4730

**Flanges and their accessories**

Code:	Size:	Description:	Type:	Mat.:
F1151	I	Ea.	Cover	Bayblend
F2251	II	Incl. PUR gasket	"	PC
F1152	I	3xPg16	Cable gland	Bayblend
F1153	I	3xPg21	"	"
F1154	I	1xPg29	"	"
F2157	II	3xPg21+6xPg16	"	PC
F2158	II	3xPg29+4xPg16	"	"
F2159	II	2xPg36+4xPg16	"	"
F2160	II	11xPg16	"	"
F2161	II	13xPg13,5	"	"
F2252	II	7xPg11+7xPg9/16 incl. PUR	Knock out	PC
F2253	II	2xPg21/29/36 +2xPg9/16+1xPg11 incl. PUR	"	"
F2254	II	5xPg16/21+2xPg11 +1x9/16 incl. PUR	"	"
F1201	I	5x7-30 mm	Membran	Rubber
F2202	II	25x5-26 mm	"	"
F2203	II	35x5-26 mm	"	"
F2204	II	3x24-60 mm	"	"
F1155	I	3x21 mm+4x15 mm	"	TPE
F1156	I	4x16 mm+6x13 mm	"	"
F2162	II	3x30+6x18+16x14 mm	"	"
F2163	II	9x18 mm+24x14 mm	"	"
F151	I	2x19-29 mm	Cable spreader	Bayblend
F152	I	2x26-32 mm	"	"
F253	II	1x20-65 mm	"	PBT/
F254	II	2x20-65 mm	"	Rubber
F1G	I	Ea.	Gasket	EPDM
F2G	II	Ea.	"	"
F1PA25	I	Set á 4 incl. nuts	Screws	PA
F2PA30	II	"	"	PA
F2SS30	II	"	"	Steel
PMR 1857	II	One per size II flange	Flange support	PA

Data subject to change without notice.

For other accessories kindly see CUBO O, page 21.

# Ensto CUBO W enclosures IP 66/67



CUBO W is a robust single enclosure, made of polycarbonate. Each enclosure is fitted with heavy duty hinges and quick release

latches. The enclosure can be easily locked, with a padlock. A wide range of accessories is available.

## Explanation to the type symbols

### WPCP 202013 T

W = CUBO W  
PC = polycarbonate  
P = plain sides  
20 = 200 mm height  
20 = 200 mm width  
13 = 130 mm depth  
T = transparent cover  
G = grey cover

Kindly see page 21 for accessories.

## Cubo W

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g	Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
<b>Polycarbonate with clear cover, 130 mm deep</b>				<b>Polycarbonate with clear cover, 185 mm deep</b>			
WPCP 202013 T		200x200x130	1149	WPCP 202018 T		200x200x185	1453
WPCP 203013 T		200x300x130	1459	WPCP 203018 T		200x300x185	1819
WPCP 204013 T		200x400x130	1784	WPCP 204018 T		200x400x185	2217
WPCP 303013 T		300x300x130	1848	WPCP 303018 T		300x300x185	2298
WPCP 304013 T		300x400x130	2257	WPCP 304018 T		300x400x185	2737
WPCP 306013 T		300x600x130	3212	WPCP 306018 T		300x600x185	3879
WPCP 406013 T		400x600x130	4176	WPCP 406018 T		400x600x185	4942
<b>Polycarbonate with grey cover, 130 mm deep</b>				<b>Polycarbonate with grey cover, 185 mm deep</b>			
WPCP 202013 G		200x200x130	1149	WPCP 202018 G		200x200x185	1453
WPCP 203013 G		200x300x130	1459	WPCP 203018 G		200x300x185	1819
WPCP 204013 G		200x400x130	1784	WPCP 204018 G		200x400x185	2217
WPCP 303013 G		300x300x130	1848	WPCP 303018 G		300x300x185	2298
WPCP 304013 G		300x400x130	2257	WPCP 304018 G		300x400x185	2737
WPCP 306013 G		300x600x130	3212	WPCP 306018 G		300x600x185	3879
WPCP 406013 G		400x600x130	4176	WPCP 406018 G		400x600x185	4942

Data subject to change without notice.



# Ensto CUBO E enclosures IP 65



The metal E-range of enclosures (EFE, ESSP and EAS) is made either of painted sheet steel or unpainted stainless or acidproof steel. Corrosion resistance is achieved by a zinc-phosphate surface treatment and relief structured polyester powder paint. Mounting plates, cover plates for flange openings and key are included in the package. The acidproof and stainless steel enclosures have no flange openings.

There are three depth alternatives, and they are supplied with mounting plate, key and flange. Standard colour is RAL 7032.

Degree of protection IP 65.

## Main characteristics

- polyester painted RAL 7032
- acidproof AISI 316
- stainless steel AISI 304
- tightness IP 65
- PUR gasket
- additional sizes and designs on request
- hinged side changeable

## Explanation to the type symbols

### EFEF 403021 G

- E = CUBO E
- FE = sheet steel
- SS = stainless steel
- AS = acidproof steel
- F = flange sides
- P = plain sides
- 40 = 400 mm height
- 30 = 300 mm width
- 21 = 207 mm depth
- G = painted
- B = unpainted

# Cubo E

Ordering symbol	Description	Dimensions H x W x D mm	Ordering symbol	Description	Dimensions H x W x D mm
Mounting plates are included in the enclosure!			EFEP 8010031 G		800x1000x307
<b>Complete enclosure, RAL 7032 incl. one flange opening</b>			EFEP 1006031 G		1000x600x307
EFEP 203015 G		200x300x150	EFEP 1008031 G		1000x800x307
EFEP 302015 G		300x200x150	EFEP 10010031 G		1000x1000x307
EFEP 303015 G		300x300x150	EFEP 1206031 G		1200x600x307
EFEP 303021 G		300x300x210	EFEP 1208031 G		1200x800x307
EFEP 304015 G		300x400x150	EFEP 12010031 G		1200x1000x307
EFEP 304021 G		300x400x207	<b>Complete enclosure, Stainless Steel</b>		
EFEP 403021 G		400x300x207	ESSP 203015 B		200x300x150
EFEP 404021 G		400x400x207	ESSP 302015 B		300x200x150
EFEP 404031 G		400x400x307	ESSP 303015 B		300x300x150
EFEP 406021 G		400x600x207	ESSP 303021 B		300x300x210
EFEP 406031 G		400x600x307	ESSP 304015 B		300x400x150
EFEP 504021 G		500x400x207	ESSP 304021 B		300x400x207
EFEP 505021 G		500x500x207	ESSP 403021 B		400x300x207
EFEP 505031 G		500x500x307	ESSP 404021 B		400x400x207
EFEP 604021 G		600x400x207	ESSP 404031 B		400x400x307
EFEP 604031 G		600x400x307	ESSP 406021 B		400x600x207
EFEP 605031 G		600x500x307	ESSP 406031 B		400x600x307
EFEP 606021 G		600x600x207	ESSP 504021 B		500x400x207
EFEP 606031 G		600x600x307	ESSP 505021 B		500x500x207
EFEP 608031 G		600x800x307	ESSP 505031 B		500x500x307
EFEP 806021 G		800x600x207	ESSP 604021 B		600x400x207
EFEP 806031 G		800x600x307	ESSP 604031 B		600x400x307
EFEP 808021 G		800x800x207	ESSP 605031 B		600x500x307
EFEP 808031 G		800x800x307	ESSP 606021 B		600x600x207
EFEP 8010031 G		800x1000x307	ESSP 606031 B		600x600x307
EFEP 1006031 G		1000x600x307	ESSP 608031 B		600x800x307
EFEP 1008031 G		1000x800x307	ESSP 806021 B		800x600x207
EFEP 10010031 G		1000x1000x307	ESSP 806031 B		800x600x307
EFEP 1206031 G		1200x600x307	ESSP 808021 B		800x800x207
EFEP 1208031 G		1200x800x307	ESSP 808031 B		800x800x307
EFEP 12010031 G		1200x1000x307	ESSP 8010031 B		800x1000x307
<b>Complete enclosure, RAL 7032</b>			ESSP 1006031 B		1000x600x307
EFEP 203015 G		200x300x150	ESSP 1008031 B		1000x800x307
EFEP 302015 G		300x200x150	ESSP 10010031 B		1000x1000x307
EFEP 303015 G		300x300x150	ESSP 1208031 B		1200x800x307
EFEP 303021 G		300x300x210	ESSP 12010031 B		1200x1000x307
EFEP 304015 G		300x400x150	<b>Complete enclosure, Acid Proof Steel</b>		
EFEP 304021 G		300x400x207	EASP 203015 B		200x300x150
EFEP 403021 G		400x300x207	EASP 302015 B		300x200x150
EFEP 404021 G		400x400x207	EASP 303015 B		300x300x150
EFEP 404031 G		400x400x307	EASP 303021 B		300x300x210
EFEP 406021 G		400x600x207	EASP 304015 B		300x400x150
EFEP 406031 G		400x600x307	EASP 304021 B		300x400x207
EFEP 504021 G		500x400x207	EASP 403021 B		400x300x207
EFEP 505021 G		500x500x207	EASP 404021 B		400x400x207
EFEP 505031 G		500x500x307	EASP 404031 B		400x400x307
EFEP 604021 G		600x400x207	EASP 406021 B		400x600x207
EFEP 604031 G		600x400x307	EASP 406031 B		400x600x307
EFEP 605031 G		600x500x307	EASP 504021 B		500x400x207
EFEP 606021 G		600x600x207	EASP 505021 B		500x500x207
EFEP 606031 G		600x600x307	EASP 505031 B		500x500x307
EFEP 608031 G		600x800x307	EASP 604021 B		600x400x207
EFEP 806021 G		800x600x207	EASP 604031 B		600x400x307
EFEP 806031 G		800x600x307			
EFEP 808021 G		800x800x207			
EFEP 808031 G		800x800x307			

Ordering symbol	Description	Dimensions H x W x D mm	Material	Ordering symbol	Description	Material
EASP 605031 B		600x500x307		EDP 40	Rail support, door Pair	Galv.steel
EASP 606021 B		600x600x207		EDP 50	" "	"
EASP 606031 B		600x600x307		EDP 60	" "	"
EASP 608031 B		600x800x307		EDP 80	" "	"
EASP 806021 B		800x600x207		EDP 100	" "	"
EASP 806031 B		800x600x307		EDP 120	" "	"
EASP 808021 B		800x800x207		EBB 20	Rail support, base Pair	Galv.steel
EASP 808031 B		800x800x307		EBB 30	" "	"
EASP 1006031 B		1000x800x307		EBB 40	" "	"
EASP 1008031 B		1000x600x307		EBB 50	" "	"
EASP 10010031 B		1000x1000x307		EBB 60	" "	"
EASP 1206031 B		1200x600x307		EBB 80	" "	"
EASP 1208031 B		1200x800x307		EBB 100	" "	"
EASP 12010031 B		1200X1000X307		EBB 120	" "	"
<b>Mounting plates</b>				DR 3520 B	DIN rail for base 35x122	Galv.steel
EMP 2030	2 mm thick		Galv.steel	DR 3530 B	35x222	"
EMP 3020	"		"	DR 3540 B	35x322	"
EMP 3030	"		"	DR 3550 B	35x422	"
EMP 3040	"		"	DR 3560 B	35x522	"
EMP 4030	"		"	DR 3580 B	35x722	"
EMP 4040	"		"	DR 35100 B	35x922	"
EMP 4060	2,5 mm thick		"	DR 3520 D	DIN rail for door 35x76	Galv.steel
EMP 5040	"		"	DR 3530 D	35x176	"
EMP 5050	"		"	DR 3540 D	35x276	"
EMP 6040	"		"	DR 3550 D	35x376	"
EMP 6050	"		"	DR 3560 D	35x476	"
EMP 6060	"		"	DR 3580 D	35x676	"
EMP 6080	3 mm thick		"	DR 35100 D	35x876	"
EMP 8060	"		"	ED10	Triangular latch Set	Steel
EMP 8080	"		"	ED10 M6	ED10 + handle "	"
EMP 80100	"		"	EKL 1	Lock + 2 keys "	"
EMP 10060	"		"	OLT 42KEY	Key for std. latch Pc.	"
EMP 10080	"		"	EH1	Handle, black Set	Plastic
EMP 100100	"		"	EVF 2	Ventilation flange, Size C Set	Painted
EMP 12060	"		"	ECF 1	Cover flange 1, Size B Set	"
EMP 12080	"		"	ECF 2	Cover flange 2, Size C Set	"
EMP 120100	"		"	EDS 1	Door stopper Set	Steel
<b>Complete enclosure, 2-door version, IP 55</b>				ERS 2015 G	Rain shelter Set	Painted steel
EFEF 8040/4031 G		800x800x307		ERS 3015 G	" "	"
EFEF 10040/4031 G		1000x800x307		ERS 4015 G	" "	"
EFEF 10050/5031 G		1000x1000x307		ERS 3021 G	" "	"
EFEF 12050/5031 G		1200x1000x307		ERS 4021 G	" "	"
ESSP 8040/4031 B		800x800x307		ERS 5021 G	" "	"
ESSP 10040/4031 B		1000x800x307		ERS 6021 G	" "	"
ESSP 10050/5031 B		1000x1000x307		ERS 8021 G	" "	"
ESSP 12050/5031 B		1200x1000x307		ERS 4031 G	" "	"
EASP 8040/4031 B		800x800x307		ERS 5031 G	" "	"
EASP 10040/4031 B		1000x800x307		ERS 6031 G	" "	"
EASP 10050/5031 B		1000x1000x307		ERS 8031 G	" "	"
EASP 12050/5031 B		1200x1000x307		ERS 10031 G	" "	"
<b>Accessories</b>				ERS 2015 B	" "	Stainless steel
EFFL 1	Fastening lug, set	10 mm high	Stainless	ERS 3015 B	" "	"
EFFL 2	"	40 mm high	"	ERS 4015 B	" "	"
EFFL 11	"	10 mm high	Galv.steel	ERS 3021 B	" "	"
EFFL 12	"	40 mm high	"	ERS 4021 B	" "	"
EDP 20	Rail support, door	Pair	"	ERS 5021 B	" "	"
EDP 30	"	"	"	ERS 6021 B	" "	"
				ERS 8021 B	" "	"
				ERS 4031 B	" "	"
				ERS 5031 B	" "	"
				ERS 6031 B	" "	"
				ERS 8031 B	" "	"
				ERS 10031 B	" "	"

# Ensto CUBO F enclosures IP 65



The CUBO F terminal box range has its origin in innovative technical solutions. Raw material choices are painted sheet steel or unpainted stainless or acidproof steel. The enclosures have plain sides as standard. They are an excellent choice for tough applications in the mechanical industry. Adequate tightness is secured with a PUR gasket. The terminal boxes are supplied with a DIN 35 rail. Standard colour is RAL 7032. Degree of protection IP 65.

## Main characteristics

- polyester painting
- acidproof AISI 316
- stainless steel AISI 304
- polyurethane gasket
- degree of protection IP 65

## Explanation to the type symbols

### FEP 404010

- F = CUBO F
- FE = sheet steel
- SS = stainless steel
- AS = acid proof
- P = plain sides
- 40 = 400 mm height
- 40 = 400 mm width
- 10 = 100 mm depth
- G = painted
- B = unpainted

# Cubo F

Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g	Ordering symbol	Description	Dimensions W x L x D mm	Unit weight g
DIN rail is included							
<b>Complete enclosure, painted RAL 7032</b>				<b>Complete enclosure, Acid proof steel</b>			
FFEP 151510 G		150x150x100	2000	FASP 151510 B		150x150x100	2000
FFEP 153010 G		150x300x100	2500	FASP 153010 B		150x300x100	2500
FFEP 202010 G		200x200x100	2500	FASP 202010 B		200x200x100	2500
FFEP 203010 G		200x300x100	2600	FASP 203010 B		200x300x100	2600
FFEP 204010 G		200x400x100	3600	FASP 204010 B		200x400x100	3600
FFEP 205010 G		200x500x100	4200	FASP 205010 B		200x500x100	4200
FFEP 206010 G		200x600x100	4800	FASP 206010 B		200x600x100	4800
FFEP 208010 G		200x800x100	7000	FASP 208010 B		200x800x100	7000
FFEP 303010 G		300x300x100	4400	FASP 303010 B		300x300x100	4400
FFEP 304010 G		300x400x100	4800	FASP 304010 B		300x400x100	4800
FFEP 305010 G		300x500x100	6200	FASP 305010 B		300x500x100	6200
FFEP 306010 G		300x600x100	6600	FASP 306010 B		300x600x100	6600
FFEP 404010 G		400x400x100	6600	FASP 404010 B		400x400x100	6600
FFEP 406010 G		400x600x100	7600	FASP 406010 B		400x600x100	7600
FFEP 408010 G		400x800x100	8600	FASP 408010 B		400x800x100	8600
<b>Complete enclosure, Stainless steel</b>							
FSSP 151510 B		150x150x100	1800				
FSSP 153010 B		150x200x100	2500				
FSSP 202010 B		200x200x100	2500				
FSSP 203010 B		200x300x100	3000				
FSSP 204010 B		200x400x100	3600				
FSSP 205010 B		200x500x100	4200				
FSSP 206010 B		200x600x100	4800				
FSSP 208010 B		200x800x100	4800				
FSSP 303010 B		300x300x100	3800				
FSSP 304010 B		300x400x100	4700				
FSSP 305010 B		300x500x100	5500				
FSSP 306010 B		300x600x100	6300				
FSSP 404010 B		400x400x100	5300				
FSSP 406010 B		400x600x100	6300				
FSSP 408010 B		400x800x100	7300				
<b>Mounting plates separately</b>							
FMP 1515							
FMP 1530							
FMP 2020							
FMP 2030							
FMP 2040							
FMP 2050							
FMP 2060							
FMP 2080							
FMP 3030							
FMP 3040							
FMP 3050							
FMP 3060							
FMP 4040							
FMP 4060							
FMP 4080							

# Ensto CUBO J connection boxes



## Connection Box AP 9, IP 55

The dual-component connection box AP 9 is equipped with 10 membrane cable entries (Ø 17 mm) on the sides, and two on the bottom. AP 9 comes with a closing plug for reclosing the cable entry if necessary. The box can be furnished with strain-reliefs AS 9.1 and AS 9.3.

## Connection Box AP 10, IP 55

The spacious, dual-component connection box AP 10 is equipped with 10 membrane cable entries (Ø 19 mm) on the sides and two on the bottom. The box can be furnished with strain-reliefs AS 9, AS 9.1, AS 9.3.

## Connection Box AP 6, IP 20

The connection box AP 6 equipped with an insulate 5-way connector. The transparent wire connector makes it easy to ensure sufficient wire depth. Max. wire capacity per connector is 4 x 2.5 or 6 x 1,5 mm<sup>2</sup>. The box has 8 knockouts, 2 are at the back.

## Connection Box AP 7, IP 44

The round, dual component connection box AP 7, is similar to AP 9 and AP 10 and is equipped with 10 membrane cable entries (Ø 17 mm) and two on the bottom. The box can be furnished with strain-reliefs AS 9, AS 9.1 and AS 9.3.

## Connection Box AP 7.1, IP 44

The round, dual component connection box AP 7.1 is equipped with 10 membrane cable entries (Ø 17 mm) and two on the bottom. The cover is equipped with a strain-relief and membrane seal (Ø 9 - 22 mm).

## Connection Box AP 8.1, IP 44

The connection box AP 8.1 is made of polycarbonate. It is designed for use in connecting appliances or junctions in industrial cable feed-trough situations.

There is a 65 mm long DIN 35-profile inbuilt at the bottom of the box. Knockouts in the lid for feeding 45 mm (DIN 35) devices. The box comes with

## Cubo J

Ordering symbol	Description	Dimensions W x L x D mm
<b>Complete enclosure, PC with grey cover</b>		
AP 9	White, IP 55	86x86x39
AP 9 G	Grey, IP 55	"
AP 10	White, IP 55	100x100x46
AP 10 G	Grey, IP 55	"
AP 6	White, IP 20	60x60x29
AP 6.2	Grey, IP 20	"
AP 7	White, IP 44	117x41 Ø
AP 7.1	White, IP 44	115x71,5 Ø
AP 8.1	Grey, IP 44	110x158x64
AS 9	Strain relief	6-15,5 mm
AS 9.1	"	10,5-20 mm
AS 9.3	"	3x(6-13,5)

4 membrane seals (Ø max. 22 mm).  
IP 44 splashproofing is achieved by using the membrane seals and rubber washers for the screws.

### Strain-reliefs AS 9, AS 9.1, AS 9.3

Connection boxes AP 7, AP 7.1, AP 9 and AP 10 can be furnished with three different strain-reliefs. AS 9, which comes with a 5-pole, 2,5 mm<sup>2</sup> connector, AS 9.1 for one cable, and AS 9.3 for three cables.

# Ensto CUBO EX enclosures IP 66/67



The CUBO EX enclosure range made of polycarbonate, aluminium and polyester (PCP 4 and 7, ALP 7 and GRP 7) is designed for use in hazardous areas. Design, production and testing follow international standards. The enclosures have been tested according to standards EN 50014 and EN 50019.

## Hazardous areas

Hazardous Areas are those locations where a potentially explosive atmosphere may exist.

Use of equipment (including enclosures) in Hazardous Areas is highly regulated. Selection of equipment must take into account the regulations of the country in which it is to be used and the acceptability of the third party certificate to that country.

Prior to selecting equipment (including enclosures) for Hazardous Area use, the Gas Grouping, Zone Classification and temperature Classification assessments must be made.

## Gas Grouping

- Group I Those found in Mining only (underground fire damp methane)
- Group II Those found in Surface industry and "offshore" installations

## Zone Classification

Having established the hazardous substances, the likelihood of the explosion risk also needs to be considered. This is simplified by a zoning method in International and

European standards as follows:

- Zone 0 Hazard continuously present or present for long periods
- Zone 1 Hazards likely to be present
- Zone 2 Hazard unlikely to be present or only present for short periods of time, for example under fault conditions

## Temperature Classification

In order to establish the suitability of apparatus for use in a hazardous area from the view point of hot surfaces, apparatus is awarded a T-rating, corresponding to its maximum surface temperature under certain



# Cubo EX

**Ordering symbol** Description **Dimensions** **Unit**  
**EExe II** W x L x D weight  
mm g

**Complete enclosure, PC with grey cover**  
XPCP7 202013 G 200x200x130 1039  
XPCP7 203013 G 200x300x130 1349  
XPCP7 204013 G 200x400x130 1674  
XPCP7 303013 G 300x300x130 1738  
XPCP7 304013 G 300x400x130 2199  
XPCP7 306013 G 300x600x130 3000  
XPCP7 406013 G 400x600x130 3964

**Complete enclosure, PC with transparent cover**  
XPCP7 202013 T 200x200x130 1039  
XPCP7 203013 T 200x300x130 1349  
XPCP7 204013 T 200x400x130 1674  
XPCP7 303013 T 300x300x130 1738  
XPCP7 304013 T 300x400x130 2199  
XPCP7 306013 T 300x600x130 3000  
XPCP7 406013 T 400x600x130 3964

**Complete enclosure, PC with grey cover**  
XPCP4 081308 G 75x125x75 209  
XPCP4 081310 G 75x125x100 274  
XPCP4 081313 G 75x125x125 300  
XPCP4 131308 G 125x125x75 283  
XPCP4 131310 G 125x125x100 357  
XPCP4 131313 G 125x125x125 398  
XPCP4 131808 G 125x150x75 381  
XPCP4 131810 G 125x175x100 465

conditions. For example T6 = 85 ° C  
which is the highest temperature the  
apparatus will reach when operated  
under the most onerous conditions.

Specific information to be present  
on the product's certification labels,  
for example:

## EEx...e...II...T6

EEx = Equipment conforms to  
types of protection  
standardised by  
CENELEC (European standards  
EN 50014 and EN 50019 )

e = Increased safety

II = Gas grouping,  
surface industry and  
"offshore"

T6 = Temperature class. Only  
informed when the  
enclosure is finally  
assembled!

**Ordering symbol** Description **Dimensions** **Unit**  
**EExe II** W x L x D weight  
mm g

XPCP4 131813 G 125x175x125 530  
XPCP4 131815 G 125x175x150 603  
XPCP4 181808 G 175x175x75 461  
XPCP4 181810 G 175x175x100 573  
XPCP4 181813 G 175x175x125 640  
XPCP4 181815 G 175x175x150 717  
XPCP4 182508 G 175x250x75 631  
XPCP4 182510 G 175x250x100 743  
XPCP4 182515 G 175x250x150 947

**Complete enclosure, PC with transparent cover**  
XPCP4 081308 T 75x125x75 209  
XPCP4 081310 T 75x125x100 274  
XPCP4 081313 T 75x125x125 300  
XPCP4 131308 T 125x125x75 283  
XPCP4 131310 T 125x125x100 357  
XPCP4 131313 T 125x125x125 398  
XPCP4 131808 T 125x150x75 381  
XPCP4 131810 T 125x175x100 465  
XPCP4 131813 T 125x175x125 530  
XPCP4 131815 T 125x175x150 603  
XPCP4 181808 T 175x175x75 461  
XPCP4 181810 T 175x175x100 573  
XPCP4 181813 T 175x175x125 640  
XPCP4 181815 T 175x175x150 717  
XPCP4 182508 T 175x250x75 631  
XPCP4 182510 T 175x250x100 743  
XPCP4 182515 T 175x250x150 947

**Complete enclosure, Polyester with grey cover**  
XGRP7 080806 G 75x80x55 230  
XGRP7 081106 G 75x110x55 280  
XGRP7 081606 G 75x160x55 370  
XGRP7 081906 G 75x190x55 430  
XGRP7 121209 G 122x120x90 660  
XGRP7 121212 G 122x120x120 890  
XGRP7 122209 G 220x120x90 1040  
XGRP7 161609 G 160x160x90 1280  
XGRP7 161612 G 160x160x120 1500  
XGRP7 162609 G 260x160x90 1750  
XGRP7 163609 G 360x160x90 2300  
XGRP7 165609 G 560x160x90 4220  
XGRP7 252612 G 255x250x120 2700  
XGRP7 262616 G 255x250x160 3275  
XGRP7 254012 G 400x250x120 3700  
XGRP7 404112 G 400x405x120 5100

**Complete enclosure, Aluminium with grey cover**  
XALP7 060604 G 58x64x36 150  
XALP7 061004 G 98x64x36 250  
XALP7 061504 G 150x64x36 320  
XALP7 080806 G 75x80x57 300  
XALP7 081306 G 125x80x57 440  
XALP7 081806 G 175x80x57 510  
XALP7 082506 G 250x80x57 650  
XALP7 121209 G 122x120x90 880  
XALP7 122009 G 220x120x90 1350  
XALP7 123609 G 360x120x90 1950  
XALP7 161609 G 160x160x90 1470  
XALP7 162609 G 260x160x90 2100  
XALP7 163609 G 360x160x90 2700  
XALP7 165609 G 560x160x90 3600  
XALP7 202311 G 200x230x110 2450  
XALP7 232811 G 280x230x110 2990  
XALP7 233311 G 330x230x110 3400  
XALP7 234011 G 400x230x110 4600  
XALP7 236011 G 600x230x110 6800  
XALP7 314011 G 400x310x110 6600  
XALP7 316011 G 600x310x110 9400

Enclosure specification

Protection Concept	Code	Principle of Concept	Zone Suitability	Type of Enclosure				Application
				IP Rating	Impact Resistance	Material Limitations	Examples of Special Requirements	
Non Incendive	EX N Exn	Non sparking in normal use	Zone 2	IP 54 (min)	7 Nm		Portable equipment 1mm drop test	Luminaries, motors, junction boxes
Increased Safety	EEx e	Non sparking and non Incendive	Zone 1 & 2	IP 54 (min)	7 Nm			Luminaries, motors, junction boxes
Intrinsic Safety	EEx i	Electrical energy is limited below that which could cause an explosion	Zone 0, 1, 2 Zone 1, 2	IP 54 (min)	None			Instrumentation, control, low power devices
Pressurized	EEx p	Pressurization prevents entry of the external gas and purging is necessary before power is switched on	Zone 1 & 2	IP 40	7 Nm	Normally metal construction	To withstand 1,5 x max operating pressure with min. 200 Pa	Control panels, Motors, Computers and Instruments
Flameproof	EEx d	Must be capable of containing an explosion	Zone 1 & 2	Suggest IP 54	7 Nm	Generally cast alloysiron	Special consideration of flame paths at flange joints	Motors, junction boxes, luminaires and control devices
Oil Immersion	EEx o	Immersing incandive devices in oil. BSEN 50015 does not allow sparking devices	Zone 1 & 2	Sealed and open reservoir enclosures are permitted	7 Nm	Normally metal construction	Requires pressure relief value to IP 23, over pressure test of 0,5 bar for 1 min.	Heavy current apparatus, Transformers and instrumentation
Sand/Powder	EEx q	Covering devices with sand/powder quenches explosions caused by sparks or hot surfaces	Zone 1 & 2	Factory sealed	7 Nm	Normally metal construction		Electronic assemblies, power supplies
Encapsulation	EEx m	Encapsulating devices in insulating material	Zone 1 & 2	N/A	2 Nm		Plastic enclosures must have min. 1 mm wall thickness	Electronic components

# Ensto CUBO KW enclosures IP 54



Ensto CUBO KW is an enclosure designed for energy transfer and metering. The construction and the accessories available allow use for many different applications. Raw materials are impact resistant polycarbonate and glassfibre reinforced polyester, both suitable also for outdoor use. Types SK 107 and SK 108 have an inspection window for an energy meter or similar. Types SK 109 and SK 110 have no window as standard, but can be supplied also in a window version.

## CUBO KW

Ordering symbol	Dimensions mm	Material	Classification	Weight kg
KW 503013	465 x 275 x 130	PC	IP 44	1,87
KW 703020	660 x 300 x 205	PC	IP 44	3,43
SK 107	290 x 290 x 160	PC	IP 54	1,12
SK 108	290 x 290 x 160	PC	IP 30	1,12
SK 109	500 x 500 x 205	GFP	IP 54	4,70
SK 110	500 x 500 x 205	GFP	IP 30	4,70

Ensto CUBO KW can be equipped in many different ways, according to the customer's need.

## Accessories

	Material	Weight kg
<b>KW 503013</b>		
Triangular lock	Stainless steel	0,16
Pole bracket, compl.	Aluminium	0,76
Wall bracket, compl.	Aluminium	0,76
Mounting plate, compl.	Aluminium	0,36
Mounting plate, compl.	Stainless steel, 2 pcs.	
Mounting plate, compl.	Stainless steel, 2 pcs.	
Mounting plate, compl.	Brass, 2 pcs.	
<b>KW 703020</b>		
Triangular lock	Electro-galvanized/zink	0,10
Pole bracket, compl.	Galvanized steel	1,81
Wall bracket, compl.	" "	1,42
Mounting plate	Plywood, marine type	0,53
<b>KW 503013/KW 703020</b>		
Key	Aluminium	0,03
Cable entry, 3 pcs	Rubber (Ø 15 - 31 mm)	0,22
Cable entry, 1 pc.	Rubber (Ø 15 - 37 mm)	0,13

Data subject to change without notice.

# Ensto CUBO EMC enclosures



## RFI/EMI shielding for enclosures

Ensto has many years of experience in creating a good protection against interference in onerous locations. For example when it goes about shielding of computer housings, some of the largest manufacturers in the world are customers to Ensto. According to the customers request, EMC shielding can be made on metal as well on plastic enclosures, with preservation of the adequate degree of tightness.

Radio frequency interference (RFI) and Elektromagnetic interference (EMI) can be prevented from penetrating or escaping from an enclosure by en-

surging it acts as a Faraday Cage. This means providing electrically conductive shielding over all the surfaces. Doors and ports have to be electrically sealed to their apertures. In practice this need not to be continuous provided the frequencies being shielded cannot escape.

Ensto CUBO EMC offer solutions using dual function gaskets that both shield and retain a level of IP rating but this is often less effective than two separate gasket dedicated to their own function.

The overall levels of attenuation vary depended upon design, gasketing used and maintenance.

The latter is very important as contaminants build up on the conductive

surfaces over a period of time so reducing the conductive effect. This is more common in designs with "butt" joints. Gaskets sealing with a wiping action offer a level of self cleaning to retain their shielding levels without maintenance for longer. Shielding windows can be provided by using material with a lamination of conductive mesh but this will need connecting to the door or aperture continuously around its edge.

In January 1996 the European Directive on Electromagnetic Compality (EMC) came into force. This directive demands that all products susceptible to or capable of emitting EMI must be designed so that their function is not unduly degraded in the

presence of EMI and that they do not emit interference that would unduly affect equipment in their environment. The Directive has caused an increased demand for shielding product and filters. If you are in any doubt about the effect of this Directive contact a GAMBIA Enclosure Group member for clarification. Enclosures themselves are outside the scope of the EMC Directive since they neither produce nor are susceptible to EMI. They do not have to carry the CE mark as far as the EMC Directive is concerned.

The table below lists the coatings to choice, their values and the values of the gaskets used. Ensto offers as standard 12 different enclosure sizes with nickel coating in base and cover and a gasket of silver/silicone. Other sizes are available upon request.

### EMI/RFI Shielding and ESD Protection Data Sheet for Plastic Enclosures

EMC = ElectroMagnetic Compatibility  
 EMI = ElectroMagnetic Interference  
 RFI = Radio Frequency Interference  
 ESD = ElectroStatic Discharge

## CUBO EMC

Ordering symbol	Dimensions H x W x D mm	Unit weight g
EMCPC 080806 G	80 x 82 x 56	132
EMCPC 081206 G	80 x 120 x 56	174
EMCPC 081308 G	75 x 125 x 75	215
EMCPC 121206 G	120 x 122 x 56	225
EMCPC 131308 G	125 x 125 x 75	291
EMCPC 131808 G	125 x 175 x 75	392
EMCPC 181808 G	175 x 175 x 75	474
EMCPC 202013 G	200 x 200 x 130	1070
EMCPC 203013 G	200x 300 x 130	1389
EMCPC 303013 G	300 x 300 x 130	1790
EMCPC 304013 G	300 x 400 x 130	2264
EMCPC 306013 G	300 x 600 x 130	3090

Other sizes on request.

## Shielding

### EMI/RFI Shielding and ESD Protection Data Sheet of Plastic Enclosures

EMC = Electromagnetic Compatibility  
 EMI = Electromagnetic Interference  
 RFI = Radiofrequency Interference  
 ESD = Electrostatic Discharge

Shielding method	Coating thickness (microns)	EMI shielding attenuation (dB) ASTM ES 7-83	Sheet resistance (Ohm/square)
Ni Painting	50	60-65 dB	<0,5
Ag Painting (fast drying silver)	25	60 dB (1000 Mhz)	0,01
Ag Painting	25	60-65 dB	<0,1
Ag/Cu Painting	50	60-65 dB	<0,2
Cu Painting	50	60-65 dB	<0,25
Graphite Painting	50	<40 dB (1000 Mhz)	10 (25 mier.)

## RFI/EMI shielding gasket

Description	Test Specification	VC3200
Conductive Matrix (Outer Jacket Material)		Pure Ag in Silicone
Elastomeric Support Matrix (Inner Core Material)		Silicone
Shielding Effectiveness (dB) Frequency: 200 KHz H-field 100 KHz E-field 500 MHz E-field 2 GHz Plane wave 10 GHz Plane wave	MIL-G-8352 para. 4.6.12	65 120 120 110 110
Volume Resistivity (ohm-cm) Surface Resistivity (ohm-Lin. in.) Durometer (shore A) Tensile Strength (p.s.i.) Elongation (%) Tear Strength (p.p.i.) Compression set (room temp.) Compression set (dry heat)	ASTM D991 V.P.C. method V908 ASTM D2240 ASTM D412 ASTM D412 ASTM D395 1000 hrs. @ 72 °F 70 hrs. @ 300 °F	.001 .150 50 1,500 320 120 0 % 12 %
Life test (vol. res. after heat aging)	1000 hrs. @ 275 °F then 48 hrs. @ 340 °F	.004
Humidity test (vol. res. after steady-state exposure to moisture)	MIL-STD-202F method 103B test condition No. 4 240 hrs. @ 140 °F 90-95 % R.H.	.006

Data subject to change without notice.

## General CUBO accessories



An ordinary enclosure may need various kinds of accessories to serve in the application and location placed. Cable glands are the most common ones. Equipped with strain-reliefs they make assembly much faster and also save space inside the enclosure. Inspection windows allow access to meters and other equipment, and facilitate maintenance. Windows come in six sizes, from 2 modules up to 12 modules. IP 65 classification secures the requested tightness.

It may occur that the IP classification is reduced for equipment that demands cooling or ventilation; however an accessory ventilator will preserve the tightness at IP 33 or IP 44. Two sizes are available for 18 mm and 29 mm ventilation openings, both types with insect net. Ventilators mounted by pair give an efficient ventilation. The small type ventilator is suitable for draining of condensed water.

## Accessories

Ordering symbol	Thread length mm	Nominal dimension	For cables Ø mm	Material	Hole dimension mm
<b>Cable glands, Polyamide</b>					
KT 24.07	9	PG 7	3 - 6	Polyamide	12,7
KT 24.09	9	PG 9	4 - 8	"	15,5
KT 24.11	9	PG 11	5 - 10	"	19,0
KT 24.13	10	PG 13,5	6 - 12	"	20,8
KT 24.16	11	PG 16	8 - 14	"	23,0
KT 24.21	11	PG 21	10 - 18	"	28,8
KT 24.29	12	PG 29	16 - 25	"	37,7
KT 24.36	14	PG 36	22 - 32	"	47,9
KT 24.42	14	PG 42	28 - 38	"	55,0
KT 24.48	15	PG 48	36 - 44	"	60,5
<b>Counter nuts, Polyamide</b>					
PMR 444.07		PG 7		Polyamide	
PMR 444.09		PG 9		"	
PMR 444.11		PG 11		"	
PMR 444.13		PG 13,5		"	
PMR 444.16		PG 16		"	
PMR 444.21		PG 21		"	
PMR 444.29		PG 29		"	
PMR 444.36		PG 36		"	
PMR 444.42		PG 42		"	
PMR 444.48		PG 48		"	
<b>Cable glands Ms IP 54, with O-ring IP 65</b>					
KT 1.07		PG 7	6 - 8	Brass	12,7
KT 1.09		PG 9	8 - 10	"	15,5
KT 1.11		PG 11	10 - 12	"	19,0
KT 1.13		PG 13,5	12 - 14	"	20,8
KT 1.16		PG 16	14 - 16	"	23,0
KT 1.21		PG 21	17 - 19	"	28,8
KT 1.29		PG 29	26 - 28	"	37,7
KT 1.36		PG 36	33 - 35	"	47,9
KT 1.42		PG 42	39 - 41	"	58,0
<b>Cable glands with strain-relief, Ms</b>					
KT 3.11		PG 11	6,5 - 8,5	Brass	19,0
KT 3.13		PG 13,5	8,5 - 11	"	20,8
KT 3.16		PG 16	9,5 - 12	"	23,0
KT 3.21		PG 21	14 - 18	"	28,8
KT 3.29		PG 29	18 - 25	"	37,7
<b>Counter nuts Ms</b>					
PT 29.07		PG 7		Brass	
PT 29.09		PG 9		"	
PT 29.11		PG 11		"	
PT 29.13		PG 13,5		"	
PT 29.16		PG 16		"	
PT 29.21		PG 21		"	
PT 29.29		PG 29		"	
PT 29.36		PG 36		"	
PT 29.42		PG 42		"	

## Inspection windows and ventilators

Ordering symbol	Dimensions W x L mm	Unit weight g
<b>Inspection windows</b>		
VMA 2	67 x 59	56
VMA 4	67 x 94	79
VMA 6	67 x 130	105
VMA 8	67 x 163	128
VMA 10	67 x 200	159
VMA 12	67 x 233	181
<b>Ventilators</b>		
VDRI 18	25 x 28	5
VDRI 29	30,5 x 69	64

Data subject to change without notice.

# CUBO key for dimensions

## Outer dimensions:

H mm	W mm	D mm	CUBO Series:	Raw material:	Spec.:	Pages
60	60	29	J	Thermoplastics		31
53	55	36	D	Polycarbonate/ABS	UL	13
53	65	36	D	Polycarbonate/ABS	UL	13
64	58	36	H, EX	Aluminium	EX	15, 33
64	98	36	H, EX	Aluminium	EX	15, 33
86	86	39	J	Thermoplastics		31
75	80	55	M, EX	Polyester	EX	17, 33
75	80	57	H, EX	Aluminium	EX	15, 33
64	150	36	H, EX	Aluminium	EX	15, 33
92	92	41	J	Thermoplastics	Ø 177 mm	31
80	82	56	D, EMC	Polycarbonate/ABS	UL EMC	13, 37
75	110	55	M, EX	Polyester	EX	17, 33
100	100	46	J	Thermoplastics		31
80	120	56	D, EMC	Polycarbonate/ABS	UL EMC	13, 37
80	82	86	D	Polycarbonate/ABS	UL	13
80	125	57	H, EX	Aluminium	EX	15, 33
90	90	71	J	Thermoplastics	Ø 115 mm	31
75	160	55	M, EX	Polyester	EX	17, 33
75	125	75	S, EMC	Polycarbonate/ABS	UL EX EMC	19, 37
80	160	56	D	Polycarbonate/ABS	UL	13
80	175	57	H, EX	Aluminium	EX	15, 33
75	195	55	M, EX	Polyester	EX	17, 33
120	122	56	D, EMC	Polycarbonate/ABS	UL EMC	13, 37
80	120	86	D	Polycarbonate/ABS	UL	13
75	125	100	S, EX	Polycarbonate/ABS	UL EX	19, 33
80	160	86	D	Polycarbonate/ABS	UL	13
110	158	64	J	Thermoplastics		31
80	250	57	H, EX	Aluminium	EX	15, 33
75	125	125	S, EX	Polycarbonate/ABS	UL EX	19, 33
125	125	75	S, EX, EMC	Polycarbonate/ABS	UL EX EMC	19, 33, 37
120	122	86	D	Polycarbonate/ABS	UL	13
20	122	90	M, EX	Polyester	EX	17, 33
120	122	90	H, EX	Aluminium	EX	15, 33
125	125	100	S, EX	Polycarbonate/ABS	UL EX	19, 33
125	175	75	S, EX, EMC	Polycarbonate/ABS	UL EX EMC	19, 33, 37
120	160	91	D	Polycarbonate/ABS	UL	13
120	122	120	M, EX	Polyester	EX	17, 33
120	200	76	D	Polycarbonate/ABS	UL	13
125	125	125	S, EX	Polycarbonate/ABS	UL EX	19, 33
120	200	86	D	Polycarbonate/ABS	UL	13
125	175	100	S, EX	Polycarbonate/ABS	UL EX	19, 33
150	150	100	F	Steel/304/316		29
150	200	76	D	Polycarbonate/ABS	UL	13
175	175	75	S, EX, EMC	Polycarbonate/ABS	UL EX EMC	19, 33, 37
160	160	90	H, EX	Aluminium	EX	15, 33
160	160	91	M, EX	Polyester	EX	17, 33
160	220	90	M, EX	Polyester	EX	17, 33
120	220	90	H, EX	Aluminium	EX	15, 33



H mm	W mm	D mm	CUBO Series:	Raw material:	Spec.:	Pages
125	175	125	S, EX	Polycarbonate/ABS	UL EX	19, 33
120	240	101	D	Polycarbonate/ABS	UL	13
175	175	100	S, EX	Polycarbonate/ABS	UL EX	19, 33
160	160	120	M, EX	Polyester	EX	17, 33
125	175	150	S, EX	Polycarbonate/ABS	UL EX	19, 33
175	250	75	S, EX	Polycarbonate/ABS	UL EX	19, 33
160	240	91	D	Polycarbonate/ABS	UL	13
122	360	80	H, EX	Aluminium	EX	15, 33
160	260	90	H, EX	Aluminium	EX	15, 33
160	260	92	M, EX	Polyester	EX	17, 33
175	175	125	S, EX	Polycarbonate/ABS	UL EX	19, 33
200	200	100	F	Steel/304/316		29
175	250	100	S, EX	Polycarbonate/ABS	UL EX	19, 33
150	300	100	F	Steel/304/316		29
175	175	150	S, EX	Polycarbonate/ABS	UL EX	19, 33
160	240	121	D	Polycarbonate/ABS	UL	13
200	230	110	H, EX	Aluminium	EX	15, 33
160	360	90	H, EX	Aluminium	EX	15, 33
200	200	130	C, O, W, EX, EMC	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33, 37
160	361	91	M, EX	Polyester	EX	17, 33
230	300	86	D	Polycarbonate/ABS	UL	13
200	300	100	F	Steel/304/316		29
175	250	150	S, EX	Polycarbonate/ABS	UL EX	19, 33
230	280	110	H, EX	Aluminium	EX1	15, 33
200	200	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
230	300	111	D	Polycarbonate/ABS	UL	13
250	256	121	M, EX	Polyester	EX	17, 33
200	300	130	C, O, W, EX, EMC	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33, 37
200	400	100	F	Steel/304/316		29
160	560	90	M, EX	Polyester	EX	17, 33
160	560	90	H, EX	Aluminium	EX	15, 33
200	230	180	H, EX	Aluminium	EX	15, 33
230	330	110	H, EX	Aluminium	EX	15, 33
200	300	150	E	Steel/304/316		26
300	300	100	F	Steel/304/316		29
200	500	100	F	Steel/304/316		29
230	401	110	H, EX	Aluminium	EX	15, 33
250	255	160	M, EX	Polyester	EX	17, 33
200	400	130	C, O, W, EX, EMC	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33, 37
200	360	151	D	Polycarbonate/ABS		13
200	300	185	C, O, W,	Polycarbonate/ABS	UL	23, 21, 24
300	300	130	C, O, W, EX	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33
200	600	100	F	Steel/304/316		29
300	400	100	F	Steel/304/316		29
250	402	120	M, EX	Polyester	EX	17, 33

**Outer dimensions:**

<b>H mm</b>	<b>W mm</b>	<b>D mm</b>	<b>CUBO Series:</b>	<b>Raw material:</b>	<b>Spec.:</b>	<b>Pages</b>
300	300	150	E	Steel/304/316		26
230	330	180	H, EX	Aluminium	EX	15, 33
310	403	110	H, EX	Aluminium	EX	15, 33
200	400	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
300	500	100	F	Steel/304/316		29
230	600	110	H, EX	Aluminium	EX	15, 33
300	400	130	C, O, W, EX, EMC	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33, 37
200	800	100	F	Steel/304/316		29
400	400	100	F	Steel/304/316		29
300	300	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
300	400	150	E	Steel/304/316		26
300	600	100	F	Steel/304/316		29
400	401	120	M, EX	Polyester	EX	17, 33
310	600	110	H, EX	Aluminium	EX	15, 33
300	400	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
310	400	180	H	Aluminium	EX	15
300	600	130	C, O, W, EX	Polycarbonate/ABS	UL EX EMC	23, 21, 24, 33
400	600	100	F	Steel/304/316		29
300	400	207	E	Steel/304/316		26
400	600	130	C, O, W, EX	Polycarbonate/ABS	UL EX	23, 21, 24, 33
400	800	100	F	Steel/304/316		29
400	400	207	E	Steel/304/316		26
300	600	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
310	600	180	H	Aluminium	EX	15
500	400	207	E	Steel/304/316		26
400	600	185	C, O, W	Polycarbonate/ABS	UL	23, 21, 24
400	400	307	E	Steel/304/316		26
400	600	207	E	Steel/304/316		26
500	500	207	E	Steel/304/316		26
400	600	307	E	Steel/304/316		26
600	600	207	E	Steel/304/316		26
500	500	307	E	Steel/304/316		26
800	600	207	E	Steel/304/316		26
600	600	307	E	Steel/304/316		26
800	800	207	E	Steel/304/316		26
600	800	307	E	Steel/304/316		26
800	800	307	E	Steel/304/316		26
1200	600	307	E	Steel/304/316		26
800	1000	307	E	Steel/304/316		26
1200	800	307	E	Steel/304/316		26
100	1000	307	E	Steel/304/316		26
1200	1000	307	E	Steel/304/316		26



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# Notes

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