

Low voltage circuit breaker

SACE Tmax XT



SACE Tmax XT are highly advanced low voltage moulded case circuit-breakers with unparalleled versatility of use and able to solve all installation problems brilliantly and respond successfully to all plant engineering requirements, from standard ones to the most technologically advanced ones.

SACE Tmax XT range can be found in the three-pole and four-pole, fixed, plug-in and withdrawable versions, fitted with the very latest generation thermo-magnetic and electronic trip units, with the possibility of interchangeability.

SACE Tmax XT set up a new technological standard and leave you free to think up and build installations with extraordinary performances.

The present document applies to products made in Italy and manufactured in Frosinone plant.

This manufacturing site is certified according to ISO 9001, IRIS, ISO 14001, OHSAS 18001 and SA 8000.

Product Conformity & Compliance

REACH (Regulation EC 1907/2006)

SACE Tmax XT and related accessories were classified as Articles and, during normal and reasonably foreseeable conditions of use, do not intentionally release any substance or preparation.

ABB SACE continuously undertakes communications throughout its supply chain in order to collect information about suppliers' compliance with REACH regulation.

SVHC (Regulation EC 1907/2006 REACH)

ABB SACE continuously assesses its products for content of Substances of Very High Concern (SVHC), as included in the "Candidate List" by the European Chemicals Agency (ECHA).

RoHS II

SACE Tmax XT and related accessories are within the scope of Directive 2011/65/EU (RoHS II) and Amendment 2015/863, starting from July 22nd 2019. However, according to our best knowledge, SACE Tmax XT and related accessories do not contain any of the restricted substances listed into RoHS II directive.

WEEE

SACE Tmax XT and related accessories are included in the scope of Directive 2012/19/EU starting from August 15th 2018.

Product Safety

Certification of conformity with the product Standards is carried out in the ABB SACE tests laboratory (accredited by ACCREDIA) in respect of UNI CEI EN ISO /IEC 17025 Standard, by the Italian certification body ACAE (Association for Certification of Electrical Apparatus), member of the European LOVAG organization (Low Voltage Agreement Group) and by the Swedish certification body Intertek Semko, belonging to the international IECEE organization.

Standard:

- IEC 60947-2.

Directives:

- EC “Low Voltage Directive” (LVD) 2014/35/EU
- EC “Electromagnetic Compatibility Directive” (EMC) 2014/30/EU
- Directive on Radio Equipment and Telecommunications 2014/53/EU (Applicable to Touch and Hi-Touch trip units where Bluetooth® is integrated).

Naval Registers:

- Lloyd’s Register of Shipping, Germanischer Lloyd, Bureau Veritas, Rina, Det Norske Veritas, Russian Maritime Register of Shipping, ABS.

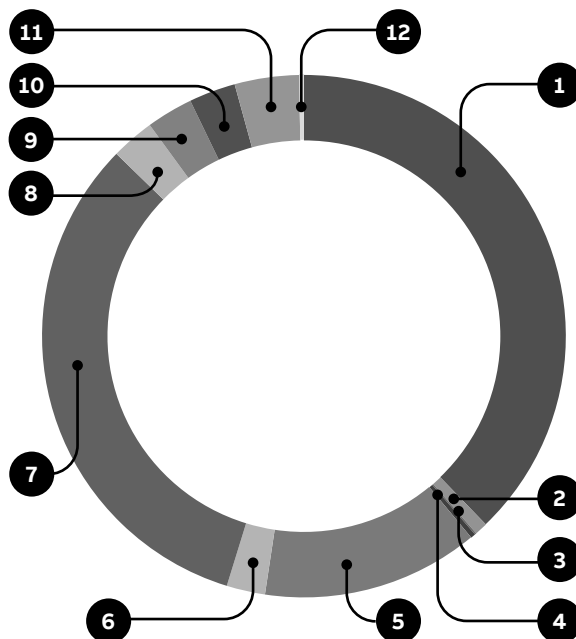
Certifications and awards



Material declaration

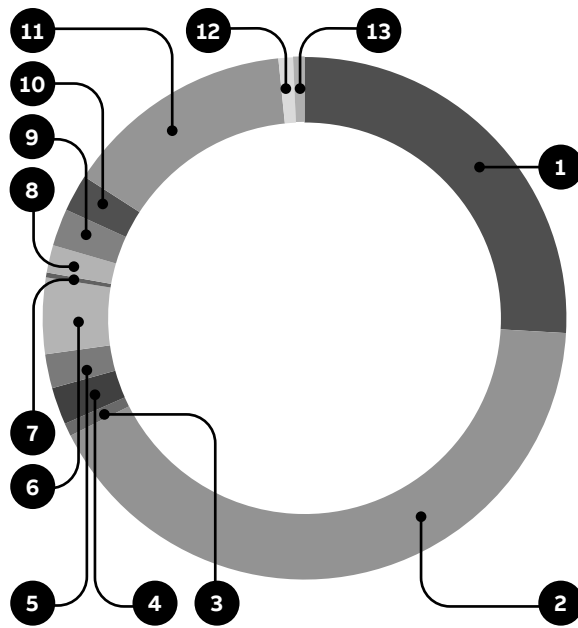
The charts below show the constituents of Tmax XT with thermal-magnetic release (TM) and electronic release, 3-poles. The constituent materials are distributed as follows.

Tmax XT1 with thermal-magnetic release.
The total weight of the product is 1.013 gr.



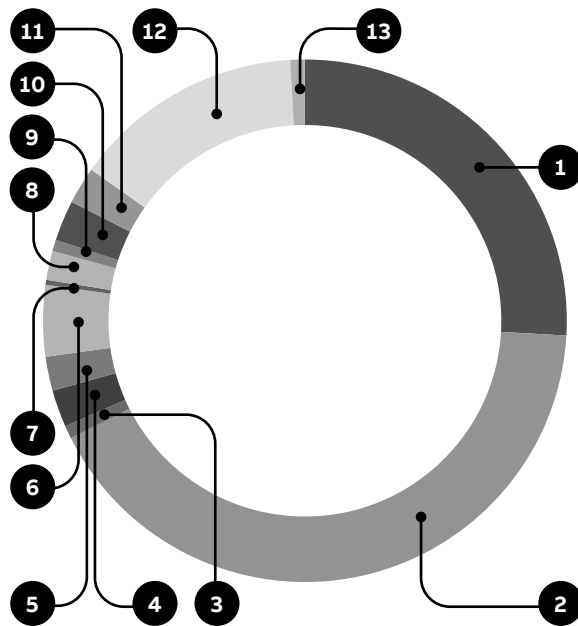
Material	% wt
1 BMC/SMC	38,0%
2 Melamine	0,8%
3 Brass	0,1%
4 Precious metals	0,3%
5 Copper	13,5%
6 Stainless steel	2,4%
7 Steel	32,7%
8 Copper alloy	2,7%
9 PA	2,4%
10 PBT	2,9%
11 PC	4,0%
12 ABS	0,3%
TOTAL	100,0%

Tmax XT2 with thermal-magnetic release.
 The total weight of the product is 1.251 gr.



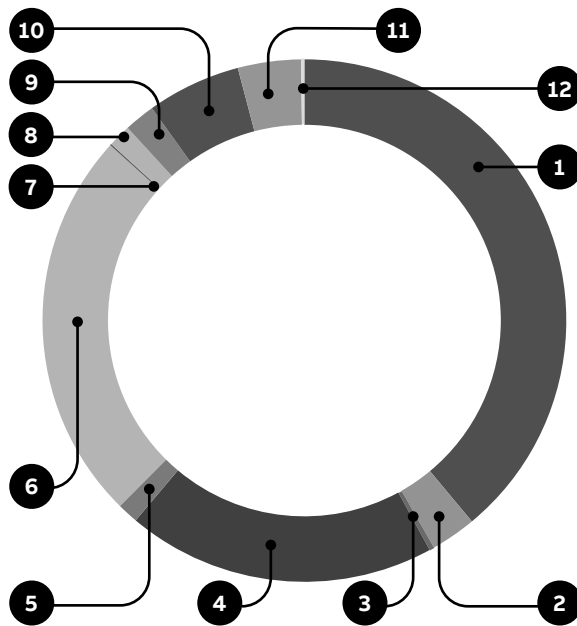
Material	% wt
1 Steel	25,9%
2 BMC/SMC	41,7%
3 PET	0,8%
4 PC	2,3%
5 PBT	2,1%
6 PA	4,7%
7 ABS	0,3%
8 Bimetal	1,7%
9 Brass	2,3%
10 Copper alloys	2,3%
11 Copper	14,3%
12 Stainless steel	0,9%
13 Precious metals	0,7%
TOTAL	100,0%

Tmax XT2 with electronic release.
 The total weight of the product is 1.244 gr.



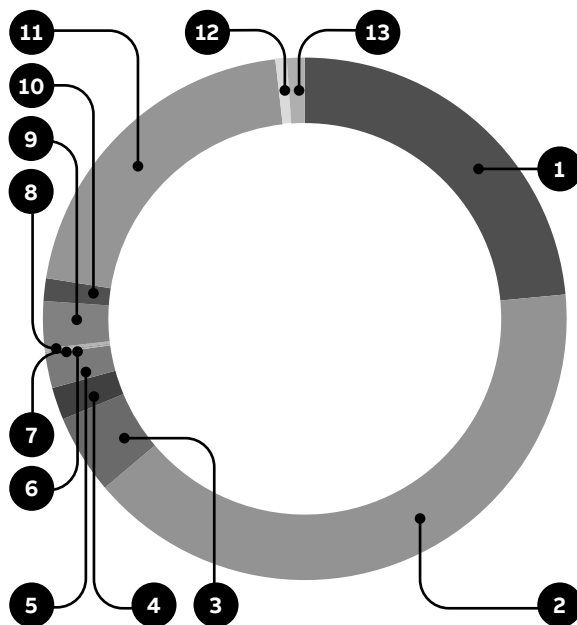
Material	% wt
1 Steel	25,9%
2 BMC/SMC	41,7%
3 PET	0,8%
4 PC	2,3%
5 PBT	2,1%
6 PA	4,4%
7 ABS	0,3%
8 Printed Circuit Board	1,8%
9 Precious metals	0,7%
10 Brass	2,5%
11 Copper alloys	2,3%
12 Copper	14,3%
13 Stainless steel	0,9%
TOTAL	100,0%

Tmax XT3 with thermal-magnetic release.
 The total weight of the product is 1.471 gr.



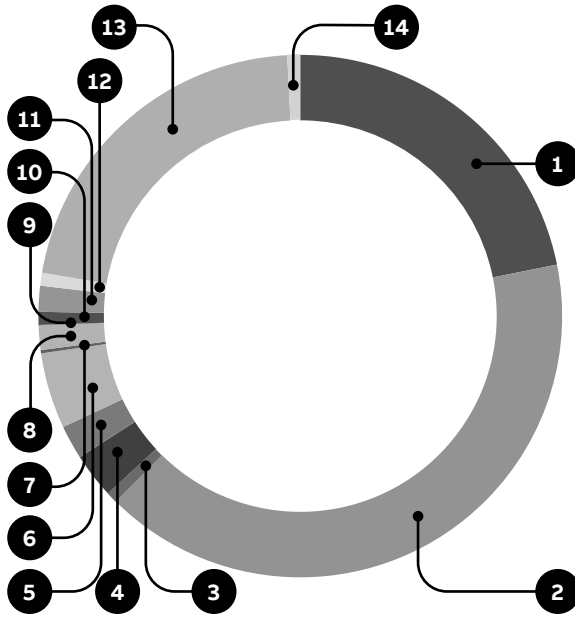
Material	% wt
1 BMC/SMC	38,9%
2 Brass	2,8%
3 Precious metals	0,3%
4 Copper	19,1%
5 Stainless steel	1,3%
6 Steel	24,2%
7 Vulcanized fiber	0,1%
8 Copper alloys	1,4%
9 PA	1,9%
10 PBT	5,8%
11 PC	3,9%
12 ABS	0,2%
TOTAL	100,0%

Tmax XT4 with thermal-magnetic release.
 The total weight of the product is 2006 gr.



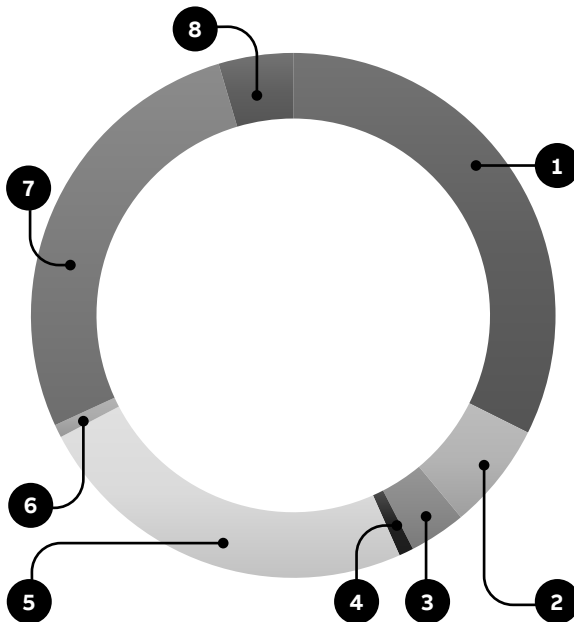
Material	% wt
1 Steel	23,5%
2 BMC/SMC	40,3%
3 PC	4,9%
4 PBT	2,0%
5 PA	2,1%
6 PAA	0,1%
7 Bronze	0,04%
8 ABS	0,2%
9 Brass	2,9%
10 Copper alloys	1,4%
11 Copper	20,7%
12 Precious metals	0,7%
13 Stainless steel	1,1%
TOTAL	100,0%

Tmax XT4 with electronic release.
The total weight of the product is 1.930 gr.



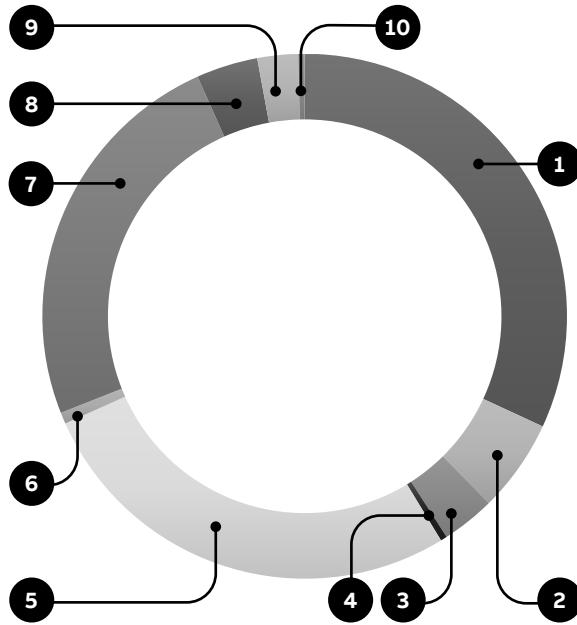
Material	% wt
1 Steel	21,8%
2 BMC/SMC	40,7%
3 PET	0,7%
4 PC	2,8%
5 PBT	2,1%
6 PA	4,7%
7 ABS	0,2%
8 PWB	1,5%
9 Bronze	0,04%
10 Precious metals	0,8%
11 Brass	1,6%
12 Wires	0,8%
13 Copper	21,6%
14 Stainless steel	0,8%
TOTAL	100,0%

Tmax XT5 with thermal-magnetic release.
The total weight of the product is 4.198 gr.



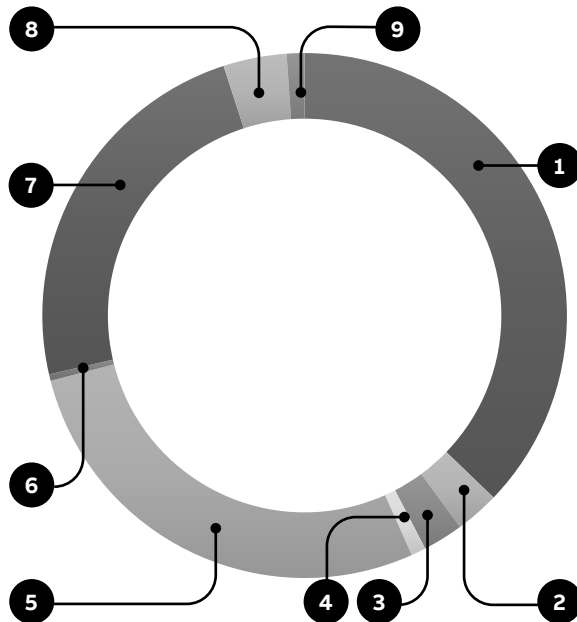
Material	% wt
1 BMC/SMC	32,4%
2 PC compounds	6,6%
3 PA compounds	3,5%
4 ABS	0,9%
5 Cu and Cu alloys	24,0%
6 Precious metals	0,8%
7 Steel	27,3%
8 Stainless Steel	4,6%
TOTAL	100,0%

Tmax XT5 with electronic release.
The total weight of the product is 4.502 gr.



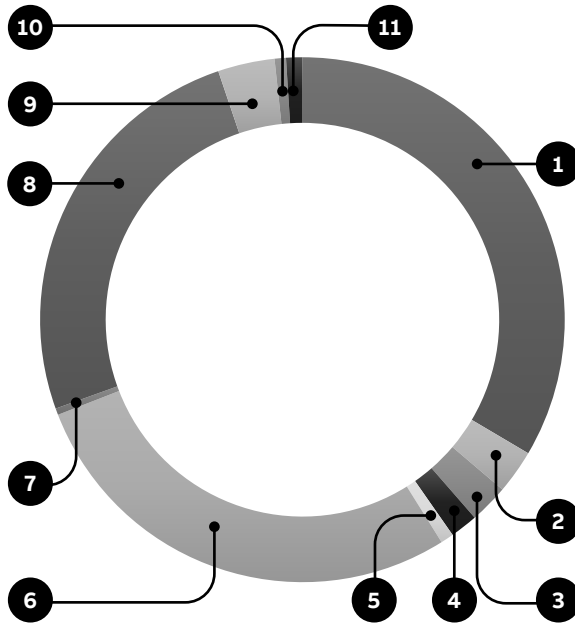
Material	% wt
1 BMC/SMC	31,9%
2 PC compounds	5,7%
3 PA compounds	3,3%
4 ABS	0,4%
5 Cu and Cu alloys	27,0%
6 Precious metals	0,7%
7 Steel	24,3%
8 Stainless Steel	3,8%
9 Electronic components	2,5%
10 Other	0,4%
TOTAL	100,0%

Tmax XT6 with thermal-magnetic release.
The total weight of the product is 8.036 gr.



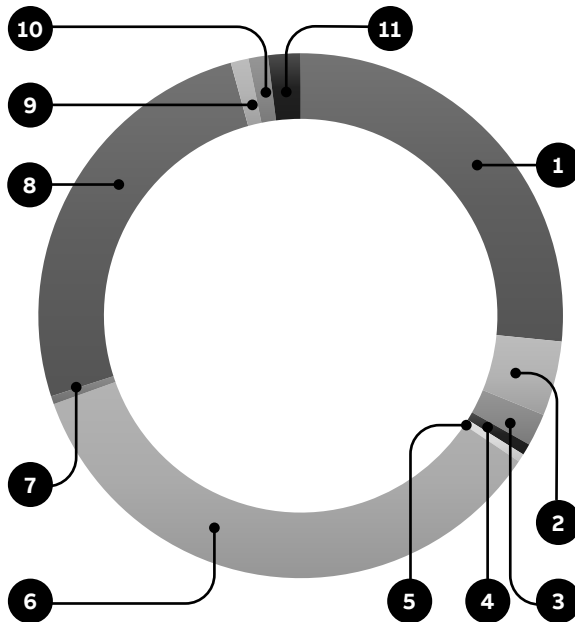
Material	% wt
1 BMC/SMC	37,2%
2 PC compounds	2,7%
3 PA compounds	2,5%
4 ABS	0,9%
5 Cu and Cu alloys	27,7%
6 Precious metals	0,4%
7 Steel	23,6%
8 Stainless Steel	3,9%
9 Other	1,1%
TOTAL	100,0%

Tmax XT6 with EKIP DIP electronic release.
The total weight of the product is 8.762 gr.



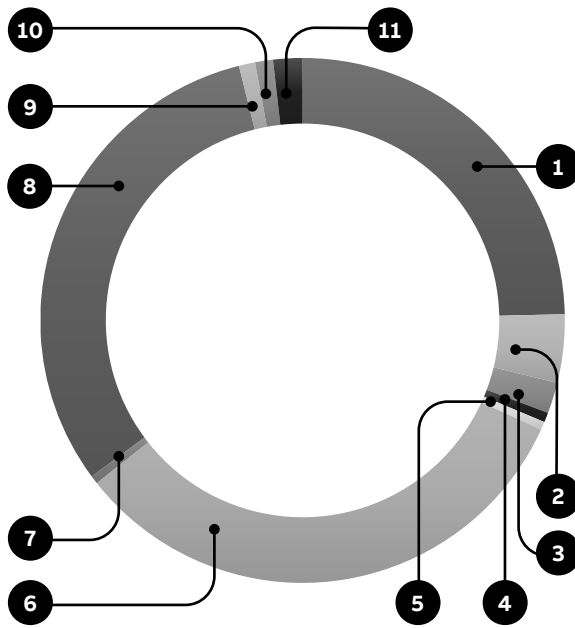
Material	% wt
1 BMC/SMC	33,5%
2 PC compounds	2,7%
3 PA compounds	2,4%
4 PET	1,7%
5 ABS	0,8%
6 Cu and Cu alloys	28,0%
7 Precious metals	0,4%
8 Steel	25,3%
9 Stainless Steel	3,5%
10 Electronic board	0,7%
11 Other	1,0%
TOTAL	100,0%

Tmax XT7 with electronic release.
The total weight of the product is 12.369 gr.



Material	% wt
1 BMC/SMC	26,6%
2 PC compounds	4,6%
3 PA compounds	2,0%
4 PET	0,7%
5 ABS	0,5%
6 Cu and Cu alloys	35,2%
7 Precious metals	0,5%
8 Steel	25,7%
9 Stainless Steel	1,1%
10 Electronic components	1,2%
11 Other	2,0%
TOTAL	100,0%

Tmax XT7 M with electronic release.
The total weight of the product is 13.368 gr.



Material	% wt
① BMC/SMC	24,6%
② PC compounds	4,2%
③ PA compounds	1,9%
④ PET	0,6%
⑤ ABS	0,5%
⑥ Cu and Cu alloys	32,5%
⑦ Precious metals	0,5%
⑧ Steel	31,2%
⑨ Stainless Steel	1,0%
⑩ Electronic components	1,1%
⑪ Other	1,8%
TOTAL	100,0%

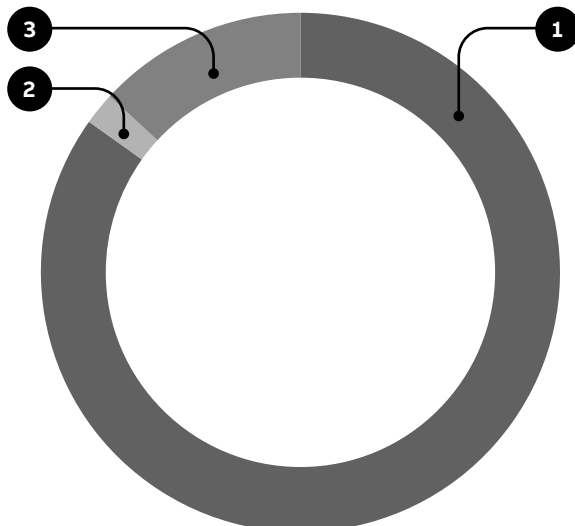
Packaging

The charts below provide information for each packaging material used.

The cardbox and the paper used for the product material are made of recycled fibers and are 100% recyclables.

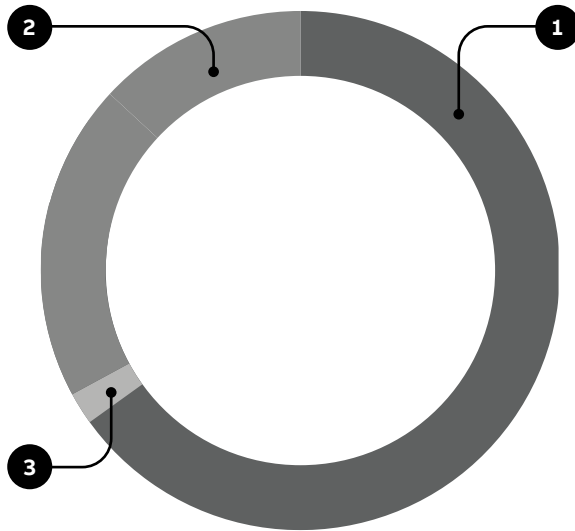
The polymer films used are marked with the proper identification code and are recyclable.

Tmax XT1 Packaging material composition:
total weight = 82 gr.



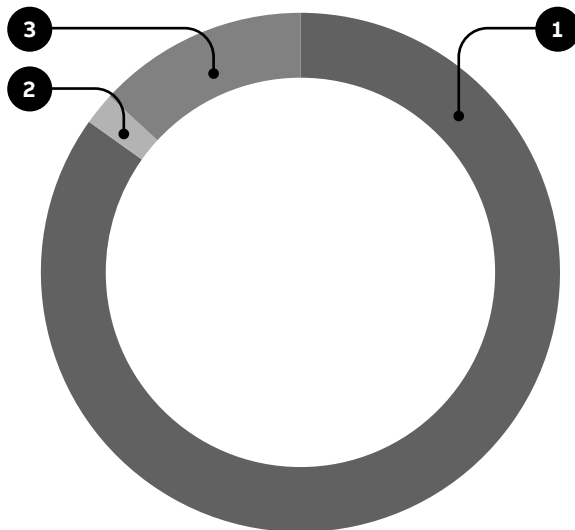
Material	%
① Cardbox	84%
② Paper	2%
③ Plastic	13%
TOTAL	100%

Tmax XT2 Packaging material composition:
total weight = 205 gr.



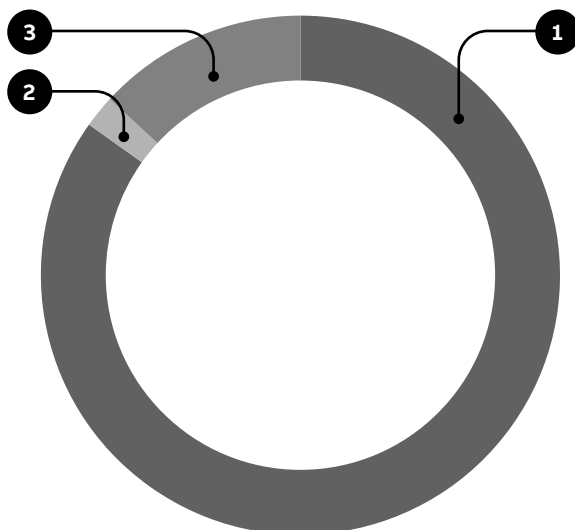
Material	%
① Cardbox	59%
② Paper	34%
③ Plastic	7%
TOTAL	100%

Tmax XT3 Packaging material composition:
total weight = 167 gr.



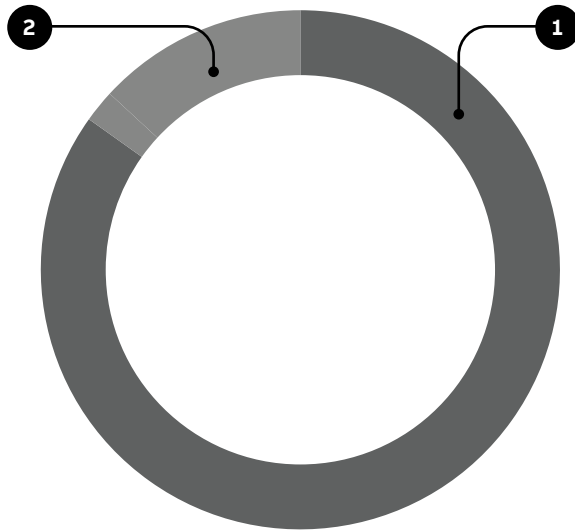
Material	%
① Cardbox	91%
② Paper	1%
③ Plastic	8%
TOTAL	100%

Tmax XT4 Packaging material composition:
total weight = 230 gr.



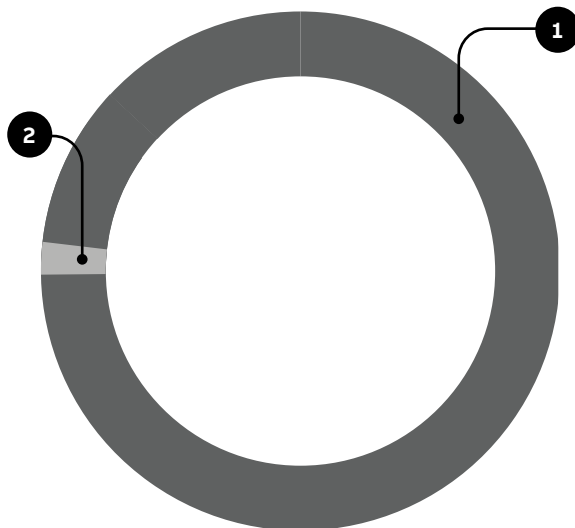
Material	%
① Cardbox	63%
② Paper	30%
③ Plastic	7%
TOTAL	100%

Tmax XT5 Packaging material composition:
total weight = 250 gr.



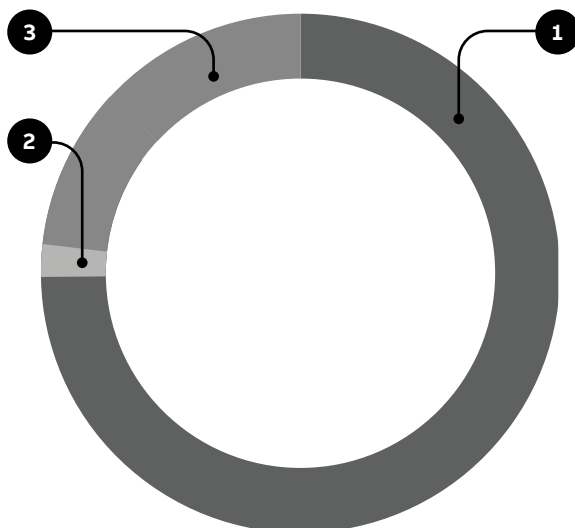
Material	%
① Cardbox	85%
② Plastic	15%
TOTAL	100%

Tmax XT6 Packaging material composition:
total weight = 1.015 gr.



Material	%
① Cardbox	98.5%
② Plastic	1.5%
TOTAL	100%

Tmax XT7 Packaging material composition:
total weight = 1.250 gr.



Material	%
① Cardbox	72%
② Plastic	4%
③ Wood	24%
TOTAL	100%

Product Use



Energy

Power losses for Tmax XT are indicated in the following table.

Type	Trip unit	Power loss (W/pole)
Tmax XT1	TM	15
Tmax XT2	TM	16.1
	Electronic	10.8
Tmax XT3	TM	17.8
Tmax XT4	TM	16.4
	Electronic	16.4
Tmax XT5 400	TM	24.1
	Electronic	19
Tmax XT5 630	TM	47.8
	Electronic	45
Tmax XT6 630	TM	34,4
	Ekip DIP	33,2
Tmax XT6 800	TM	54,2
	Ekip DIP	53,4
Tmax XT6 1000	Ekip DIP	83,5
Tmax XT7 XT7-M 800	Electronic	24
Tmax XT7 XT7-M 1000	Electronic	37
Tmax XT7 XT7-M 1250	Electronic	57
Tmax XT7 XT7-M 1600	Electronic	94

These values represent 0.02-0.03% of the total power flowing through Tmax XT breakers. The energy consumption during the use of Tmax XT has been estimated assuming 20 years of continual operation with a 30% load rate and 100% operation time.

Type	Trip unit	Energy consumption (KWh)
Tmax XT1	TM	710
Tmax XT2	TM	762
	Electronic	511
Tmax XT3	TM	842
Tmax XT4	TM	776
	Electronic	776
Tmax XT5 400	TM	1140
	Electronic	899
Tmax XT5 630	TM	2261
	Electronic	2129
Tmax XT6 630	TM	1627
	Ekip DIP	1570
Tmax XT6 800	TM	2564
	Ekip DIP	2526
Tmax XT6 1000	Ekip DIP	3950
Tmax XT7 XT7-M 800	Electronic	1135
Tmax XT7 XT7-M 1000	Electronic	1750
Tmax XT7 XT7-M 1250	Electronic	2696
Tmax XT7 XT7-M 1600	Electronic	4447

End-of-life

At the end of operating life, constituent components of Tmax XT have been optimized in order to reduce waste amount and increase recovery of the material.

Metals and polymers contained into SACE Tmax XT are characterized by high recycling rates. Most plastic parts are marked for easy sorting.

The recyclability potential of the product has been evaluated using IEC / TR 62635. According to this Standard, the potential recyclability ratio is >60%.

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