PRODUCT ENVIRONMENTAL INFORMATION

Low voltage contactors and contactor relays
AF09 … AF96 and NF

ABB's range of AF contactors is the industry benchmark. The integrated electronically controlled coil offers multiple benefits over conventional alternatives, and together with ABB's wide product offering an optimal configuration, every time.

The AF 3-pole contactors are designed for the control of motors from 4 up to 45 kW / 400 V AC (AC-3) or 5 up to 60 hp / 480V AC UL and switching power circuits up to 130 A (AC-1) or 115 A UL/CSA general use. NF contactor relays are used for switching auxiliary and control circuit. Thanks to the AF technology, contactors and contactor relays accept a wide control voltage range (24...500 V 50/60 Hz and 20...500 V DC) with only 4 coils managing large control voltage variations, reducing panel energy consumptions and ensuring distinct operations in unstable networks. Furthermore, surge protection is built-in, offering a compact solution. AF contactors and NF contactor relays have a block type design, can be easily extended with add-on auxiliary contact blocks and an additional wide range of accessories.

Product conformity & compliance

REACH (Regulation EC 1907/2006)
AF contactors 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 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 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). According to our best knowledge, AF contactors and related accessories do not contain SVHC substances exceeding 0.1 % w/w.

RoHS II
AF contactors and related accessories are within the scope of directive 2011/65/EU (RoHS II) and amendment 2015/863, starting from July 22 2019.

WEEE
The Waste Electrical and Electronic Equipment Directive (WEEE Directive) is the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive, became European law in February 2003.

Product safety
Compliance with essential health and safety requirements has been assured by compliance with the applicable product and safety standards. The validation according to the product and safety standards is carried out by third party tests laboratory (STIEE / TL030) in respect of the EN ISO/IEC 17025 European standard, according to IECEE CB scheme. CB certificate has been issued.

Standards:
- IEC/EN 60947-1
- IEC/EN 60947-4-1
- IEC/EN 60947-5-1

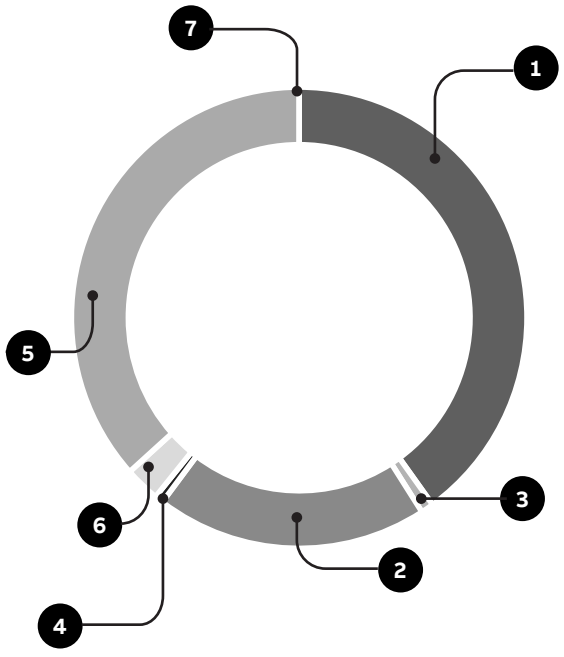
- UL 508, 60947-1, 60947-4-1, 60947-5-1
- CSA 60947-1, 60947-4-1, 60947-5-1

Directives:
- Low Voltage Directive 2014/35/EC
- EMC Directive No. 2014/30/EU

Material declaration

The chart below shows the constituents of NF22E-11 which represent the NF 4-pole contactor relays range. The constituent materials are distributed as follows.

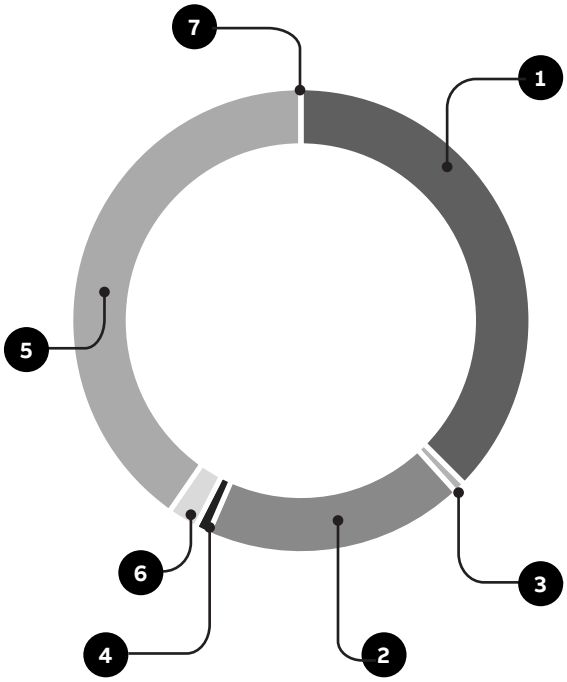
NF22E-11
The total weight of the product is 270 gr.



Material		% wt
1	Steel	40.0 %
2	Copper and copper alloys	19.3 %
3	Stainless steel	0.9 %
4	Precious metal	0.6 %
5	PA	36.6 %
6	PCBA	2.5 %
7	Other	<0.1 %
	TOTAL	100.0 %

The chart below shows the constituents of NF44E-11 which represent the NF 8-pole contactor relays range. The constituent materials are distributed as follows.

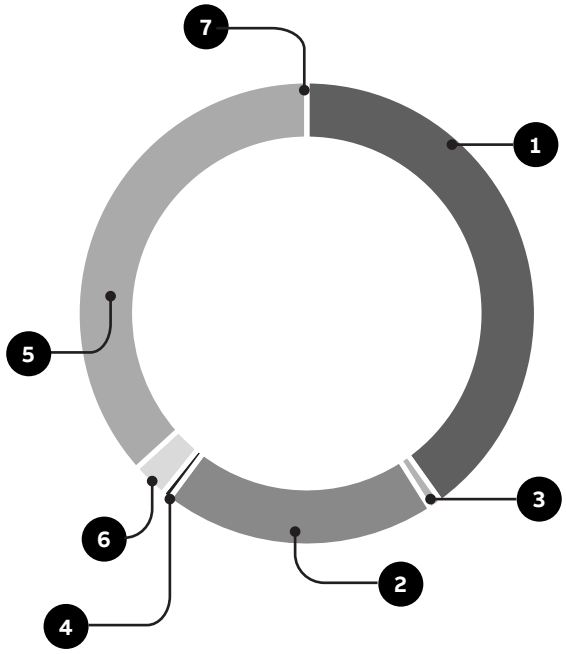
NF44E-11
The total weight of the product is 320 gr.



Material		% wt
1	Steel	37.4 %
2	Copper and copper alloys	18.4 %
3	Stainless steel	0.8 %
4	Precious metal	1.0 %
5	PA	40.3 %
6	PCBA	2.1 %
7	Other	<0.1 %
	TOTAL	100.0 %

The charts below show the constituents of AF09-30-10-11 which represent the AF09...AF16 3-pole contactor range. The constituent materials are distributed as follows.

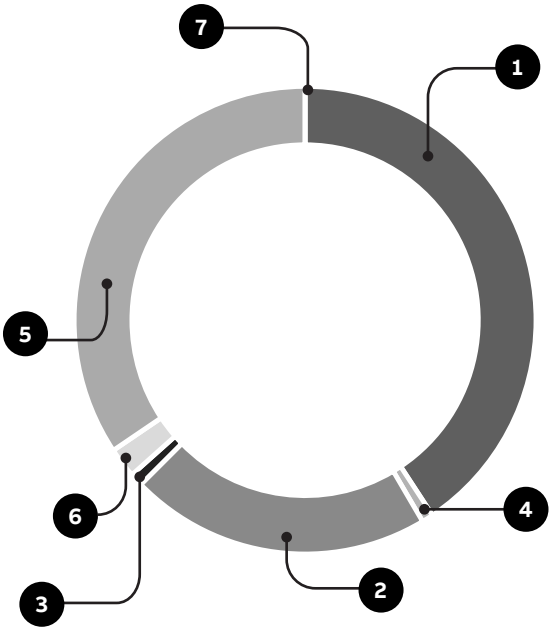
AF09-30-10-11
The total weight of the product is 270 gr.



Material		% wt
1	Steel	40.0 %
2	Copper and copper alloys	19.3 %
3	Stainless steel	0.9 %
4	Precious metal	0.6 %
5	PA	36.6 %
6	PCBA	2.5 %
7	Other	<0.1 %
	TOTAL	100.0 %

The charts below show the constituents of AF26-30-00-11 which represent the AF26...AF38 3-pole contactors range. The constituent materials are distributed as follows.

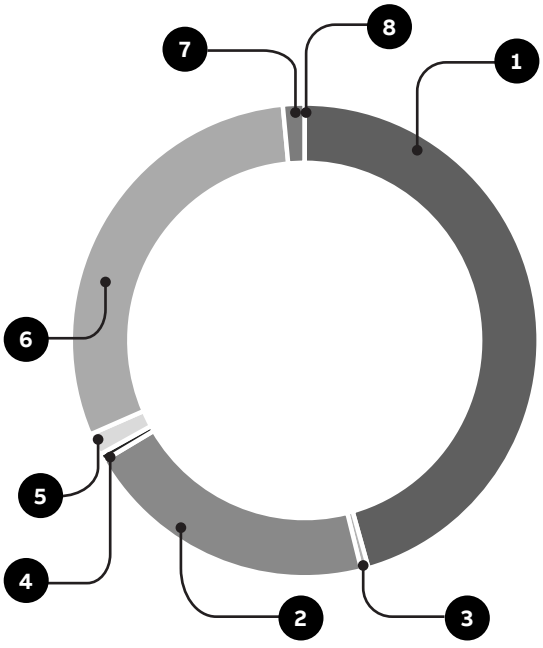
AF26-30-00-11
The total weight of the product is 320 gr.



Material		% wt
1	Steel	40.7 %
2	Copper and copper alloys	21.1 %
3	Precious metal	0.9 %
4	Stainless steel	0.8 %
5	PA	34.4 %
6	PCBA	2.1 %
7	Other	<0.1 %
	TOTAL	100.0 %

The charts below show the constituents of AF40-30-00-11 which represent the AF40...AF65 3-pole contactors range. The constituent materials are distributed as follows.

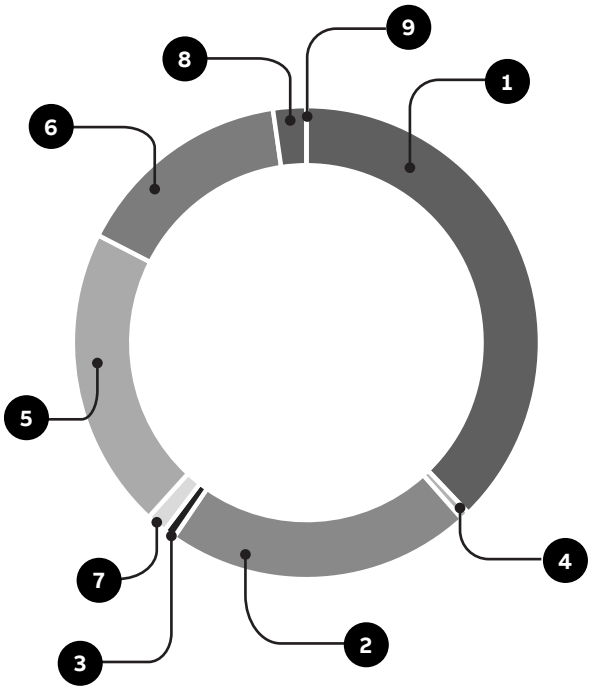
AF40-30-00-11
The total weight of the product is 950 gr.



Material		% wt
1	Steel	45.6 %
2	Copper and copper alloys	20.4 %
3	Stainless steel	0.5 %
4	Precious metal	0.5 %
5	PA	30.0 %
6	PCBA	1.5 %
7	MF	1,5 %
8	Other	<0.1 %
	TOTAL	100.0 %

The charts below show the constituents of AF80-30-00-11 which represent the AF80, AF96 3-pole contactors range. The constituent materials are distributed as follows.

AF80-30-00-11
The total weight of the product is 1033 gr.

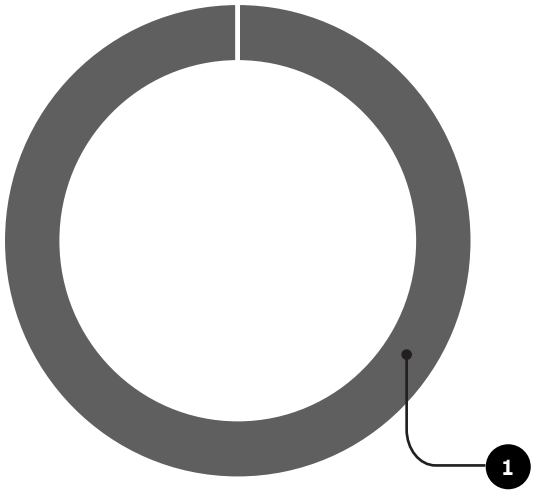


Material		% wt
1	Steel	37.8 %
2	Copper and copper alloys	21.2 %
3	Precious metal	0.8 %
4	Stainless steel	0.6 %
5	PA	20.7 %
6	PPA compounds	15.2 %
7	MF	2.3 %
8	PCBA	1.4 %
9	Other	<0.1 %
	TOTAL	100.0 %

Packaging

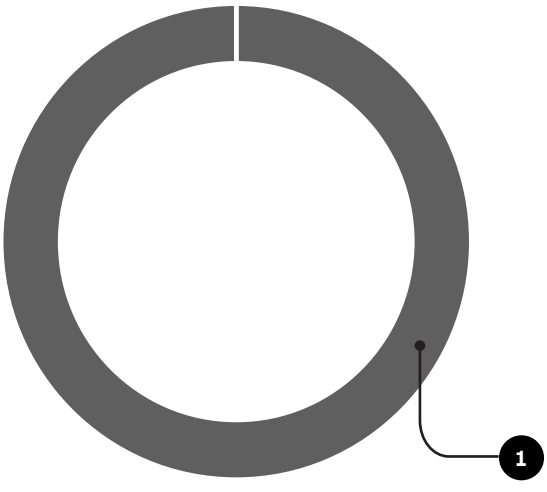
The charts below provide information for each packaging material used. The cardbox and the paper used for the product material are made of recycled fibers and are 100 % recyclables.

NF22E-11
Packaging material composition: total weight = 12 gr.



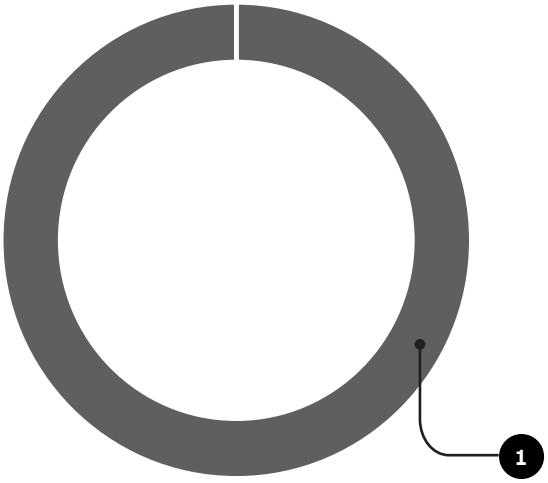
Material		%
1	Cardbox	100 %
	TOTAL	100 %

NF44E-11
Packaging material composition: total weight = 19 gr.



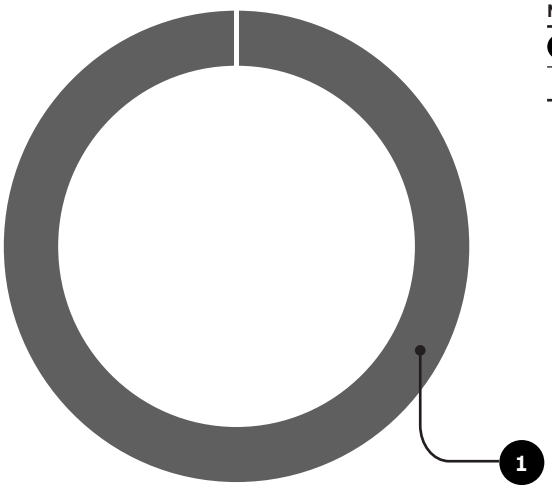
Material		%
1	Cardbox	100 %
	TOTAL	100 %

AF09-30-10-11
Packaging material composition: total weight = 12 gr.



Material		%
1	Cardbox	100 %
	TOTAL	100 %

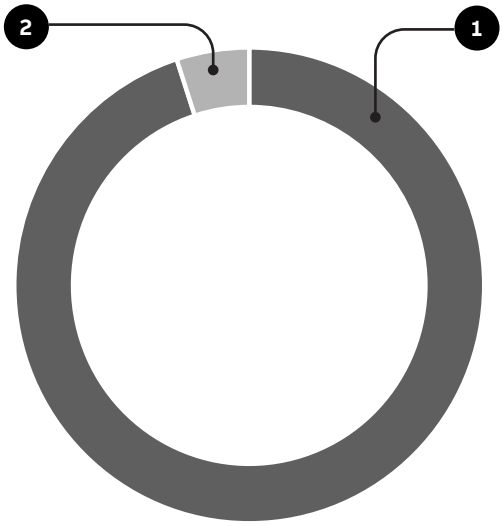
AF26-30-00-11
Packaging material composition: total weight = 13 gr.



Material		%
1	Cardbox	100 %
	TOTAL	100 %

AF40-30-00-11

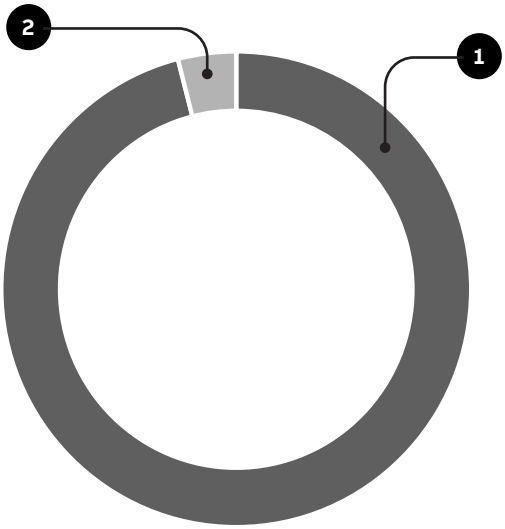
Packaging material composition: total weight = 107 gr.



Material		%
1	Cardbox	95 %
2	Paper	5 %
	TOTAL	100 %

AF80-30-00-11

Packaging material composition: total weight = 115 gr.



Material		%
1	Cardbox	96 %
2	Paper	4 %
	TOTAL	100 %

Product use

Energy

Power losses per pole for AF09 … AF96 3-pole contactors are indicated in the following table.

Type		Power loss (W)
AF09	Ie / AC-1	4.4 W
	Ie / AC-3, AC-3e	2.3 W
AF12	Ie / AC-1	5 W
	Ie / AC-3, AC-3e	2.6 W
AF16	Ie / AC-1	5.6 W
	Ie / AC-3, AC-3e	3.05 W
AF26	Ie / AC-1	7.4 W
	Ie / AC-3, AC-3e	3.8 W
AF30	Ie / AC-1	9.2 W
	Ie / AC-3, AC-3e	4.7 W
AF38	Ie / AC-1	9.2 W
	Ie / AC-3, AC-3e	5.9 W
AF40	Ie / AC-1	11 W
	Ie / AC-3, AC-3e	5 W
AF52	Ie / AC-1	20.9 W
	Ie / AC-3, AC-3e	7.1 W
AF65	Ie / AC-1	23 W
	Ie / AC-3, AC-3e	10.1 W
AF80	Ie / AC-1	24.8 W
	Ie / AC-3, AC-3e	11 W
AF96	Ie / AC-1	26.6 W
	Ie / AC-3, AC-3e	15.5 W

End-of-life

At the end of operating life, constituent components of AF contactors have been optimized in order to reduce waste amount and increase recovery of the material. Metals and polymers contained into AF contactors are characterized by high recycling rates. Most plastic parts are marked for easy sorting.

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