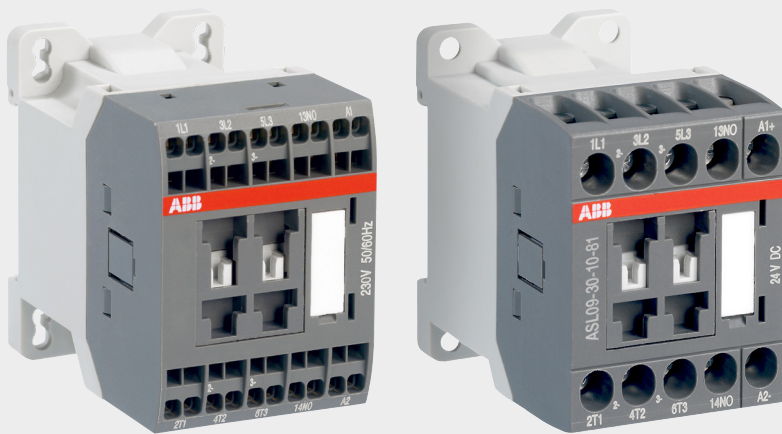


# Motor protection and control

## AS 3-pole contactors and NS contactor relays



The compact AS contactor range are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

AS(L)...(S) contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

- 3 main poles and 1 built-in auxiliary contact
- control circuit: AC or DC operated
- add-on auxiliary contact blocks for front mounting and a comprehensive range of accessories.

### Product conformity & compliance

#### REACH (Regulation EC 1907/2006)

AS(L)...(S) 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, AS(L)...(S) contactors and related accessories do not contain SVHC substances exceeding 0.1 % w/w.

#### RoHS II

AS(L)...(S) 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 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 in respect of the EN ISO/IEC 17025 European standard, according to IECEE CB scheme. CB certificate has been issued.

Standard:

- EN/IEC 60947-1
- EN/IEC 60947-4-1
- UL 60947-4-1

Directives:

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

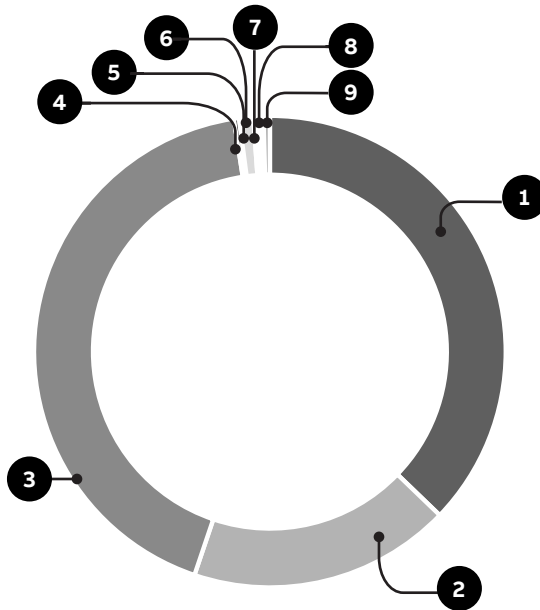
### Material declaration

The charts below show the constituents of EF, 3-poles. The constituent materials are distributed as follows.

The chart below shows the constituents of AS09-30-10-20/NS40E-25 which represents the range of AS 3-pole contactors/relays with screw terminals. The constituent materials are distributed as follows.

AS09-30-10-20/NS40E-25

The total weight of the product is 228.32 gr.

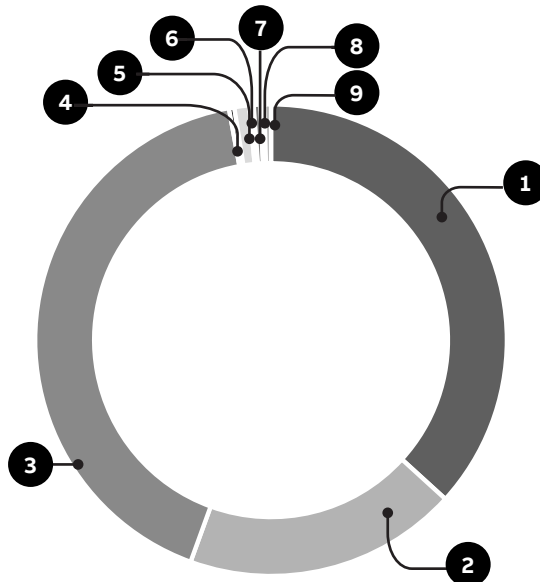


Material	% wt
1 Thermoplastic	37.2 %
2 Copper	18.0 %
3 Steel	42.4 %
4 Tin	0.4 %
5 Zinc	1.0 %
6 Silver	0.3 %
7 Nickel	0.1 %
8 Aluminum	0.3 %
9 NBR	0.4 %
TOTAL	100 %

The chart below shows the constituents of AS09-30-10S-20/NS40ES-25 which represents the range of AS 3-pole contactors/relays with spring terminals. The constituent materials are distributed as follows.

AS09-30-10S-20/NS40ES-25

The total weight of the product is 218.58 gr.

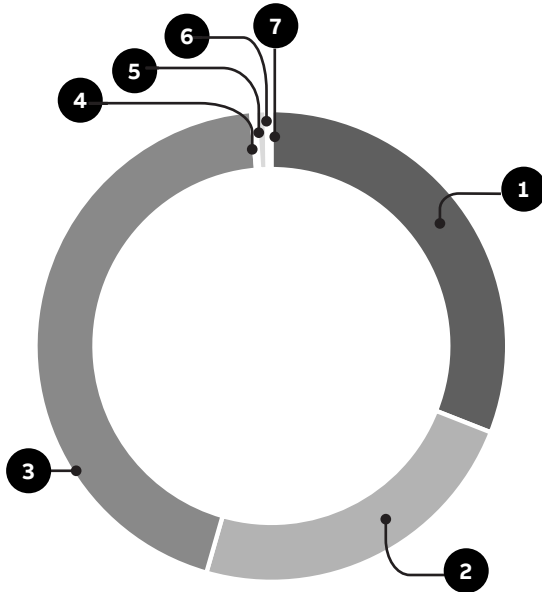


Material	% wt
1 Thermoplastic	36.8 %
2 Copper	18.8 %
3 Steel	41.6 %
4 Tin	0.4 %
5 Zinc	1.0 %
6 Silver	0.3 %
7 Nickel	0.5 %
8 Aluminum	0.3 %
9 NBR	0.5 %
TOTAL	100 %

The chart below shows the constituents of ASL09-30-10-81/NSL40E-81 which represents the range of AS 3-pole contactors/relays with screw terminals. The constituent materials are distributed as follows.

ASL09-30-10-81/NSL40E-81

The total weight of the product is 285.99 gr.

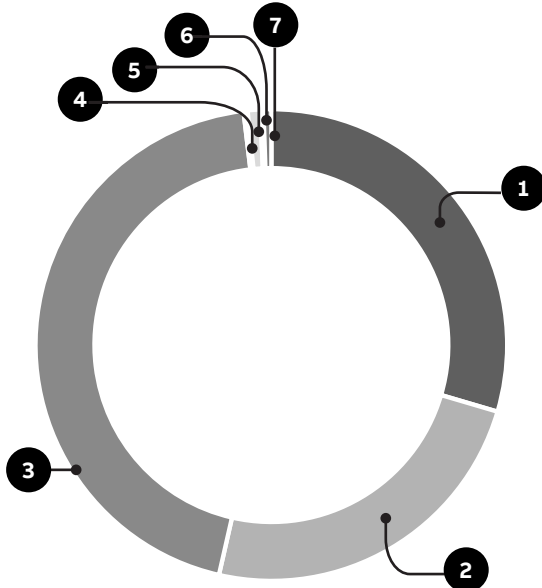


Material	% wt
① Thermoplastic	31.0 %
② Copper	23.5 %
③ Steel	44.2 %
④ Tin	0.3 %
⑤ Zinc	0.8 %
⑥ Silver	0.2 %
⑦ Nickel	0.1 %
TOTAL	100 %

The chart below shows the constituents of ASL09-30-10S-81/NSL40ES-81 which represents the range of AS 3-pole contactors/relays with spring terminals. The constituent materials are distributed as follows.

ASL09-30-10S-81/NSL40ES-81

The total weight of the product is 284.07 gr.

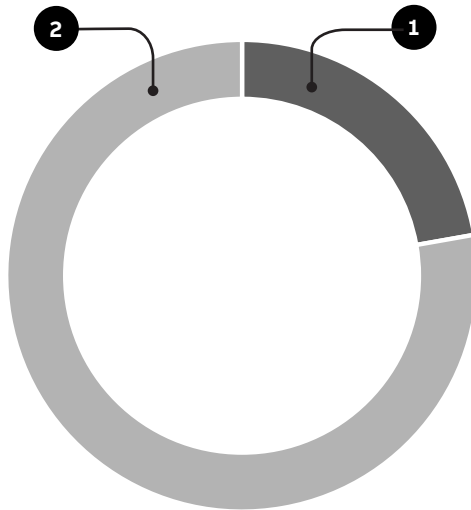


Material	% wt
① Thermoplastic	29.6 %
② Copper	24.0 %
③ Steel	44.5 %
④ Tin	0.3 %
⑤ Zinc	0.8 %
⑥ Silver	0.2 %
⑦ Nickel	0.5 %
TOTAL	100 %

## Packaging

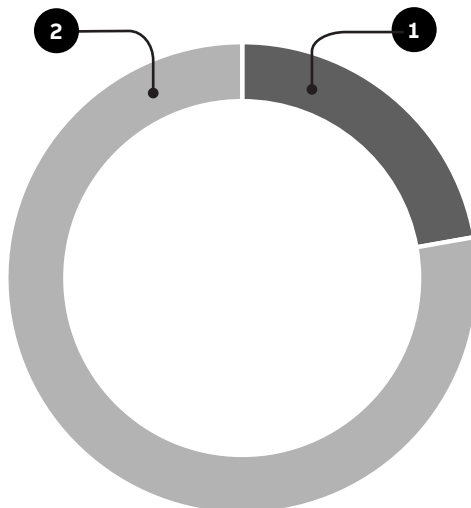
The charts below provide information for each packaging material used. The cardbox and the paper used for the product material are made of recycled fibers and are 100 % recyclables. The polymer films used are marked with the proper identification code and are recyclable.

**AS09-30...AS16-30 screw terminal: total weight = 18 gr.**



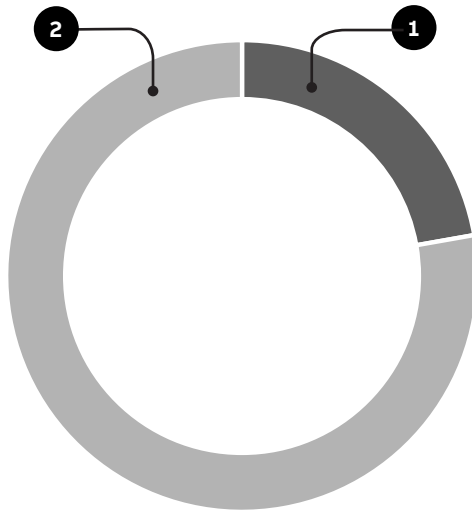
Material	%
1 Cardbox	22 %
2 Paper	78 %
TOTAL	100 %

**AS09-30...AS16-30 spring terminal: total weight = 18 gr.**



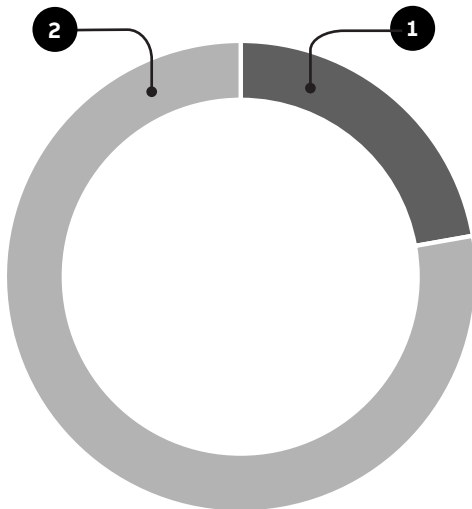
Material	%
1 Cardbox	22 %
2 Paper	78 %
TOTAL	100 %

ASL09-30...ASL16-30 screw terminal: total weight = 18 gr.



Material	%
1 Cardbox	22 %
2 Paper	78 %
TOTAL	100 %

ASL09-30...ASL16-30 spring terminal: total weight = 18 gr.



Material	%
1 Cardbox	22 %
2 Paper	78 %
TOTAL	100 %

## Product use



### Energy

Power losses for AS(L)...(S) contactors are indicated in the following table.

Type AC-3	Power loss (W/pole)	Coil (W)	Total power loss (W)
AS09-30...AS16-30 screw terminal	0.18	2.95	3.49
AS09-30...AS16-30 spring terminal	0.18	2.95	3.49
ASL09-30...ASL16-30 screw terminal	0.18	3.72	4.26
ASL09-30...ASL16-30 spring terminal	0.18	3.72	4.26

### 20 years energy consumption (KWh) AC-3

Type AC-3	Energy consumption (KWh)
AS09-30...AS16-30 screw terminal	611
AS09-30...AS16-30 spring terminal	611
ASL09-30...ASL16-30 screw terminal	746
ASL09-30...ASL16-30 spring terminal	746

Type AC-1	Power loss (W/pole)	Coil (W)	Total power loss (W)
AS09-30...AS16-30 screw terminal	0.9	2.95	5.65
AS09-30...AS16-30 spring terminal	0.9	2.95	5.65
ASL09-30...ASL16-30 screw terminal	0.9	3.72	6.42
ASL09-30...ASL16-30 spring terminal	0.9	3.72	6.42

### 20 years energy consumption (KWh) AC-1

Type AC-1	Energy consumption (KWh)
AS09-30...AS16-30 screw terminal	990
AS09-30...AS16-30 spring terminal	990
ASL09-30...ASL16-30 screw terminal	1125
ASL09-30...ASL16-30 spring terminal	1125

## Energy

Power losses for NS(L)...(S) contactors are indicated in the following table.

Type AC-15 DC-13 (6A)	Power loss (W/pole)	Coil (W)	Total power loss (W)
NS screw terminal	0.1	2.93	3.23
NS spring terminal	0.1	2.93	3.23
NSL screw terminal	0.1	3.96	4.26
NSL spring terminal	0.1	3.96	4.26

## 20 years energy consumption (KWh) AC-15 DC-13 (6A)

Type	Energy consumption (KWh)
NS screw terminal	566
NS spring terminal	566
NSL screw terminal	746
NSL spring terminal	746

## End-of-life

At the end of operating life, constituent components of AS contactor have been optimized in order to reduce waste amount and increase recovery of the material. Metals and polymers contained into AS contactor 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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