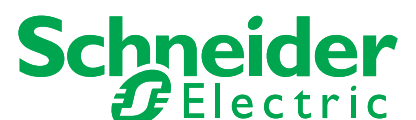
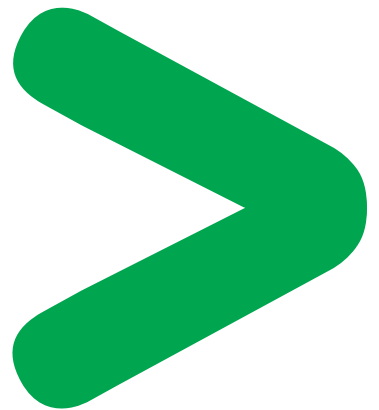


Product Environmental Profile

Altivar 12

Ranges: 0.75/100 V/1PH

1.5- 2.2 kW/200 V/1PH



Product Environmental Profile - PEP

Product overview

The Altivar 12 range is primarily intended for the control and variation of the rotational speed of an asynchronous electric motor.

This range comprises products with ratings from 0.18 to 4 kW for operation on 100 and 200 V, 1 or 3 phases supplies.

The product used for the study is the Altivar 12 with heatsink, 1.5 kW / 200 V / 1PH rating (ref. ATV12HU15M2).

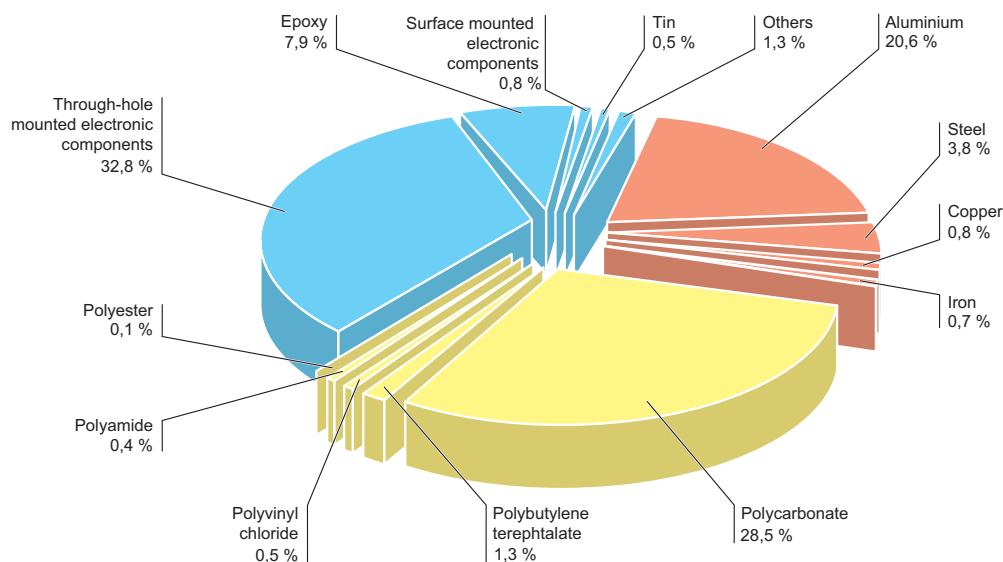
It is representative of the entire range. The same technology and manufacturing process is used for other products within the range.

The environmental analysis has been performed in conformity with standard ISO 14040 "Environmental management: life cycle assessment, principle and framework". It takes into account the life cycle stages of the product. (Manufacturing, Distribution, Use).

Constituent materials

The weights of the products included in this analysis are between 1300 g and 1460 g. For the Altivar 12 – 1.5 kW, 200 V, 1PH analysed, the weight is 1450 g (excluding packaging).

The proportional values of the various materials used are as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

This range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

Distribution

The weight and volumes of the packaging have been reduced in compliance with the European Union's packaging directive 94/62/EC. The weight of the packaging of Altivar 12 is 245 g which mainly consists of recyclable cardboard.

No foam chock, or staple, or polyethylene bag is used.

Product Environmental Profile - PEP

Utilization

The products in the Altivar 12 range: 0.75 kW / 100 V / 1 PH and 1.5 to 2.2 kW / 200 V / 1PH do not generate any environmental pollution requiring precautionary measures (noise, emissions, etc). Power dissipated by the product depends on the installation and operating conditions. Their internal power consumption ranges from 48 W to 93 W. It is 72 W for the Altivar 12 – 1.5 kW / 200 V / 1PH and accounts for 4 % of the total power flowing through the product.

End of life

At end of life, products of the Altivar 12 range can either be crushed or dismantled in order to optimize the valorisation rate of the various materials used. The recycling potential rate is 70 %. This percentage mainly includes steel, copper, aluminium and plastics parts marked with a recycling code. The products in this range also include electronic cards and electrolytic capacitors that we recommend to extract and send to specialized processing sites. Appropriate recycling recommendations at the Product end of life are detailed in a document entitled "End of Life Instructions". This document is available on request.

Environmental impacts

The Life Cycle Assessment (LCA) has been established with the aid of EIME (Environmental Impact and Management Explorer) software version V4.0 and its database version V10. The assumed service life of the product is 10 years and the electrical energy model used is the European model. The scope of the analysis was limited to an Altivar 12 – 1.5 kW / 200 V / 1 PH (ref ATV12HU15M2). The environmental impacts have been analysed for the Manufacturing (M) stage, including the processing of raw materials, and for the Distribution (D) and Usage (U) stages.

Presentation of product environmental impacts:

Environmental indicators	Symbol	Unit	ATV 12 1.5 kW - 200V - 1PH			
			S = M + D + U	M	D	U
Raw Material Depletion	RMD	Y-1	0.3 10 ⁻¹²	0.3 10 ⁻¹²	9.8 10 ⁻¹⁸	44 10 ⁻¹⁵
Energy Depletion	ED	MJ	40 10 ³	478	10.7	39.5 10 ³
Water Depletion	WD	dm ³	6.4 10 ³	250	14.6	6.1 10 ³
Global Warming Potential	GWP	g≈CO ₂	2.1 10 ⁶	29.0 10 ³	309	2.0 10 ⁶
Ozone Depletion	OD	g≈CFC-11	0.2	3.6 10 ⁻³	73 10 ⁻⁶	0.2
Photochemical Ozone Creation	POC	g≈C ₂ H ₄	712	10.8	0.1	701
Air Acidification	AA	g≈H ⁺	326	5.8	0.2	320
Hazardous waste production	HWP	kg	33.2	1.0	0.2 10 ⁻³	32.2

The Life Cycle Assessment of the product indicates that the usage stage (stage U) is the stage that has the greatest impact on the majority of the environmental indicators.

It also shows that the indicators of this stage are strongly influenced by the "Global Warming Potential" parameter of the product.

The total mass of products of the range covered by this deliverable has been reduced up to 28 % compared to the previous range particularly by optimizing thermal and mechanical.

This mass reduction is the predominant factor for the reduction of environmental impacts.

Product Environmental Profile - PEP

System approach

As the product of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction within an assembly or an installation submitted to this Directive.

*N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the installation.*

Glossary

Raw Material Depletion (RMD)

This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.

Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources. This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm³.

Global Warming Potential (GWP)

The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as "greenhouse-effect" gases. The effect is quantified in gram equivalent of CO₂.

Ozone Depletion (OD)

This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.

Photochemical Ozone Creation (POC)

This indicator quantifies the contribution to the "smog" phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of ethene (C₂H₄).

Air Acidification (AA)

The acid substances present in the atmosphere are carried by rain. A high level of acidity in the rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H⁺.

Hazardous Waste Production (HWP)

This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc. It is expressed in kg.

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