

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

StoPox 452 EP



The Norwegian EPD Foundation

Owner of the declaration:

Sto SE & Co. KGaA

Product:

StoPox 452 EP

Declared unit:

1 kg

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-11033-9985

Registration number:

NEPD-11033-9985

Issue date:

13.05.2025

Valid to:

13.05.2030

EPD software:

LCAno EPD generator ID: 872626

General information

Product

StoPox 452 EP

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
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Declaration number:

NEPD-11033-9985

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building
and construction industry

Statement of liability:

The owner of the declaration shall be liable for the underlying
information and evidence. EPD Norway shall not be liable with respect
to manufacturer information, life cycle assessment data and
evidences.

Declared unit:

1 kg StoPox 452 EP

Declared unit with option:

A1, A2, A3, A4, A5, C1, C2, C3, C4, D

Functional unit:

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information
and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4.
Verification of each EPD is made according to EPD-Norway's
guidelines for verification and approval requiring that tools are i)
integrated into the company's environmental management system, ii)
the procedures for use of the EPD tool are approved by EPD-Norway,
and iii) the process is reviewed annually by an independent third
party verifier. See Appendix G of EPD-Norway's General Programme
Instructions for further information on EPD tools

Verification of EPD tool:

Independent third party verification of the EPD tool, background data
and test-EPD in accordance with EPDNorway's procedures and
guidelines for verification and approval of EPD tools. NEPD73

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

Owner of the declaration:

Sto SE & Co. KGaA
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Manufacturer:

Sto SE & Co. KGaA
Ehrenbachstraße 1
79780 Stühlingen, Germany

Place of production:

Rüsselsheim
Eisenstraße 38
65428 Rüsselsheim, Germany

Management system:

ISO 14001; ISO 50001; ISO 9001

Organisation no:

DE142834082

Issue date:

13.05.2025

Valid to:

13.05.2030

Year of study:

2023

Comparability:

EPD of construction products may not be comparable if they not
comply with EN 15804 and seen in a building context.

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03,
developed by LCA.no. The EPD tool is integrated in the company's
management system, and has been approved by EPD Norway.
NEPD7143

Developer of EPD: Linus Kaltenbach

Reviewer of company-specific input data and EPD: Angelica Hultin

Approved:



Håkon Hauan, CEO EPD-Norge

Product

Product description:

StoPox 452 EP is an epoxy primer in accordance with EN 1504-2 and EN 13813 for damp substrates. The area of application is interior as well as areas exposed to weather. It can be used as a priming coat on non-mineral substrates such as stainless steel flanges and as a priming coat on balconies. StoPox 452 EP has a transparent appearance.

StoPox 452 EP is delivered in two components, StoPox 452 EP Component A and StoPox 452 EP Component B, which have to be mixed as stated on the technical data sheet before use. This EPD calculates the environmental impact of the correctly mixed product at the construction site.

Product specification

The composition of the mixed product is stated in the following table:

Materials	Value	Unit
Binder, organic	> 98	%
Defoamer	< 1	%
Additive	< 1	%

Technical data:

Information on the technical data of StoPox 452 EP as well as the mixing and application process can be found in the Technical Data Sheet on www.sto.de.

Criterion	Standard / test specification	Class/ Value	Unit
Density (mixture 23 °C)	EN ISO 2811	1,03 - 1,09	g/cm ³
Viscosity (at 23 °C)	EN ISO 3219	750 - 950	mPa.s
Bond strength (28 days)	EN 1542	> 2,0	MPa

Market:

The main markets are Germany and the Scandinavian countries.

Reference service life, product

A reference service life (RSL) as per ISO 15686-1, -2, -7, and -8 is not declared.

In this LCA an estimated service life of 50 years has been declared, equal to the useful life of the building, since the product is incorporated in the building structure.

Reference service life, building

50 years

LCA: Calculation rules

Declared unit:

1 kg StoPox 452 EP

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

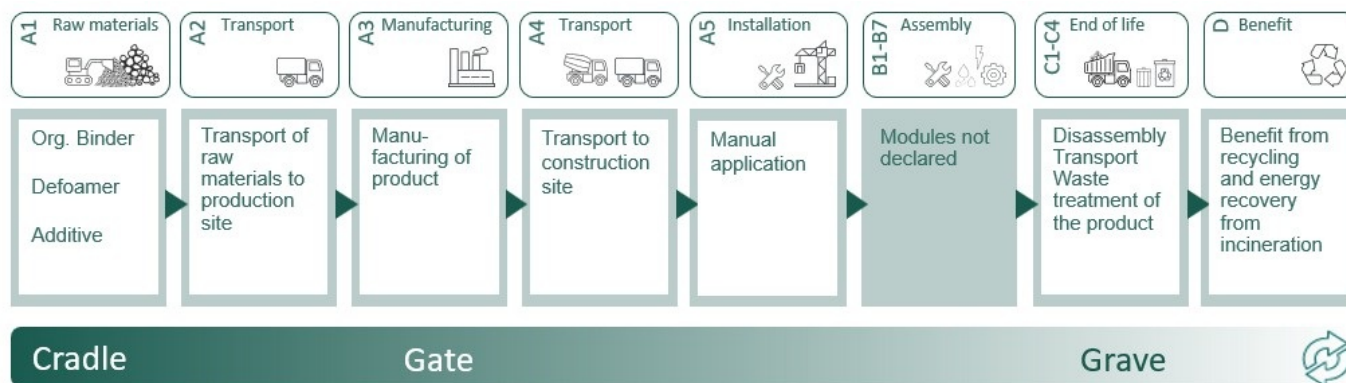
Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Binder	CEPE RM Database v3.0, ecoinvent 3.6	Database	2016
Binders and Resins	Ecoinvent 3.6	Database	2019
Binders and Resins	Supplier	EPD	2021
Defoamer	CEPE RM Database v3.0	Database	2016
Packaging	ecoinvent 3.6	Database	2019

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use		De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7		C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND		X	X	X	X	X

System boundary:

The scope of this EPD is cradle to gate with options, modules C1-C4 and module D. No actions are necessary during User stage.



Additional technical information:

When used as recommended, the waste code can be selected according to the code of the European Waste Catalogue (EWC), category 17.09 "Other Construction and Demolition Waste".

The waste code for unused product is 08 01 11* Paint and varnish waste containing organic solvents or other dangerous substances which is hazardous waste in terms of the European directive 2008/98/EG.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

A4 (Transport to market/building site): Since the distance to the construction site can vary strongly, a distance of 300 km has been chosen, which is equal to the suggested distance for domestic production by the PCR.

A5 (Installation): The product is applied according to the specifications in the technical data sheet at the construction site. For application, machinery in accordance with the Technical Data Sheet should be used. Outputs are small amounts of waste from the product itself (assumed to be a maximum of 5 %) and waste from packaging materials.

C1 (De-construction, demolition): It is assumed that StoPox 452 EP is dismantled using machinery.

C2 (Transport end of life): This stage includes the transportation effects of demolished waste to a waste processing area. The distance between the demolishing area and a waste processing area is assumed to be quite short (less than 100 km). The distance varies depending on the type of waste processing.

C3, C4 (Waste processing): Hardened epoxy coating is not classified as hazardous waste and treated as mixed construction waste. A typical End of life scenario for construction waste is a mix of recycling and landfill. The End-of-life scenario is declared according to the PCR with 90% landfill and 10% recycling.

D (Environmental costs and benefits of recycling and reuse): Energy credit related to energy recovery from the incineration is included in module D.

Stages not included

B1-B7: Once installation is complete, no actions or technical operations are required during the use stage until the end of life stage.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (kgkm)	36,7 %	300	0,043	l/tkm	12,90
Assembly (A5)	Unit	Value			
Material loss, including waste treatment (psc)	Units	0,050			
Electricity, Germany (kWh)	kWh	0,013			
Waste, packaging, metal, average treatment (kg)	kg	0,048			
De-construction demolition (C1)	Unit	Value			
Diesel (L)	L	0,00075			
Demolition of building per kg of cement-based product, C1 (kg)	kg	1,00			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (kgkm)	36,7 %	100	0,043	l/tkm	4,30
Waste processing (C3)	Unit	Value			
Waste treatment of cement-based product after demolition to recycling (kg)	kg	0,10			
Disposal (C4)	Unit	Value			
Waste, inert waste, to landfill (kg)	kg	0,90			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary aggregates with crushed recycled cement-based products (kg)	kg	0,10			

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact												
Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO ₂ -eq	3,78E+00	1,61E-02	2,24E-02	5,14E-02	1,93E-01	2,67E-03	1,71E-02	1,08E-01	7,39E-03	-2,34E-04
	GWP-fossil	kg CO ₂ -eq	3,80E+00	1,61E-02	2,00E-02	5,14E-02	1,89E-01	2,67E-03	1,71E-02	7,10E-05	7,38E-03	-2,29E-04
	GWP-biogenic	kg CO ₂ -eq	-8,04E-02	6,65E-06	7,27E-04	2,13E-05	1,44E-03	5,01E-07	7,09E-06	1,08E-01	8,62E-06	-4,57E-06
	GWP-luluc	kg CO ₂ -eq	5,52E-02	5,72E-06	1,67E-03	1,83E-05	2,84E-03	2,11E-07	6,09E-06	9,83E-08	1,81E-06	-1,55E-07
	ODP	kg CFC 11 -eq	4,86E-05	3,64E-09	2,49E-09	1,16E-08	2,43E-06	5,77E-10	3,88E-09	1,40E-11	2,80E-09	-4,20E-11
	AP	mol H ⁺ -eq	1,46E-02	4,62E-05	2,38E-05	1,48E-04	6,81E-04	2,80E-05	4,92E-05	5,75E-07	6,57E-05	-2,06E-06
	EP-FreshWater	kg P -eq	2,40E-04	1,28E-07	1,11E-07	4,10E-07	1,26E-05	9,73E-09	1,37E-07	4,49E-09	8,37E-08	-6,09E-09
	EP-Marine	kg N -eq	4,83E-03	9,14E-06	6,07E-06	2,92E-05	2,34E-04	1,23E-05	9,73E-06	1,68E-07	2,44E-05	-7,15E-07
	EP-Terrestrial	mol N -eq	3,50E-02	1,02E-04	6,03E-05	3,27E-04	1,67E-03	1,35E-04	1,09E-04	1,94E-06	2,69E-04	-8,40E-06
	POCP	kg NMVOC -eq	1,20E-02	3,92E-05	2,02E-05	1,25E-04	5,67E-04	3,72E-05	4,17E-05	5,20E-07	7,71E-05	-2,22E-06
	ADP-minerals&metals ¹	kg Sb-eq	3,35E-05	4,44E-07	8,20E-08	1,42E-06	1,25E-06	4,10E-09	4,73E-07	9,01E-10	6,65E-08	-2,03E-08
	ADP-fossil ¹	MJ	7,52E+01	2,43E-01	2,74E-01	7,76E-01	3,78E+00	3,68E-02	2,59E-01	2,21E-03	2,03E-01	-3,87E-03
	WDP ¹	m ³	1,93E+01	2,35E-01	1,45E+01	7,51E-01	2,69E+00	7,81E-03	2,50E-01	2,43E-01	1,25E+00	-1,82E-01

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Remarks to environmental impacts

Additional environmental impact indicators

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
 PM	Disease incidence	1,72E-07	9,83E-10	1,54E-10	3,14E-09	7,80E-09	7,39E-10	1,05E-09	9,00E-12	1,40E-09	-4,40E-11
 IRP ²	kgBq U235 -eq	6,51E+01	1,06E-03	1,61E-04	3,39E-03	3,25E+00	1,58E-04	1,13E-03	3,70E-05	9,27E-04	-3,55E-05
 ETP-fw ¹	CTUe	5,20E+01	1,80E-01	1,04E-01	5,76E-01	2,27E+00	2,01E-02	1,92E-01	1,56E-03	1,11E-01	-3,99E-03
 HTP-c ¹	CTUh	7,55E-09	0,00E+00	7,00E-12	0,00E+00	1,86E-10	1,00E-12	0,00E+00	0,00E+00	5,00E-12	0,00E+00
 HTP-nc ¹	CTUh	1,32E-07	1,96E-10	1,11E-10	6,29E-10	6,19E-09	1,80E-11	2,10E-10	1,00E-12	8,00E-11	-5,00E-12
 SQP ¹	dimensionless	8,97E+01	1,70E-01	-2,87E-02	5,43E-01	4,47E+00	4,67E-03	1,81E-01	1,25E-03	7,82E-01	8,79E-03

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3}$ = 0,009"

*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
 PERE	MJ	2,01E+01	3,48E-03	1,66E-01	1,11E-02	9,95E-01	1,99E-04	3,71E-03	1,14E-03	7,27E-03	-9,07E-04	
 PERM	MJ	1,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,02E+00	0,00E+00	0,00E+00	
 PERT	MJ	2,11E+01	3,48E-03	1,66E-01	1,11E-02	9,95E-01	1,99E-04	3,71E-03	-1,02E+00	7,27E-03	-9,07E-04	
 PENRE	MJ	6,19E+01	2,43E-01	2,74E-01	7,77E-01	3,07E+00	3,68E-02	2,59E-01	2,21E-03	2,03E-01	-4,09E-03	
 PENRM	MJ	1,51E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,51E+01	0,00E+00	0,00E+00	
 PENRT	MJ	7,70E+01	2,43E-01	2,74E-01	7,77E-01	3,07E+00	3,68E-02	2,59E-01	-1,51E+01	2,03E-01	-4,09E-03	
 SM	kg	8,78E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 RSF	MJ	2,16E-02	1,24E-04	7,56E-05	3,98E-04	6,57E-03	4,89E-06	1,33E-04	0,00E+00	1,51E-04	-1,85E-05	
 NRSF	MJ	4,86E-02	4,45E-04	2,76E-04	1,42E-03	3,22E-04	7,20E-05	4,74E-04	0,00E+00	3,26E-04	-1,91E-05	
 FW	m ³	4,86E-02	2,60E-05	1,27E-03	8,30E-05	2,45E-03	1,89E-06	2,77E-05	3,78E-06	2,50E-04	-1,42E-04	

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

*Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

End of life - Waste												
Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	1,11E-02	1,25E-05	1,89E-03	4,00E-05	4,70E-04	1,08E-06	1,33E-05	2,20E-07	0,00E+00	-9,34E-07
	NHWD	kg	5,32E-01	1,18E-02	2,07E-03	3,78E-02	6,33E-02	4,35E-05	1,26E-02	6,96E-06	9,00E-01	-2,83E-05
	RWD	kg	1,01E-03	1,66E-06	2,22E-07	5,29E-06	5,11E-05	2,55E-07	1,76E-06	2,33E-08	0,00E+00	-3,07E-08

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3}$ = 0,009"

*INA Indicator Not Assessed

End of life - Output flow												
Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0,00E+00	0,00E+00	4,10E-04	0,00E+00	4,80E-02	0,00E+00	0,00E+00	1,00E-01	0,00E+00	0,00E+00
	MER	kg	0,00E+00	0,00E+00	3,95E-03	0,00E+00	1,97E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	EEE	MJ	0,00E+00	0,00E+00	2,06E-03	0,00E+00	1,03E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	EET	MJ	0,00E+00	0,00E+00	3,12E-02	0,00E+00	1,56E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3}$ = 0,009"

*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	2,94E-02
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Source	Amount	Unit
Electricity, low voltage, 100% hydro, certificate, 01.01.2023-31.12.2023, Germany (kWh)	Modified ecoinvent 3.6	60,95	g CO ₂ -eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

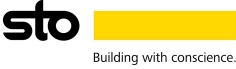
Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products											
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	3,86E+00	1,61E-02	2,18E-02	5,14E-02	1,93E-01	2,67E-03	1,71E-02	7,11E-05	7,39E-03	-2,45E-04

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

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ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
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NPCR Part A: Construction products and services. Ver. 2.0, 24.03.2021 EPD Norway.
NPCR 009 Part B for Technical - Chemical products for building and construction industry, Ver. 3.0, 06.10.2021, EPD Norway.

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