

# froling

## Product data SP Dual



All errors and omissions excepted.

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# 1 Technical specifications

## 1.1 SP Dual 22/28

### Technical specifications of the firewood boiler

Refer to the technical data of the firewood boiler for technical specifications and information regarding efficiency and emissions in firewood operation.

### Technical specifications of the pellet unit

Description		SP Dual	
		22	28
Rated heat output	kW	22	25
Output range during the pellet operation	kW	4.7 – 22	4.7 – 25
Electrical connection		230 V / 50 Hz / C16A	
Power consumption in pellet mode	W	38 - 67	38 - 70
Power consumption in slumber mode	W	3	
Boiler weight incl. pellet unit	kg	955	965
Weight of pellet unit	kg	310	315
Total boiler capacity (water)	L	157	
Pellet container capacity	l	90	
Water pressure drop ( $\Delta T = 10 / 20 \text{ K}$ )	mbar	14.5 / 7.5	18.5 / 5.9
Min. boiler return temperature	°C	60	
Max. permitted operating temperature	°C	90	
Permitted operating pressure	bar	3	
Boiler class as per EN 303-5:2012		5	
Permitted fuel as per EN ISO 17225		Part 2: Wood pellets class A1 / D06	
Airborne sound level	dB(A)	< 70	
Test book number		PB 041	PB 042

Regulation (EU) 2015/1187		SP Dual	
		22	28
Energy efficiency class of boiler		A+	A+
Energy efficiency index (EEI) of boiler		117	118
Heating space annual rate of use $\eta_s$	%	80	80
Energy efficiency index (EEI) of boiler and controller combined		119	120
Energy efficiency class of boiler and controller combined		A+	A+

**Additional data for regulation (EU) 2015/1189**

Description		SP Dual	
		22	28
Heating up mode		automatic	
Condensing boiler		No	
Solid fuel boiler for combined heat and power		No	
Combined heating system		No	
Storage tank volume		↻ "Storage tank" ▶ 6]	
Characteristics when operated exclusively with the preferred fuel			
Useful heat delivered at rated heat output (P <sub>n</sub> )	kW	21.1	23.7
Useful heat delivered at 30% of rated heat output (P <sub>p</sub> )		4.7	4.7
Fuel efficiency at rated heat output (η <sub>n</sub> )	%	86.5	86.4
Fuel efficiency at 30% of rated heat output (η <sub>p</sub> )		83.7	83.7
Auxiliary current consumption at rated heat output (e <sub>l,max</sub> )	kW	0.067	0.070
Auxiliary current consumption at 30% of rated heat output (η <sub>p</sub> )		0.038	0.038
Auxiliary current consumption in standby mode (P <sub>SB</sub> )		0.012	0.012

Regulation (EU) 2015/1189 – emissions in [mg/m <sup>3</sup> ] <sup>1)</sup>	
Annual space heating emissions of dust (PM)	≤ 45
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 30
Annual space heating emissions of carbon monoxide (CO)	≤ 530
Annual space heating emissions of nitrogen oxides (NO <sub>x</sub> )	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

Regulation (EU) 2015/1189 – emissions in [mg/m <sup>3</sup> ] <sup>1)</sup>	
Annual space heating emissions of dust (PM)	≤ 30
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 20
Annual space heating emissions of carbon monoxide (CO)	≤ 380
Annual space heating emissions of nitrogen oxides (NO <sub>x</sub> )	≤ 200

1. The emissions of dust, gaseous organic compounds, carbon monoxide and nitrogen oxides are stated in a standardised form based on dry flue gas with a oxygen content of 10 % and under standard conditions at 0°C and 1013 millibar

## 1.2 SP Dual 32/34/40

### Technical specifications of the firewood boiler

Refer to the relevant assembly instructions for technical specifications and information regarding efficiency and emissions in firewood operation.

### Technical specifications of the pellet unit

Description		SP Dual		
		32 <sup>1)</sup>	34	40
Rated heat output	kW	32	34	38
Output range during the pellet operation	kW	9.2 - 32	9.2 - 34	9.2 – 38
Electrical connection		230 V / 50 Hz / C16A		
Power consumption in pellet mode	W	40 - 72	41 - 73	41 - 73
Power consumption in slumber mode	W	3		
Boiler weight incl. pellet unit	kg	1055	1065	1075
Weight of pellet unit	kg	320	325	330
Total boiler capacity (water)	L	220		
Pellet container capacity	l	103		
Water pressure drop ( $\Delta T = 10 / 20 \text{ K}$ )	mbar	37.0 / 8.2	37.0 / 8.2	37.0 <sup>2)</sup> / 15
Min. boiler return temperature	°C	60		
Max. permitted operating temperature	°C	90		
Permitted operating pressure	bar	3		
Boiler class as per EN 303-5:2012		5		
Permitted fuel as per EN ISO 17225		Part 2: Wood pellets class A1 / D06		
Airborne sound level	dB(A)	< 70		
Test book number		PB 108	PB 053	PB 052

1. SP Dual 32 only available in Italy  
2. Water pressure drop at  $\Delta T = 12 \text{ K}$

Regulation (EU) 2015/1187		Pellet unit – SP Dual		
		32	34	40
Energy efficiency class of boiler		A+	A+	A+
Energy efficiency index (EEI) of boiler		119	120	120
Heating space annual rate of use $\eta_s$	%	81	82	82
Energy efficiency index (EEI) of boiler and controller combined		121	122	122
Energy efficiency class of boiler and controller combined		A+	A+	A+

**Additional data for regulation (EU) 2015/1189**

Description		Pellet unit, SP Dual		
		32	34	40
Heating up mode		automatic		
Condensing boiler		No		
Solid fuel boiler for combined heat and power		No		
Combined heating system		No		
Storage tank volume		➡ "Storage tank" [► 6]		
Characteristics when operated exclusively with the preferred fuel				
Useful heat delivered at rated heat output ( $P_n$ )	kW	32	35.1	38
Useful heat delivered at 30% of rated heat output ( $P_p$ )		8.2	9.2	9.2
Fuel efficiency at rated heat output ( $\eta_n$ )	%	86.7	86.8	86.8
Fuel efficiency at 30% of rated heat output ( $\eta_p$ )		85.0	85.5	85.5
Auxiliary current consumption at rated heat output ( $e_{l_{max}}$ )	kW	0.083	0.073	0.073
Auxiliary current consumption at 30% of rated heat output ( $\eta_p$ )		0.040	0.041	0.041
Auxiliary current consumption in standby mode ( $P_{SB}$ )		0.013	0.011	0.011

**Regulation (EU) 2015/1189 – emissions in [mg/m<sup>3</sup>]<sup>1)</sup>**

Annual space heating emissions of dust (PM)	≤ 45
Annual space heating emissions of gaseous organic compounds (GOC)	≤ 30
Annual space heating emissions of carbon monoxide (CO)	≤ 530
Annual space heating emissions of nitrogen oxides (NO <sub>x</sub> )	≤ 200

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## 2 Storage tank

Observe the regional regulations for using a storage tank!

Certain subsidy guidelines prescribe compulsory requirements for the installation of storage tanks. Up-to-date information about individual subsidy guidelines can be found at [www.froeling.com](http://www.froeling.com).

Channelling the heat generated by the Dual fuel boiler to a storage tank can bring major advantages, such as

- better utilisation of fuel
- more user-friendly operation in terms of reloading intervals
- maximum independence from instantaneous heating requirements
- minimal dirt in boiler and flue gas system

As the boiler's minimum continuous heat output is 30% above the nominal heat output, we as boiler manufacturer are obliged under EN 303-5:2021, Section 4.4.6 to advise that the Dual fuel boiler SP Dual must always be connected to a storage tank with adequate storage capacity.

The storage tank capacity can be calculated using the following formula according to EN 303-5:2021:

$$V_{Sp} = 15T_B \times P_N (1 - 0.3 \times P_H / P_{min})$$

$V_{Sp}$	Storage tank capacity in litres
$P_N$	Nominal heat output of boiler in kW
$T_B$	Burn-off period of boiler in hours <sup>1)</sup>
$P_H$	Heating load of building in kW
$P_{min}$	Minimum heat output of boiler in kW <sup>2)</sup>

1. Sample combustion times for various fuels are provided in the technical data
2. The boiler's minimum output is the lowest value of the output range in the technical data. If there is no minimum heat output specified, use the nominal heat output ( $P_{min} = P_N$ )

For the correct dimensions of the storage tank and the line insulation (for instance to ÖNORM M 7510 or guideline UZ37) please consult your installer or Fröling.

### Recommended storage tank capacity:

	Unit	S4 Turbo			
		22 - 28	32 - 40	50	60
Recommended storage tank capacity <sup>1)</sup>	[l]	2000	2500	3000	3400

1. Values for calculating the capacity can be found in the technical data or the technical data with partial load inspection (if available)

	Unit	SP Dual 22-28	SP Dual 32-40
Recommended storage tank capacity <sup>1)</sup>	[l]	2000	2500

1. Values for calculating the capacity can be found in the technical data or the technical data with partial load inspection (if available)

Certain countries have recommended storage capacities; these are listed below. The specified values apply when the nominal heat output of the boiler corresponds to the heating requirements of the building and a maximum of 50% of the nominal heat output can be dissipated to the building being heated under partial load conditions.

The exact design of the storage tank capacity is in accordance with the locally applicable guidelines and regulations:

*Austria* According to the relevant Austrian laws governing energy technology, which are based on Art. 15a B-VG "Agreement on protective measures for small furnaces" (2012):

No storage tank is required on manually fed biomass boilers that have been positively tested at both nominal load and partial load (below 50% of nominal load) to ensure they adhere to the emissions limits specified in that agreement.

*Germany* The first BImSchV (Ordinance on small and medium-sized heating plants of 26 January 2010, BGBl. I P. 38) stipulates a minimum water heat storage tank volume of 55 litres per kilowatt of rated heat output; a water heat storage tank with a volume of 12 litres per litre of fuel loading chamber is recommended.

*Switzerland* In accordance with the Swiss Federal Ordinance on Air Pollution Control (LRV 2018), appendix 3, paragraph 523 "Special requirements for boilers", hand-fed boilers up to 500 kW rated heat output must be fitted with a minimum heat storage tank volume of 12 litres per litre of fuel loading chamber. The volume may not fall below 55 litres per kW rated heat output.

### Hot water tank in accordance with Commission Regulation (EU) 2015/ 1189 (Ecodesign Requirements)

The boiler should be operated with a hot water tank. The storage capacity =  $45 \times P_r \times (1 - 2.7/P_r)$  or 300 litres, whichever is greater, where the rated heat output of  $P_r$  is given in kW. The resulting storage capacity is below the abovementioned recommended storage tank capacity.



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