



MILESTONE APPLICATION BOOK

Milestone application book collects hundreds of applications developed by our Product and Application Specialist in the worldwide.

Milestone offers a wide range of rotors to match your needs.

Below some guidelines and some parameters to be evaluated during the adjustment of a method.

Application fields Vs. Rotors

	HPR (SK-10)	MPR (SK-12)	PRO (PRO 16/24)	MUP-41	Q-20	Nova
Environment	✓	✓	✓	✓	✓	
Food- Feed	✓	✓	✓	✓	✓	
Agriculture	✓	✓	✓	✓	✓	
Chemicals	✓	✓	✓			✓
Metals- Alloys	✓	✓				✓
Plastics- Polymers	✓					✓
Catalysts- Pigments	✓					✓
Clinical- Pharmaceutical	✓	✓	✓		✓	
Geochemistry- Mining	✓					✓
Ceramic- Refractory	✓					✓
Petrochemical- Energy	✓					

Parameters to be checked

- Application field
- Sample amount
- Reagent type and amount
- Maximum temperature
- Maximum pressure
- Number of vessels used

For any clarification please contact your local product specialist.



Max sample amount (according to the rotor specifications)

HPR: up to 1 g of dry organic with a fat content of 10% max.

MPR: up to 0,5 g of dry organic with a fat content of 10% max.

PRO rotors: up to 0,3 g of dry organic with a fat content of 10% max.

Multiprep: up to 0,2 g of dry organic with no fat content.

Q-20: up to 0,2 g of dry organic material.

Nova: mainly for inorganic samples.

	Min volume (ml)	Max volume (ml)	Reagents type	Max working T	Max working P
HPR (SK-10)	8	50	All acids*	250°C	100 bar
MPR (SK-12)	8	50	All acids*	220°C	40 bar
PRO rotors (PRO 16/24)	10	37	All acids, except aqua regia and HCl*	200°C	35 bar
Multiprep	10	20	All acid*	180°C	20 bar
Q-20	3 (only by IR)	20	All acids	200°C	40 bar
Nova	12	20	All acids*	280°C	100 bar

* Due to high reactivity of perchloric acid (HClO₄) Milestone suggests not to use it.

Suggestions

To run an application note for HPR in a different Milestone rotors evaluate the following parameters:

- application field; it has to be suitable
- limit of temperature; it has to be in the rotor specification
- amount and type of reagent
- sample amount; it must be in according to the rotor specifications
- ramping time

For any clarification please contact your local product specialist.



How to select the ramping time

Suggested ramping time according to the working temperature and to the type of rotor:

Rotor type	Up to 180°C	Up to 200°C	Up to 220°C	Up to 240°C	Up to 260°C	Up to 280°C
HPR	15 min	20 min	25 min	25 min	-	-
MPR	15 min	20 min	25 min	-	-	-
PRO 16	20 min	20 min	-	-	-	-
PRO 24	25 min	30 min	-	-	-	-
Multiprep	40 min	-	-	-	-	-
Nova	15 min	20 min	25 min	25 min	30 min	40 min

Milestone's software automatically select the amount of power necessary to follow the set temperature profile, therefore the change of the ramping time is not required for standard operations. Anyway, for high throughput rotors, it is possible to reduce the ramping time when the rotor is not full.

For instance if you use an PRO 24 rotor (24 positions) the ramping time to 180°C is 25 minutes, but if you use only 5 vessel the ramping time can be reduced to 10 minutes.

Following the ramping time divided by number of vessels:

N° of used vessels	Up to 180°C	Up to 200°C	Up to 220°C*	Up to 240°C*	Up to 260°C*	Up to 280°C*
Up to 5 vessels	10 min	10 min	10 min	15 min	25 min	30 min
Up to 10 vessels	15 min	20 min	25 min	25 min	30 min	40 min
Up to 16 vessels	20 min	25 min	-	-	-	-
Up to 24	25 min	30 min	-	-	-	-
Up to 41	40 min	-	-	-	-	-

*At higher temperature > 220°C only HPR (SK-10) and Nova rotor can be used.