

For providing comfortable car interiors

- Introducing VOCs [volatile organic compounds] -reducing-products -

For providing comfortable car interiors

"Cars" have made people's lives affluent by transporting people and things.

Recently, **comfort** is required for car interiors more than ever before.

In addition, with the growing environmental needs, **VOC regulations** are becoming tighter in various countries and automobile manufacturers are requiring conformance with the VOC standards in accordance with the contents of such regulations.

To respond to such requests, we developed "**VOC-reducing products**" for significantly reducing the generation of VOCs (volatile organic compounds), which are the source of unpleasant odors that impair comfort.

1 Enhancement of comfort

Reduction of VOCs

- Conformance with VOC standards

Reduction of odor generation

- Improvement in odor test (sensory evaluation) compared with conventional products

2 Safety

Impact resistance

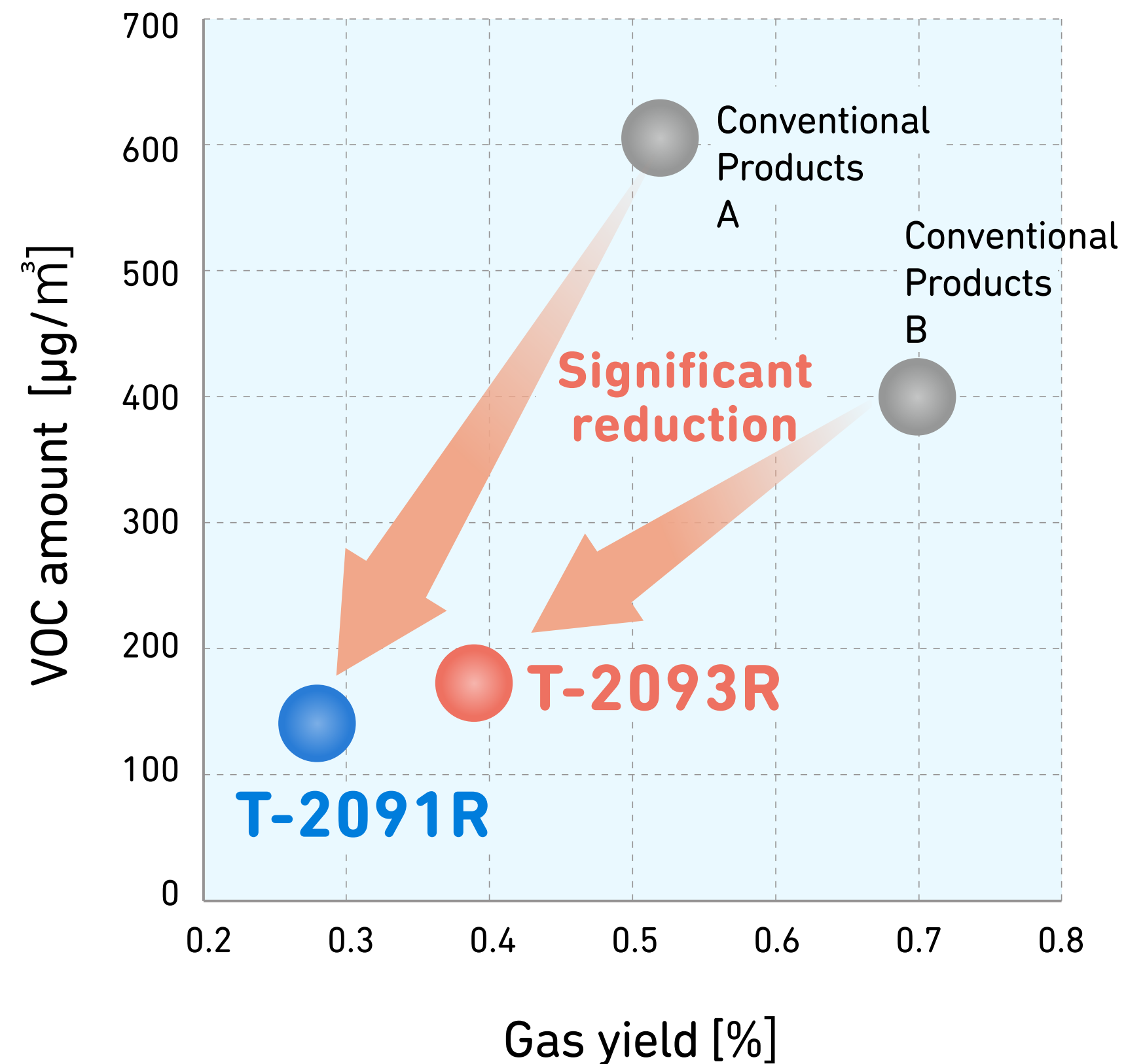
- Reduction of the risk of breakage at the time of crash

Long-term durability

- Control of physical property degradation due to long-term use in high-humidity and temperature environment

Newly developed product lineup

T-VOC Measured value (Measurement method : Q/FC-CD05-001-2013)



TGA Temperature conditions : 240°C×Hold for 30 minutes

VOC-reducing grade

T-2091R

Product with excellent heat resistance, impact resistance, and long-term durability substantially reducing emissions of:

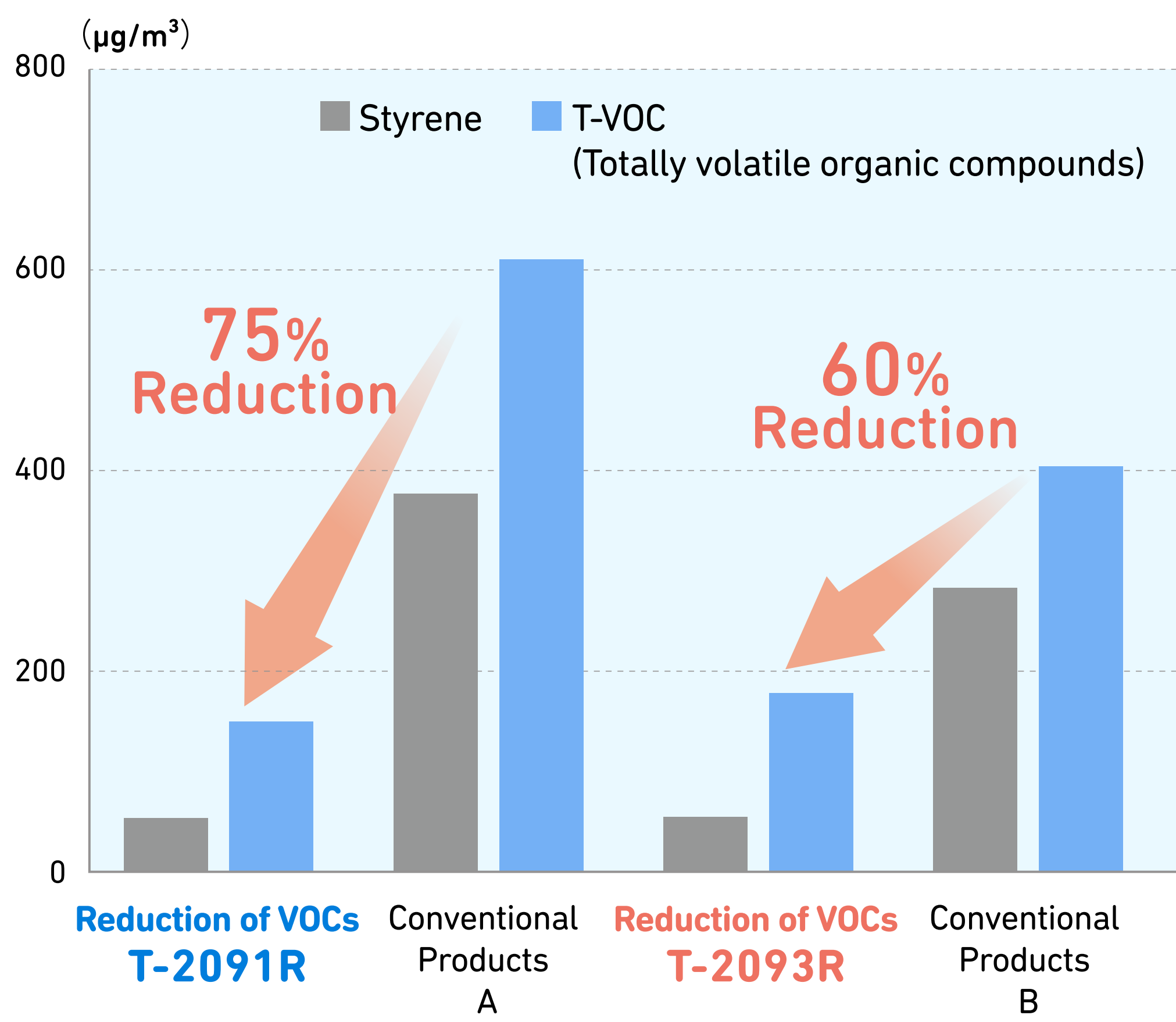
- VOC generating unpleasant odors
- Gasses that cause defects in forming

T-2093R

Product with almost equal characteristics with T-2091R and can be used for products for which fluidity in forming is required.

Reduction in emission of VOCs

VOC test



The VOC-reducing-grade can **reduce unpleasant odors**, decreasing the emission of VOCs from the material.

Measurement method :
Q/FC-CD05-00-2013
(10L Back method, 65°C/2hr)

Odor reduction

Odor test (Sensory evaluation)

Rank

Grade	VOC-reducing grade	Conventional products
Measurement temperature		
80°C/2hr.	3.5	4.0

VOC-reducing-grade products reduce odors generated from materials to "enhance comfort in car interiors."

[Judgment criteria]

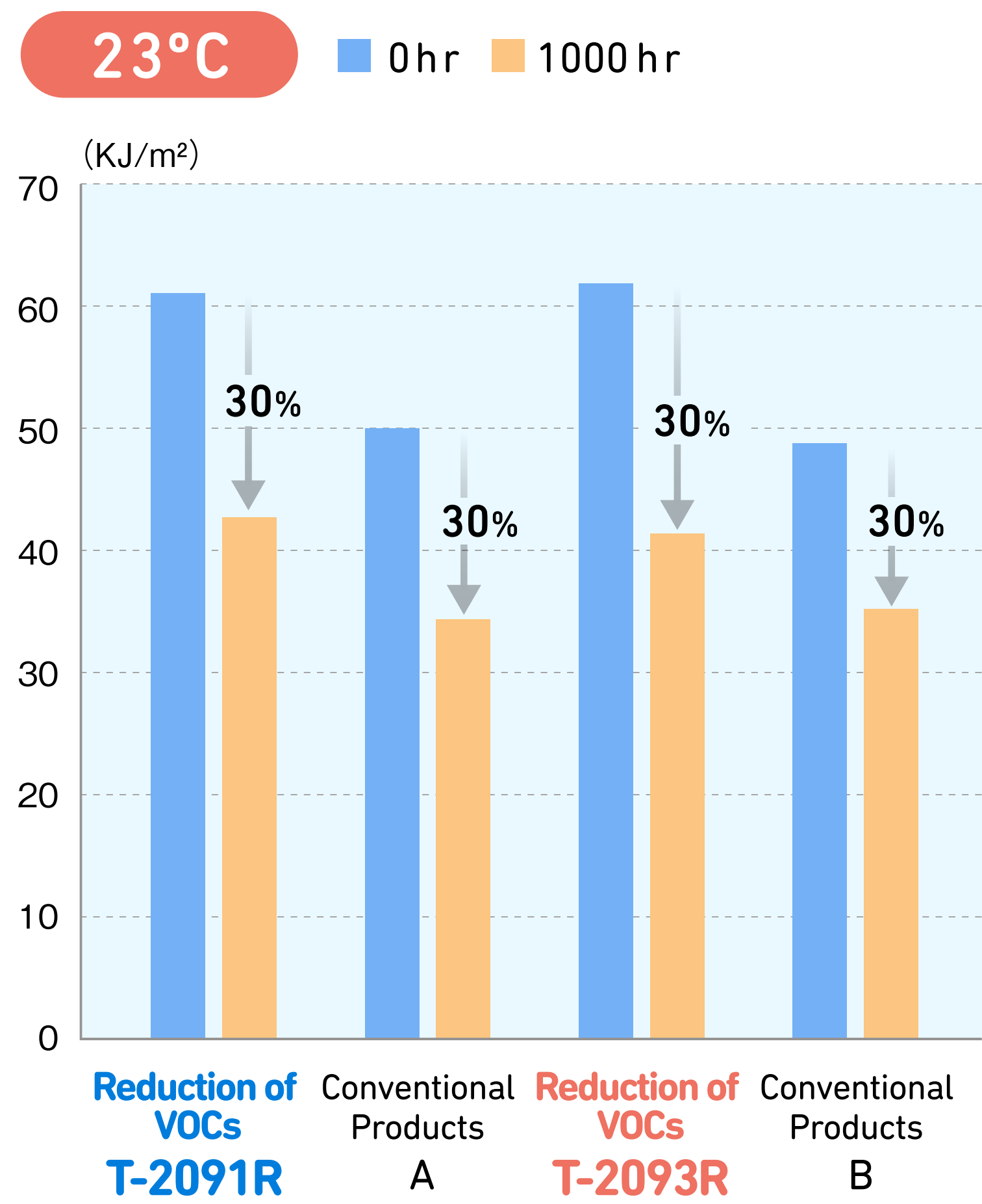
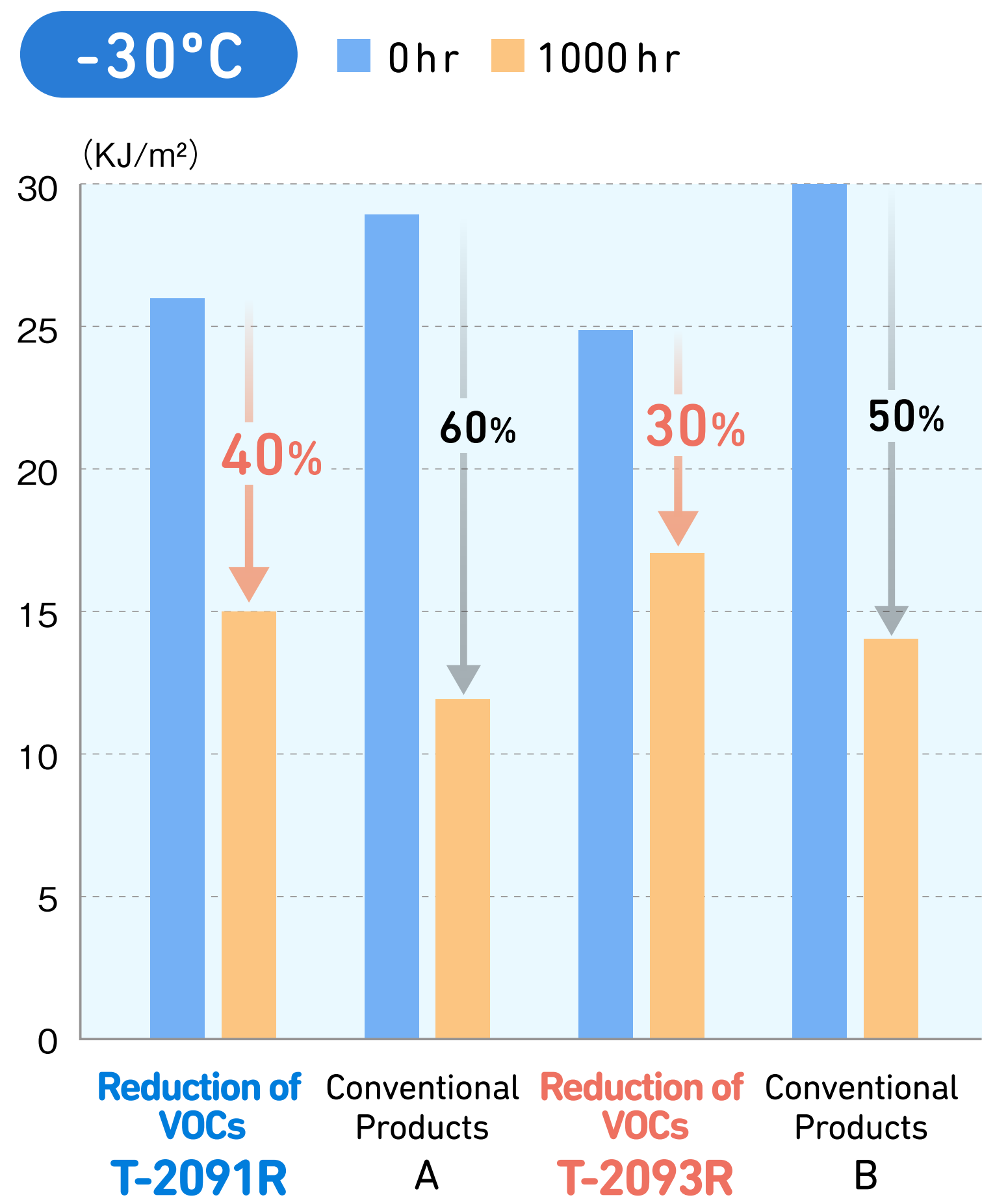
Rank	Explanation
Class 1	No smell is sensed
Class 2	A smell is sensed but is not unpleasant
Class 3	A smell is apparently sensed but is not unpleasant
Class 4	An unpleasant smell
Class 5	Very unpleasant smell
Class 6	An unbearable smell

[Evaluation conditions]

Measurement method :
PV3900-2000
Measurement temperature : 80°C/2 hr.

Long-term durability -1-

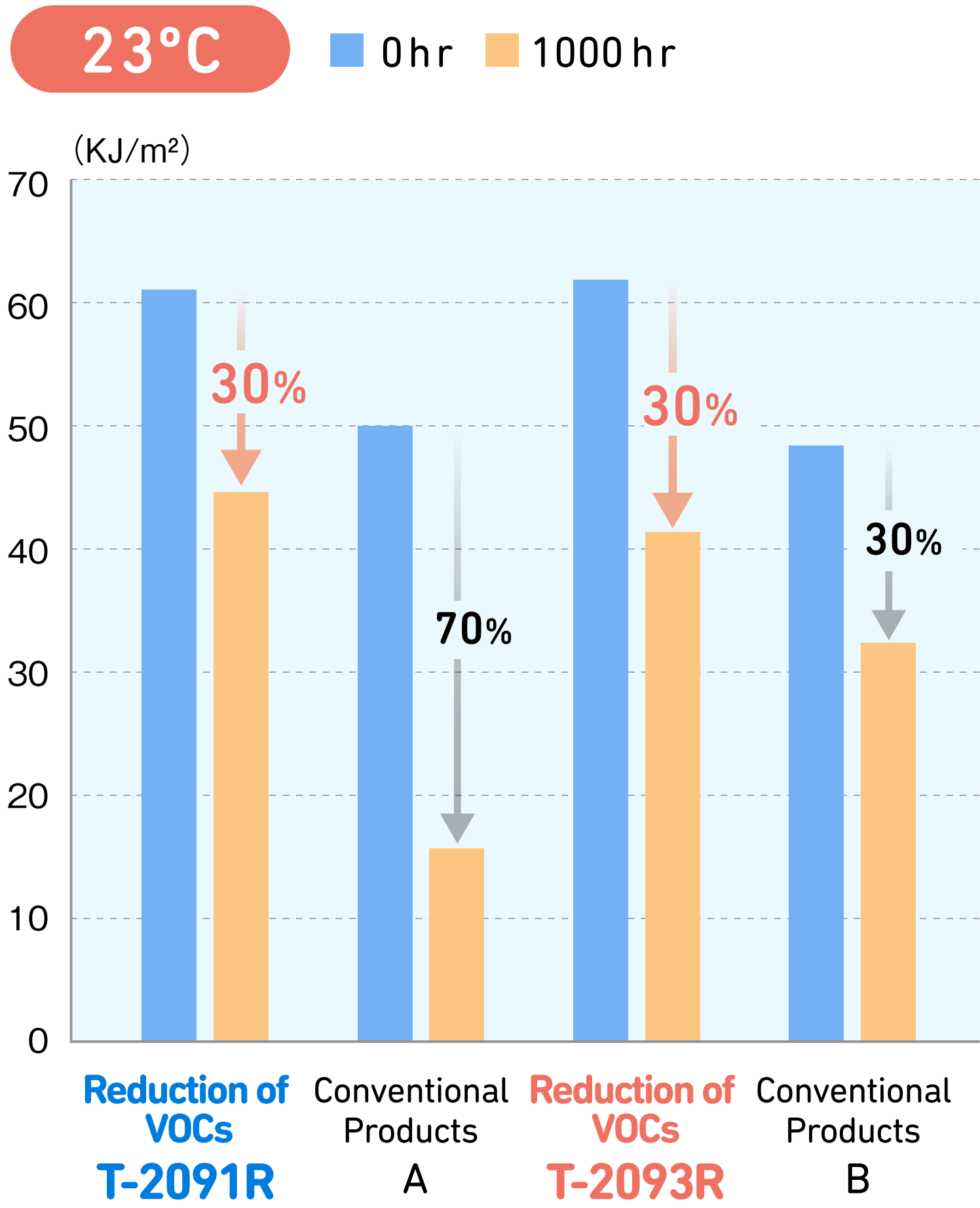
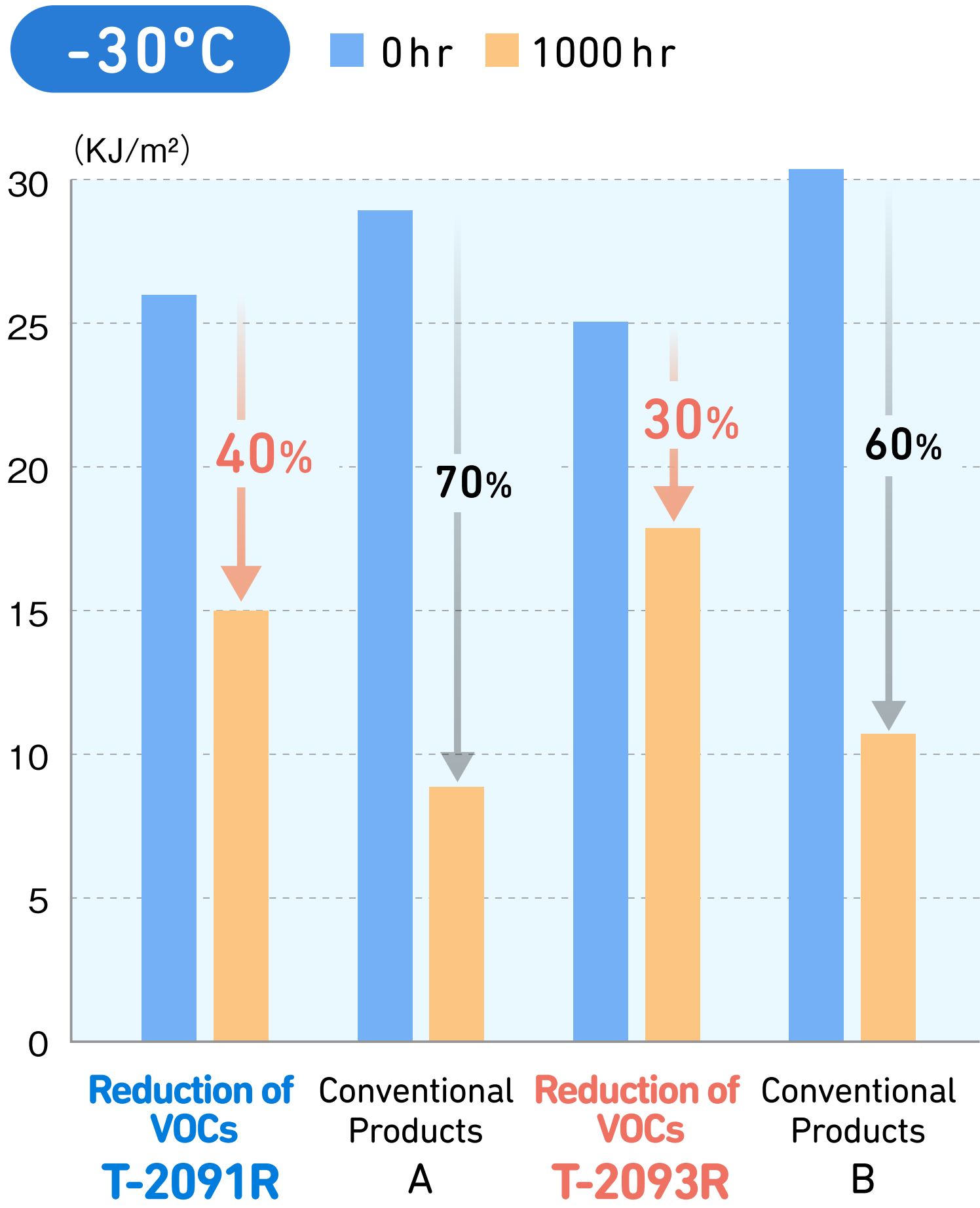
Dry-heat aging test/Charpy impact strength (100°C×1000 hr.)



Degradation of characteristics of the VOC-reducing-grade after dry-heat aging test decreases compared with existing products.

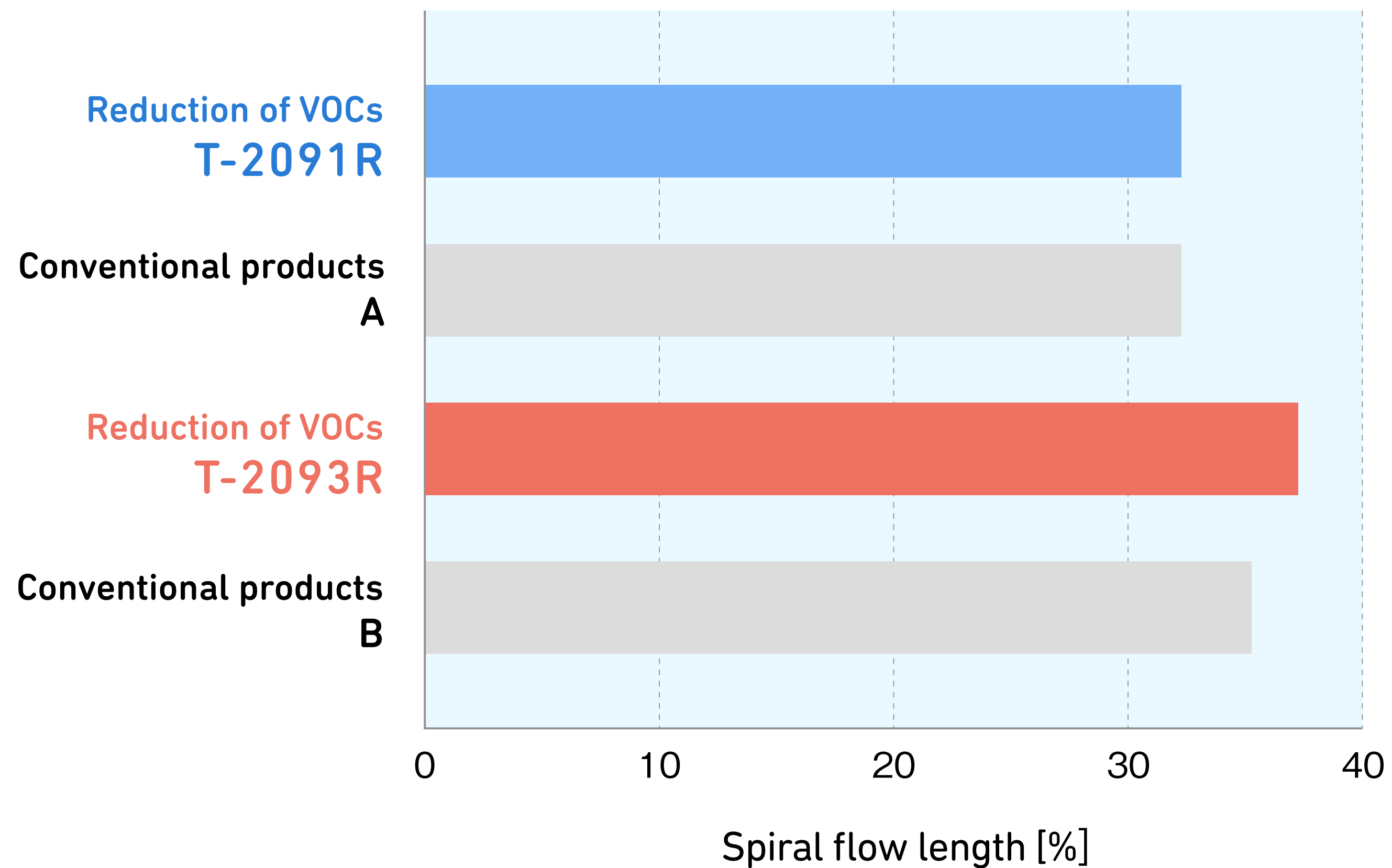
Long-term durability -2-

Wet-heat aging test/Charpy impact strength (80°C×95%Rh×1000 hr.)



Degradation of characteristics in wet-heat aging of the VOC-reducing-grade decreases like in dry-heat aging and **long-term durability is improved.**

Fluidity in forming



VOC-reducing-grade has almost the same fluidity as conventional PC and ABS products and formability is also the same as existing products.

[Test condition]

Cylinder temperature : 260°C

Mold temperature : 70°C

Flow path : width/8mmt、Thickness : 2mmt

Holding pressure : 98MPa

Mold : Archimedean spiral flow

Physical properties

Introducing VOCs reducing grade

Property	Unit	Test method	Measurement condition	Reduction of VOCs T-2091R	Conventional products A	Reduction of VOCs T-2093R	Conventional products B
MVR	cm ³ /10min	ISO 1133	250°C/5kg	10	17	10	18
Density	kg/m ³	ISO 1183	–	1,140	1,140	1,130	1,130
Tensile yield stress	MPa	ISO 527-1 ISO 527-2	50mm/min	55	55	53	52
Tensile fracture stress				50	50	50	55
Tensile fracture distortion				100	120	120	120
Flexural strength	MPa	ISO178	2mm/min	87	85	86	80
Flexural modulus				2,400	2,200	2,400	2,150
Charpy impact strength	kJ/m ²	ISO 179	23°C notched	60	50	60	55
			-30°C notched	25	35	25	35
Load-deflection temperature	°C	ISO 75-1,2	1.80MPa	110	110	103	102
Spiral flow length	cm	In-house method	260°C/98MPa	32	32	37	35

※Figures listed in this chart are typical values obtained under standard test methods, and may not be certified values.

Molding Condition

〈T-2091R、T-2093R Standard molding condition〉

Properties	Unit	Molding condition
Molding Temp.	°C	230~270
Mold Temp.	°C	50~80
Injection Pressure	MPa	59~147
Drying Temp.	°C	110°C
Drying Time	hr	5~8

● CAUTION

- The figures listed in this catalogue are typical values obtained under standard test methods, and may not be applicable for products that are used under different application conditions.
- The combustion figures listed in this catalogue are from small-scale tests and may not be applicable for hazards during a major fire.
- These grades cannot be used in food container and food packing applications.
Please call us for advice regarding applications for medical equipment and toys.
- When any kind of additives (such as anti-bacterial agents, stabilizers and flame retardants) or coloring agents are to be added to this resin, please be sure to consult with TEIJIN LIMITED in advance.
However, even after consultation, TEIJIN LIMITED will not guarantee nor bear responsibility in any form for the usage of such additives.
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- The contents of this catalogue may be changed without prior notice.
- Please refer to the Safety Data Sheet (SDS) before use for other warnings in detail.