Sealing Compounds for Drinking and Service Water Systems

Parker Prädifa

ENGINEERING YOUR SUCCESS.

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Wherever drinking water is obtained from any of its sources, pumped and processed, materials with low extraction levels and without any harmful ingredients are required. Sealing elements that combine long life, economy and toxicological harmlessness are indispensable to the sealing of pipes, for use as radial shaft seals in pumps or the sealing of sensors in operations that process drinking water.

Long-Term Durability

Seals for domestic water piping are a good example of the required durability. Following their installation, the sealing elements should have a life of at least 30 years, irrespective of whether they are used in hot or cold water. Seal failure and resulting leakage would lead to massive damage and major expenditures of time, labor and costs for replacement.
This is why Parker Prädifa has developed EJ820, for example, an EPDM compound with outstanding compression set combined with improved resistance against autoxidation. The material is compliant with all national and international drinking water approvals such as KTW, W270, W534, EN681-1, KIWA, WRAS, etc. It is a robust compound with outstanding suitability for successfully mastering any challenge in drinking water applications. Its low compression set ensures long service life and thus reliable sealing of all fittings, valves and pipe systems.

Consumer Protection is of Paramount Importance

Sealing compounds for use in drinking water and service water applications are subject to a wide range of approval regulations. These regulations serve to assure the safety of water from the time of intake, via treatment, processing and transportation through to consumption. Practically every country in the world has its own drinking water regulations specifying particular tests and including lists of approved ingredients. The regulations are complemented by physical and microbiological examinations. The Parker Engineered Materials Group has developed a number of compounds, each of which meets a wide range of the required approvals, thus allowing the global utilization of the sealing systems (see overview on page 6.)

Everyone is familiar with showerheads and practically everyone uses them daily. Today, shower systems come in a wide variety that meets diverse needs. Available features range from light effects that make the water appear in different colors while the spray pattern of choice exerts its massaging effect, making the user feel – at least for a short while – of being at a spa, to simulated rainfall reminiscent of a shower in a tropical forest. But to save the day before it has actually started by preventing foam and water from flooding the bathroom floor, reliable and modern sealing concepts need to be installed in showerheads. These sealing concepts are indispensable to enabling and protecting the increasingly complex mechanical and electronic devices utilized in sophisticated shower systems. In addition to effectively preventing leakage, the sealing systems should be wear-proof, exhibit low friction and be resistant against mineral buildup and other deposits.

Solar Thermal Energy Systems

High stagnation temperatures and steam are the specific challenges which solar thermal systems pose to seals. Parker Prädifa has developed special compounds for these applications.

Bathroom Taps and Shower Heads

Modern showerheads are equipped with electronics and mechanical devices requiring protection against moisture. In addition to preventing leakage, the sealing systems should be wear-proof, exhibit low friction and be resistant against mineral buildup and other deposits.

Pressfittings

Parker Prädifa's EPDM compounds are superbly suited for heater and drinking water fittings. Low compression set and minimal extraction of the materials are crucial advantages for these applications.

Drinking Water Applications

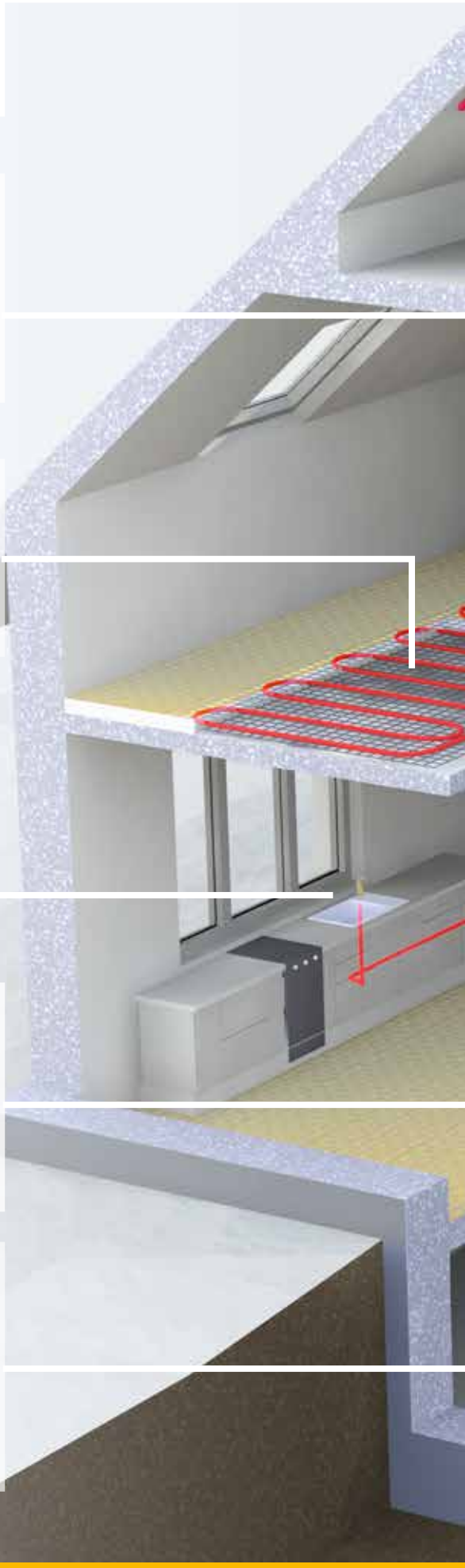
Seals in contact with drinking water have to meet diverse requirements in terms of extraction, micro-bacterial growth and compression set. This is why Parker Prädifa has developed a compound that is compliant with all common drinking water approvals.

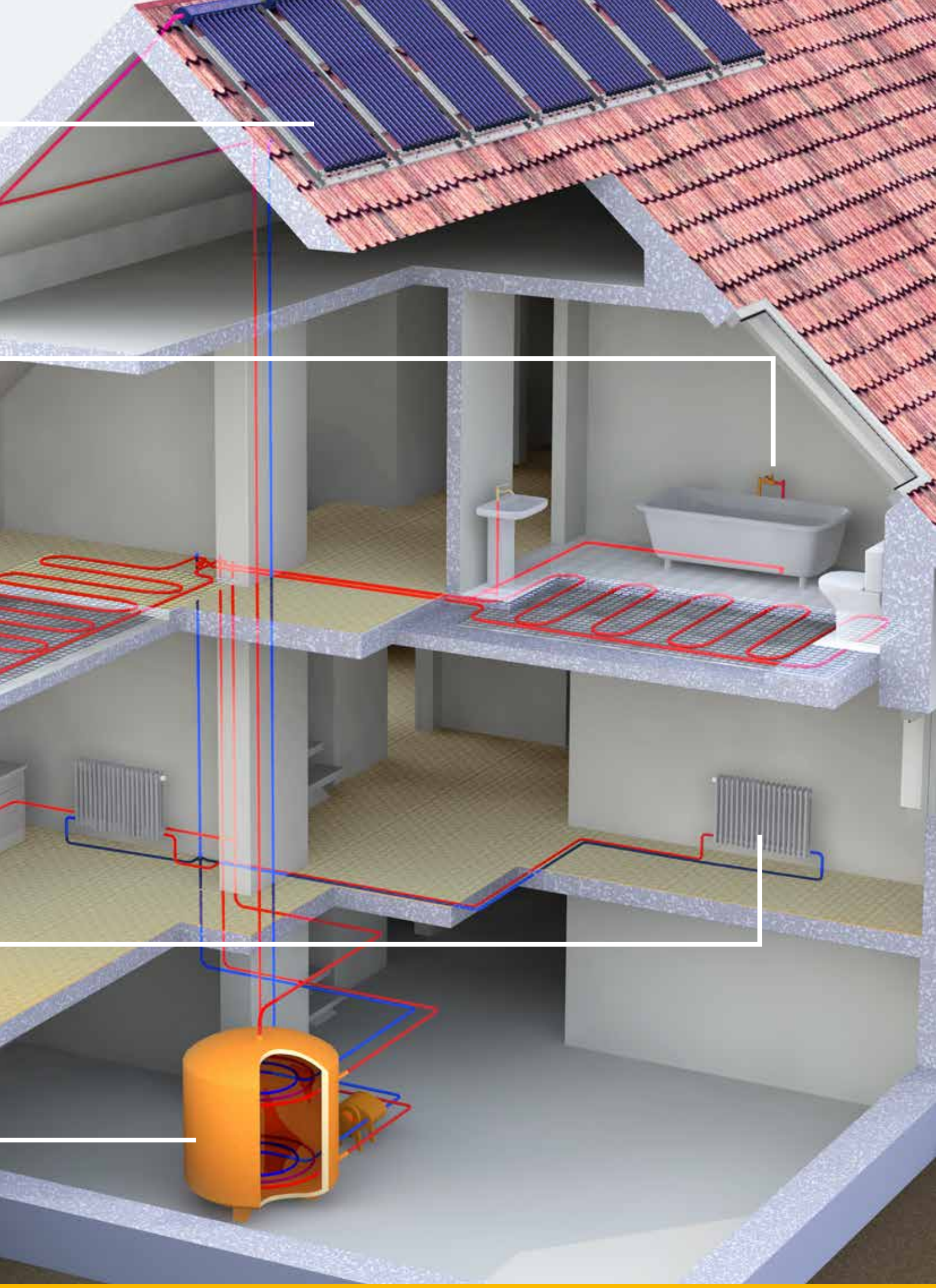
Heater Valves and Valve Blocks

In addition to the pure sealing function, long life and ease of movement are the main requirements to be met by sealing systems used in valves and valve blocks of heating systems in order to ensure reliable control of room temperature and valve shut-off for many years.

Heater Pumps

Long service life for many years, both in continuous and energy-efficient intermittent operation, must be ensured by the sealing system of a modern heater pump. This requires materials and material pairings exhibiting high wear resistance and long-term durability.





Sealing Compounds for Drinking and Service Water Systems

Parker Compound	E1244	E1512	E1549	E1561	E1583
Hardness (Shore A)	70	70	70	60	70
Hardness (Shore D)					
Internally lubed	•	•			•
Peroxide cured					•

Regulation / Directive	Country / Region	Scope of Application	Standard	EPDM	EPDM	EPDM	EPDM	EPDM
KTW / Interim Guidance on Elastomer Guideline	D	Plastics in drinking water, cold, warm and hot water	UBA Guideline for hygienic assessment of elastomers in contact with drinking water (Elastomer Guideline)				•	
W 270	D	Drinking water	DVGW worksheet W270: Multiplication of microorganisms on materials for drinking water applications					
ACS	F	Plastics in contact with drinking water	French drinking water application AFNOR XP P41-250 part 1-3					
WRAS	GB	Plastics in contact with drinking water	British Standard BS 6920 and BS2494			•	•	
KIWA	NL	Rubber pipe joint seals for potable water and waste water	BRL-2013-04, cold and hot water; ATA Product Certification (Technical Approval Toxicological Aspects)					
NSF 61	USA	Food and sanitary/ plumbing applications	NSF Standards and Criteria (Mechanical Plumbing Devices)	•	•	•	•	•
EN 681-1	Europa	Seals for water supply applications	DVGW: Material requirements for pipeline seals for applications in water supply and drainage					
W 534	D	Pipe/tube connectors and pipe/ tube connections in drinking water installations	DVGW: Pipe connectors/fittings and pipe connectors/ fittings in drinking water installation (May 2004)					
Chloramine resistant	USA	-	-		•			

* In Preparation

Low-Friction Assembly with ParCoat®

EJ820	N1510	P5000	nobrox®	ParCoat® KTW
70	70	92		
			76	
•				

EPDM	NBR	TPU EU/AU	PK	Coating
• 85 °C 184 °F		*		• 85 °C 184 °F
•				
•				
• 85 °C 184 °F				• 85 °C 184 °F
•	•		•	

O-rings with ParCoat® coatings allow low-friction, low-force installation using automatic assembly equipment. Unlike surfaces treated with oils or greases, seals with a ParCoat® finish do not contaminate the conveyors and feeders of automatic assembly lines. The rings do not stick together, are protected from damage and can be elongated up to 150 % without the transparent anti-friction coating breaking or tearing. The installation process can be repeated several times with the same assembly forces.

Since the coating is transparent the colors of the elastomers are visible, thus preventing mix-ups. Temperature resistance ranges from -40 to +120 °C (-40 to +250 °F).

Assembly Pressure Loads for Plug Connections

Depending on the type of application, ParCoat® may reduce the required assembly pressure by more than 50 % compared to uncoated O-rings or O-rings with different types of surface treatment.
Figure 1 illustrates the assembly pressures required for fitting standard connections of automotive air-conditioning systems with ParCoat®-treated and uncoated O-rings. Even during repeated assembly of the same O-ring, pressures remain at the same, consistently low levels (Figure 2).

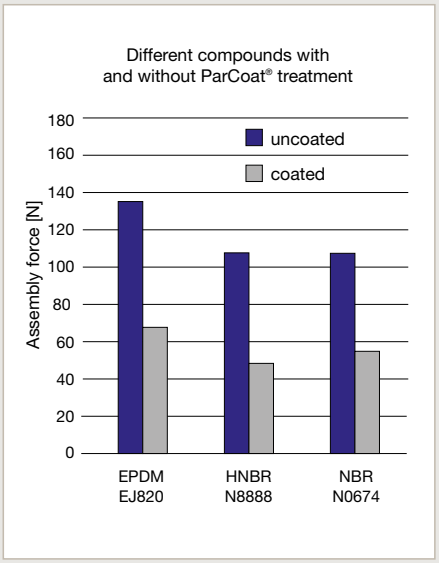


Figure 1

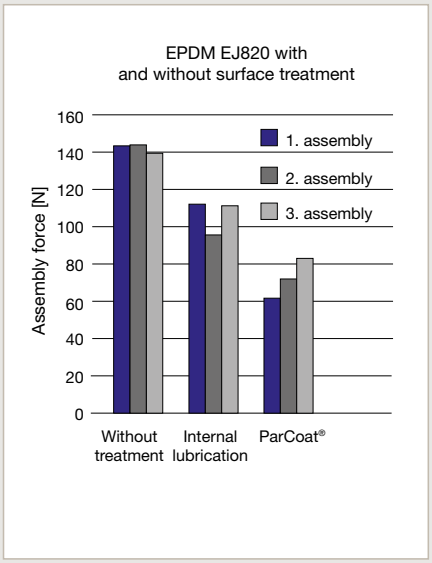


Figure 2

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