

## Protadur® – the gas brand for food.

Under the Protadur® trademark, Westfalen has developed a line of products and systems which offers extensive security especially for the food industry. Gases in the Protadur® family conform to all regulations applicable EU-wide to food and food additives regarding their registration, specification and manufacture. The Protadur® series is tied to an HACCP Concept (Hazard Analysis of Critical Control Points) with a dense network of control points. The unbroken traceability of Protadur® food gases can be assured at all times.

Gases in the Protadur® series.			
Product	Components	Delivery modes*	Main applications
Protadur® E 290	Carbon dioxide (CO <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 8 l</li> <li>• Individual cylinder 13.4 l</li> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Freezing</li> <li>• Packaging</li> <li>• Carbonation</li> <li>• Preloading</li> </ul>
Protadur® E 938	Argon (Ar)	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> <li>• Mobile container 175 l</li> <li>• Mobile container 600 l</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® E 939	Helium (He)	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® E 941	Nitrogen (N <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> <li>• Mobile container 175 l</li> <li>• Mobile container 600 l</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Freezing</li> <li>• Packaging</li> <li>• Hardening</li> <li>• Chopping/Mincing</li> <li>• Stabilising</li> </ul>
Protadur® E 942	Nitrous oxide (N <sub>2</sub> O)	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Foaming</li> </ul>
Protadur® E 948	Oxygen (O <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> <li>• Mobile container 175 l</li> <li>• Mobile container 600 l</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> <li>• Foaming</li> </ul>
Protadur® E 949	Hydrogen (H <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50</li> <li>• Bulk</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrogenating</li> </ul>
Protadur® C 20	20 % Protadur® E 290 (CO <sub>2</sub> ) 80 % Protadur® E 941 (N <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 10 l</li> <li>• Individual cylinder 20 l</li> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® C 30	30 % Protadur® E 290 (CO <sub>2</sub> ) 70 % Protadur® E 941 (N <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 10 l</li> <li>• Individual cylinder 20 l</li> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® C 50	50 % Protadur® E 290 (CO <sub>2</sub> ) 50 % Protadur® E 941 (N <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® O 70 C 30	70 % Protadur® E 948 (O <sub>2</sub> ) 30 % Protadur® E 290 (CO <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> </ul>
Protadur® Ethene 4	4 % Ethene (C <sub>2</sub> H <sub>4</sub> ) 96 % Protadur® E 941 (N <sub>2</sub> )	<ul style="list-style-type: none"> <li>• Individual cylinder 50 l</li> <li>• Bundle 12 x 50 l</li> </ul>	<ul style="list-style-type: none"> <li>• Ripening process control</li> </ul>

\* Nominal volume in litres; actual content varies depending upon the gas type. Further Protadur® mixtures and delivery modes on request.

# Protective atmospheres with Protadur®.

In principle almost all foods can be packaged under protective gas. The table shows recommendations on the Protadur® gases or their mixtures to be used which are proven in practice for certain products. We would be pleased to advise you in detail on the versatile application possibilities of the Protadur® range, as well as on questions of supply and technical application and statutory requirements.

Product	Protadur® E 290 (CO <sub>2</sub> )	Protadur® E 938 (Ar)	Protadur® E 939 (He)	Protadur® E 941 (N <sub>2</sub> )	Protadur® E 948 (O <sub>2</sub> )	Protadur® C 20 (20 % CO <sub>2</sub> / 80 % N <sub>2</sub> )	Protadur® C 30 (30 % CO <sub>2</sub> / 70 % N <sub>2</sub> )	Protadur® C 50 (50 % CO <sub>2</sub> / 50 % N <sub>2</sub> )	Protadur® O 70 C 30 (30 % CO <sub>2</sub> / 70 % O <sub>2</sub> )
<b>Meat</b>									
Fresh meat	-	-	-	-	-	-	-	-	100
	20*	-	-	-	80*	-	-	-	-
Pickled meat	-	-	-	-	-	-	100	-	-
Sliced sausage	-	-	-	-	-	-	100	-	-
	40*	-	-	60*	-	-	-	-	-
Long life sausage	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	100	-	-	-
Liver pâté	-	-	-	-	-	100	-	-	
<b>Fish/ Seafood</b>									
Plaice	40*	-	-	30*	30*	-	-	-	-
Prawns	80*	-	-	20*	-	-	-	-	-
<b>Ready meals</b>									
Sterilised	-	-	-	100	-	-	-	-	-
Pasteurised	-	-	-	-	-	100	-	-	-
Frozen	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	100	-	-	-
	-	-	-	-	-	-	100	-	-
<b>Pasty goods</b>									
Bread (pre-baked)/ Bread for toast	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	-	-	100	-
Puff pastry	80*	-	-	20*	-	-	-	-	-
	100	-	-	-	-	-	-	-	-
Pizza	-	-	-	-	-	-	100	-	-
Biscuits	100	-	-	-	-	-	-	-	-
	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	-	-	100	-
Pancakes	80*	-	-	20*	-	-	-	-	-
	-	-	-	-	-	-	-	100	-
<b>Dairy products</b>									
Quark	-	100	-	-	-	-	-	-	-
	-	-	100	-	-	-	-	-	-
	-	-	-	-	-	100	-	-	-
Cheese	100	-	-	-	-	-	-	-	-
	-	-	-	100	-	-	-	-	-
Yoghurt	100	-	-	-	-	-	-	-	-
	-	100	-	-	-	-	-	-	-
	-	-	100	-	-	-	-	-	-
Cream	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	-	-	100	-
Potato products	-	-	-	100	-	-	-	-	-
	-	-	-	-	-	-	-	100	-
Delicatessen with Mayonnaise	-	-	-	100	-	-	-	-	-
Confectionery, Chocolate	-	-	-	100	-	-	-	-	-
<b>Beverages</b>									
Beer	100	-	-	-	-	-	-	-	-
Mineral water/ Lemonade	100	-	-	-	-	-	-	-	-
	-	-	-	100	-	-	-	-	-
Sparkling wine/ Champagne	-	-	-	-	-	-	100	-	-
	100	-	-	-	-	-	-	-	-
	-	-	-	-	-	100	-	-	-
Wine	-	-	-	-	-	100	-	-	-
	-	-	-	-	-	-	100	-	-

\* Mixtures prepared individually or in on-site gas mixing installations.

The provided data, values and information correspond to the state of knowledge at the time of printing (as at August 2008). They assert no claim for accuracy or completeness and in this respect do not absolve the user from his duty of verification.