

Cryonorm b.v.  
Koperweg 3  
2401 LH Alphen aan den Rijn  
The Netherlands

Phone : +31-(0)172-418080  
Fax : +31-(0)172-438819

Home page : <http://www.cryonorm.nl>  
E-mail : [sales@cryonorm.nl](mailto:sales@cryonorm.nl)

Bank : ABN-AMRO  
Alphen aan den Rijn  
The Netherlands  
Bank account nr. 56.92.17.075

VAT nr. : NL807593254B03

Chamber of Commerce Leiden nr. 28033006

## Declaration

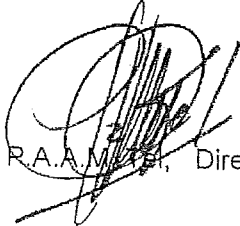
We herewith declare that the Cryonorm "Indirect Fired Waterbath Vaporiser" Serialnumber 7769, made in compliance with the Directives and harmonised Norms as mentioned in the Cryonorm and Eclipse EC Declarations of conformity, do not cause an Ex-zone as per EN60079-10.

Trusting to have informed you sufficiently,

Kind regards,

Alphen a/d Rijn, The Netherlands

Date: 02/12/04



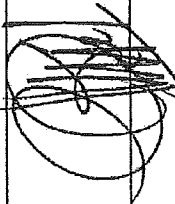
R.A.A. Meijer, Director CRYONORM B.V.

Manufacturer of cryogenic equipment.  
Specialised in - ambient air heated vaporisers  
- steam- and waterbath vaporisers  
- trimheaters  
- cryogenic process skids

Cryonorm is a subsidiary of  
Cryotek Management & Beheer B.V.

All offers made, all orders placed and all agreements made with us are subject to our general conditions METAALUNIEVOORWAARDEN deposited at the COURT of ROTTERDAM as per the latest version, copy of which will be provided upon first request.



Boundaries of the hazard/risk analyse against the proper (legal) background 8): Gas fired WWB vaporiser - 16 kNm <sup>3</sup> /hr Gasfired, drukloos waterbad met 1 Verdamperspiraal Serienummer: 7769 Reference : R2-040241 Revision: 01 dd. 02-12-2004		Date: 04-10-2004	
Manufacturer: CRYONORM B.V.		Signature:	
On behalf of manufacturer:			

Toelichting op de noten, zie laatste blad

Soort gevaar		Van toepassing	Risico-bepaling door	Indien noodzakelijk: risico-reductie door					Risico-evaluatie	Toelichting
No. Type of hazard		2) Relevant	3) Risk estimation by	If applicable: risk reduction by					Risk evaluation	Explanations
1)		2)	3)	Ontwerp/design			Gebruik / Use		4)	
				Constructieve maatregelen	Controle productieprocessen	Beveiliging (systemen)	Aanvullende maatregelen	Waarschuwing over resterend risico		
				Construction	Control of production processes	Safeguarding (Systems)	Additional precautions	Warning against remaining risk		
1		Internal pressure - normal operating conditions - regeneration conditions - thermal liquid expansion - exothermal reactions/run away	Y	M					A	To be included in usermanual: A safety valve must be installed, connected to the vaporiser coil which must be calculated to have sufficient capacity for the application.
2		External pressure - vacuum - normal operating conditions - regeneration conditions - condensing steam/vapour due to cooling down	N	M					A	
3		Ambient temperature	N	M					A	

## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar	Van toepassing Relevant	Risico- bepaling door Risk estimation by	Indien noodzakelijk: risico-reductie door If applicable: risk reduction by					Risico- evaluatie Risk evaluation	Toelichting Explications
No.	Type of hazard	2)	3)	5)					4)	
	1)			Ontwerp/design			Gebruik / Use			
				Constructieve maatregelen Construction	Controle productieproce- s Control of production proces	Beveiliging (systemen) Safeguarding (Systems)	Aanvullende maatregelen Additional precautions	Waarschuwing over resterend risico Warning against remaining risk		
4	Temperature - margin between operating and design temperature to small - regeneration conditions - exothermal reactions - to small response time of temperature sensors	Y	M	P		P			A	Control of N2 valve is dependent on sufficient waterbath temperature. The water level is maintained by a float valve and controlled High and low level switches.
5	Temperature changes - temperature gradient	Y	M	+					A	Structure is inherently suitable
6	Creep	N	M						A	
7	External fire (pool, jet)	N	M						A	
8	Static head of the content under operating and test conditions	N	M						A	
9	Dynamic liquid pressure (waterhammer) - Condensation of gaseous fluids	N	M						A	
10	Mass of content under operating and test conditions	N	M						A	
11	Traffic loadings/geotechnical loadings(underground pressure equipment)	Y	M					+	A	To be included in usermanual: The foundation must be sufficient to carry the load of the filled equipment.
12	Windloading - mounting outside	N	M						A	
13	Snow and ice loads - location (outside) - due to process	N	M						A	

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### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar	Van toepassing Relevant	Risico- bepaling door Risk estimation by	Indien noodzakelijk: risico-reductie door If applicable: risk reduction by 5)					Risico- evaluatie Risk evaluation	Toelichting Explanations
No.	Type of hazard	2)	3)	Ontwerp/design			Gebruik / Use		4)	
				Constructieve maatregelen Construction	Controle productieproce- s Control of production proces	Beveiliging (systemen) Safeguarding (Systems) 6)	Aanvullende maatregelen Additional precautions 7)	Waarschuwing over resterend risico Warning against remaining risk		
14	Earthquake loading	N	M						A	
15	Forces and moments from supporting structures	N	M						A	
16	Forces and moments from piping connections (nozzle loads)	Y	M	+				+	A	To be included in usermanual: Assemble without stress. In- and Outlet piping to be supported, allowing the piping to expand and shrink because of temperature fluctuations ((§t 200) .
17	Corrosion - Internal - External - Condensation in piping for gaseous fluids	N	M						A	
18	Chemical attack of the materials by the proces fluid	Y	M					+	A	To be included in usermanual: Use non aggressive, non corrosive, clean water
19	Erosion/wear - pipelines (high velocity of fluid, turbulence, vortices) - solids (e.g. coal)	N	M						A	
20	Fatigue - pressure fluctuations (range) - vibration of pipelines - mixtures - pumps	N	M						A	

## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar	Van toepassing Relevant	Risico- bepaling door Risk estimation by	Indien noodzakelijk: risico-reductie door If applicable: risk reduction by					Risico- evaluatie Risk evaluation	Toelichting Explanations
No.	Type of hazard	2)	3)	5)					4)	
	1)			Ontwerp/design			Gebruik / Use			
				Constructieve maatregelen Construction	Controle productieproce- s Control of production proces	Beveiliging (systemen) Safeguarding (Systems) 6)	Aanvullende maatregelen Additional precautions 7)	Waarschuwing over resterend risico Warning against remaining risk		
21	Excessive loadings due to excessive free movement (pipelines)	N	M						A	
22	Excessive forces/moment on flanges; connections; bellows; hoses (pipelines)	Y	M					+	A	To be included in usermanual: Assemble without stress. In- and Outlet piping to be supported
23	Decomposition of unstable fluids	N	M						A	
24	Consequences due to deposits - loss of fluid (level) - corrosion - overheating	Y	M					+	A	The water level is regulated by a float valve and controlled by level switches. To be included in usermanual: The tank is to be inspected and cleaned regularly. It must be ensured that there is no deposit on the coils to avoid under deposit corrosion.
25	Unstability during transport or movement	Y	M					+	A	To be included in usermanual: Tank must be empty for transport.
26	Danger due to internal pressure in relation to opening and closing of pressure equipment	N	M						A	
27	Danger due to the type of fluid in relation to opening and closing of the pressure equipment	N	M						A	
28	Surface temperature, related to the intended use	Y	M					+	A	To be included in usermanual: The user must wear sufficient personal protective aids. Hot or cold surfaces to be indicated with stickers.

## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar	Van toepassing Relevant	Risico-bepalling door Risk estimation by	Indien noodzakelijk: risico-reductie door If applicable: risk reduction by					Risico-evaluatie Risk evaluation	Toelichting Explanations
No.	Type of hazard	2)	3)	5)					4)	
	1)			Ontwerp/design			Gebruik / Use			
				Constructieve maatregelen Construction	Controle productieprocess Control of production process	Beveiliging (systemen) Safeguarding (Systems)	Aanvullende maatregelen Additional precautions	Waarschuwing over resterend risico Warning against remaining risk		
29	Adversely effects of opening (for inspection)	N	M						A	
30	Uncontrolled chemical reactions, due to insufficient ventilation	N	M						A	
31	Danger related to cleaning, inspecting and maintenance - ventilation - product remains	Y	M					+	A	To be included in usermanual: Before inspection or maintenance the equipment is to be depressurised and the power supply must be switched of
32	Overfilling	N	M						A	
33	Overpressure due to overfilling (filling ratio and vapour pressure at reference temperature)	N	M						A	
34	Instability of the pressure equipment during filling and emptying	N	M						A	
35	Uncontrolled release of the pressurized fluid	N	M						A	
36	Unsafe connection and disconnection	Y	M					+	A	To be included in usermanual: Before inspection or maintenance the equipment is to be depressurised and the power supply must be switched
37	Dangerous accumulation of ignitable mixtures of combustible substances and air (hoollers)	N	M						A	

## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar <i>Type of hazard</i>	Van toepassing <i>Relevant</i>	Risico- bepaling door <i>Risk estimation</i> by	Indien noodzakelijk: risico-reductie door <i>If applicable: risk reduction by</i>					Risico- evaluatie <i>Risk</i> <i>evaluation</i>	Toelichting <i>Explications</i>
No.	1)	2)	3)	5)					4)	
				Ontwerp/design		Gebruik / Use				
				Constructieve maatregelen <i>Construction</i>	Controle productieproce- s <i>Control of production proces</i>	Beveiliging (systemen) <i>Safeguarding (Systems)</i>	Aanvullende maatregelen <i>Additional precautions</i>	Waarschuwing over resterend risico <i>Warning against remaining risk</i>		
38	Flame blowback (boilers)	N	M						A	
39	Discharge of static electricity	N	M						A	
40	Dangers due to release of fluids (location and type of fluid): - safety devices - leakages - flange gaskets (type) - glad gaskets - due to forces/moments on flange connections	Y	M					+	A	To be included in usermanual: The equipment is intended for outside use. The safety valves exhaust is to be directed to safe direction.
41	Consequences of dropping the pressure vessel (related to intended use)	N	M						A	
42	Negative effects of the test fluid	Y	M					+	A	To be included in usermanual: The coil has to be dried after the pressure test.
43	Failure of joints, due to expected use	N	M						A	
44										
45										
Nrs.	Combinaties van gevaren									
No.s	Combination of hazards									

## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

Nr.	Soort gevaar	Van toepassing	Risico-bepalling door	Indien noodzakelijk: risico-reductie door				Risico-evaluatie	Toelichting
No.	Type of hazard	Relevant	Risk estimation by	If applicable: risk reduction by				Risk evaluation	Explications
	1)	2)	3)	Ontwerp/design		Gebruik / Use		4)	
				Constructieve maatregelen	Controle productieproces	Beveiliging (systemen)	Aanvullende maatregelen		
				Construction	Control of production proces	Safeguarding (Systems)	Additional precautions		
						6)	7)		



## RESULTAAT VAN DE GEVAREN ANALYSE

### RESULT OF THE HAZARD ANALYSIS

- 1) Binnen het beoogde gebruik en het redelijkerwijs te voorzien misbruik / overschrijding van de ontwerpcondities van de drukapparatuur. Identificatie van de gevaren *Within the scope of the intended use and reasonable foreseeable misuse or operation outside the design conditions. Hazard identification*  
 Bij het definiëren van het gevaar dient onderscheid gemaakt te worden tussen de oorzaken en de gefahren die daar het gevolg van zijn. (b.v. uitval van hulpenergie kan bezwijken t.g.v. drukoverschrijding tot gevolg hebben.  
*When defining the hazards, there has to be a clear distinction between the causes and the hazards that can result from them. (example: auxiliary power failure can lead to excessive pressure)*
- 2) Beantwoorden met / answer with: Y/N.  
 Bepalen of een gevaar van toepassing is kan door een logische redenatie, al dan niet ondersteund door analyse technieken als HAZOP, FMEA  
*Analysing the possibility of the hazard can be done by logical reasoning, when necessary, supported by analysis techniques as HAZOP and FMEA*
- 3) Beantwoorden met / answer with:  
 M = fabrikant/manufacture;  
 EC = ingenieursbureau / engineering company;  
 US = specificatie van de gebruiker / user specification  
*In the framework of the PED, the manufacturer has to bear the main responsibility and has to be supplied with the relevant information in order to establish the hazard identification and risk assessment.*  
*Exception to this principle shall be clearly indicated*
- 4) Beantwoorden met / answer with: A (Acceptabel, if a tolerable risk is achieved); NA (Not Acceptable, if a tolerable risk is NOT achieved)  
 De risicoreductie dient uitgevoerd te zijn tegen het principe ALARP (as low as reasonable possible)  
*The risk reduction shall be carried out against the ALARP principle*
- 5) Beantwoorden met / answer with:  
 + = Risico tot acceptabel niveau teruggebracht door de betreffende maatregel  
*Risk reduction to acceptable level with only the counter measure*  
 P = Risico tot acceptabel niveau teruggebracht door een combinatie met andere maatregelen (meerdere P's op de betreffende regel)  
*Risk reduction to acceptable level with a combination with other precautions (more than one P on the applicable row)*
- 6) Indien een instrumentele beveiliging is aangebracht, tevens een referentie opgeven naar een kwantitatieve risicoanalyse  
*If safeguarding is realised by instrumentation (e.g. SRMCR), a reference shall be made to a quantitative risk analysis*  
 Zo nodig dienen aanwijzingen voor installatie en beveiliging opgenomen te worden in de handleiding bij het drukapparaat  
*If necessary directions for installation and safeguarding shall be part of the operation manual*
- 7) Deze maatregelen dienen opgenomen te worden in de handleiding  
*These counter measures shall be part of the operation manual*
- 8) Gaarne aangeven welke drukvaten, installatieleidingen; onder druk staande c.q. veiligheidsappendages tot de aangevraagde drukapparatuur behoren  
*Please indicated which vessels, piping; pressure accessories; safety accessories are included in the pressure equipment that is applied for.*