

**RESICOAT®**

# Corrosion Protection of Valves and Fittings with Epoxy Powder RESICOAT R4



Functional

  
**AKZO NOBEL**

04/2005

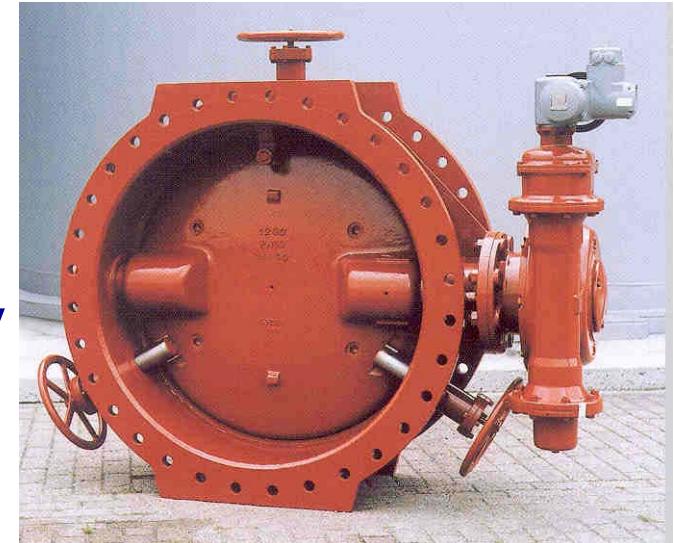
Corrosion Protection of Valves and Fittings

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# Application Areas of RESICOAT R4



- Gate Valves



- Butterfly Valves



- Watermeters

- Hydrants
- Fittings
- Filter Plates



# Resistances

- Mechanical: impact, elongation, abrasion (solids)
- Chemical: acids, bases, gas (R4-resistance list)  
water, waste water
- Electrical: stray currents (trams, relais stations)

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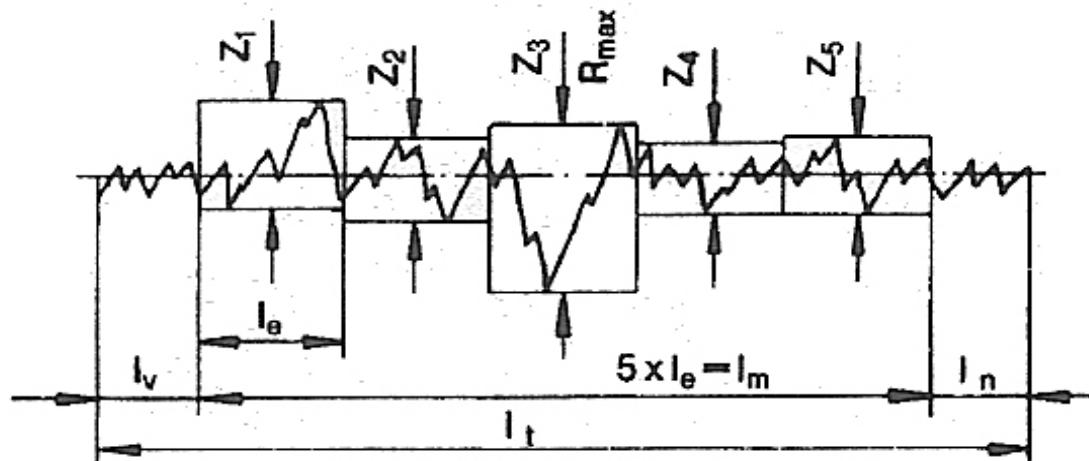


## Pretreatment of Cast- and Ductil Iron

- grit blasting with high cinetic energy (...80 m/s)
- grit blasting material:
  - edged cast iron + steel grit or corundum  $\text{Al}_2\text{O}_3$
  - HRc 55-65, Ø 0,4 - 1,2 mm
- surface roughness  $R_z$  60 - 70  $\mu\text{m}$
- no graphite, dust, salt, moding resin
  - finally dust... Is to blow off by compressed air
- less than 4 hrs from blasting to coating
- manual handling only with gloves

# Blast Cleaning Profile

$R_z$  DIN avarage roughness  
DIN 4777



# Preheating and Curing

- Preheating process by IR or indirect oven or both
- min. 190 °C (self-curing) - max. 230 °C (oxides)
- Degassing oil removal
- Short coating time:
  - avoids overspray (ES)
  - reduces thickness (FB)
- No post baking for wall thickness > 6 mm

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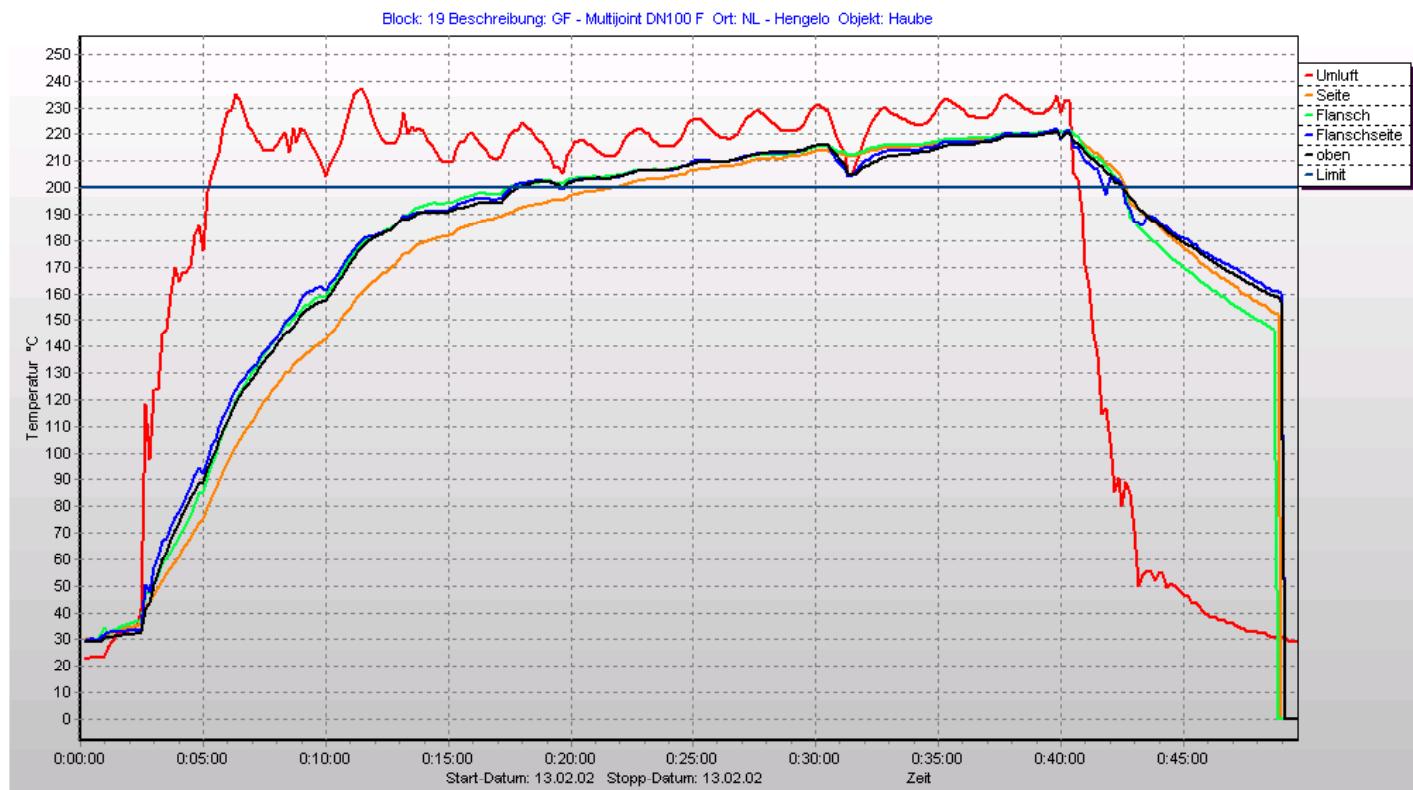




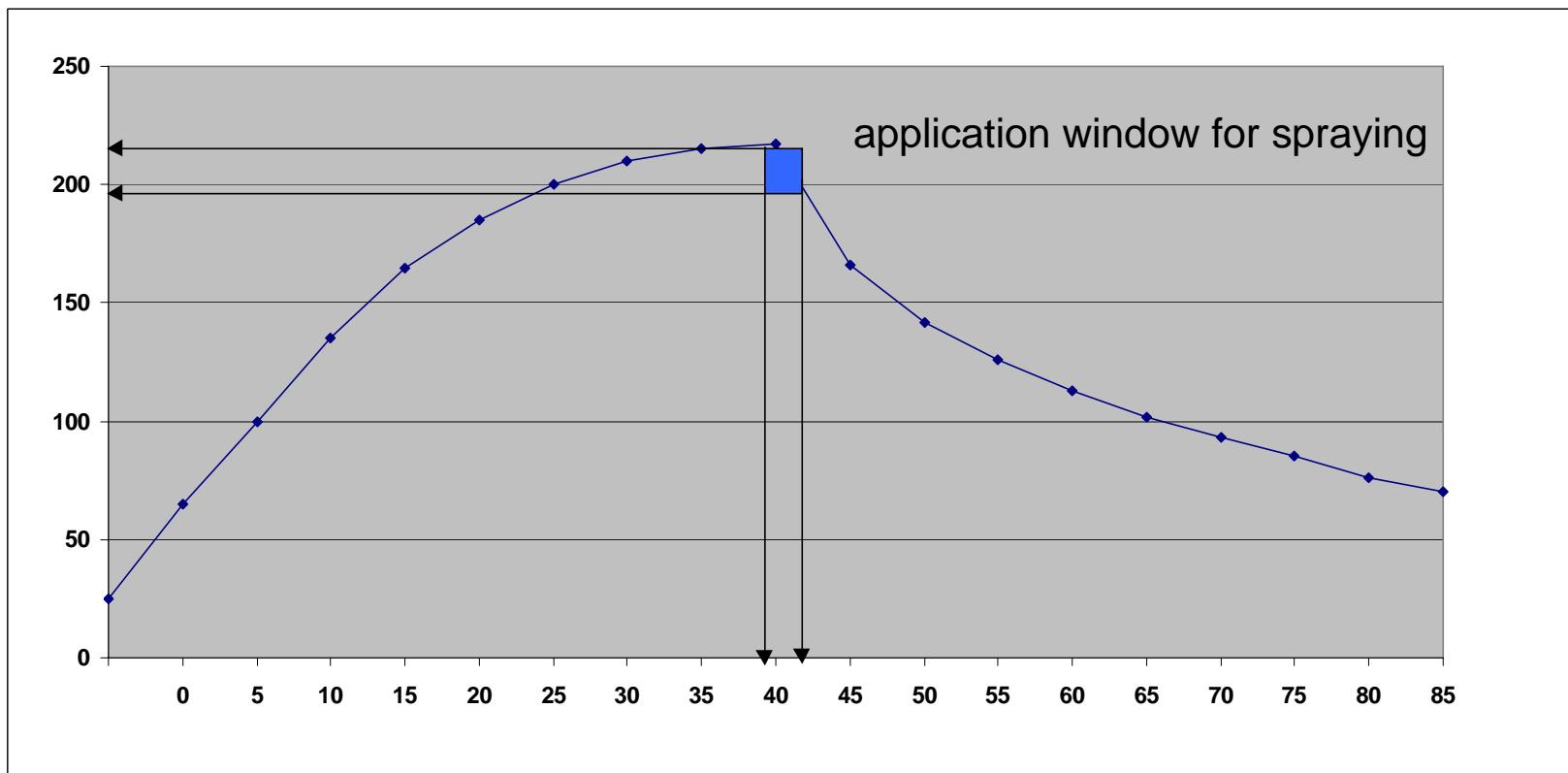
## Recommended Surface Temperatures

- R4-ES Electrostatic Spraying Powders  
**200 - 220 °C (392 - 428 °F)**  
HGF03R, HJF10R, HJF14R, HJF26R, HNF04R
- R4-FB Fluidized Bed Powders  
**190 - 210 °C (374 - 410 °F)**  
HGC07R, HJC03R, HJC06R, HJC08R, HNF04R

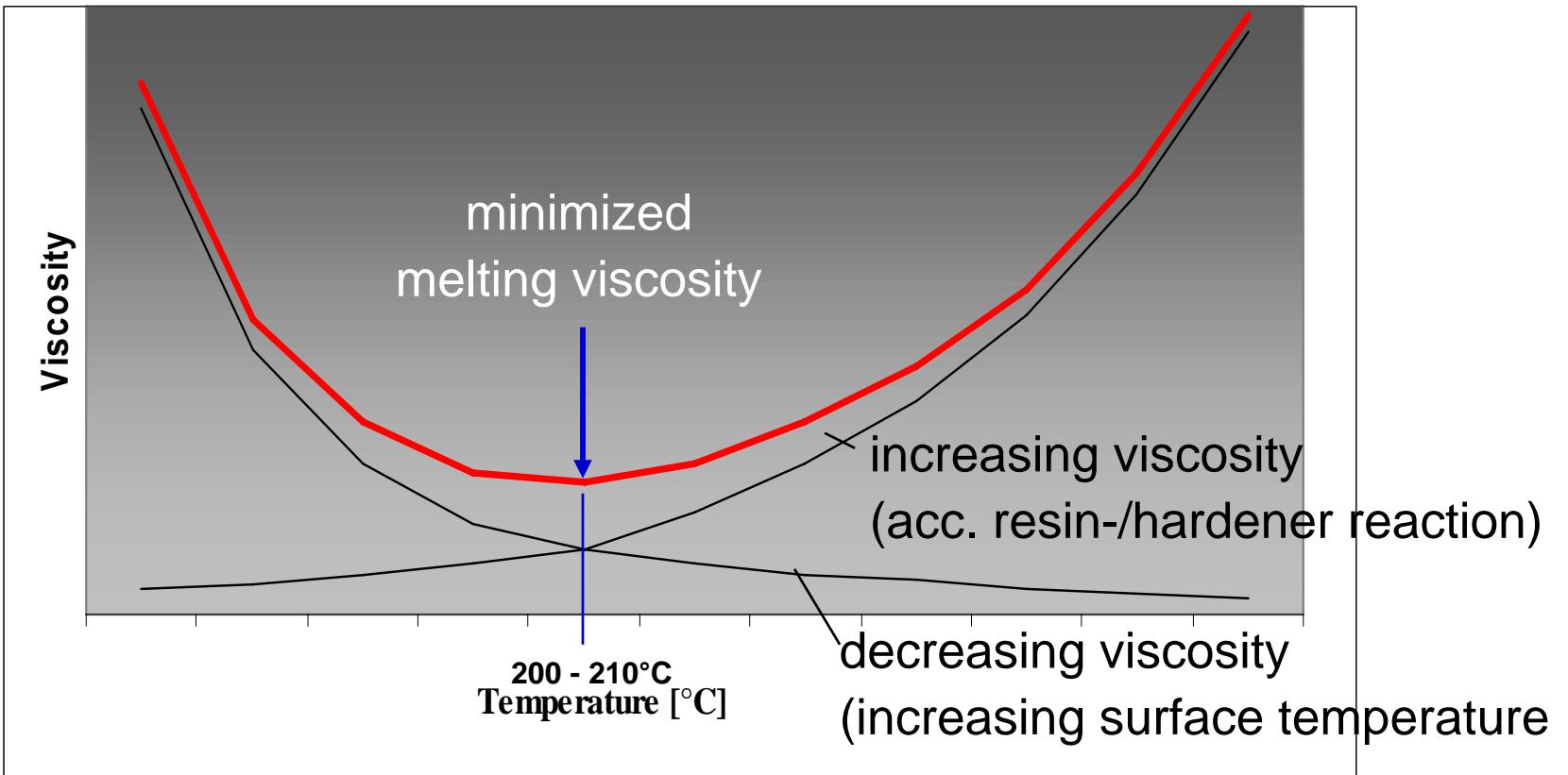
# Object Temperature (indirect oven, 35 min./340 °C-circ.air, Fitting (DN 100))



# Application Window for R4-ES

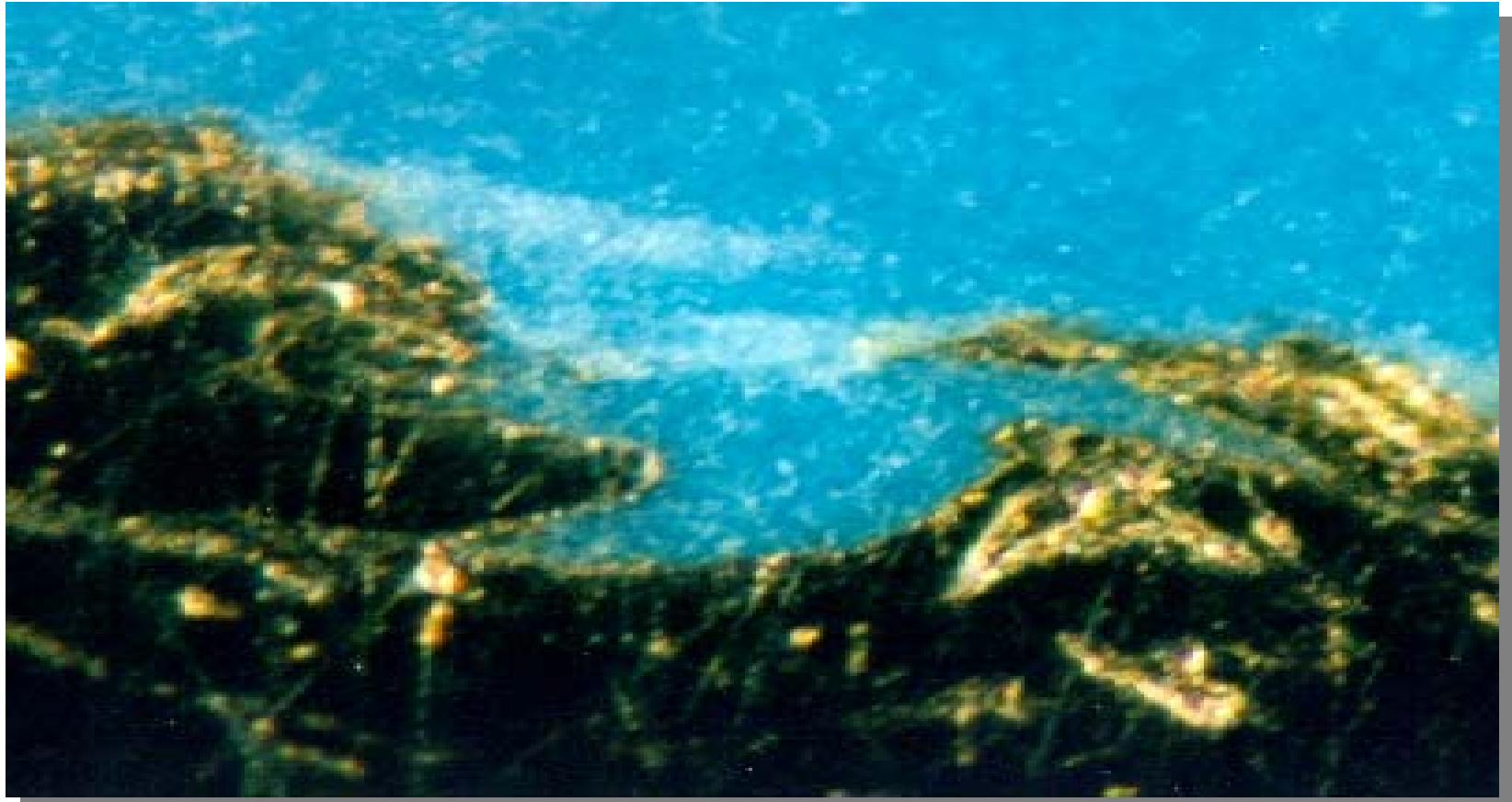


# Object Temperature ~ Wetting Power





# Penetration Power



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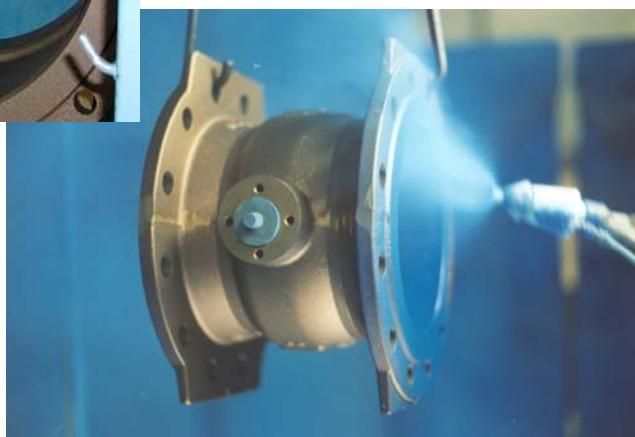
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# Application Processes

- Electrostatic Spraying
  - manual process
  - suitable for heavy or big parts (> 300 kg)
  - for UV-resistance: ...+ Polyester powder (hydrants...)
- Fluidized Bed Process
  - automatic process in general, manual possible
  - reproducible quality: thickness distr., edge coverage...

# Electrostatic Spraying



- > 200 °C
- neg charged powder
- > 250 µm



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# Fluidized Bed Process

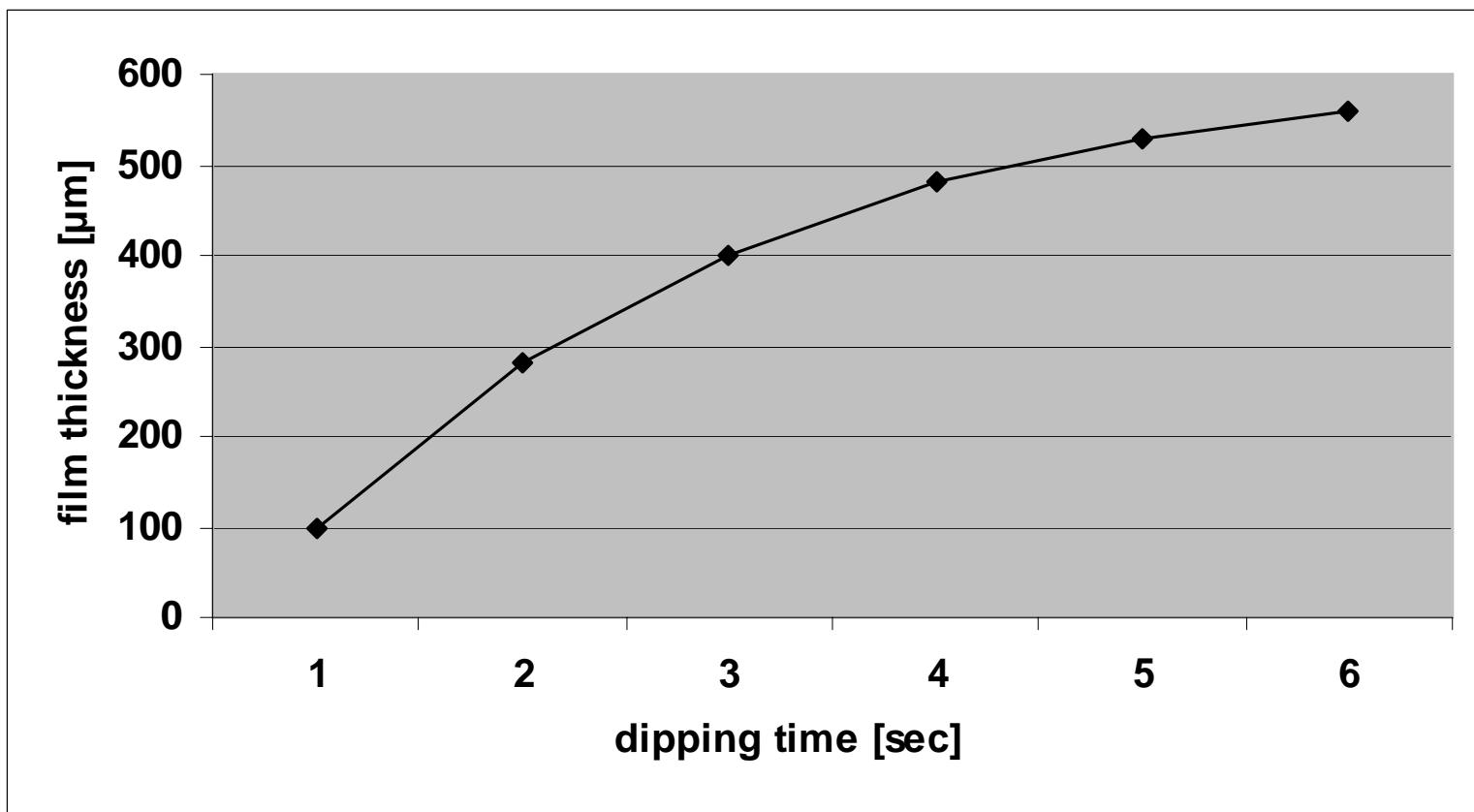
- $> 190 \text{ } ^\circ\text{C}$
- fluidized powder
- $> 250 \text{ } \mu\text{m}$



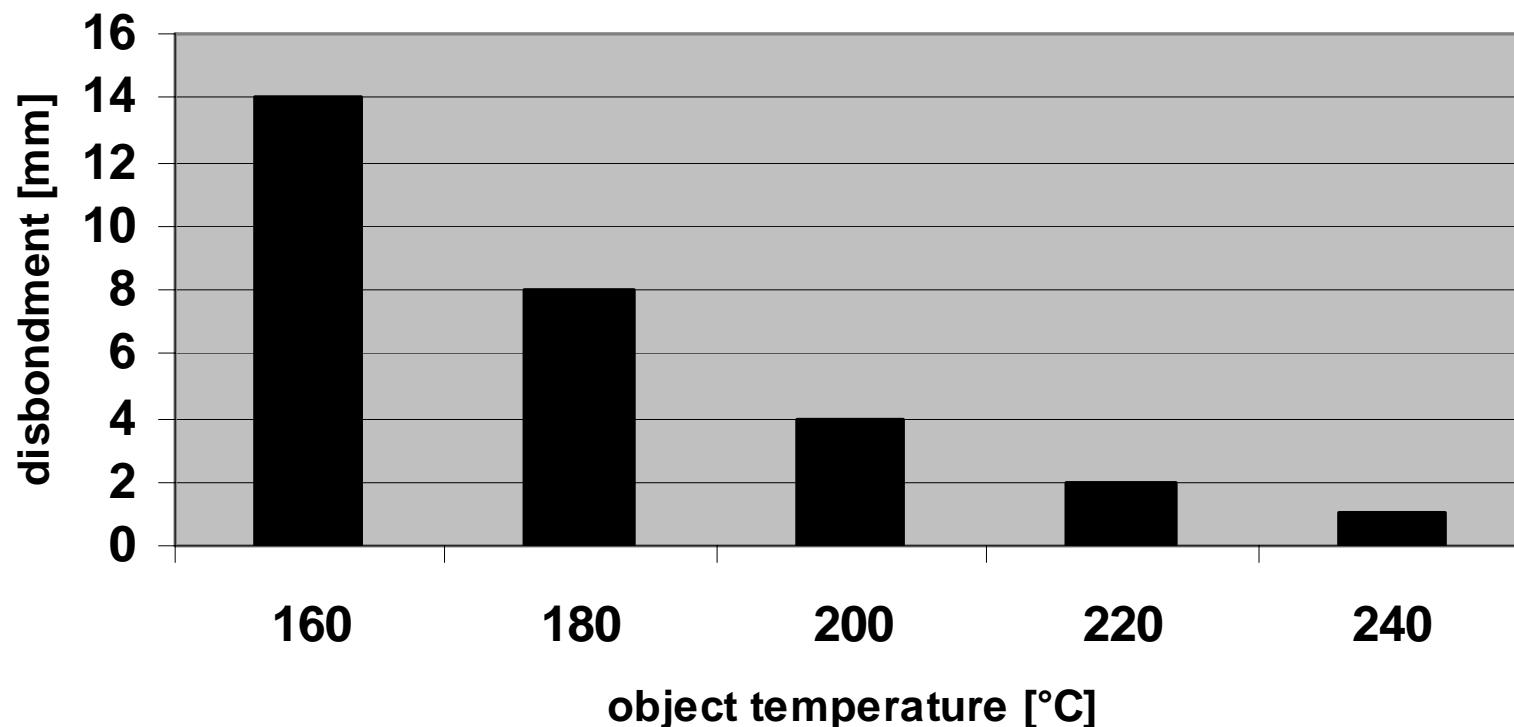
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## Dipping Time ~ Film Thickness ( $t_0 = 200 \text{ } ^\circ\text{C}$ )

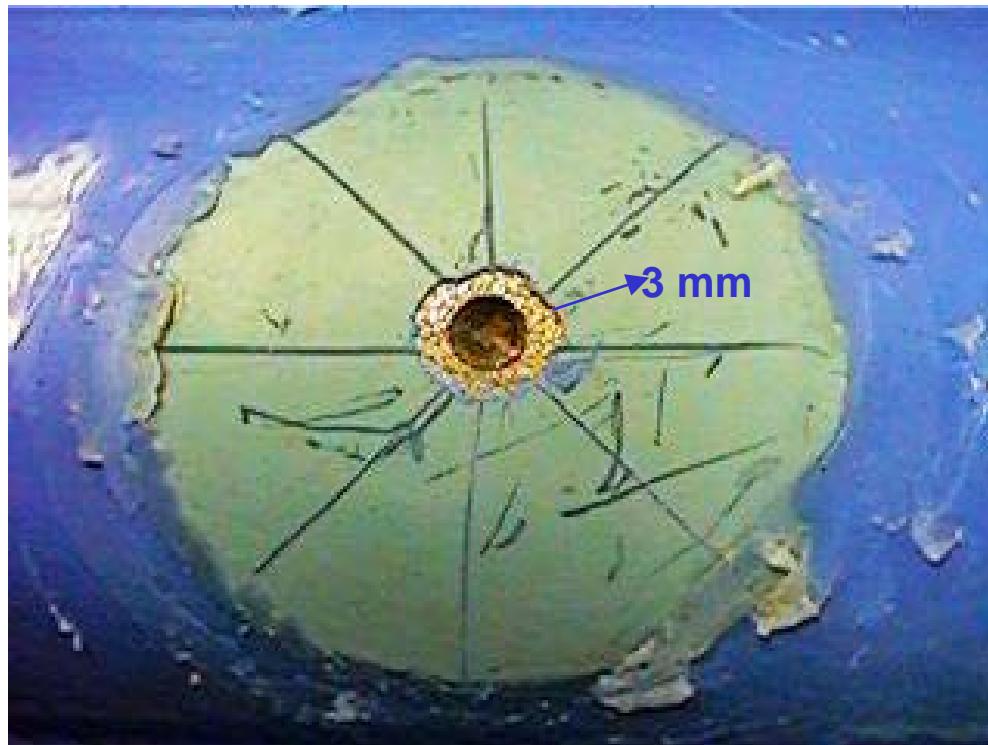


# Cathodic Disbonding (30 days / 23 °C)





## Disbonding Test



Requirements e. g. < 10 mm - 30 d / 23 °C

## Adhesion after 7 days / 90 °C water



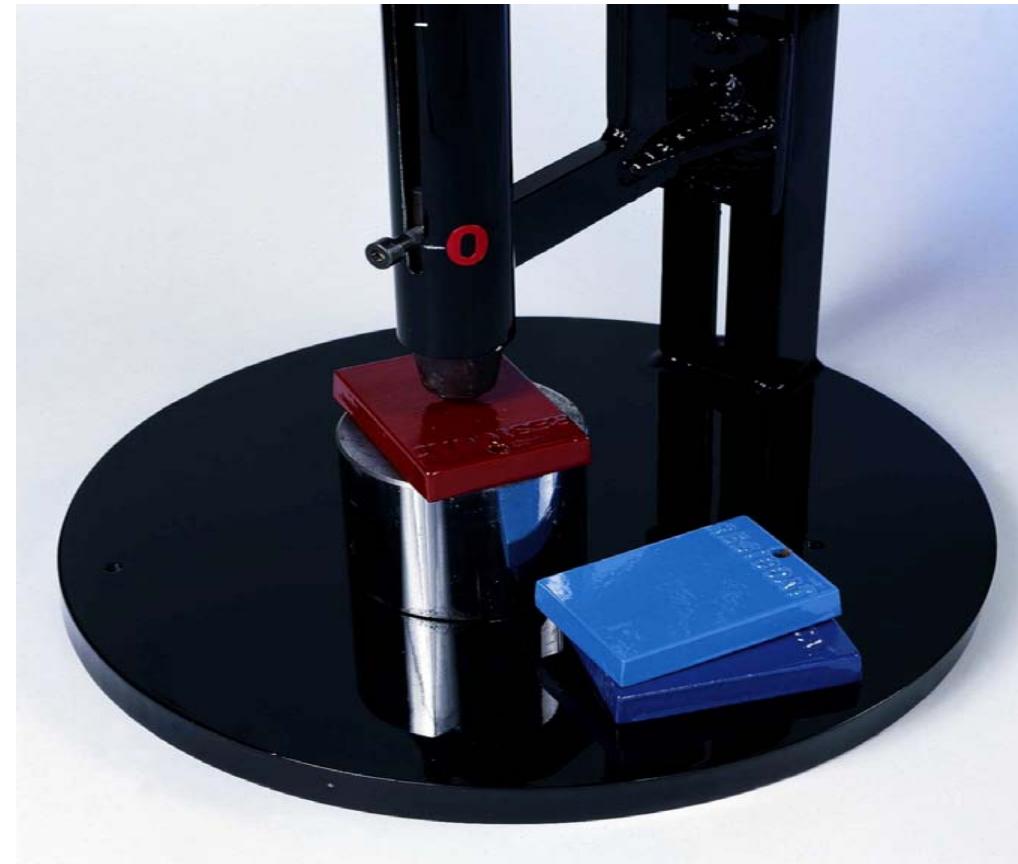
### Sampling Testing Procedure

- storing in hot water
- drying
- dollies to fix with adhesion material + drying 3h/70 °C
- pull-off test               $> 12 \text{ N/mm}^2$  required

$> 20 \text{ N/mm}^2$  for R4 usual

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## Impact test acc. to GSK



> 5 Nm

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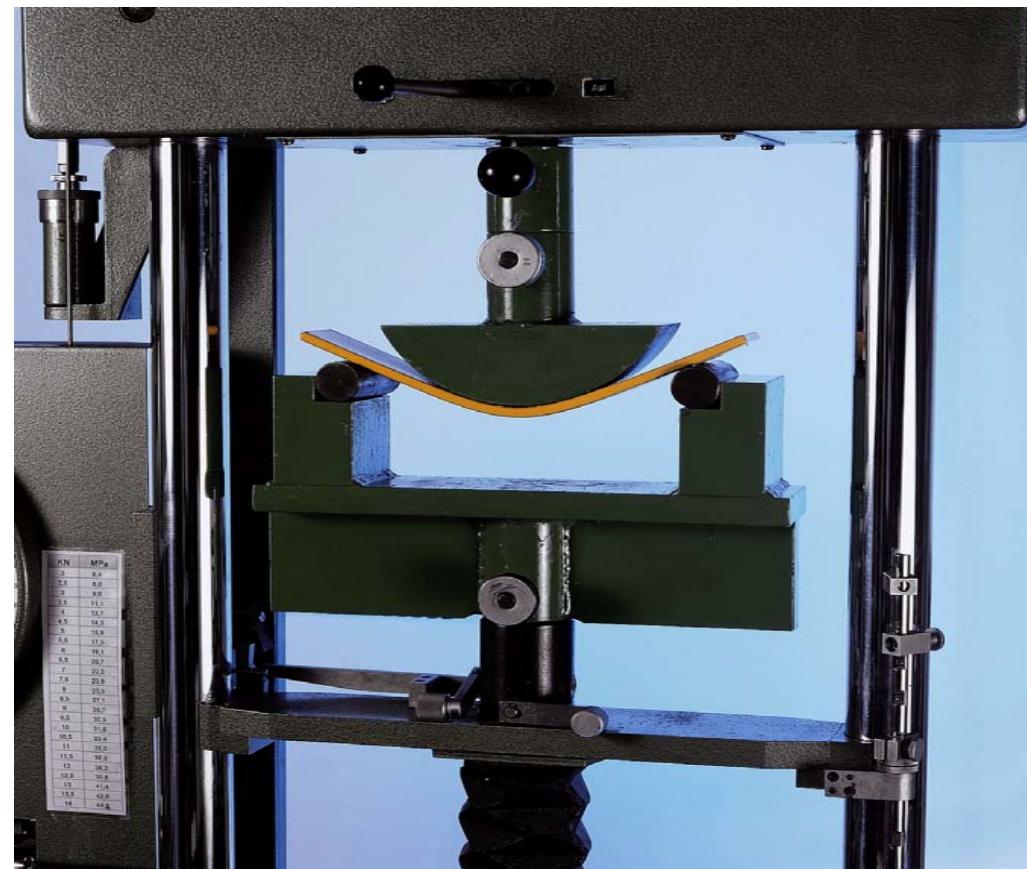
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# Bending



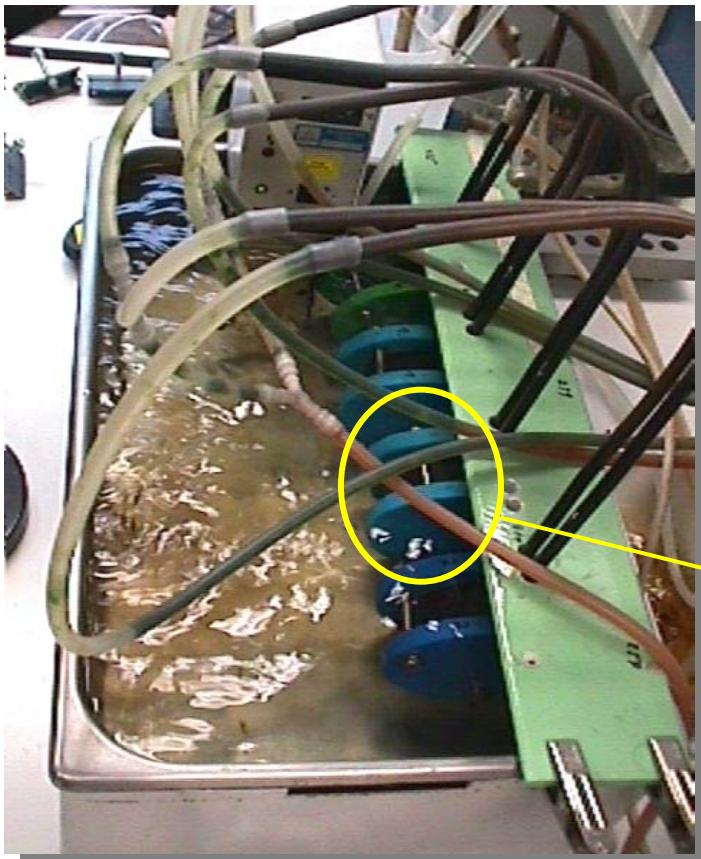
> 3%

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# Long Term Testing

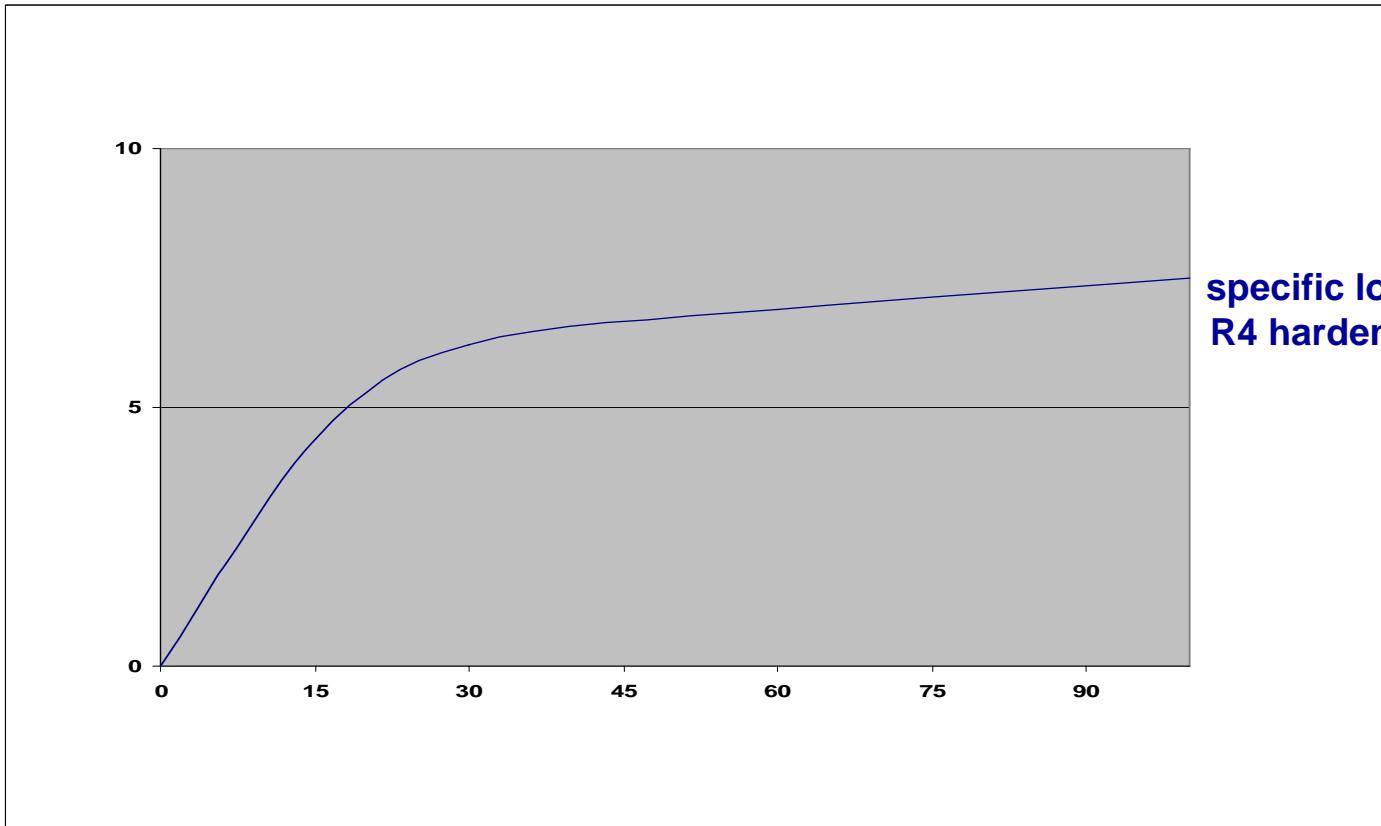


## $\Delta t$ - test::

- based on 10°/20°C water temperature
- 3 years running without any problems



# Water Absorption at 80 °C



# Summary - Coating Properties

- Cathodic Disbonding < 10 mm 30d/23°C, 1.5V,  
3 % NaCl
- Adhesion > 12 N/mm<sup>2</sup> 7d/90 ° hot water
- Electrical Insulation > 3 KV/100 µm
- Impact (-40 to + 40 °C) > 5 Nm Ø-25 mm ball
- Elongation > 3 %
- 5000 hrs 90 °C Wasser no blisters on steel

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# Pont à Mousson-Specification

• Property	Requirement	R4-ES HJF13R
• Binder content	$\geq 90\%$	90.5 %
• Gel-time 180 °C	70 - 80 sec.	70 - 80 sec.
• Humidity content	$\leq 0.5\%$	0.4 %
• Particle size Sympatec laser	$< 15 \mu\text{m} \leq 8\%$ median size: $> 50 \mu\text{m}$	$< 5\%$ $> 52 \mu\text{m}$
• Water absorption EN 24624	after 100 days 80 °C	$< 9\%$ $\leq 10\%$



# References

- World wide companies
  - AVK Group, Denmark
  - St. Gobain Group (Pont-à-Mousson), France
  - Tyco Group (Belgicast, Erhard, Bayard...), US
- Europe
  - Hawle Group
  - VAG Group
  - Düker
  - Danfoss
  - etc.

# International Drinking Water Approvals

- Germany, A, CH DVGW (KTW)
- France DGS
- UK BS 6920
- Netherlands KIWA
- Belgium Belqua
- US NSF

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# Germany, A, CH (DVGW, KTW)

Technologiezentrum Wasser (TZW)

Karlsruhe  
Prüfstelle Wasser

TZW

Seite 2

Technologiezentrum Wasser (TZW) **TZW**  
Karlsruhe  
Prüfstelle Wasser

## PRÜFZEUGNIS

über die Untersuchung von Pulverlack "RESICOAT® R4 HJF13R (blau)" gemäß KTW-Empfehlungen des Bundesgesundheitsamtes

Hersteller : Akzo Nobel Powder Coatings GmbH, Reutlingen  
 Art der Proben : Epoxidharzqualität (Pulverschichtung)  
 Bezeichnung der Proben : Pulverlack "RESICOAT® R4 HJF13R (blau)"  
 Art der Prüfkörper : beschichtete Probeplatte  
 Eingang der Proben : 5.7.2001  
 Probenehmer : Auftraggeber

## Untersuchungsergebnisse

1. Rezeptur wurde vorgelegt und überprüft

2. Grundanforderungen: O:V-Verhältnis 1:1 cm²/cm³

	1.-3. Tag	4.-6. Tag	7.-9. Tag	Richtwert für 3. Extraktion
Klarheit, Färbung, Geruch, Geschmack, Schaumbildung org., Putzmittel	GS 2	nmb	nmb	nicht nennenswert beeinflusst
C-Abgabe [mg C/m²d]	<0,3	<0,3	<0,3	≤ 2,5
Cl <sub>2</sub> -Zehrung [mg Cl <sub>2</sub> /m²d]	1,4	0,9	0,8	≤ 2,0

3. Zusatanforderungen:

Aromatische Amine [mg/m²d]	0,0003	0,0006	0,0006	≤ 0,005
Phenole [mg/m²d]	0,01	<0,01	<0,01	≤ 0,25
Formaldhyd [mg/m²d]	0,10	0,03	<0,02	≤ 1,0
Epichlorhydrin [mg/m²d]	<0,00025	<0,00025	<0,00025	<0,00025
Bisphenol A [mg/m²d]	<0,0003	<0,0003	<0,0003	≤ 0,38
BADGE, BFDGE+ Hydrolyseprod [mg/m²d]	0,0017	<0,0003	<0,0003	≤ 0,125

## Fortsetzung Rückseite

Das Technologiezentrum Wasser ist eine Einrichtung des DVGW  
Deutsche Vereinigung des Gas- und Wasseraufschlusses e.V.

Karlsruher Straße 84

Telefon: +49(0)721-331 63-0  
Telex: +49(0)721-331 60

Die Gültigkeit dieses Prüfzeugnisses richtet sich nach an demorit festgelegten Bestimmungen. Sie endet jedoch spätestens 5 Jahre nach Ausstellungsdatum.  
 Die Veröffentlichung des Prüfzeugnisses - vollständig oder in Auszügen - ist ohne ausdrückliche Genehmigung von seiten der Prüfstelle nicht gestattet.

Das Technologiezentrum Wasser ist eine Einrichtung des DVGW  
Deutsche Vereinigung des Gas- und Wasseraufschlusses e.V.Karlsruher Straße 84  
D-76139 Karlsruhe  
Telefon: +49(0)721-331 63-0  
Telex: +49(0)721-331 60

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**AKZO NOBEL**

instituttechnologische

**RESICOAT®**

# France (DGS)



04/2005

Corri

**LABORATOIRE SANTÉ ENVIRONNEMENT HYGIÈNE DE LYON**  
 Successeur de l'INSTITUT PASTEUR DE LYON

Laboratoire Agréé pour les analyses d'eaux par le Ministère de la Santé

Département analyses

Tél. : (33) 04 72 76 16 16

Fax : (33) 04 78 72 35 03

**ATTESTATION DE CONFORMITE SANITAIRE**

Conformément à l'arrêté du 29 mai 1997 modifié et aux circulaires du Ministère de la Santé

DGS/VS4 n° 99/217 du 12 avril 1999 et DGS/VS4 n° 2000/232 du 27 avril 2000

Coordonnées du demandeur :	Nom(s) commercial(aux) du produit fini :
AKZO NOBEL POWDER COATINGS GmbH Markwiesenstrasse 50 72770 REUTLINGEN Allemagne	RESICOAT RT 9000 R4 bright blue

Type de produit fini :

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> tube                  | <input type="checkbox"/> raccord et manchon | <input type="checkbox"/> revêtement              |
| <input type="checkbox"/> produit de jointoyage | <input type="checkbox"/> joint              | <input type="checkbox"/> composant d'accessoires |
| <input type="checkbox"/> autre :               |   |  |

Nature du matériau :

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> polychlorure de vinyl PVC | <input type="checkbox"/> polybutylène PB                     | <input type="checkbox"/> ethylene-propylène EPDM     |
| <input type="checkbox"/> PVC surchloré PVC-C       | <input type="checkbox"/> polyamide PA                        | <input type="checkbox"/> butadiène-acrylonitrile NBR |
| <input type="checkbox"/> polyéthylène PE           | <input type="checkbox"/> polytétrafluoroéthylène PTFE        | <input type="checkbox"/> autre :                     |
| <input type="checkbox"/> polyéthylène réticulé PER | <input type="checkbox"/> acrylonitrile-butadiène-styrène ABS |  |
| <input type="checkbox"/> polypropylène PP          | <input type="checkbox"/> à base de résine époxydique         |  |

Commentaires :

Renouvellement de l'ACS 98 MAT NY 352

N° de dossier attribué par le laboratoire habilité : **03 MAT LY 053**

Formulation chimique :

La formulation chimique a été vérifiée conforme aux listes positives. Les restrictions sont vérifiées.

Essais d'inertie réalisés selon la norme XP P 41-250 :

Rapport S/V testé : 3 cm<sup>2</sup>/L

Date des essais : /

Commentaires : La composition chimique du Resicoat RT 9000 R4 bright blue n'ayant pas évolué et étant toujours conforme aux listes positives, de nouveaux essais d'inertie ne sont pas nécessaires. Les essais réalisés en 1997 restent valables et conformes.

Attestation délivrée par :

C. AUTUGELLE  
Responsable Laboratoire MCDE  
L.S.E.H.L.

Signature :

A la date du : 21 novembre 2003

Date d'expiration de l'ACS : 21 novembre 2008

Commentaires : Néant

F\_MC058-b 03.11.2003 CAu

Société Anonyme au capital de 1 753 163,70 euros - RCS Lyon B 410 545 313 - SIRET 410 545 313 00018 - APE 743 B - N° TVA : FR 82 410 545 313  
Siège Social : 321, avenue Jean Jaurès - F - 69362 LYON cedex 07 - Tél. : (33) 04 72 76 16 17 - Fax : (33) 04 78 72 12 11

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# UK (BS 6920)



04/2005

Our Ref: CR/JC

BESTÄNDIGE  
- 7. Juni 2004

3<sup>rd</sup> July 2004

Akzo Nobel Powder Coatings GmbH  
Markwiesenstrabe 50  
D 72770 Reutlingen  
Germany

Dear Sir

**WATER REGULATIONS ADVISORY SCHEME  
"ITEMS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY - BS 6920"**

We refer to your application for the material(s) described below to be approved arising from the results of the tests of effect on water quality that have been carried out on the product(s) so described, it has been decided that there is no objection to its/their use provided the source, nature and manufacturing processes of the ingredients and products are not changed. (See notes overleaf).

**COATINGS, PAINTS & LININGS - FACTORY APPLIED - PIPE & FITTINGS COATINGS 5030**

Resicoat R4 Blue, Resicoat R4 Red & Resicoat R4 Black. Epoxy based powder coating. Factory applied for coating metal. For cold water and hot water use up to 85°C.

Test Reports: M102721/A & B & M102878

0202505

**AKZO NOBEL POWDER COATINGS GMBH**

An entry, as above, will accordingly be included in the Water Fittings and Materials Directory, Part Two, under the section headed, "Materials which have passed full tests of effect on water quality".

Your attention is drawn to the statement overleaf. Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that the product as listed, having passed the tests of effect on water quality, is suitable for use in contact with potable water and that a reference to the product will be included in the Materials section, Part Two, of the Water Fittings and Materials Directory: this may be abbreviated to "Water Regulations Advisory Scheme - Approved Product" or "WRAS - Approved Product". Approval of this product does not signify the approval of its mechanical or physical properties for any use.

The Technical Committee of the Scheme reserves the right to review approval. This product automatically becomes due for audit reassessment in February 2007.

Yours faithfully

Chris Ramsey (Miss)  
Materials Administrator  
Water Regulations Advisory Scheme

Water Regulations Advisory Scheme  
Fern Close, Pen-y-Fan Industrial Estate,  
Oakdale, Gwent NP11 3EH, UK.  
Tel: 01495 248454, Fax: 01495 249234,  
E-mail: info@wras.co.uk Website: www.wrash.co.uk

WRAS Ltd  
Reg. Office: Registered No. 2712926  
Regulated Office: Frontland Road,  
Whitson, Vale of  
Monks, Vale of  
Monks, NP11 3EF, United Kingdom

# Netherlands (KIWA)



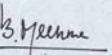
**kiwa**  
Partner for progress

Number K11557/08 Replaces K11557/07  
Issued 2004-05-15 date 2003-11-15

Page 2 Number K11557/08 Replaces K11557/07  
Issued 2004-05-15 date 2003-11-15

**Product Certificate**  
**Coatings for potable water applications**

Based on pre-certification tests as well as periodic inspections by Kiwa, the products referred to in this certificate and marked with the Kiwa-mark as indicated under 'Marking', manufactured by **Akzo Nobel Powder Coatings GmbH** may, on delivery, be relied upon to comply with the Kiwa audit guideline BRL-K759 dated 1996-02-15 "Coating systems for potable water applications".

Kiwa N.V.  


ing. B. Meekma  
Director,  
Certification and Inspection

This certificate is issued in accordance with the Kiwa-Regulations for Product Certification and consists of 2 pages.  
Publication of the certificate is allowed.  
\*) This is a translation. Only the Dutch text is legally binding.

**Company**  
Akzo Nobel Powder Coatings GmbH  
Markwieserstrasse 50  
P.O. Box 4011  
72771 Reutlingen  
Germany  
Phone 0049-7121 519 191  
Fax 0049-7121 519 199

**Kiwa N.V.**  
Certification and Inspection  
Sir W. Churchilllaan 273  
P.O. Box 70  
2280 AB Rijswijk  
The Netherlands  
Telephone +31 70 41 44 400  
Telefax +31 70 41 44 420  
Internet [www.kiwa.nl](http://www.kiwa.nl)

04/2005

Corrosion Protection of Valves and Fittings

## Coatings for potable water applications

### PRODUCTSPECIFICATION

**General**  
Coating Systems in accordance with BRL-K759 "Coating Systems for potable water applications".

This certificate is applicable to the following  
RESICOAT RT 9000 R4 products:

Code new (color)	Code old	Code new (color)	Code old
HGC07R (Redbrown)	500 331	HJF01R (RAL5005)	500 532
HGC08R (Redbrown)	500 321	HJF08R (RAL5015)	500 531
HGF01R (RAL3005)	500 301	HJF10R (RAL5017)	500 530
HGF03R (RAL3005)	500 320	HJF11R (RAL5015)	500 538
HGF04R (Redbrown)	500 322	HJF13R (PAMI)	500 542
HJC03R (RAL5015)	500 527	HJF14R (RAL5015)	500 547
HJC04R (RAL5012)	500 528	HJF19R (RAL5010)	500 553
HJC06R (RAL5005)	500 533	HJF22R (RAL5015)	=
HJC08R (RAL5017)	500 535	HJF26R (RAL5005)	=
HJC12R (PAMI)	=		

### APPLICATION AND USE

The product is suitable for application as a coating system in potable water installations with a maximum operating temperature of 35 °C.  
The product can be applied on pipes, fittings and accessories.

### MARKING

The products are marked with the Kiwa-mark.

Place of the mark:

- On the outside of cartons, containers or bags.
- Compulsory specifications:
- The maximum shelf life of the product must be specified;
- Kiwa (TUEV)
- Name of manufacturer

### Method of marking:

- non-erasable
- Kiwa sticker on the product label.

### ATA PRODUCT REQUIREMENTS

During the third period of the "standard migration test":

- the global migration shall not exceed the 3 mg/l limit;
- the specific migration (the product of the migration in mass per surface area and the conversion factor) of the following substances shall not exceed the values stated (MTC):
  - Bisphenol A: 30 µg/l;
  - Epichlorohydrine: 0.1 µg/l;
  - Primary aromatic amines: 0.1 µg/l;
  - Secondary aliphatic amines: 0.1 µg/l;

### Product specific parameters:

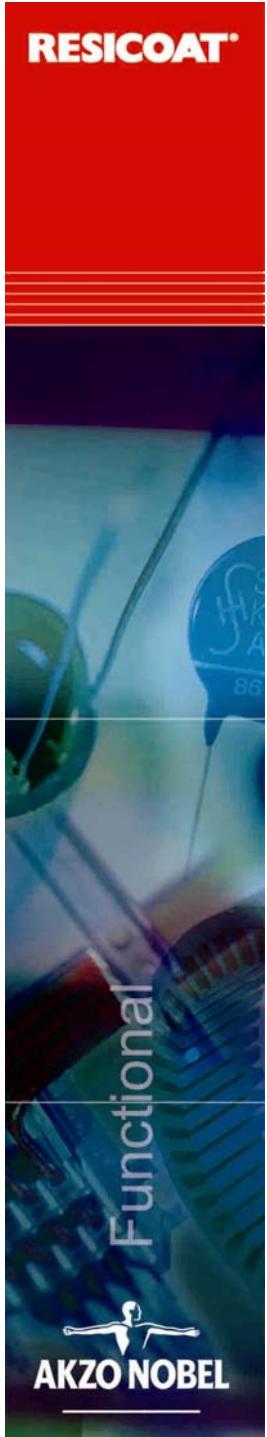
The other relevant limits (MTC) have, in connection with the confidentiality, been detailed in the private appendix to the certification contract K11557.

### RECOMMENDATIONS FOR CUSTOMERS:

1. Check at the time of delivery whether:
  - 1.1 the producer has delivery in accordance with the agreement;
  - 1.2 the mark and the marking method are correct;
  - 1.3 the products show no visible defects as a result of transport etc.
2. If you should reject a product on the basis of the above, please contact:
  - 2.1 Akzo Nobel Powder Coatings GmbH
  - and, if necessary,
  - 2.2 Kiwa N.V.
3. Consult the producer's processing guidelines for the proper storage and transport methods.
4. Check whether this certificate is still valid by consulting the Kiwa internet site.

**RESICOAT®**

# Belgium (Belgaqua)



04/2005



## CERTIFICAT

(traduction: uniquement pour information)

Le présent document atteste que le matériau:

Epoxy RESICOAT R4 Dark blue,  
produit par AKZO-NOBEL Powder Coatings GmbH  
Markwiesenstraße, 50  
DE - 72770 Reutlingen

a été présenté à l'agrément par Belgaqua  
par la société AKZO-NOBEL Powder Coatings GmbH

et a été déclaré conforme aux prescriptions de la procédure  
d'agrément de matériaux en contact avec l'eau potable et l'eau  
destinée à la production d'eau potable "HYDROCHECK",  
approuvée par le Conseil d'Administration de Belgaqua  
en date du 16 mars 2001.

Le certificat est délivré sur base du rapport d'analyse  
PIDPA/HYDROCHECK011, conjointement avec l'examen de la  
composition du matériau. Ces documents ne peuvent être  
communiqués à des tiers ou reproduits qu'à la condition expresse  
de respecter cette intégralité.

L'agrément du matériau est valable pour une durée indéterminée  
prenant cours à la date de signature et pour des matériaux  
identiques à ceux soumis aux tests. Elle sera attestée par la  
mention des références dans le Répertoire de matériaux agréés en  
contact avec l'eau, édité annuellement par BELGAQUA.

Etabli en un exemplaire original en langue néerlandaise,  
le 8 octobre 2001 et adapté le 27 mai 2004

BELGAQUA  
LE 27 MAI 2004

Chr. LEGROS  
Directeur de BELGAQUA

BELGAQUA: Rue Colonel Bourg, 127 - BE 1140 Bruxelles  
Tel: +32(0)2 706 40 90 - Fax: +32(0)2 706 40 99 email: info@belgaqua.be

Corrosion Protection of Valves and Fittings

**RESICOAT®**

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# US (NSF)



NSF International

## OFFICIAL LISTING

NSF International Certifies that the products appearing on this Listing conform to the requirements of  
NSF/ANSI Standard 61 - Drinking Water System Components - Health Effects

This is the Official Listing recorded on July 28, 2003.

AKZO NOBEL POWDER COATINGS GMBH  
MARKWIESENSTR. 50  
D-72770 REUTLINGEN  
GERMANY  
49 712 151 9145

Plant At: REUTLINGEN, GERMANY

### Protective (Barrier) Materials

Trade Designation	Water Contact Size Restriction	Water Contact Temp	Water Contact Material
<b>Coatings - Fittings</b>			
Resicoat R4 Blue 500 535 <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue 500 536 <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue 500 545 <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue 500 547 <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue 500 554 <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJC 08R <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJF 10R <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJF 14R <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJF 21R <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJG 01R <sup>[1]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Blue HJG 05R <sup>[3]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Red 500 333 <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Red 500 335 <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Red HGT 10R <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Red HGT 12R <sup>[2]</sup>	>= 1 in.	D. HOT	PEC
Resicoat R4 Saphir Blue HJF [2] 23R	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue 500 [1] 536	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue 500 [1] 545	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue 500 [1] 547	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue 500 [1] 554	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue HJF [1] 10R	>= 1 in.	D. HOT	PEC
Resicoat RT 9000 R4 Blue HJF [1] 14R	>= 1 in.	D. HOT	PEC

Note: Additions shall not be made to this document without prior evaluation and acceptance by NSF International.

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## Product Data Sheet

### **RESICOAT® R4-FB HGC07R (500331)**

Valves and Fittings  
Fluidized Bed Application

#### **POWDER PROPERTIES:**

Binder System	Epoxy resin
Density (ISO 8130-2)	1,3 – 1,4 g/cm <sup>3</sup>
Gel time at 200° C (ISO 8130-6)	30 – 40 sec.
Storage stability	4 months ≤ 23° C
MSDS	PC508

#### **APPLICATION DATA:**

Preheating temperature	190 – 235° C object temperature
Post cure conditions	self curing on 8 mm steel at above temp.
Particle size distribution (ISO 8130-1)	< 63 µm = 45 – 60 % < 200 µm = 99 – 100%

#### **MATERIAL PROPERTIES:**

Colour	red-brown
Recommended film thickness	250 – 300 µm
Flow	smooth
Gloss at 60° angle (DIN 67530)	70 – 90 units
Cross cut test (DIN EN ISO 2409)	Gt 0
Impact resistance (DIN 30677-2)	> 5 Joule
Elongation (DIN 30677-2)	> 5 %
Hardness (DIN EN ISO 2815)	> 100
Cathodic disbonding test (DIN 30677-2)	< 10 mm
Water immersion test, 90° C, 4 weeks	no visible change
Adhesion test after 7 days 90° C water (according EN 24624, GSK DIN 30677-1)	16 MPa



### **DRINKING WATER APPROVALS:**

Leitlinien zur hygienischen Beurteilung von Epoxidharzbeschichtungen im Kontakt mit Trinkwasser, Arbeitsblatt W270, KTW-D

DGS/VS 4 No99/217, AFNOR XP P41-250-1-3, LHRSP-F

Guideline BRL-K759, K 11557, KIWA-NL

Pidpa/Hydrocheck 011, Belgaqua-B

BS6920, WRAS-UK

## Product Data Sheet

### **RESICOAT® R4-FB HJC06R (500533)**

Valves and Fittings  
Fluidized Bed Application

#### **POWDER PROPERTIES:**

Binder System	Epoxy resin
Density (ISO 8130-2)	1,3 – 1,4 g/cm <sup>3</sup>
Gel time at 200° C (ISO 8130-6)	30 – 45 sec.
Storage stability	4 months ≤ 23° C
MSDS	PC508

#### **APPLICATION DATA:**

Preheating temperature	190 – 210° C object temperature
Post cure conditions	self curing on 8 mm steel at above temp.
Particle size distribution (ISO 8130-1)	< 63 µm = 45 – 60 % < 200 µm = 99 – 100 %

#### **MATERIAL PROPERTIES:**

Colour	blue (approx. RAL 5005)
Recommended film thickness	250 – 300 µm
Flow	smooth
Gloss at 60° angle (DIN 67530)	65 – 90 units
Cross cut test (DIN EN ISO 2409)	Gt 0
Impact resistance (DIN 30677-2)	> 5 Joule
Elongation (DIN 30677-2)	> 5 %
Hardness (DIN EN ISO 2815)	> 100
Cathodic disbonding test (DIN 30677-2)	< 10 mm
Water immersion test 90° C, 4 weeks	no visible change
Adhesion test after 7 days 90° C water (according EN 24624, GSK DIN 30677-1)	16 MPa



### **DRINKING WATER APPROVALS:**

Leitlinien zur hygienischen Beurteilung von Epoxidharzbeschichtungen im Kontakt mit Trinkwasser, Arbeitsblatt W270, KTW-D

DGS/VS 4 No99/217, AFNOR XP P41-250-1-3, LHRSP-F

Guideline BRL-K759, K 11557, KIWA-NL

BS6920, WRAS-UK

Czech Notice 37/2001, Krajska Hygienicka Stanice-CZ



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**Resistance against chemical substances of RESICOAT R4 room temperature**

acetic acid	10 %	6 months	no change
ammonia	10 %	1 year	no change
ammonia	36 %	6 months	no change
benzol		1 month	no change
bore oil		1 year	no change
butanol		6 months	no change
carbon tetra chloride		1 year	no change
caustic soda solution	10 %	1 year	no change
caustic soda solution	50 %	1 year	no change
chlorine bleach lye and disinfectant		1,5 years	no change
citric acid		1 year	no change
engine oil SAE 20		1 year	no change
ethylene alcohol		1 year	no change
ethylene glycol		1 year	no change
hydrofluoric acid	1 %	1 day	no change
formaldehyde	37 %	6 months	no change
formic acid	5 %	1 year	no change
formic acid	10 %	6 months	no change
glycerol		1 year	no change
Gly santin (Trade name: mixture of glycol and glycerol)		1 year	no change
hydrochloric acid	10%	6 months	no change
hydrochloric acid	concentrated	1 week	no change
hydrogen peroxide	3 %	1 year	no change

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lactic acid	10 %	1 year	no change
lye	1%	1 year	no change
methanol		2 days	no change
nitric acid	10 %	1 month	no change
nitric acid	25 %	1 week	no change
oxalic acid	5 %	6 month	no change
petrol		1 year	no change
petroleum		1 year	no change
propanol		1 year	no change
phosphoric acid	10 %	1 year	no change
phosphoric acid	50 %	1 year	no change
dichromatic potassium	10 %	1 year	no change
potassium hydroxide	10 %	1 year	no change
potassium hydroxide	25 %	1 year	no change
potassium hydroxide	50 %	1 year	no change
sodium carbonate	20 %	1 year	no change
sodium chloride	2 %	1 year	no change
sodium chloride	20 %	1 year	no change
sulphuric acid	2 %	1 year	no change
sulphuric acid	20 %	1 year	no change
sulphuric acid	50 %	6 months	no change

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tartaric acid	5 %	1 year	no change
toluol		1 year	no change
turpentine oil		1 year	no change
urea	10 %	1 year	no change
urine		1 year	no change
xylol		1 year	no change

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