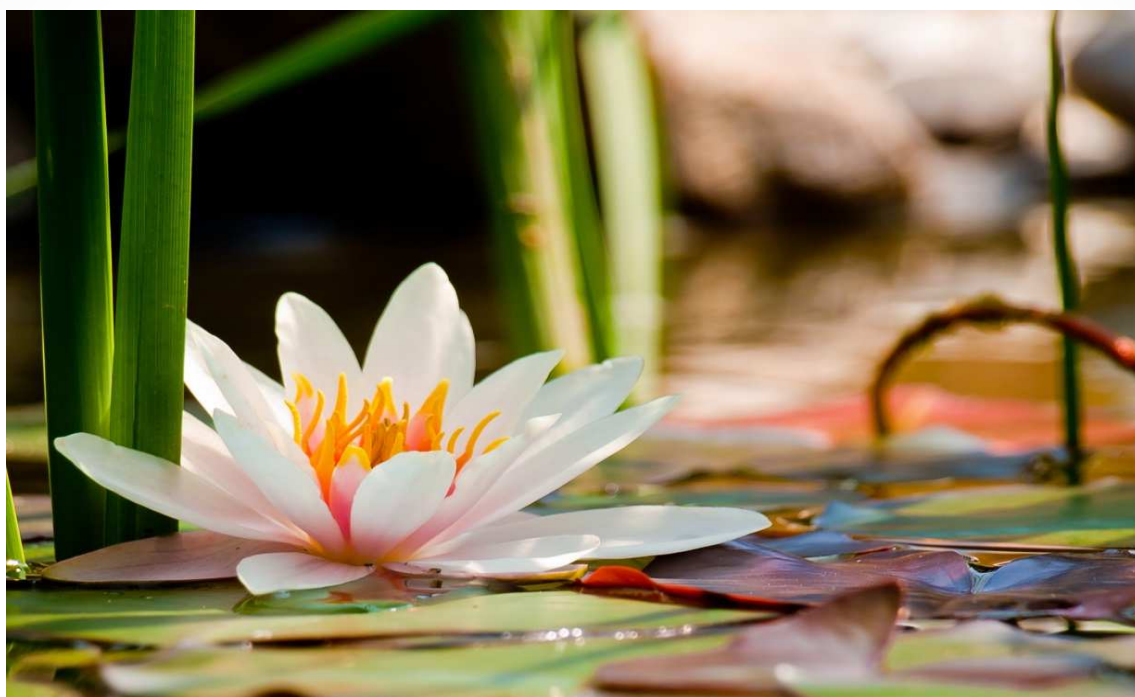


Waterborne Epoxy Hardeners Gaskamine Series

Recommended Formulation for Coatings Technical Data Sheet



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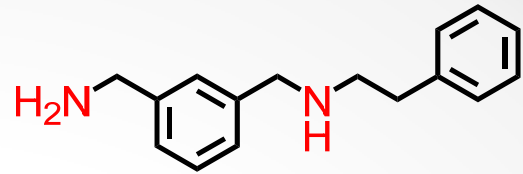
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Gaskamine 240 ~ No-VOC Waterborne Hardener ~

- **Low Viscosity**
- **No-VOC**
- **Fast Curing**
- **Good Appearance**



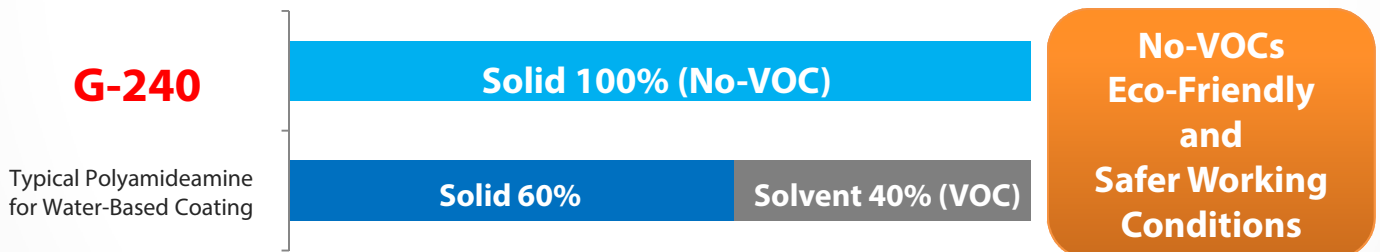
G-240

| Color (Hardener) | Viscosity (25°C) | AHEW | Solids (NVM) | MXDA | Potlife(*) (23°C, 300g scale) |
|------------------|-------------------------------|---------------|-------------------|---------------------|-------------------------------|
| <1 (Pale Yellow) | 66mPa·s (Ultra Low Viscosity) | 103 (Low Phr) | 100% (No Solvent) | <1wt% (No Blushing) | 72min (Max Temp. ...32°C) |

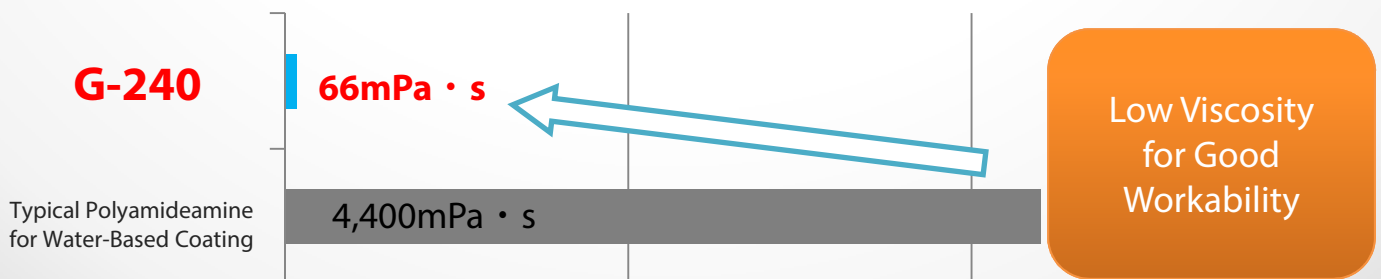
(*) Epoxy Resin...#1001 Bisphenol A Solid Type Epoxy Resin Based Emulsion

G-240 Advantages vs. Typical Polyamideamine

<NVM>



<Viscosity>

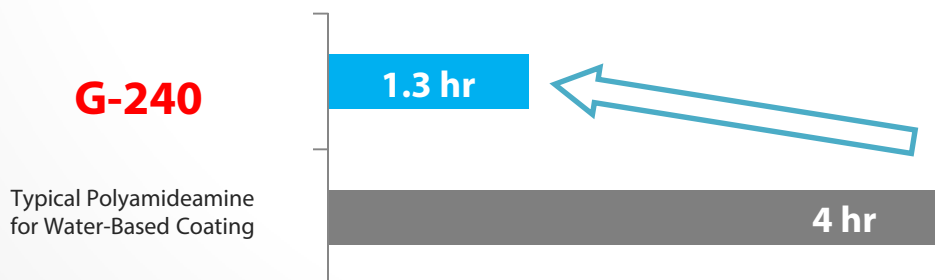


Recommended Formulation

| | | Water-Borne G-240 (No-VOC) | Typical Polyamideamine (VOC) | Non-Solvent G-240 | |
|--------------------|--|---|------------------------------------|--|--------|
| Formulations | Epoxy Resin | #1001 Bisphenol A Solid Type Epoxy Resin Based Emulsion NVM: 55% EEW: 1020 (as supplied) | | Modified Bisphenol A Type Epoxy Resin (#828 + AGE) | |
| | | 100g | 100g | 100g | |
| | Hardener | 10g (Low Phr) | 72g | 52g | |
| Curing Conditions | Substrate | Zinc Phosphate Treated Steel | | | |
| | Film Thickness (Wet) | 200µm (Thick Coating) | | | |
| | Curing Condition | 23°C, 50%RH (No Heat Curing Required) | | | |
| Coating Properties | RCI Drying Time | Set to Touch | 0.1hr | 0.7hr | 6.5hr |
| | | Dust Free | 1.3hr | 4.0hr | 13.0hr |
| | | Dry Through | 6.4hr | >24hr | >24hr |
| | Dryness (After 1day) | Ex | Ex | Ex | |
| | Water Resistance Test (After 1/2/7 days) | Ex/Ex/Ex | G/G/Ex | G/G/Ex | |
| | Pencil Hardness (After 1/2/7 days) | H/H/H | <6B/B/H | HB/F/H | |
| | Appearance (Clarity / Levelling / Gloss) | Ex/F/Ex | Ex/Ex/Ex | Ex/Ex/Ex | |

Pencil hardness: (hard)2H>H>F>HB>B>2B>3B>>>6B(soft)
Ex: Excellent> G: Good> F: Fair> P: Poor> VP: Very Poor

<Curing Time (Dust Free)>



Less Waiting
↓
More Productivity

<Phr>



Low Phr
↓
Material Reduction

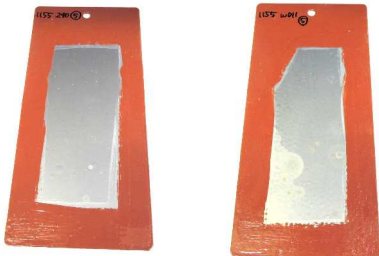
Fast Curing, Good Water Resistance and Good Appearance

Chemical Resistance (Immersion for 2 weeks)

| | Water-Borne G-240 (No-VOC) | Water-Borne Typical Polyamideamine (VOC) | Non-Solvent G-240 (No-VOC) |
|--|--|--|----------------------------------|
| Water | Good (Slightly Gloss Reducing) | Fair (Surface Roughening) | Excellent |
| 10wt% NaOH aq. | Good (Slightly Gloss Reducing) | Poor (Rusting) | Poor |
| 10wt% H ₂ SO ₄ aq. | Good (Slightly Gloss Reducing) | Very Poor (Rusting, Swelling) | Poor |
| Methanol | Fair (Whitening) | Poor (Blistering) | Good |
| 90wt% Methanol aq. | Fair (Whitening) | Poor (Blistering) | Fair |
| Toluene | Fair (Whitening) | Very Poor (Swelling) | Very Poor |
| 5wt% Salt Spray (1week) | Good (Whitening) | Poor (Rusting) | Poor |

<Appearance after Immersion>

10wt% NaOH aq.



G-240 **Good** Polyamideamine **Poor**

10wt% H₂SO₄ aq.



G-240 **Good** Polyamideamine **Very Poor**

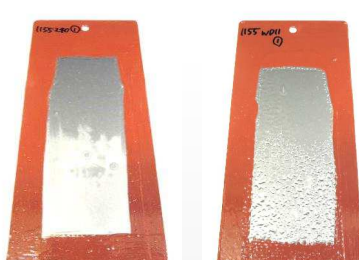
G-240 = No Rusting,
Swelling or
Blistering

90wt% MeOH aq.



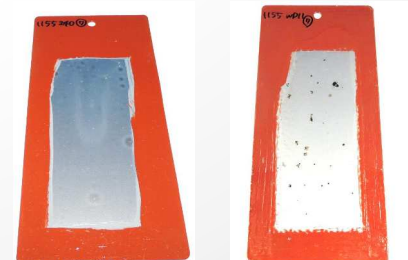
G-240 **Fair** Polyamideamine **Poor**

Toluene



G-240 **Fair** Polyamideamine **Very Poor**

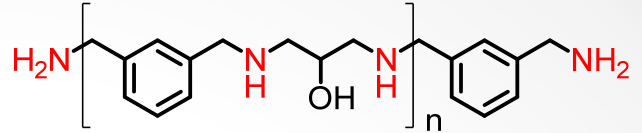
5wt% Salt Spray



G-240 **Good** Polyamideamine **Poor**

Gaskamine 328 ~ No-VOC Water-Soluble Polyamine ~

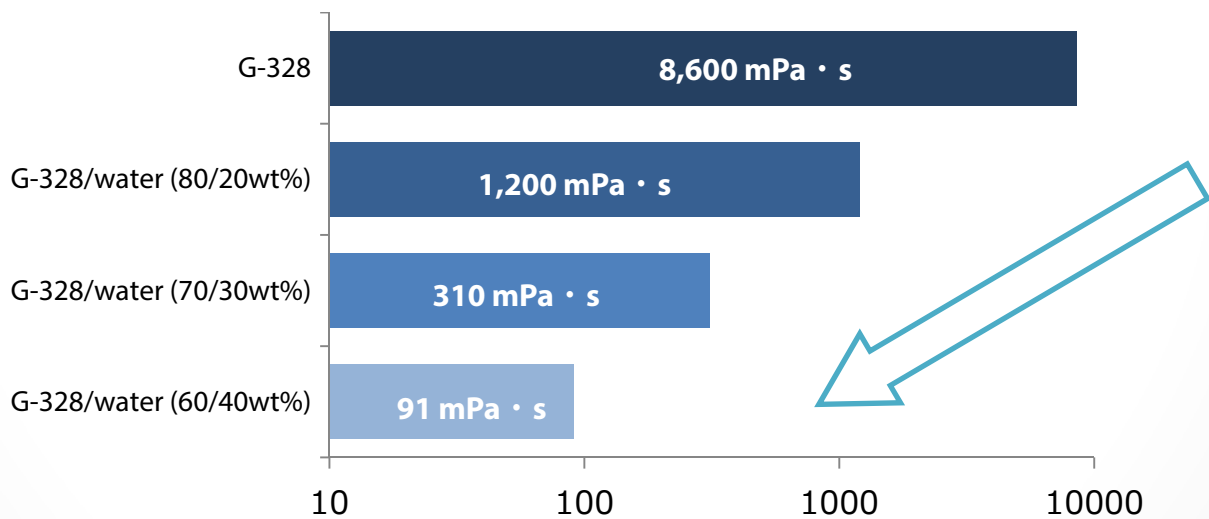
- **No-VOC**
- **Water Soluble**
- **Fast Curing**
- **High Tg Polyamine**



G-328

| Color (Gardener) | Viscosity (25°C) | AHEW | Solids (NVM) | MXDA |
|---------------------|-------------------------|-----------------|----------------------|----------------|
| ≤5 (Pale Yellow) | 7,000 – 14,000 mPa·s | 55 (Low Phr) | 100% (No Solvent) | 24 – 28 wt% |

<Viscosity>



Viscosity Lowered with Water

Recommended Formulation for Concrete Primer

| | | | G-328 / Water (80wt%/20wt%) (No-VOC) | Typical Polyamide amine (VOC) |
|----------------------|----------------------------|---|---|-------------------------------------|
| Formulations | Water-Borne Epoxy Resin | 1001 Bisphenol A Solid Type Epoxy Resin Based NVM: 55% EEW: 1020 (as supplied) | 100g | 100g |
| | Hardener | | G-328: 5.4g Water: 1.35g (Low Viscosity, Low Phr) | 72g |
| Curing Conditions | Substrate | | Slate (Reinforced Cement Mortar) Board | |
| | Film Thickness (Wet) | | 100µm | |
| | Curing Condition | | 23°C, 50%RH | |

Coating Properties (23°C, 50%RH)

| | | G-328 / Water (80wt%/20wt%) (No-VOC) | Typical Polyamide amine (VOC) |
|------------------------------------|--------------|--|-------------------------------------|
| RCI Drying Time | Set to Touch | 0.1hr | 0.7hr |
| | Dust Free | 0.9hr | 4.0hr |
| | Dry Through | 2.1hr | >24hr |
| Dryness (after 1 day) | | Ex | Ex |
| Pencil Hardness (after 1/2/7 days) | | H/H/H | B/H/H |

Ex: Excellent > G: Good > F: Fair > P: Poor
Pencil hardness: (hard) 2H > H > F > HB > B > 2B > 3B > >> 6B (soft)

Fast Curing, Good Pencil Hardness