

The background is a solid orange color. There are two thin, white, curved lines that sweep across the frame. One line starts from the left edge, curves upwards and then downwards, ending near the top right. The other line starts from the bottom left, curves upwards and then downwards, ending near the middle right. A small blue dot is located on the upper left curve, and a small green dot is located on the lower right curve.

DMA REPLACEMENT

ACCELERATOR NL-67 and TC-R-1033

Nouryon

DMA - hazard identification

GHS/CLP

Classification of *N,N*-dimethylaniline (CAS number 121-69-7) according to Annex VI Table 3.1.:

Acute Toxic Oral category 3; H301 (Toxic if swallowed)
 Acute Toxic Dermal category 3; H311 (Toxic in contact with skin)
 Acute Toxic Inhalation category 3; H331 (Toxic if inhaled)
 Carcinogenic category 2; H351 (Suspected of causing cancer)
 Aquatic environment chronic category 2; H411 (Toxic to aquatic environment with long lasting effects)



Signal word: DANGER

European Union Regulation 1272/2008/EC: Classification, Labeling and Packaging of Substances and Mixtures

DPD

Classification of *N,N*-dimethylaniline (CAS number 121-69-7) according to Annex VI Table 3.2.:



T

N

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.
 Carcinogenic category 3, R40: Limited evidence of a carcinogenic effect.
 R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 S28: After contact with skin, wash immediately with plenty of . . .
 S36/37: Wear suitable protective clothing and gloves.
 S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S61: Avoid release to the environment. Refer to special instructions/Safety data sheets.

European Union Directive 1999/45/EC: Dangerous Preparations Directive

DMA - reclassified

N,N-Dimethylaniline (DMA, CAS number: 121-69-7)

It is a substance listed in Tables 3.1 and 3.2 of Annex VI to the CLP Regulation.

Nouryon Polymer Chemistry' Safety Data Sheets and labels Annex VI presents a mandatory classification for DMA being, among other hazards, suspected of causing cancer.

CLP Regulation and DPD require that products (mixtures/preparations) containing DMA in concentrations equal or above 1 wt% are classified as Carcinogenic category 2, H351 (Suspected of causing cancer) and Carcinogenic category 3, R40 (Limited evidence of carcinogenic effect) respectively, in addition to the relevant acute human and environmental chronic toxic hazards.

Replacement products

Nouryon Polymer Chemistry decided to withdraw the following products containing DMA from the product portfolio:

- Accelerator NL-63-100
- Accelerator NL-63-10P
- Accelerator NL-23

Replacement products

- Accelerator NL-67 as replacement for Accelerator NL-63
- TC-R-1033 (development product) as replacement for Accelerator NL-23

We are pleased to offer Accelerator NL-67 as replacement product

Accelerator NL-67

Hazard rating

Accelerator NL-67

is non hazardous (see SDS on the left)

- is corrosive. For safe handling gloves and safety goggles are recommended to protect skin and eyes.
- has slightly higher viscosity than Accelerator NL-63.
- could solidify at temperatures around 0°C (a minimum storage temperature of 10°C is recommended)
- can be diluted (for example with styrene) to lower the concentration to make it easier to dose and to resolve viscosity and solidification issues.
- We can deliver pre-dissolved formulations for easy handling.
- is CLP notified and REACh pre-registered

2. HAZARDS IDENTIFICATION

Harmful if swallowed.
Risk of serious damage to eyes.

GHS classification

Description	Applicable
Acute toxicity (oral)	category 4
Eye irritation	category 1

Pictogram(s) (GHS)



Signal word/Hazard statement(s) GHS

Code	Description
Signal word: DANGER	
H302.	Harmful if swallowed.
H318.	Causes serious eye damage.

Accelerator NL-67

Hazard rating

- TC-R-1033 is based on Cobalt and Accelerator NL-65 (dimethyl-p-toluidine).
- The hazard rating of TC-R-1033 is mainly caused by the presence of Cobalt (reprotoxic) and the dimethyl-p-toluidine (acute toxicity).

2. HAZARDS IDENTIFICATION

Harmful by inhalation, in contact with skin and if swallowed.
 Danger of cumulative effects.
 May cause sensitization by skin contact.
 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 Possible risk of impaired fertility.
 Harmful: may cause lung damage if swallowed.
 Repeated exposure may cause skin dryness or cracking.

GHS classification

Description	Applicable
Acute toxicity (inhalation)	category 4
Acute toxicity (oral)	category 4
Reproductive toxicity	category 2
Aspiration hazard	category 1
Target organ, repeated exposure	category 2
Aquatic environment, chronic	category 2
Skin sensitization	category 1

Pictogram(s) (GHS)



Signal word/Hazard statement(s) GHS

Code	Description
Signal word: DANGER	

Test data

Accelerator NL-67

- In high and medium reactive ortho resins

TC-R-1033

- In high reactive ortho resin
- In epoxy based vinylester resin

Accelerator NL-67

Reactivity in ortho resin at 20°C

High reactive ortho (parts)	100	100	100			
Medium reactive ortho (parts)				100	100	100
Perkadox® CH-50X (phr)	2	2	2	2	2	2
Di-methyl aniline (former Accelerator NL-63-100) (phr)	0.1			0.1		
Accelerator NL-64-100 (phr)		0.5			0.5	
Accelerator NL-67 (phr)			0.1			0.1
4 mm laminate at 20°C						
Gel time (min.)	56	54	30	66	64	34
Time to peak (min.)	71	62	40	91	76	55
Peak exotherm (°C)	68	111	84	49	89	53
Barcol hardness						
1 hrs	0	0	55	0	0	25
2 hrs	50	57	55	38	53	44
6 hrs	52	57	55	44	56	49
24 hrs	54	57	55	48	57	49
Res. styrene after 24 hrs wt%	4.3	2.0	4.0	3.7	1.5	3.9
Res. styrene after 8 hrs 80°C post cure wt%	0.7	0.7	0.8	0.3	0.3	0.3

The gel time can be increased by reducing the amount of Accelerator NL-67 or by adding for example Inhibitor NLC-10.

TC-R-1033

Reactivity in ortho resin at 20°C

High reactive ortho (parts)	100	100	100
Quartz filler (parts)	100	100	100
Butanox® M-50 (phr)	2	2	2
Accelerator NL-49P (phr)	1.5		
Accelerator NL-23 (phr)		0.5	
TC-R-1033 (phr)			0.5
Filled SPI (20°C)			
Gel time (min.)	5	3	3
Time to peak (min.)	21	18	19
Peak exotherm (°C)	57	95	93
Res. styrene after 24 hrs wt%	2	1	1

Conclusion

In high reactive ortho resin TC-R-1033 has the same reactivity as Accelerator NL-23.

TC-R-1033

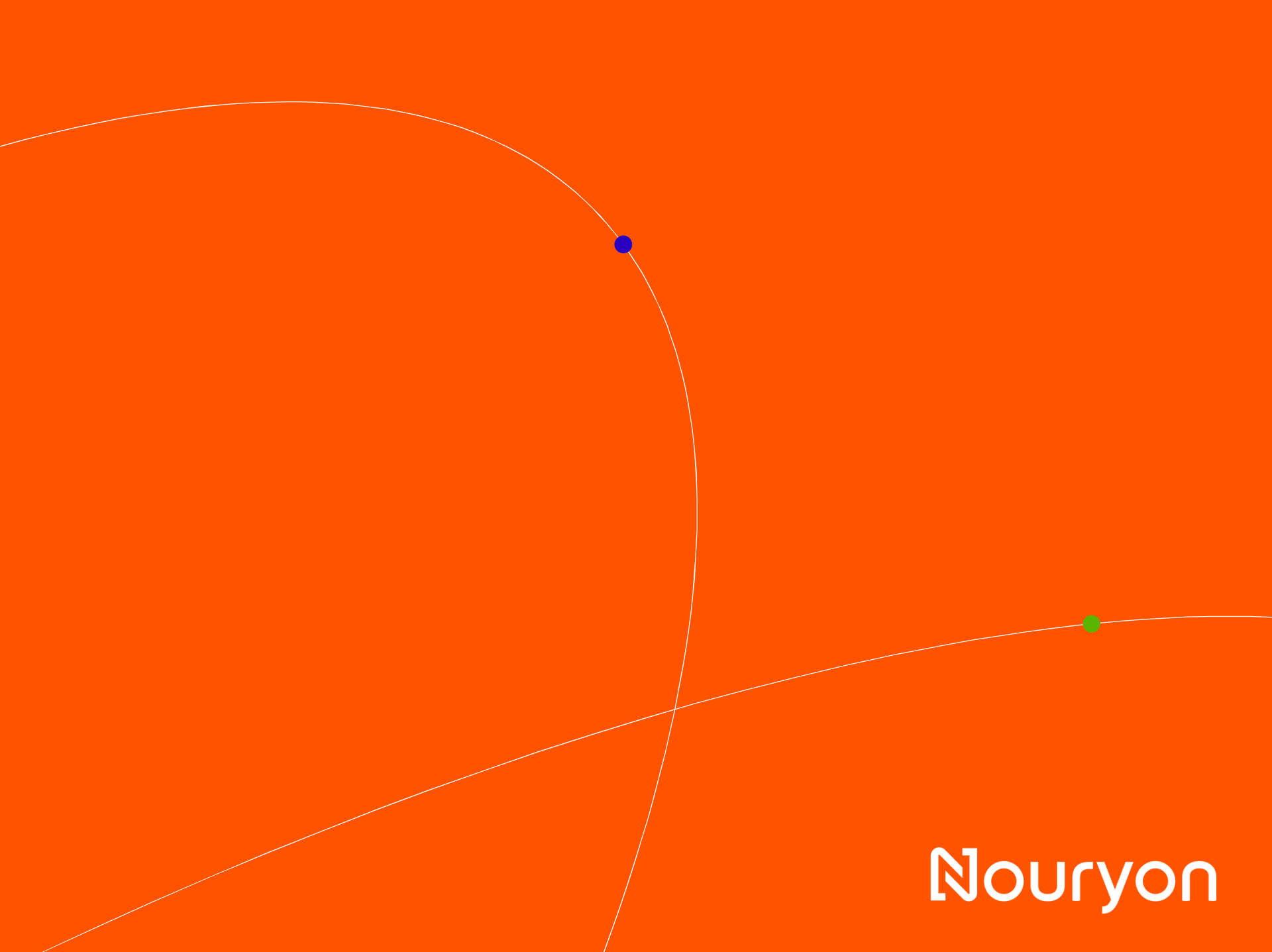
Reactivity in VE resin at 20°C

Epoxy VE resin (parts)	100	100	100
Quartz filler (parts)	100	100	100
Butanox LPT-IN (phr)	2	2	2
Accelerator NL-49P (phr)	1.5		
Accelerator NL-23 (phr)		0.5	
TC-R-1033 (phr)			0.5
Filled SPI (20°C)			
Gel time (min.)	34	22	14
Time to peak (min.)	98	59	55
Peak exotherm (°C)	51	89	81
Res. styrene after 24 hrs wt%	4.6	1.4	2.1

Conclusion

TC-R-1033 is very suitable as promoter in epoxy based vinylester resin.

TC-R-1033 is a good replacement for Accelerator NL-23 in this application.



Nouryon