

ANCAMINE® 2858 – HIGH-PERFORMANCE SOLUTION FOR HOT CLIMATES

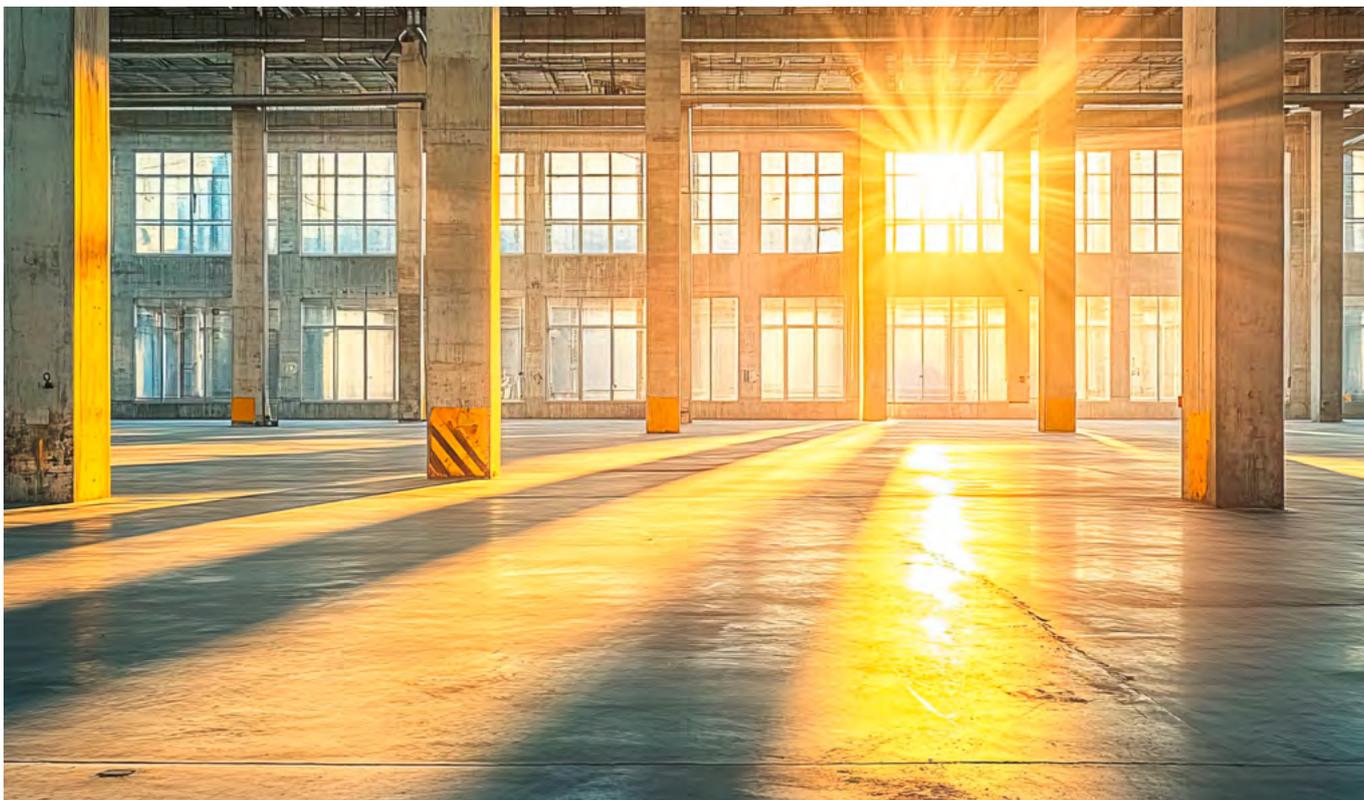


Figure 1: Application picture of a warehouse flooring.

The ongoing impacts of climate change are reshaping our daily lives and significantly altering industry requirements. In high-temperature regions, such as the Middle East, outside temperatures have risen dramatically, with summer seasons typically lasting for half the year. During this time, average temperatures can soar to 40 °C, reaching highs of 55 °C and are often accompanied by high humidity levels of 85 % or above. Other regions, including Southern Europe, are also experiencing consistently increasing summer temperatures. In these high temperatures, epoxy flooring applications face unique challenges as the temperatures influence the processing parameters of the coating formulations. Epoxy systems are often the first choice for floor coatings due to their excellent

mechanical properties, including high chemical and abrasion resistance, leading to highly durable floorings (**Figure 1**). It is essential for epoxy coating formulators to balance adequate time for handling and application with fast cure speeds to ensure early walkability on the floor.

High temperature limits the so-called working time or pot life. Typically, for optimal productivity a pot life of 30 to 45 minutes is desired, alongside a moderate induction time of over 10 minutes. Additionally, flooring formulations must also exhibit high carbamation resistance especially at elevated humidity levels. Addressing these challenges is vital for developing effective and durable flooring solutions in high temperature regions.

BENEFITS AT A GLANCE

- Extended pot life specifically designed for hot climates
- Excellent carbamation resistance and adhesion to wet concrete
- Low viscosity for excellent wetting performance
- Optimal handling and rapid hardening for efficient workflow

BALANCING POT LIFE WITH ENHANCED CURING PERFORMANCE

Ancamine® 2858 is a newly developed curing agent for epoxy primers, specifically engineered for high-temperature climates. Its curing profile with standard liquid epoxy resins (LER) allows for easy handling and application at 40 °C and above. At this temperature, the pot life, as determined by the gelation time of the formulation, is approximately 25 minutes (Figure 2).

In comparison with the industry standard hardener Ancamine® 1618 and the best-in-class hardener for hot climates, Ancamine® 2646M, Ancamine® 2858 extends the gelation time by 5 minutes at 40 °C. This improvement is even more pronounced at 30 °C, where Ancamine® 2858 achieves a pot life of 55 minutes, compared to the 30 minutes of the current offerings.

In addition to a longer pot life, the curing of the floor coatings as measured by Shore D hardness development is also extended with Ancamine® 2858. Typically, a Shore D hardness of 40 – 50 is targeted for walkability, which is achieved after roughly 6 hours at 40 °C with Ancamine® 2858 (Figure 3). This means that the topcoat could still be applied within the same working shift. Full cure, corresponding to a final shore D hardness level of 80, is reached after 24 hours. Ancamine® 2858 effectively combines extended pot life with good hardness development.

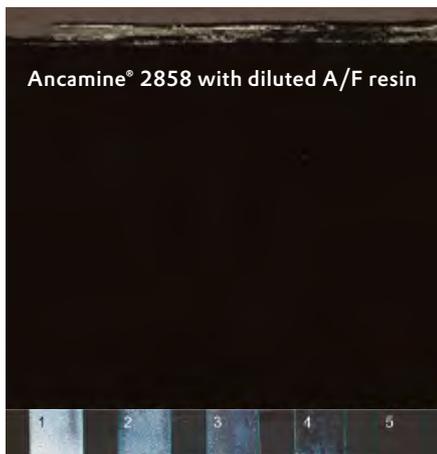


Figure 4: Picture of a sample formulation based on Ancamine® 2858 with a diluted A/F resin after treatment with a wet patch for 24 h at 23 °C. The sample shows no signs of whitening which indicates carbamation. The lower part shows the evaluation scale of the test method, with 5 being the best value.

Figure 2: Gelation time of different Ancamine® hardeners cured with a DGEBA

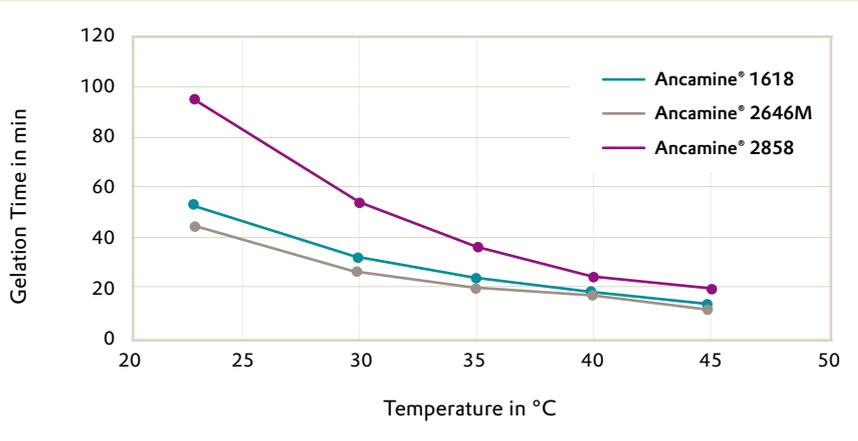
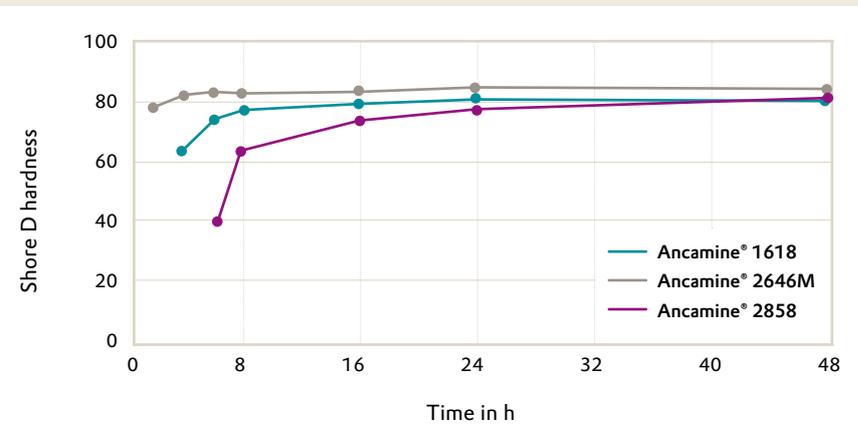


Figure 3: Shore D hardness development of different Ancamine hardeners at 40 °C



ENGINEERED FOR HUMIDITY RESISTANCE

In addition to its tailored cure profile, Ancamine® 2858 is also formulated to withstand high humidities with low carbamation and superior adhesion to wet concrete. Ancamine® 2858 withstands high humidity and shows no visible defects or salt formation after 24 h exposure to moisture, determined with the wet-patch method (Figure 4).

DESIGNED TO FACILITATE THE APPLICATION PROCESS

Handling and application of formulations based on Ancamine® 2858 are further facilitated by its low hardener viscosity of 100 – 400 mPas. The low viscosity enhances the wetting of the concrete in primer applications and enable a fast coating process with good leveling performance.

Table 1: Typical properties of Ancamine® 2858

Property	Value	Unit	Method
Appearance	Yellow Liquid		
Color	max 12	Gardner	ASTM D 1544 – 80
Viscosity @ 25°C	100 – 400	mPas.s	Brookfield RVTD, Spindle 4
Amine Value	270 – 320	mg KOH/g	Perchloric Acid Titration
Specific Gravity @ 21°C	1.0	g/ml	
Equivalent	95	Wt/{H}	
Recommended use Level	50	PHR	With Bisphenol A diglycidyl ether (EEW=190)

The recommended parts per hundred resin (PHR) ratio is at 50 parts per of Ancamine® 2858 to 100 parts of LER which allows for easy mixing at the construction site, as well as low cost in use.

With a Gardner color rating of a maximum of 12, Ancamine® 2858 is on the same level as Ancamine® 2646M. Both products are particularly recommended for primer applications, dark topcoats, or pigmented screeds and mortars.

Our distribution partner IMCD tested the new product in their Application Center in the Middle East. Ancamine® 2858 was tested versus the light-colored Ancamine® 1618 in a self leveling formulation with a brown color. Both formulations show comparable color and surface (Figure 5).

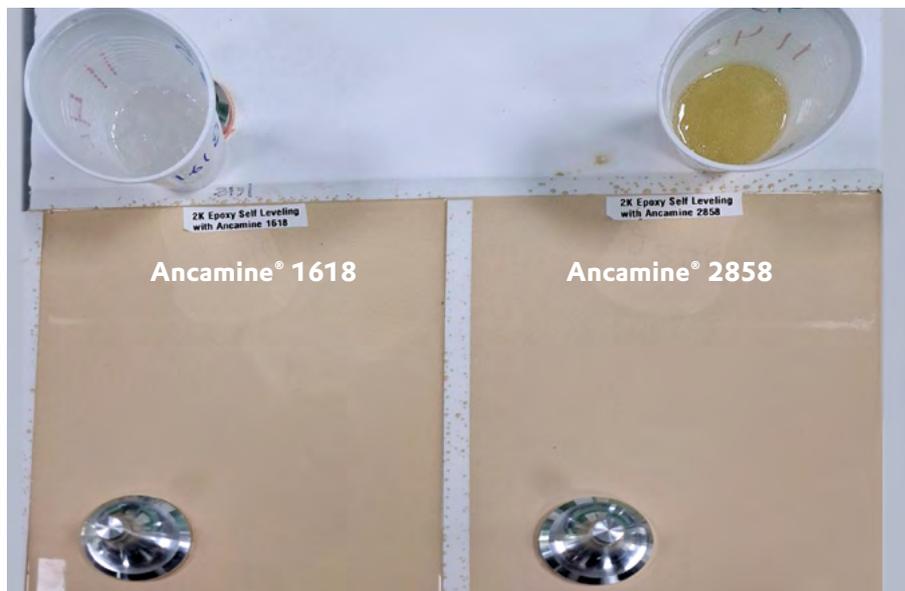


Figure 5: Picture of samples based on Ancamine® 1618 (left) and Ancamine® 2858 (right) in a 2K self leveler formulation. The initial color of the hardeners can be seen in the cups at the top of the image.

Courtesy of IMCD ME.

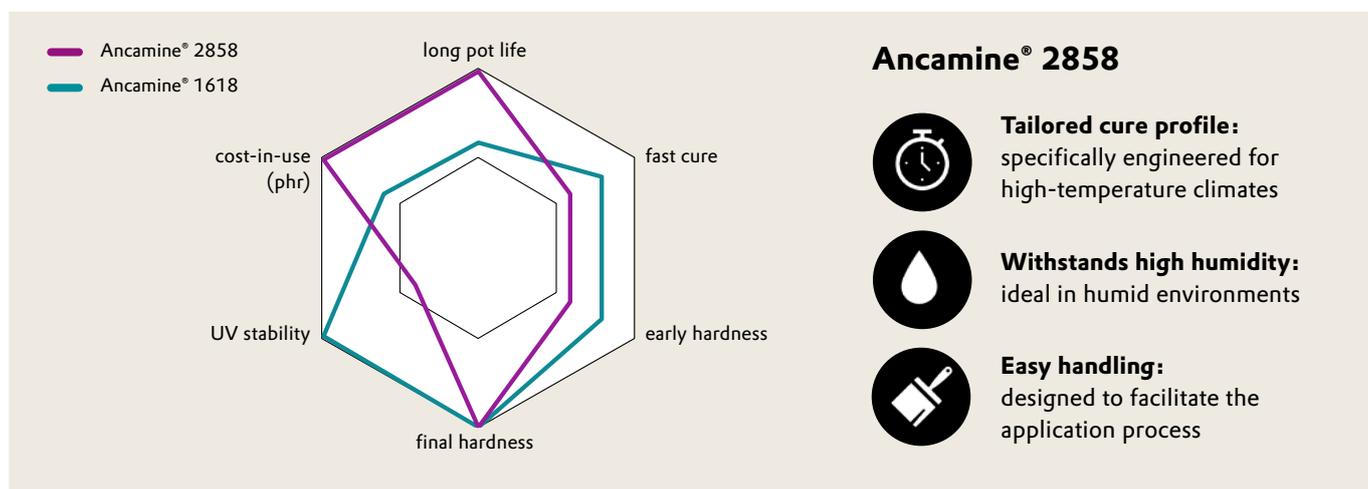


Figure 6: Overview of technical performance parameters of Ancamine® 2858 versus Ancamine® 1618

ANCAMINE® 2858 IS THE IDEAL CHOICE FOR HOT CLIMATES

In summary, Ancamine® 2858 offers an extended pot life and good cure speed. The outstanding carbamation resistance and adhesion to wet concrete are crucial for high performance hardeners for floor coatings. Combined with a low viscosity and excellent wetting properties, Ancamine® 2858 is a great choice for high performance floor coatings that are easy to apply and reduce downtime.

These exceptional performance benefits make Ancamine® 2858 the ideal choice for floor coating primers in hot climates. The property profile is adjusted to the specific needs of floor coating applicators in areas with high temperatures and humidities.

GET IN TOUCH

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