

TYPE

Modified epoxy resin

FORM OF DELIVERY (f.o.d.)

60 % in solvent mixture (60LG)

SPECIAL PROPERTIES AND USE

Beckopox EM 441 can only be used in combination with Beckopox EM 440 for good adhesive one-pack-stoving systems, e.g. primers with high corrosion protection, foil and packing lacquers.

The elasticity of the system Beckopox EM 441/EM 440 is adjusted by variation of the mixing ratio.

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity [mPa.s] 13000 - 22000
(25 1/s; 23 °C)

Iodine Colour Number DIN 6162

iodine colour number <= 3

Non-Volatile Matter DIN EN ISO 3251

non-volatile matter [%] 58 - 62
analogue DIN EN ISO 3251
(1 h; 160 °C; 1 g; toluene)

Not continually determined:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity [mPa.s] 10000 - 18000
(25 1/s; 25 °C)

Density (Liquids) DIN EN ISO 2811-2

density [g/cm³] 1,07
approx.
(20 °C)

Flash Point DIN EN ISO 1523

flash point [°C] 50
approx.

DILUTABILITY

xylene	⊙	isopropanol	○
acetone	●	ethoxypropyl acetate	●
methyl ethyl ketone	●	solvent naphtha 150/180	⊙
methyl isobutyl ketone	⊙	solvent naphtha 180/210	⊙
ethanol	⊙	ethyl ethoxypropionat	●
butanol	⊙		

● = unlimited dilutability
● = substantial dilutability

⊙ = limited dilutability
○ = very limited or no dilutability

COMPATIBILITY

Beckopox EM 441/440 3 : 1 mixture

Epoxy type 1, 4, 7, 9	unlimited
Butvar B-98	limited

SUGGESTED USES

Beckopox EM 441 is a modified epoxy resin which cures at high temperature. The resin system shows excellent adhesion onto most metal substrates, outstanding deep-drawing properties with good surface hardness, and corrosion protection. Due to this, Beckopox EM 441/EM 440 is preferably used in metal pre-coating systems like coil-coating or sheet-coating.

Important other applications are stoving primers for corrosion protection, coatings for machineries, conveyors, tanks, pipes, fuel containers, collapsible tubes, electro-insulation varnishes and foil lacquers which resist high temperatures.

PROCESSING

The mixing ratio between Beckopox EM 441 and EM 440 can be between 1 : 1 and 6 : 1 (f.o.d.). Standard mixing ratio is Beckopox EM 441/EM 440 approx. 3 : 1. If the proportion of Beckopox EM 441 is increased, the flexibility of the resulting film increases too. Whereas if the amount of Beckopox EM 440 in this mixture is increased, the resistance against e. g. hot water improves, but flexibility declines. The system Beckopox EM 441/EM 440 can be modified with amino resins to increase curing speed but the storage stability of the resin mixture decreases at the same time.

The system Beckopox EM 441/EM 440 (cured at temperatures around 200 °C) is nonyellowing and can be pigmented with the usual pigments / fillers suitable for high-temperature stoving systems.

Acceleration of curing

Additions of approx. 1 % Beckopox EH 610 (hardener), improves curing speed, especially at relatively low temperatures. The storage stability of this mixture is approx. 6 weeks only.

Dilution

Mixtures containing higher alcohols, acetic acid esters, ketones, glycol ethers and aromatic hydrocarbons are preferably used to dilute systems containing Beckopox EM 441/EM 440. An appropriate mixture consists of 40 parts xylene, 10 parts diacetone alcohol and 50 parts methoxypropanol. Aromatic solvents should not be used alone for dilution in order to avoid formation of a porous film with reduced anticorrosion resistance.

STORAGE

At temperatures up to 25 °C storage stability packed in original containers amounts to at least 365 days.

SAFETY AT WORK AND ENVIRONMENTAL PROTECTION

When handling and processing epoxy resins and hardeners, the rules and regulations established by local authorities should be observed. A Material Safety Data Sheet is available on request.