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**HIGH
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ENFALT
Emülsiyon ve Asfalt Tesisleri A.Ş.

40 YEARS OF EXPERIENCE
in the Road and Insulation Industry

AkzoNobel

Enfalt Emülsiyon ve Asfalt Tesisleri A.Ş. is a member of the innovation leader **Engine Holding.**

With its experience of more than 40 years, Enfalt has led the way in many projects in the road, asphalt and insulation industry, brought innovation to the industry with its aim of sustainable solutions, and introduced numerous products to the industry.

With its stationary and mobile plants spreading to the whole country, Enfalt provides service to many public and private enterprises, particularly the administrations.

HISTORY

Having started providing the emulsion production service in Ankara in 1993 in the first and only emulsion plant with a capacity of 12 tons/hour in Turkey which was controlled with a constant-type computer system under the partnership of ENGİNE A.Ş. and AKZO NOBEL - Scan Road (Sweden), ENFALT A.Ş. gets its experiences from ENGİNE Holding dating back to 1977.

For more than 40 years, with its partnerships and know-how transfers with the leading companies such as AKZO NOBEL, COLAS and BP, ENFALT has brought innovation to the road and insulation industry in our country with its aim of sustainable solutions, introduced numerous products to the industry, and led the way in many projects. ENFALT, which continues its production activities today as a full member of ENGİNE Holding, carries out the promotion and marketing works of Akzo Nobel chemicals as the exclusive representative of Akzo Nobel Surface Chemistry in Turkey.

The road and asphalt products included in the product range of ENFALT are successfully used on all state, city, village and urban roads, particularly on our highways, and its insulation products are used in the construction industry. Thanks to its successful applications, ENFALT increases the number of its road and insulation applications every year.

OUR FOUNDER KEMAL TATAROĞLU (1929-2017)

ENGİNE HOLDING was founded in 1977 by Kemal Tataroğlu.

When he founded the company at the age of 49 following his service of 27 years in the General Directorate of Highways, Kemal Tataroğlu had one single aim: to provide the road and asphalt industry with technological high-quality products and with honest service of high technical level.

40 years now, we grow without leaving the principles of our founder.

The firsts introduced by ENFALT to our country

1978: The first tunnel insulation application in Turkey, Torul Tunnels - Gümüşhane
1985: The first geotextile application in drainage, Trabzon City Crossing
1986: The first geotextile applications on asphalt in Turkey, Ankara-Istanbul Highway
1990: The first imported asphalt delivery in Turkey, 190,000 tons, General Directorate of Highways
1992: The first subway line in Turkey, PE membrane insulation application, Ankaray
1992: The largest mining pond insulation in Turkey, 280,000 m², Eurogold
1993: The largest PE membrane foundation insulation application in Turkey, 28,000 m², Tat Towers
1993: The first geogrid reinforced wall application in Turkey, Bahçeşehir-Istanbul
1994: The first surface treatment emulsion application in Turkey, Çankırı Highway
1994: The first on-site prepared Trinidad Lake Asphalt application in Turkey, 1. Bosporus Bridge and link roads
1996: The largest stabilization application with geogrid in Europe, Bodrum Airport
2004: Erosion control with geogrid, Izmir Olympic Village
2004: The first stream improvement application with geosynthetics in Turkey, Melez Stream

We continue to increase our 40-year production experience with the plants we incorporated within the scope of our domestic and foreign projects.

Asphalt Plant - 240 t/h	Stationary Emulsion Production Plant - 20 t/h
Asphalt Plant - 160 t/h	Mobile Emulsion Production Plant - 12 t/h
Crushing & Screening Plant - 350 t/h	Mobile Emulsion Production Plant - 13 t/h
Crushing & Screening Plant - 250 t/h	Mobile Emulsion Production Plant - 10 t/h
Polymer Modified Bitumen Plant - 20 t/h	Asphalt Joint Filler Plant - 10 t/h
Ready Mixed Concrete Plant - 90 m3/h	Insulation Products Production Plant - 10 t/h

Engine Holding
Enfalt Emülsiyon ve Asfalt Tesisleri A.Ş. is a member of the innovation leader Engine Holding.

Akzo Nobel
Enfalt is the solution partner and exclusive representative of Akzo Nobel Surface Chemistry in Turkey.

Ibef
Enfalt is the only Turkish member of the International Bitumen Emulsion Federation (IBEF).

www.enfalt.com.tr

Asphalt and Road Products

Insulation Products

ASPHALT EMULSIONS

Asphalt Emulsions are bituminous binders that are formed by dissolution of the bitumen particles in water with the help of an emulsifier. Asphalt emulsions, which have a wide range of application such as surface treatment, tack coat, primer, etc., do not have a flash point and they are not flammable or explosive. They are both affordable and environmentally friendly. They consume less energy and have less greenhouse gas emissions. Since they are applied at low temperatures, they extend the working season.

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CATIONIC ASPHALT EMULSIONS

CRS1 Cationic Asphalt Emulsion / Asphalt Binder and Adhesive Emulsion (ENEM 100)

ENEM 100 is a multipurpose rapid shearing binder cationic asphalt emulsion manufactured from bitumen of the penetration specified in technical specifications. It is used as bituminous binder, primer and adhesive material for the road superstructures.

Technical Specifications

Test Values	TS EN	Unit	Value (*)
Shearing Value	13075-1		< 110
Bitumen Content	1431	%	58-62
Flow time, 2mm, 40 ºC	12846-1	sec.	≤ 20
Residue on Sieve, 0.5 mm sieve	1429	% m/m	≤ 0.2
Precipitation Tendency	12847	%	≤ 5
Adhesiveness	13614	%	≥ 90
Penetration, 25ºC	1426	0.1 mm	≤ 220
Softening Point	1427	ºC	≥ 35

** According to the specifications of rapid curing bitumen emulsion of C60B2-5 quality in accordance with KTŞ (Technical Specifications for Highways) 412-3 (TS EN 13808)*

Application

*It is applied at about 50 to 85 ° C.
* It can be applied with asphalt distributor or simpler spraying elements.
*ENEM 100 is applied to the surface at a rate of 0.15-0.5 lt/m_2.

CRS2 Cationic Asphalt Emulsion / Surface Treatment Emulsion (ENEM 200)

ENEM 200 is a rapid shearing cationic asphalt emulsion with high bitumen ratio (67 to 70%), used in single or double layer or multi-layer surface treatments and bituminous protective (seal coat) coat applications.

Teknik Özellikler

Test Values	TS EN	Unit	Value (*)
Shearing Value	13075-1		< 110
Bitumen Content	1431	%	67-71
Flow time, 4 mm, 40 ºC	12846-1	sec.	5-70
Residue on Sieve, 0.5 mm sieve	1429	% m/m	≤ 0.2
Precipitation Tendency	12847	%	≤ 5
Adhesiveness	13614	%	≥ 90
Penetration, 25ºC	1426	0.1 mm	≤ 220
Softening Point	1427	ºC	≥ 35

According to the specifications of rapid curing bitumen emulsion of C69B2-5 quality in accordance with KTŞ (Technical Specifications for Highways) 412-3 (TS EN 13808)

Application

* The temperature of the emulsion should be 65-90 ° C.
* The emulsion of 1.5 kg/m² in average is added with distributor to the first layer. Right after, the Type-1 stone chips of 20 kg/m² in average are added sparsely in such a way not to cover the tires of the truck and roller. The emulsion of 2.0 kg/m² in average is added to the second layer and right after, the Type-3 stone chips of 15 kg/m² in average are added in such a way to fill the gaps of the first layer, and the double layer coating is completed.
* An iron-tire roller is used preferably.
* Single pass is sufficient for the cylinder (Forward + Backward). It is essential that the roller follows the chip spreader.
* After the application, allowing the traffic in a controlled manner on the area of application will extend the lifetime of the surface treatment.

ASPHALT AND ROAD PRODUCTS

CSS Cationic Asphalt Emulsion / Primer Emulsion (ENEM 500)

ENEM 500 is a slow shearing cationic asphalt emulsion that is used as a primer material on the foundation in surface treatment applications, in asphalt concrete applications, on plant-mix or cement foundations, and in any primer applications required by specifications. It can be used instead of MC 30 (Fm2B2).

Technical Specifications

Test Values	TS EN	Unit	Value (*)
Shearing Value	12848		> 2
Bitumen Content	1431	%	53-57
Flow time, 2mm, 40 ºC	12846-1	sec.	≤ 20
Residue on Sieve, 0.5 mm sieve	1429	% m/m	≤ 0.2
Precipitation Tendency	12847	%	≤ 5
Adhesiveness	13614	%	≥ 90
Penetration, 25ºC	1426	0.1 mm	≤ 150
Softening Point	1427	ºC	≥ 39

(*) According to the specifications of slow curing bitumen emulsion of C55B9-4 quality in accordance with KTŞ (Technical Specifications for Highways) 412-5 (TS EN 13808)

Application

* The application temperature of the material should be 70 ° C.
* Plenty of water is added to the stabilizing material.
* After the stabilizing material absorbs the water, the primer material of 1.5 kg/m² in average is applied with distributor.
* When the color of the primer material turns from brown into black, it is covered with powder.
* After the powder is removed, the traffic is allowed. The primed area is swept after 24 hours.

NONIONIC ASPHALT EMULSIONS

Nonionic Asphalt Emulsion / Primer Emulsion (ENEM 700)

ENEM 700 is a nonionic water based asphalt emulsion. The formulation can be changed upon request and according to the application conditions. ENEM 700 emulsion is used as primer material instead of MC30 (Fm2B2) for road constructions. It is environmentally friendly as it does not contain flammable materials.

The nonionic emulsion is used as primer material for road constructions where it is desired to create an impermeable surface at low costs.

ASPHALT JOINT FILLERS

Asphalt joint fillers are the hot or cold-mix repair and joint filler materials which are manufactured to repair the cracks on asphalt coatings, to ensure impermeability on joints of repaired old and new asphalt layers, and to fill asphalt and concrete site joints.

Hot-mix Asphalt Joint Filler (İZOFALT D)

General Specifications

İZOFALT D is a black, hot-mix, modified bitumen based crack repair and joint filler material which is manufactured and packaged in order to repair the cracks on asphalt coatings and to ensure impermeability on joints of repaired old and new asphalt layers. It is also used to protect the surfaces requiring insulation.

As the Polymer Modified Bitumen is manufactured from stabilizers, fiber and rubber, it is suitable for cold and hot weather conditions and it does not lose its performance. It is fully compatible with the surfaces it is applied to. It is saltproof and waterproof. It can be applied quickly and it does not create a slippery surface after the application.

Technical Specifications

Color	Black
Flow (60°C, 75°C angle, 5 hours)	2 mm
Resilience (25°C, rebound resilience %)	65%
Conical Penetration (25°C, 100 g, 5 sec.)	40
Ductility (25°C, 5 cm/min.)	60
Softening Point, °C	90
Metal Surface Compatibility	Compatible
Safe Heating Temperature °C	180
Specific Gravity kg/m3	1.52

İzofalt D's Areas of Application

*For road coating cracks,
* On highway, asphalt and concrete sites,
* On joints of two concrete sections,
* On horizontal joints and cracks,
* It is used as filling and repair material.

İzofalt D's Aduantages

* It is resistant to any climate conditions.
* It is resistant to waste water and sea water.
* It is partially resistant to solvents.
* It is resistant to low and high temperatures.
* It requires minimum crew and equipment.

Cold-mix Asphalt Joint Filler (İZOFALT S)

General Specifications

İZOFALT S is a two-component, polyurethane based joint filler and crack repair material with coal tar additive, suitable for use in asphalt and concrete site joints. It is also used to protect the surfaces requiring insulation.

It is suitable for cold and hot weather conditions and it does not lose its performance. It is fully compatible with the surfaces it is applied to. It is suitable for constant water contact. It can be applied in all seasons. It is resistant to various chemicals and ultraviolet.

İzofalt S' Areas of Application

* For road coating cracks,
* On highway, asphalt and concrete sites,
* On airport runways,
* On horizontal joints and cracks,
* It is used as filling and repair material.

İzofalt S'in Avantajları

* It is highly resilient, and resistant to dynamic movements
* Ideal for joints and cracks on concrete, asphalt and between concrete and asphalt
* High working flexibility
* Excellent adhesiveness and abrasion resistance
* It is resistant to deformation with its elastomeric structure
* It is resistant to chemicals

ASPHALT AND ROAD PRODUCTS

POLYMER MODIFIED BITUMEN (PMB)

It is a fact that our roads deteriorate very quickly in today's conditions (with heavy traffic loads and changing climate conditions). As the conventional asphalt concrete did not satisfy the needs, various researches were made to renew and improve the deteriorated superstructures. As a result, the desired result was received by adding certain bitumen-compatible polymers to bitumen, which is one of the most important coating materials. The purpose of the addition of polymer to bitumen is to improve the positive properties of the bitumen without changing it. Thus, the sensitivity of bitumen to heat reduces, the softening point rises and the brittleness point decreases.

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Polymer Modified Bitumen (POLİFALT)

POLİFALT is a polymer modified bitumen manufactured by Enfalt in accordance with the Technical Specifications for Highways.

Purposes of Bitumen Modification

For Hot Bituminous Mixtures:
• Reducing deformations at high temperatures
(Preventing wheel track formations, preventing deformations)
• Improving performance at low temperatures (resilience and preventing thermal cracks)
• Increasing fatigue strength
• Increasing resistance to reflection cracks
• Thickening the bituminous film surrounding the aggregates (resistance to oxidation)
• Reducing layer thicknesses
• Increasing the durability of coating

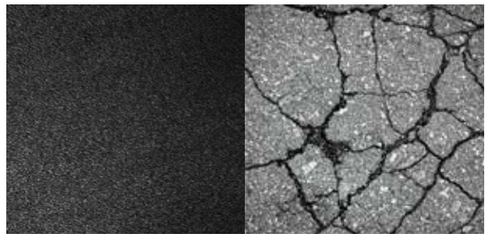
Technical Specifications

Test Values		TS EN	Unit	Value
Penetration, 25°C, 150 g, 5 sec.		1426	0.1 mm	25-55
Softening Point		1427	°C	≥ 65
Ductility with Dynamometry, 25°C, 5 cm/min		13589	J	≥ 0.5
Elastic Rebound, 25°C		13398	%	≥ 60
Flash Point		2592	°C	≥ 220
Shearing Value		13075-1	g/sec.	< 110
Specific Gravity		15326	g/cm³	1.0-1.1
Dynamic Shear Rheometer (DSR) (DSR) G*/sinδ>1kpa)	Failure Temperature	14770	°C	≥ 76
Permanent Penetration		1426	%	≥ 45
Bending Beam Rheometer (BBR) Bending-Creep Hardness S≤300MPa, m≥0,300	Temperature	14771	°C	≥ -6

(*) According to the specifications of polymer modified bitumen of PMB 76-16 quality in accordance with KTŞ (Technical Specifications for Highways) 412-2 (TS EN 14023)

Polifalt's Effect of Preventing Wheel Track Formation

Polifalt's Effect of High Resistance to Crack Formation



ENFALT FIBROCEL CELLULOSIC FIBER FOR STONE MASTIC ASPHALT

Enfalt Fibrocel is a high-quality cellulosic fiber product used in domestic and foreign stone mastic asphalt applications.

Specifications and Advantages

It provides a high homogeneous distribution and increases the adhesion of bitumen, and fills the gaps between aggregates and minimizes the bitumen percolation. The product, approved by the General Directorate of Highways, is the most suitable fiber type used for stone mastic asphalt applications and has many advantages

- HIGH QUALITY, ATTRACTIVE PRICE
- LOW MIXING TIME AND HOMOGENEOUS DISTRIBUTION
- MOISTURE RESISTANT
- EARNING TO THE NATIONAL ECONOMY WITH 100% DOMESTIC PRODUCTION AND EXPORTATION SUCCESS
- MODERN PRODUCTION (ISO 9001 AND OHSAS 18001)

Thanks to its high quality, Fibrocel is preferred not only by Turkish companies but also by the foreign road construction companies, especially in Europe.

Application

Enfalt Fibrocel can be very easily mixed with the dry mix before mixing with bitumen. Thanks to this property, it disperses homogeneously and quickly in the bitumen and covers the aggregate. Depending on the type and size of the mixer, the mixing of 5-15 seconds is sufficient to distribute Enfalt Fibrocel in the dry mix.

Packaging

Big bag of 500 kg (suitable for overseas shipments)

Technical Specifications

Appearance	Thickness of 4-7 mm
Schellenberger Percolation Value (with 0.3%)	Max. 0.18% (The criterion of the Specifications is 0.3%)
Moisture	Max. 5%
Oil Absorption	At least 5 times the cellulose weight

ASPHALT CHEMICALS

The exclusive representative of Akzo Nobel Surface Chemistry in Turkey, Enfalt carries out the marketing and distribution activities of Akzo Nobel's wide range of high quality asphalt chemicals for sustainable solutions.

Anti-stripping Asphalt Additives (DOP)

Adhesion between bitumen and aggregate is an important factor for the lifetime of bituminous coatings. The reason for the deterioration on the road surface is the lack of adhesion and the stripping.

Water has the feature of separating bitumen from aggregate under certain conditions. In addition, traffic load accelerates this separation.

Many aggregates are more easily wetted with water than with bitumen.

The materials increasing the resistance to stripping, called anti-stripping materials, are used to prevent stripping. It is tried to prevent stripping by adding these materials into asphalt at low rates. Considering the cost of an entire asphalt superstructure, the use of these resistance-increasing materials does not bring quite extra costs. On the other hand, they also extend the lifetime of asphalt by acting as a good protector.

Stripping means the break of the bond between aggregate and bitumen. In some way, water enters between the aggregate and the bitumen. The reaction of the aggregate surface with water is greater than that with bitumen, so the bond will break.

The contact angle between water, aggregate and bitumen can be observed if a drop of bitumen is dropped on the aggregate surface and then immersed in water. The rate of occurrence of the stripping varies by temperature, aggregate type and viscosity and components of bitumen.

Wetfix BE

Wetfix BE is an anti-stripping liquid additive produced by Akzo Nobel Surface Chemistry especially for hot and warm-mix asphalt.

Specifications and Advantages

* It maintains its stability up to 5 days without losing its properties in hot bitumen.
* It minimizes water damage and cracks.
* It minimizes wheel tracks.
* It increases the adherence at perfect level.
* As it can be applied at -20 ° C to 0 ° C, it is easily added to bitumen also in cold weather.
* It complies with the Section 411 of the Technical Specifications for Highways.

Amount of Use

Wetfix BE has a low amount of use. Depending on the type of bitumen and aggregate to be used, it is used at a rate of 0.1% to 0.3% of the bituminous binder under normal conditions.

Packing and Storage

Wetfix BE can be supplied in barrels of 190 kg or in IBCs of 950 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature in a dry place.

Physical Properties and Specifications

Appearance at 20 ° C	Brown Liquid
Density, 20°C, kg/m³	980
Flash point, °C	>218
Viscosity, 20°C, mPa.s	800
pH, in water of 5%	11
Amine number mg HCL/g	160-185
Acid Value mg KOH/g	<10

Diamine OLBS

Diamine OLBS is a liquid additive material that improves the adherence between asphalt and aggregate, designed by Akzo Nobel Surface Chemistry to prevent stripping in surface treatments and asphalt mixtures. Thanks to its low viscosity and comfortable dosing advantage, it homogeneously spreads in hot bitumen or cutback even at cold temperatures.

Amount of Use

It is used at a rate of 0.1% to 0.3% of the binder for cationic emulsion, and at a rate of 0.1% to 1.0% of the binder for hot and warm asphalt mixtures.

Packing and Storage

DIAMINE OLBS can be supplied in barrels of 180 kg or in IBCs of 900 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature in a dry place.

Physical Properties and Specifications

Appearance at 20 ° C	Liquid
Density, 20°C, g/cc	0.92
Flash point, °C	>100
Viscosity, 20°C, mPa.s	110
Amine number mg HCL/g	140-155

Asphalt Emulsifiers

Redicote E-11

Redicote E-11 is an emulsifier produced by Akzo Nobel Surface Chemistry for cationic type, slow shearing bitumen emulsions used in adhesives, primers, slurry seal and cold mix applications.

Specifications and Advantages

Low amount of use: With low amount of use, high-quality slow shearing emulsions are achieved.

Excellent Adhesion: Emulsions made with Redicote E-11 provide excellent adhesion with limestone based aggregates.

No need for acid: Acid is not needed in the water phase. Emulsions can be prepared at normal pH levels.

It does not contain APE: Redicote E-11 does not contain alkylphenol ethoxylate.

Amount of Use

The amount of use for cationic slow shearing emulsions is 0.6% to 1.5% of emulsion. The pH of the emulsion should be 2-6 with the appropriate acid.

Packing and Storage

Redicote E-11 can be supplied in barrels of 170 kg or in IBCs of 900 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature.

Physical Properties and Specifications

Appearance at 25°C	Liquid
Density, 20°C, g/cc	0.90
Flash point, °C	18
Viscosity, 20°C, mPa.s	52
pH, propanol-water	6-9

Redicote E-11 HF

Redicote E-11 HF is an emulsifier produced by Akzo Nobel Surface Chemistry for cationic type, slow shearing bitumen emulsions used in adhesives, primers, slurry seal and cold mix applications. Its flash point is high compared to Redicote E-11.

Specifications and Advantages

Low amount of use: With low amount of use, high-quality slow shearing emulsions are achieved.

Excellent Adhesion: Emulsions made with Redicote E-11 HF provide excellent adhesion with limestone based aggregates.

No need for acid: Acid is not needed in the water phase. Emulsions can be prepared at normal pH levels.

It does not contain APE: Redicote E-11 HF does not contain alkylphenol ethoxylate.

Amount of Use

The amount of use for cationic slow shearing emulsions is 0.6% to 1.5% of emulsion. The pH of the emulsion should be 2-6 with the appropriate acid.

Packing and Storage

Redicote E-11 HF can be supplied in barrels of 200 kg or in IBs of 950 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature.

Physical Properties and Specifications

Appearance at 25°C	Liquid
Density, 25°C, g/cc	0.99
Flash point, °C	85
Viscosity, 25°C, mPa.s	270
pH, in 2-propanol-water of 5%	6-9

Redicote EM 44

Redicote EM 44 is a liquid emulsifier produced by Akzo Nobel Surface Chemistry for cationic type, rapid and medium shearing bituminous emulsions (CRS1, CRS2) which are generally used in adhesive layer and surface treatment applications.

Specifications and Advantages

Low amount of use: With low amount of use of 0.12-0.22%, high-quality rapid shearing emulsions are achieved.

Quality emulsions with high storage stability: With Redicote EM 44, quality emulsions with high storage stability are achieved.

Medium/low viscosity with low amount of use: Low or medium viscosity emulsions are achieved with low amount of use.

Amount of Use

0.12% to 0.22% at pH 1.5-3.5 HCI for
cationic rapid shearing emulsions, and
0.25% to 0.60% at PH 1.5-3.5 HCI for
cationic medium shearing emulsions
Slurry and Microsurfacing
0.80% to 1.50% – pH 2-3 Phosphoric Acid

Packing and Storage

Redicote EM 44 can be supplied in barrels of 180 kg or in IBCs of 900 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package.

Physical Properties and Specifications

Appearance at 20 ° C	Liquid
Density, 20°C, g/cc	0.93
Flash point, °C	>100
Viscosity, 20°C, mPa.s	450

Redicote E-4875 NPF

Redicote E-4875 NPF is an emulsifier produced by Akzo Nobel Surface Chemistry for cationic type, slow shearing bituminous emulsions and grave emulsions which are used in slurry seal, stabilization and cold recycling applications.

Specifications and Advantages

Low amount of use: For most applications, the use of 0.8 to 1.2% is sufficient.

Proven performance: Its performance has been proven in wide areas of application.

Comfortable mixtures without solvent: Dense aggregate mixtures provide comfortable working and coating performance with recycled materials.

Environmentally conscious: Redicote E-4875 NPF does not contain nonylphenol ethoxylate.

Amount of Use

The amount of use for cationic slow shearing emulsions is 0.8% to 2.0%. The pH of the emulsion should be 2-5 with the appropriate acid. The quality of emulsion will increase in case 0.1 to 0.3% of CaCl is used.

Packing and Storage

Redicote E-4875 NPF can be supplied in barrels of 210 kg or in IBCs of 1000 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature.

Physical Properties and Specifications

Appearance at 25°C	Dark Liquid
Density, 20°C, g/cc	1.07
Flash point, °C	>100 (ISO 2592)
Viscosity, 20°C, mPa.s	1200
pH, in water of 1%	11

Redicote E-47 NPF

Redicote E-47 NPF is an emulsifier produced by Akzo Nobel Surface Chemistry for bitumen, TOP and resin based nonionic type, slow shearing emulsions.

Specifications and Advantages

Low amount of use: High-quality emulsions are achieved with the low amount of use of 0.9 to 1.4%.

Super stable emulsions: Emulsions made with Redicote E-47 NPF have high stability.

Wide pH range: Nonionic emulsions have a wide pH range and can be combined with both cationic and anionic emulsifiers.

Environmentally conscious: Redicote E-47 NPF does not contain nonylphenol ethoxylate.

Amount of Use

For cationic slow shearing emulsion structures:
1.4 to 1.8% – pH 2-6 Hydrochloric Acid.
For anionic slow shearing emulsion structures:
0.9 to 1.4% – pH 7-12 Sodium Hydroxide.

Packing and Storage

Redicote E-47 NPF can be supplied in barrels of 204 kg or in IBCs of 1089 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature.

Physical Properties and Specifications

Appearance at 25°C	Liquid
Density, 20°C, g/cc	1.09
Flash point, °C	>100
Viscosity, 20°C, mPa.s	2100
pH, in water of 1%	5-6.5

Warm Asphalt Mixture Additives

Rediset LQ-1102CE Warm Asphalt Mixture Additive

Rediset LQ-1102CE is an additive produced by Akzo Nobel Surface Chemistry for hot and warm mixtures and thanks to its heat stability, it both allows decreasing the mixture and spread, compression temperatures and provides resistance to stripping.

Specifications and Advantages

Active Adhesion: The Rediset LQ-1102CE added bitumen has the ability to coat aggregates comfortably at low temperatures.

Heat stability: It maintains its performance in hot bitumen.

Workability and easy spread effect: It allows workability of mixture at low temperatures and comfortable spread, and thus the spread at low temperatures and fast spread.

Moisture Resistance: With Rediset LQ-1102CE additive, the mixtures with excellent adhesion and moisture resistance are achieved. There is also no need for anti-stripping additives.

Amount of Use

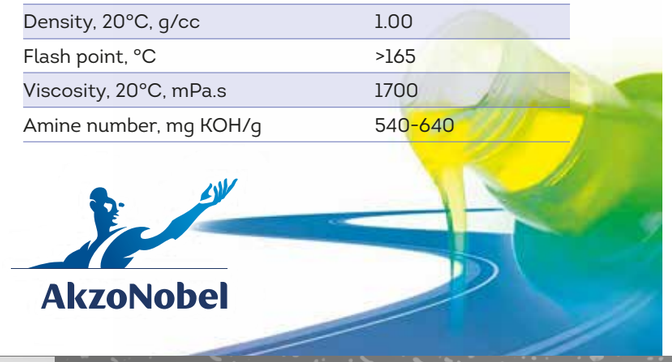
The amount of use in hot and warm mixtures is 0.3 to 1.0% of the binder.

Packing and Storage

Rediset LQ-1102CE can be supplied in barrels of 200 kg or in IBCs of 950 kg. It does not lose its properties for a minimum of 2 years as long as it is stored in its original package at room temperature.

Physical Properties and Specifications

Appearance at 25°C	Liquid
Density, 20°C, g/cc	1.00
Flash point, °C	>165
Viscosity, 20°C, mPa.s	1700
Amine number, mg KOH/g	540-640



BITUMEN BASED INSULATION EMULSIONS AND SOLUTIONS

Bituminous insulation emulsions are bituminous binders that are formed by dissolution of the bitumen particles in water with the help of an emulsifier.

Bituminous solutions are mixtures obtained by mixing the bitumen with the additives by using special methods.

Bituminous emulsions and solutions are used as primers for waterproofing or as intermediate products for bitumen based liquid insulation products.

Anionic Bitumen Emulsion (ENEM 600)

ENEM 600 is anionic bitumen emulsion which is formed by dissolution of water in a certain amount of bitumen in invisible small particles with special methods. On the area where it is applied to, it creates a waterproof black layer increasing adhesion strength with the evaporation of the water in it.

ENEM 600 is used as a basic component in bitumen based single and binary component waterproofing products.

Areas of Use of Waterproofing Products Produced with ENEM 600

* As a moisture-proof material in foundation and basement walls of buildings,
* As a waterproofing material in dry or moist details such as terrace, roof, kitchen, bathroom, etc.,
* As a primer under bituminous coatings,
* As a priming material and binder in applications such as fiberglass, canvas, etc.,
* As an impermeability and adherence-enhancing additive in mortars and plasters formed with cement and/or fine sand,
* As a mould release agent preventing resilience and deterioration of construction moulds due to their contact with water.

Liquid membrane application produced with ENEM 600

Product's Technical Data

Respective Standard	: TS 113
Public works item no.	: 04.611
Customs Tariff Statistics Position (GTIP) No.	: 2715.00.00.00.00
Basis	: Bitumen
Thinner	: Water
Color	: Brown in package, black after drying.
Package	: Metal Bin of 17 kg / Sheet Metal Barrel of 220 kg / IBC of 1000 kg

Technical Specifications

Test	Method/std	Unit	Tolerance	Value
Density	TS 113	G/cm³	± 0.03	1.01
Viscosity	ASTM D4402-87	CP	± 40	245
Distillation (0-225 °c)	TS 122	%	Min.	35
Distillation (225 °c-360°c)	TS 122	%	Max.	65
Residual Penetration (25°c)	TS 118	DMM	–	20-50
Heat Test (100 ± 3°c)	TS 113	There should be no residue / flow / heave		
Dry Time 1-touch 2-through-dry 3-test	TS 113			1 h 5-6 h 8 h

Xylene-containing Bitumen Solution (ENEM 300 M)

ENEM 300 M is a bitumen solution, the bitumen properties of which have been improved with resilience increasing additives and which does not contain any filling material. With the evaporation of the Xylene in it, it strongly adheres to the surface where it is applied to and it creates a high-resistant durable film layer.

It is used as a production input raw material in the production of polyurethane/acrylic based single and binary component insulation products.

Its content may vary according to the requests of manufacturers.

Areas of Use of Waterproofing Products Produced with ENEM 300 M

* With the application to the lateral surfaces of buildings, preventing water and moisture and preventing blister, paint deterioration and mold formation on the walls of inner surfaces,
* Protecting metal surfaces against corrosion,
* With the application to a metal surface that is under or above the soil, preventing decomposition,
* With its use together with fiberglass net and bitumen sheet, creating a waterproof layer,
* Insulating external surfaces that are in contact with the soil,
* Insulating tunnels, drainage and waste water channels and collectors.

Foundation insulation application with PU/acrylic based insulation material produced with ENEM 300 M

Product's Technical Data

Respective Standard : TS 103
Public works item no.: 04.614
Basis : Bitumen/rubber and polymers on request
Thinner : Xylene
Color : Black
Package : Sheet Metal Barrel of 220 kg

Technical Specifications

Test	Method/Std	Unit	Tolerance	Value
Density	TS 113	Gr/cm³	±0,03	0,98
Viscosity	ASTM D4402-87	CP	±30	245
Distillation (0-225 °c)	TS 122	%	Min.	35
Distillation (225 °c-360°c)	TS 122	%	Max.	65
Residual Penetration (25°c)	TS 118	DMM	–	20-50

POLYURETHANE BASED INSULATION PRODUCTS

Polyurethane based insulation products are suitable for joint applications on the surfaces such as concrete, steel, wood, epoxy, polyurethane, etc.

he adhesive force and abrasion resistance of the polyurethane based joint fillers are high.

Polyurethane Based Joint Filler Primer (ENEM PUR-AST)

ENEM PUR-AST is a polyurethane based, single component primer produced for topcoats and joint filler compounds. It is suitable for applications on the surfaces such as concrete, steel, wood, epoxy, polyurethane, etc. It can also be used as surface hardener and dustproofing agent for concrete coatings.

Areas of Use

ENEM PUR-AST is used as primer before the application of the polyurethane joint filler ENEM PUR.

Primary Areas of Use

* On airports, aprons and runway areas, parking lots,
* At shipyards and ports, gas stations, and all concrete floors of refineries,
* In military areas,
* In industrial areas,
* In joints of asphalt and concrete roads and for repair of cracks,
* On surface joints of bituminous and concrete floors,
* On all concrete floor surfaces under the influence of oil, fuel and various chemicals.

Polyurethane Based Joint Filler (ENEM PUR)

ENEM PUR is a polyurethane and tar based, binary component, solvent-free, cold-mix, self-spreading joint filler resistant to jet fuels for concrete surfaces.

It is suitable for applications on the surfaces such as concrete, steel, wood, epoxy, polyurethane, etc.

Technical Specifications

Color	Black
Curing speed (22 °C) h	12
Hardness (according to Shore A, +/- 5)	5-35
Application Temperature °C	5-40
Tensile Strength Kg/cm²	15
Resilience %	~200
Specific Gravity kg/m3	1.40
Min-Max joint depths mm	10-30
Expansion ratio (joint width / depth ratio)	1 / 1-1.5

PROJECTS AND REFERENCES

ENFALT combines its knowledge and experience of about half century with its technical competencies and innovative solutions, and provides added value to the national economy with the projects it successfully completed as a contractor.

Meeting the needs of its own projects in the asphalt and emulsion production facilities it established in various cities of our country, **ENFALT** also provides supply services to the domestic and foreign companies and also provides consultancy services to the industry.

ENFALT has been committed to providing its customers with the service of high quality and international standards in a wide range of areas with its contracting services range including hot bituminous mixture, emulsion and bituminous surface treatment, polymer modified bitumen, repair, concrete road, tunnel insulation and waterproofing applications.

Some of Our Important Projects and References

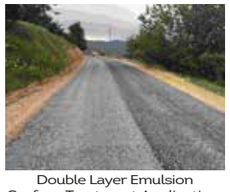
Hot
Bituminous Mixture Application,
Samsun 2017

Double Layer Emulsion
Surface Treatment Application,
K.Maraş 2017

Modified Bitumen Based
Waterproofing Application,
İstanbul 2017

Concrete Road Application,
Samsun 2017

Polymer
Modified Bitumen Application,
Eskişehir 2017



Double Layer Emulsion
Surface Treatment Application,
K.Ereğli 2017

Hot Asphalt Joint Filler Application, 1. Region of General Directorate of Highways 2015-2017

Bituminous Emulsion
for Concrete Pipes,
Istanbul 2017

Emulsion and Chemicals Supply
to 3. Airport and its Contractors
Istanbul 2016-2017

Bituminous and Double Layer
Emulsion Surface Treatment
Application, Samsun 2016

Bituminous
Surface Treatment Application,
Eskişehir 2016

Bituminous and Double Layer
Emulsion Surface Treatment
Application, Çarşamba 2016

Asphalt Repair Application,
Muğla 2015

Hot
Bituminous Mixture Application
Eskişehir 2016

Bituminous Mixture
Application,
Adana 2015

Bituminous Mixture
Application
Aydın 2015

Double Layer Emulsion
Surface Treatment Application,
Pozantı-Tufanbeyli 2014

Erosion Control with Geogrid,
Olympic Village
Izmir 2004

AnkaRay PE Membrane
Insulation Application,
Ankara 1992

Torul Tunnel
Insulation Application,
Gümüşhane 1978

ENFALT
Emülsiyon ve Asfalt Tesisleri A.Ş.

We Work to Be the Best
in the Road and Insulation Industry...

We Attach Importance to Quality