

## The Use of Bitumen Waste Oil to Coating Car Park (Review)

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### Abstract

The research indicates that the use of bitumen is one of the residues of oil refining, made of plastic with tar, which increases its use of power and at the same time gives good stability to the asphalt concrete at high temperatures, and is used in the coating of parking.

The recycling of bitumen leads to a reduction in the cost of oil refineries to produce deeper refining, leading to deterioration of the physical and chemical properties of oil tar, and as a result, lead to a decrease in the quality of oil tar.

Today, the expansion of raw materials for road bitumen production can be achieved through the use of by-products, construction waste, bitumen recycling,

**Key words:** Waste, Asphalt binder, Recycling, Reuse, Tar, Mastic.

### Introduction

Bitumen is a substance extracted naturally or from distillation of petroleum oil. It is found in its natural form mixed with dust and volcanic rocks known as asphalt. Asphalt is a mixture of bitumen, some exotic materials and some stones.

Bitumen is a pure substance that is not mixed with any material. When oil is discovered and oil is extracted from it, the bitumen is known as it can extract more solvents and volatiles to obtain different types of bitumen suitable for all purposes and for all cold and warm climates.[1]

The growth rate of road transport in many regions of Iraq is quite high, and the quality of the road surface is rather low.

Recycling construction waste is acute throughout the civilized world. According to the European Association for the Demolition of Buildings, established in 1977, every year on the planet about 2.6 billion tons of construction waste is generated, including 180 million tons in Europe. [2]

### To date, there are two ways of disposal of construction waste:

- burial in specially designated landfills and dumps;
- full processing using special crushing equipment. [2]

Until recently, in the overwhelming majority of Iraq , the disposal of construction waste was carried out according to the first option, but, in essence, this is just a postponement of the solution of the problem for tomorrow. In addition, this method of disposal creates major environmental problems. [2]

Abroad, the problem of waste disposal is solved systematically at the state level: in some countries construction waste dumps are banned altogether, while in America there exist, in principle, landfills, but their size is significantly limited by the fact that the cost of dumping waste significantly exceeds the cost of recycling.[3]

To solve the problems that arise with the formation of such a quantity of waste is possible only by organizing their large-scale processing. In Europe, already now the share of construction waste recycling averages about 45% of the total volume. Due to the improvement of technology and legislation, Denmark, the Netherlands, Sweden, where in more than 85% of such wastes are currently being processed. In Germany, the recycling industry has a half-century history. More than 390 factories processing debris operate there.[3]

In Iraq, until 1994, construction waste was practically not disposed of. Their main mass was distributed to waste storage sites. The situation began to change radically the last 10-15 years. The volume of construction waste began to increase rapidly since 2000 due to the rise of the construction industry.[2]

For example, in 2004 only commercial orders received approximately 1 million 50 thousand tons of construction and demolition waste, including bitumen-roofing waste. [4]

In order to reduce the harmful effects of waste on the environment and increase the efficiency of collection and subsequent processing of bitumen-containing waste, which defined measures for organizing the production of commercial products based on recycling of bitumen-roofing waste. [4]

The long-term target program of Iraq "Utilization and disposal of production and consumption waste in the Iraq region for 2012–2020 would be approved . The goal of the Program is to ensure environmental safety and prevent the harmful effects of industrial and consumer waste on the environment and human health, and to draw waste into economic circulation as additional sources of raw materials in the interests of sustainable development of Iraq. The results of the program are an increase in the number of used neutralized waste in the total volume of waste generated in Iraq in the process of production and consumption up to 65%; construction of 8 waste recycling and 2 waste sorting complexes, 2 waste handling stations an increase in the number of municipal areas and urban districts covered by social activities in the field of safe waste management. [4]

#### **Four generations of roofing materials can be distinguished:**

1. Generation - ordinary roofing felt, rolled roofing.
2. Generation - deposited ruberoid on a cardboard basis.
3. Generation - bituminous materials on putty resistant bases made of synthetic or glass fibres.
4. Generation - bitumen-polymer materials on rotting resistant bases.[5]

At present, materials of the third and fourth generations almost everywhere displace materials of the first and second generations, in connection with which there was a problem of rational use of the waste roofing materials that need to be removed from working surface before applying a new material. [5]

The development of roofing mastic on the basis of secondary bitumen is due to the accumulation on the roofs of buildings of a significant mass of old, destroyed flowing roofing carpets on a bitumen basis. Further layering repair becomes unacceptable due to low efficiency and achievement of the critical mass of the old carpet. [5]

#### **Therefore, it is necessary to dismantle the old coating.**

The processing of the bitumen-containing crumb obtained after shredding the ruberoid carpet can be done in various ways, depending on what the final material is required to obtain. [5]

When fusing bitumen-containing crumbs with construction oil bitumen in various proportions in the installation, it is possible to prepare bitumen's of construction oil with fibrous filler of the BNN 50/50, BNN 70/30, BNN 90/10 grades. Bitumen's are allowed for use for repair and construction works in roofing. [3]

For a long time typical flat combined roofs with roofing bitumen roofing were erected on buildings and structures, the volume of which was 75-80% of the total volume of all erected roofs. Currently, such roofs consist of 10-12 layers, this is 50-60mm, of which 15 mm is poured back during waterproofing works, a small part is used in the manufacture of bitumen mastic. Thus, with the use of soft roof repair waste in waterproofing works, up to 17% of the secondary binder can be utilized. [5]

The remainder of the soft repair waste roofing can be applied in road construction

The greater the evaporation of volatiles, the greater the bitumen hardness. On this basis, the different types of bitumen can be classified according to the degree of rigidity. Therefore, the machines used to measure this hardness or liquidity. Bitumen can be divided into three main sections:

1. Rapid sclerosis Rc
- 2 - Medium Sclerosis Mc
3. Slow Sclerosis Sc

When heating the bitumen in the asphalt mixing stations, the temperature that should not be reached should be known, and then the resulting fumes can be ignited. Until the temperature reaches 160, with the continued heating note the emergence of flame over the surface of bitumen at the flame of the torch and this means that the fumes have burned and let it burn for at least 5 seconds, to soften the bitumen steel.[1]

### **Conclusions:**

Bitumen samples used for roofing houses have been collected as waterproofing materials, or as a damping agent for roofs of houses, buildings or building foundations. The bitumen was recycled at 150 ° C to obtain the liquid state and then paint the car positions, reducing the consumption of bitumen resulting from oil production on the one hand and reducing the waste used and its negative impact on the environment.

### **CONFLICT OF INTERESTS.**

- There are no conflicts of interest.

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## استخدام نفايات البيتومين (القيير) في طلاء مواقف السيارات

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### الخلاصة:

يتضمن البحث على أن استخدام مادة البيتومين (القيير) أحد مخلفات التكرير النفطي، المصنوع من البلاستيك مع القطران، حيث يزيد استخدامه من القوة وفي الوقت نفسه يعطي ثباتية جيدة للخرسانة الإسفلتية في درجات الحرارة العالية، ويستخدم في الطلاءات الخاصة بمواقف السيارات.

ان إعادة تدوير البيتومين تؤدي الى التقليل في تكلفة مصافي النفط إلى إنتاج تكرير أكثر عمقاً، مما يؤدي إلى تدهور الخصائص الفيزيائية والكيميائية لقطران النفط، ونتيجة لذلك، يؤدي إلى انخفاض في جودة القار النفطي.

اليوم، يمكن تحقيق توسيع قاعدة المواد الخام لإنتاج البيتومين على الطرق من خلال استخدام المنتجات الثانوية ونفايات البناء وإعادة تدوير القار (البيتومين).

**الكلمات الدالة:** النفايات، الموثق الأسفلت، إعادة التدوير، إعادة الاستخدام.