The invention relates primarily to a process for the manufacture of a new organo-metallic compound, having industrial value.

The process according to the invention consists in treating with methyl iodide in the presence of anhydrous ether, a special magnesium-calcium alloy containing these two metals in atomic proportions. The reaction takes place immediately without requiring any other addition and an organo-magnesium-calcium compound is obtained according to the formula:

\[ \text{Mg} \left( \text{CH}_3 \right)_2 \text{Mg} \left( \text{C}_6 \text{H}_5 \right)_2 \text{O} \right) \right] \text{Ca} \]

This compound in solution in ether conducts electricity, its odour is disagreeable, different from that of magnesium derivatives. It is decomposed violently by water.

When treated with benzaldehyde it yields methyl-phenyl-carbinol with a yield of 67%, while by the present process this industrial alcohol can only be obtained with a yield of 10%.

When treated by benzoyl chloride it gives dimethyl-phenyl-carbinol with a yield of 52.5% which is likewise of very great interest having regard to the yield of the present process.

The following is a non-limiting example of the carrying out of the invention.

1130 kg. of Mg and 1870 kg. of Ca in pieces are melted while protected from air in a hermetically sealed receptacle maintained at a temperature considerably above 700°C, for about a quarter of an hour.

After complete cooling an alloy of magnesium and calcium in atomic ratio is collected having the following approximate composition:

<table>
<thead>
<tr>
<th>Percent</th>
<th>Ca</th>
<th>Mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>62.5</td>
<td></td>
<td>37.5</td>
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</table>

3.2 grams of this alloy are placed in a receptacle under a layer of 75 ccs. of anhydrous ether. On this is poured a solution of 15 grams of methyl iodide in 75 ccs. of ether. The reaction starts at the first drop but without violence. It is complete at the end of 30 minutes. The organo-metallic compound is then precipitated for the greater part in the form of a greyish sludge. Then the product is heated on the water-bath at 50°C for about 30 minutes. In the receptacle there remains no alloy which has not reacted, the yield is thus quantitative.

If, with the organo-magnesium-calcium compound thus obtained, it is desired to make methyl-phenyl-carbinol, \( \text{CH}_3 \text{CHOH} \text{C}_6 \text{H}_5 \), there are allowed to run for example upon the organo-metallic compound obtained 10 grams of benzaldehyde, \( \text{C}_6 \text{H}_5 \text{CHO} \), drop by drop at the beginning and more rapidly towards the end, the period of pouring varying from 15 to 17 minutes. The reaction is rapid but not dangerous. The product is then heated on the water-bath to 50°C for about 30 minutes. The isolation of the alcohol is effected according to a current method by taking up with ice, by sulphuric acid, decantation, distillation and rectification. The alcohol obtained weighs 7.7 grams, the yield is thus 67%. Care should be taken to add a trace of hydroquinone to prevent in know manner the formation of styrolene.

If with the organo-magnesium-calcium compound thus obtained it is desired to make dimethyl-phenyl-carbinol

\[ \text{CH}_3 \text{CHOH} \text{C}_6 \text{H}_5 \text{C}_6 \text{H}_5 \text{OH} \]

there are allowed to run for example upon the organo-metallic compound 6.85 grams of benzoyl chloride, \( \text{C}_6 \text{H}_5 \text{COCl} \). The weight of alcohol obtained is 5.3 grams, or a yield of 83.5%.

The present invention likewise concerns by way of new industrial product the magnesium-calcium alloy containing these two metals in atomic ratio.

What I claim is:

1. The process for the manufacture of an organo-metallic compound consisting in treating with methyl iodide in the presence of anhydrous ether, a magnesium-calcium alloy containing the said metals in atomic ratio.

2. An organo-metallic compound of the formula:

\[ \text{Mg} \left( \text{CH}_3 \right)_2 \text{Mg} \left( \text{C}_6 \text{H}_5 \right)_2 \text{O} \right) \right] \text{Ca} \]

3. The process for the manufacture of an organo-metallic compound consisting in treating with a solution of methyl-iodide in anhydrous ether, a magnesium-calcium alloy containing the said metals in atomic ratio.

4. The process for the manufacture of an organo-metallic compound consisting in treating a magnesium-calcium alloy containing the said metals in atomic ratio under a layer of anhydrous ether, by means of a solution of methyl-iodide in anhydrous ether.

5. The process for the manufacture of an organo-metallic compound which consists in causing to act on a magnesium-calcium alloy in atomic ratio covered by anhydrous ether, a solution of methyl iodide in ether, the quantities of
the said materials being a common multiple of respectively 3.2 grams, 75 cubic centimeters, 15 grams and 75 cubic centimeters.

6. The process for manufacturing an organo-metallic compound which consists in causing methyl iodide to act in the presence of anhydrous ether on a magnesium-calcium alloy containing said metals in atomic ratio, and in heating the product of the reaction in a water bath until it contains only the said organo-metallic compound.

7. The process for manufacturing an organo-metallic compound which consists in causing methyl iodide to act in the presence of anhydrous ether on a magnesium-calcium alloy containing said metals in atomic ratio, and in heating the product of the reaction in a water bath until it contains only the said organo-metallic compound.

8. The process for manufacturing an organo-metallic compound which consists in placing a body of a magnesium-calcium alloy containing said metals in atomic ratio in a receptacle under a layer of anhydrous ether and in pouring onto this a solution of methyl iodide in anhydrous ether.

CLÉMENT DUVAL.