〈技術資料〉

# 脂肪族二液型ポリウレア塗料処方の最適化と塗料分野への適用

## Aliphatic Two-Component Polyurea System Formulation Optimization and Its Adoption in Coatings

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**Abstract**

Nowadays aliphatic Two-component（2K）polyurea coatings based on polyaspartic acid ester and polyisocyanates are often adopted in various coating applications such as floor coatings, metal coatings, corrosion protective coatings and auto refinish coatings. The driving force of the adoption are fast drying for high-throughput or application process reduction, high solid formulation for VOC reduction, high film thickness for reducing number of coatings layers and good weatherability similar to 2K polyurethane coatings.

The unique reactivity of aliphatic 2K polyurea coatings makes their reaction kinetics more independent of temperature compared to conventional 2K polyurethane coatings. However aliphatic 2K polyurea coatings are more sensitive to moisture in the atmosphere so that it needs formulation techniques to balance potlife and drying properties in various coatings formulations.

This paper provides basic technical information from the view points of key components selection of polyaspartic acid ester and polyisocyanates, water scavenger, acid compounds, tin-containing compounds, polyols and solvents to optimize aliphatic 2K polyurea coatings formulation.

**キーワード**：脂肪族2液型ポリウレア塗料、ポリイソシアネート、速乾性、厚膜塗装性、ハイソリッド
**Keywords**：Aliphatic Two-component polyurea coatings, polyisocyanates, fast drying, high film build up, high solid

### 1.　はじめに

アスパラギン酸エステルとポリイソシアネートからなる脂肪族二液型ポリウレアシステムは、既に塗料分野で採用が始まっている。本稿では、当該塗料処方を検討するにあたっての留意点と塗料分野への適用事例について述べる。

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### 2.　脂肪族二液型ポリウレア塗料用原材料

#### 2.1　アスパラギン酸エステル

アスパラギン酸エステルは、コベストロ社より「デスモフェン®NH」として上市され、**図1**の化学構造式に示されるように立体障害のある二級アミンで、主骨格Xの選択により、反応性と物性が大きく異なり、塗料設計での注意が