# NUCLEATING AGENT-SODIUM BENZOATE (TWIM)

## Introduction

Demands to create smaller, lighter parts have made thin-wall molding one of the most sought after capabilities for an injection moulder. Thin wall injection moulding is a specialized form of conventional injection moulding that focuses on mass-producing plastic parts that are thin and light so that material cost savings can be made and cycle times can be as short as possible. Shorter cycle times means higher productivity and lower costs per part.

The definition of thin wall is really about the size of the part compared to its wall thickness. For any particular plastic part, as the wall thickness reduces the harder it is to manufacture using the injection moulding process. The size of a part puts a limit on how thin the wall thickness can be. For packaging containers & portable electronics parts thin wall means wall thicknesses that are less (1mm) whereas for large automotive parts, "thin" may mean 2 mm.

## Applications

1. Food packaging (e.g. Food containers and lids)
2. Automotive (e.g. both structural and non-structural car parts)
3. Mobile telecommunications (e.g. Mobile phone housings)
4. Medical (e.g. Syringes)
5. Computing equipment (e.g. Computer housings)

## Benefits

1. Cheaper than organic nucleating agents.
2. Stable over wider temperature range
3. Stable for high pressure moulding conditions.
4. Better performance at reduced cycle time.
5. Clarity and Transparency not affected.
6. Enhanced product stiffness even when wall thickness is reduced considerably
7. Increase in crystallisation temperature by almost 15 degrees C thereby reducing cycle time
8. Unlike fast melting nucleating agents, Sodium Benzoate reduces the possibility of introduction of freeze stresses into a part, which later can cause dimensional instability
9. Sodium Benzoate SF grade also reduces the possibility of sudden shrinkage in moulded part which can cause difficulties for ejection of moulded parts.

Homo, and co-polymers specifically produced for Thin Wall Injection moulding applications.

The typical dosage is around 0.1-0.3 %.

## 3.0 Requirements of resin

Plastic resins suitable for thin-wall molding should have high-flow properties, particularly low melt viscosity. In addition, they need to be robust enough to avoid degradation from the heat generated by high shear rates (high injection speeds). Some plastic manufacturers make plastics specifically for thin wall applications that have excellent flow properties inside the mould cavity.

due to difference in the crystallisation temperatures of polymer and organic nucleating agent leading to uneven shrinkage (shrinkage isotropy, overall shrinkage, and dimensional performance).

## Specifications

| Test | Specification | Test Method |
|---|---|---|
| Appearance | White Powder free from visible contamination | Visual |
| Purity (on Na content basis) | > 99 % | By AAS |
| Moisture Content | < 1.5 % | Oven drying at 105 Deg C |
| Acidity /Alkalinity | 1 gm sample requires max 0.2 ml of 0.1 N HCl or NaOH soln | By Titration |
| Heavy metals | max 20 ppm | Atomic Absorbtion / ICP |
| Arsenic | max 3 ppm | Atomic Absorbtion / ICP |
| Particle size (MN) D10 | <3-5 Microns | Particle size Analyser |
| Particle size (MN) D50 | <15 Microns | Particle size Analyser |
| Particle size (MN)D90 | <30 Microns | Particle size Analyser |
| Particle size (SF) D95 | <10 Microns | Particle size Analyser |

## Product FDA Status

Sodium Benzoate Micronised is approved for use in food contact polymer as per the following chapter headings.

| Title | 21 - Food and Drugs |
|---|---|
| Chapter | I - Food and drug administration, department of health and human services |
| Sub Chapter | B - Food for human consumption |
| Part | 184 - Direct food substances affirmed as generally recognized as safe |
| Sub Part | B - Listing of Specific Substances Affirmed as GRAS |
| Section | 184.1733 - Sodium benzoate |

Polymer Add (Thailand) Co; Ltd.

106, Chalaremprakiat, Lor 9, Soi 22, Yak 5,Nongbon, Prawet,Bangkok ,Thailand,10250
**Phone:**0804531391
**Email:** contact@polymeradd.co.th **Website:**www.polymeradd.co.th