

# EXPERIENCE UNRIVALED

## HOT MELT EXTRUSION

**AbbVie Contract Manufacturing offers proprietary hot melt extrusion technology in both the US and Europe.** Our Ludwigshafen, Germany location offers development and commercial production, while our Barceloneta, Puerto Rico facility offers further commercial production capabilities. Hot melt extrusion is a robust process that offers continuous processing capabilities for a more economical manufacturing method serving poorly-soluble APIs, potent APIs, abuse deterrence, taste masking, and solvent-free formulations.

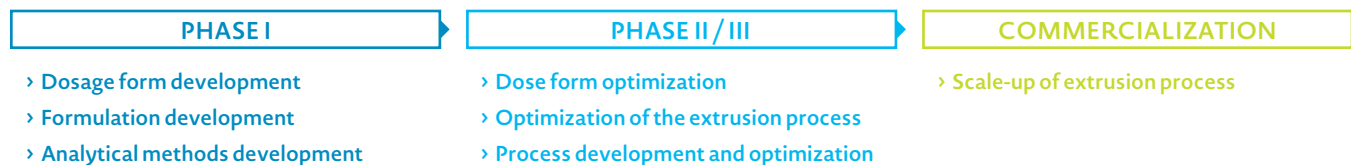
### HOT MELT EXTRUSION (HME) CAPABILITIES

#### Advantages

- › Once developed, it's an extremely robust process
- › Very stable product
- › Continuous processing capabilities for a more economical method of manufacturing
- › Ease of scalability of the extrusion process

#### Dosage Forms

- › Controlled & modified release
- › Tablets
- › Multi-layer tablets
- › Capsules



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### THE ABBVIE ADVANTAGE

#### Development Services

- › Analytical
- › HME formulation
- › HME process development
- › Scale-up from 18mm to 70mm extruder
- › Associated dosage forms

#### Commercial Manufacturing

- › 18mm – 70mm extruders
- › Continuous processing
- › Manufacturing sites in the US and EU
- › HME and tableting / capsules at commercial scale

#### Capabilities

- › Pilot to commercial scale
- › Expertise in tableting / encapsulation, potents, and modified release

#### Benefits

- › Improved bioavailability of the pharmaceutical active ingredients
- › Precisely timed and delayed release can be reached
- › Excellent integration of difficult-to-dissolve APIs
- › Enhancement of solubility / bioavailability for poorly-soluble drugs
- › Support for good process control and scalability
- › Ability to add taste masking

#### Experience

- › Integrated development and commercial manufacturing for HME and all associated dosage forms
- › More than 10 years of HME experience in both development and commercial manufacturing