



# Drawing / Forming Die Material - Die Ace

A special hardened copper alloy casting designed to eliminate galling and scoring in harsh drawing and forming applications.



- Superior wear resistance and the material's lubricity makes for longer die life.
- Material can be TIG welded to aid in alignment and maintenance (machining errors, galling/scoring, design changes, etc.)
- Exceptional thermal conductivity and ability to drastically reduce galling/scoring to both the panel and the die.
- Casting to form reduces machining time and material cost.
- Sankyo's proprietary formula has resulted in a proven and unique special hardened copper alloy.  
Die Ace will provide you with increased production efficiencies, lower maintenance costs and longer tool life.



# Types and Features of Die Ace

To order, Please call Sankyo Oilless USA at (586)254-3100. Our sales representative will assist you.

## SO330

Suitable for typical drawing and forming applications.

## SO350

High hardness which is most suitable for drawing stainless and high tensile steel.

## SO390 **NEW**

Easier to machine but still highly suitable for drawing and forming under harsh conditions.

### Mechanical Properties

	SO330	SO350	SO390
Hardness HB	280~300	330~340	270~290
Elongation %	1 or more	0.5 or more	0.5 or more
Tensile Strength N/mm <sup>2</sup>	850~950	780 or more	600 or more

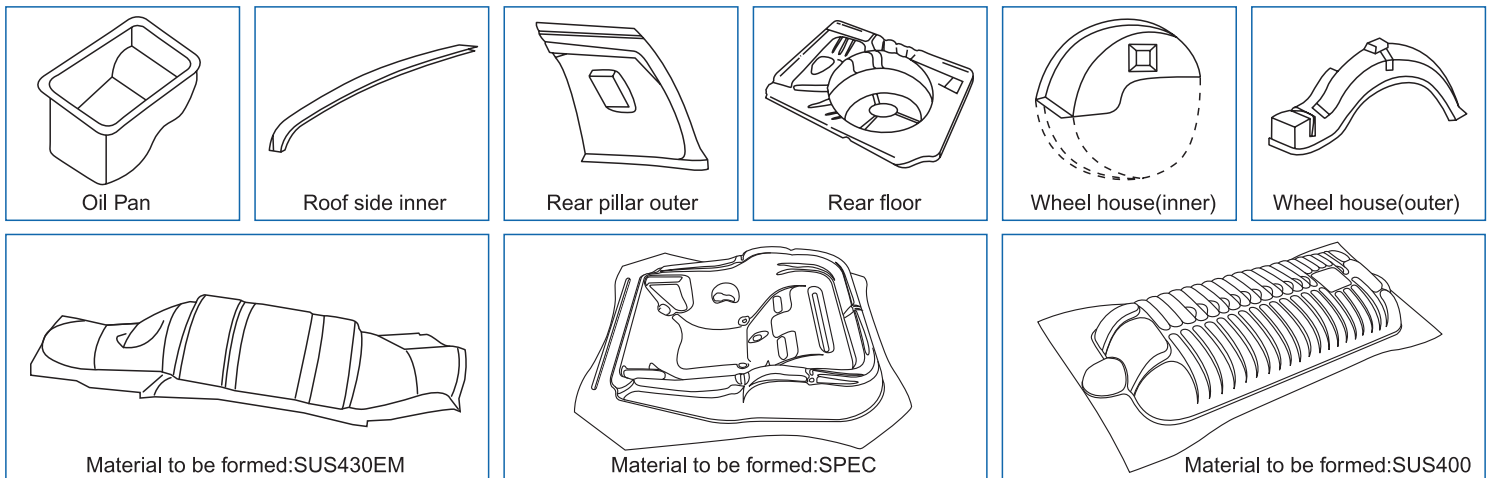
### Physical Properties

	SO330	SO350	SO390
Specific Gravity g/cm <sup>3</sup>	7.6	7.6	7.2
Linear coefficient 10 <sup>-6</sup> /°C	1.70	1.70	1.71
Thermal Conductivity cal/cm·sec	0.13~0.15	0.20	0.11~0.12
Melting Point °C	985~1040	985~1040	960~1030
Modulus of Longitudinal Elasticity Gpa	135	135	145

### Machining Conditions

	Cutter	Machining Conditions		
			SO330 / SO350	SO390
Drilling	Carbide tool	Speed m/min	20~40	35~40
		Feed mm/rev	0.10~0.15	0.10~0.15
Milling	Rough: Ball nose (Carbide insert)	Speed m/min	70~80	125~150
		Feed mm/rev	0.10~0.15	0.50~0.80
		Cut mm	1.00~2.00	1.00~2.00
	Finish : Ball nose (Carbide insert)	Speed m/min	150~160	150~160
		Feed mm/rev	0.05~0.10	0.10~0.20
		Cut mm	0.20~0.50	0.20~0.50
End milling(side machining)	Rough (Carbide insert)	Speed m/min	20~40	250~350
		Feed mm/rev	0.15~0.25	0.15~0.25
		Cut mm	1.00~2.00	3.50~5.00
	Finish (Carbide insert)	Speed m/min	20~40	150~180
		Feed mm/rev	0.05~0.10	0.05~0.10
		Cut mm	0.05~0.10	0.05~0.10
Tapping	High Speed Steel	Speed m/min	1~2	1~2
Reaming	High Speed Steel	Speed m/min	1~3	10~15
		Feed mm/rev	0.05~0.10	0.10~0.15

### Application Examples



**SANKYO OILLESS INDUSTRY(USA) CORP.**

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Visit us at [www.sankyo-oilless-usa.com](http://www.sankyo-oilless-usa.com)