MATERIALS

BETE manufactures nozzles in hundreds of different materials and combinations of materials. The chart on this page shows the 40 materials most often specified. If you don't know which material is best for your application, BETE Applications Engineering can help you with your selection. Some factors that influence the nozzle material selection process are:

Temperature. Melting or softening of material establishes maximum temperature limits. However, these temperature limits must be reduced when corrosion, oxidation, or chemical attack are also present. See column in blue for general temperature limits for various materials.

Corrosion. Plastics offer superior corrosion resistance at relatively low cost, but can only be used in low-temperature applications. In general, metals can be ranked in the following order of corrosion resistance (from lowest to highest): cast iron, brass, stainless steels, nickel-based alloys, refractory metals and precious metals. Ceramics have excellent corrosion resistance except in very high pH environments.

Chemical attack. There are few general guidelines to this complex subject, but the material used for piping may provide a useful indicator of a suitable nozzle material. If the environment of your application is known to contain substances which may attack the spray nozzle, contact BETE Applications Engineering for advice.

Abrasion. Hardened stainless steel, Cobalt Alloy 6, tungsten carbide, and ceramics are commonly used in applications where abrasive fluids are sprayed.

Cost. There are exceptions, but materials can generally be ranked in the following order in terms of cost (from lowest to highest): brass, stainless or carbon steel, plastics, stainless steels, cobalt-base alloys, nickel-base alloys, ceramics, refractory metals and precious metals.

Material Description	BETE Material No. (MN)	(DIN) Description	Temp. Rating (° F)	Trade Name*
Brass	4	Messing	450°	
Naval Brass	64		750°	
Bronze		Bronze	750°	
L.C. Steel	72	C-Stahl	400°	
303	5	1.4305	800°	
304	6	1.4301	800°	
304L		1.4306	800°	
316	7	1.4401	800°	
Tungsten Carbide	7H			
Alumina	26			
316L	20	1.4404	800°	
317	21	1.4440	800°	
317L	22	1.4438	800°	
416	24	1.4005	800°	
904L	74	1.4539	800°	
Alloy 20	70	2.4660	900°	Carpenter® 20
Nickel Alloy M30C	37	2.4360/2.4366	1000°	Monel®
Nickel Alloy 600	35	2.4816	2000°	Inconel® 600
Nickel Alloy 625	3B	2.4856	2000°	Inconel® 625
Nickel Alloy 800	33	1.4876	1850°	Incoloy® 800
Nickel Alloy 825	34	2.4858	1850°	Incoloy® 825
Nickel Alloy B	31	2.4800/2.4810	1400°	Hastelloy® B w/2.5 Max. Co
Nickel Alloy G	32	2.4619	2000°	Hastelloy® G
Nickel Alloy G30	49	2.4603	2000°	Hastelloy® G30
Nickel Alloy C276	81	2.4819	2000°	Hastelloy® C276
Nickel Alloy C22	2A	2.4602	2000°	Hastelloy® C22
Nickel	38	Nickel	650°	
Titanium	11	Titan	900°	
Tantalum	40	Tantal	2700°	
Zirconium	61	Zirkonium	1000°	
Cobalt Alloy 6	9		1900°	Stellite® 6
SNBSC ceramic	62		3000°	Refrax®
RBSC ceramic	59		2500°	
PTFE	3	PTFE	300°	Teflon®
PVDF	36	PVDF	245°	Kynar®
PVC	1	PVC	135°	
CPVC	16	CPVC	180°	
Polypropylene	2	Polypropylen	155°	
UHMW	17		180°	
Polyurethane	69		176°	
ABS	15		155°	

*** BETE does not represent that it manufactures its products with materials sold under any of these brand names.** Customers sometimes ask for BETE products without using a USA standard specification for the material they require. When materials are described incompletely, with DIN specifications or with a commonly used brand name, BETE will usually supply materials according to the USA specifications listed above. Specifications for forms other than cast or bar may differ from the above.

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